



MINISTRY OF EDUCATION

Physical Education and Health (Elective) For Senior High Schools

TEACHER MANUAL



NATIONAL COUNCIL FOR
CURRICULUM & ASSESSMENT
OF MINISTRY OF EDUCATION

MINISTRY OF EDUCATION



REPUBLIC OF GHANA

Physical Education and Health (Elective) For Senior High Schools

Teacher Manual
Year Two



NATIONAL COUNCIL FOR
CURRICULUM & ASSESSMENT
OF MINISTRY OF EDUCATION

PHYSICAL EDUCATION AND HEALTH (ELECTIVE) TEACHER MANUAL

Enquiries and comments on this manual should be addressed to:

The Director-General

National Council for Curriculum and Assessment (NaCCA)

Ministry of Education

P.O. Box CT PMB 77

Cantonments Accra

Telephone: 0302909071, 0302909862

Email: info@nacca.gov.gh

website: www.nacca.gov.gh



©2025 Ministry of Education

This publication is not for sale. All rights reserved. No part of this publication may be reproduced without prior written permission from the Ministry of Education, Ghana.



Contents

INTRODUCTION	VIII
ACKNOWLEDGEMENTS	IX
SECTION 1: SEXUAL AND REPRODUCTIVE HEALTH	1
STRAND: HEALTH EDUCATION	1
Sub-Strand: Health and Wellness	1
WEEK 1	3
Focal Area: Explanation of Sexual and Reproductive Health	3
WEEK 2	13
Focal Area: Contraception, its types, and impact on health and wellness	13
Appendix A: Structure and Rubrics for Group Project Work	23
SECTION 2: IMPACT OF FOOD QUALITY, TYPE, AND CHOICE ON HEALTH	26
STRAND: HEALTH EDUCATION	26
Sub-Strand: Nutrition and Diet in Health	26
WEEK 3	28
Focal Area: The meaning of food safety and wholesomeness	28
WEEK 4	39
Focal Area: The impact of organic, genetically modified, sugary and processed (OGMSP) foods on health	39
WEEK 5	50
Focal Area: Food choices	50
Appendix B: Portfolio Structure and Rubric	57
Appendix C: Rubrics for Poster	59
Assessment Rubrics	57
SECTION 3: EMOTIONAL AND MENTAL HEALTH ISSUES	61
STRAND: HEALTH EDUCATION	61
Sub-Strand: Common Human Diseases	61
WEEK 6	63
Theme or Focal Area: Mental Health Conditions	63
WEEK 7	72
Theme or Focal Area: Factors promoting positive mental and emotional health	72
Appendix D: Mid-Semester Examination	78
SECTION 4: LIFE CHOICES AND DISEASES	79
STRAND: PHYSICAL EDUCATION	79
Sub-Strand: Physical Activity for Healthy Living	79

WEEK 8	81
Focal Area: The impact of life choices on diseases	81
SECTION 5: INJURY PREVENTION AND REGULAR PHYSICAL ACTIVITY	90
STRAND: PHYSICAL EDUCATION	90
Sub-Strand: Physical Activity for Healthy Living	90
WEEK 9	92
Focal Area: Injury prevention before, during and after physical activity	92
WEEK 10	105
Focal Area: Factors that influence adherence to regular participation in physical activity	105
SECTION 6: TRAINING PRINCIPLES	110
STRAND: PHYSICAL EDUCATION	110
Sub-Strand: Training Principles for Sports Performance	110
WEEK 11	112
Focal Area: Principles of training	112
WEEK 12	118
Focal Area: Applying Principles of Training	118
Appendix E: End of Semester Examination	127
SECTION 7: PRINCIPLES OF BIOMECHANICS	128
STRAND: PHYSICAL EDUCATION	128
Sub-Strand: Scientific Bases of Physical Activity	128
WEEK 13	130
Focal Area: Biomechanical Principles	130
WEEK 14	144
Focal Area: Applying biomechanical principles	144
Appendix F: Rubrics for Project-Based Assessment	163
Appendix G: A Sample Individual Project	164
SECTION 8: PROFESSIONALS IN HEALTH EDUCATION	166
STRAND: ACADEMIC AND CAREER PATHWAYS	166
Sub-Strand: Health Education Pathways	166
WEEK 15	168
Focal Area: Professionals in Health Education	168
WEEK 16	181
Focal Area: Professional preparation of career pathways in health education	181
Appendix H: Rubrics for Simulation	188
SECTION 9: BUILDING A PROFESSIONAL PROFILE IN PHYSICAL EDUCATION	189
STRAND: ACADEMIC AND CAREER PATHWAYS	189

Sub-Strand: Physical Education Pathways	189
Sub-Strand: Sports Excellence Pathways	189
WEEK 17	191
Focal Area: Concepts of career resume to project a learner's profile in physical education	191
WEEK 18	199
Focal Area: Developing a career resume to project a learner's profile in Physical Education	199
WEEK 19	215
Focal Area: Building a 21st-century career in Physical Education	215
WEEK 20	227
Focal Area: Developing a 21st-century career in Physical Education	227
Appendix I: Mid-Semester Examination	242
Appendix J: Rubric for Dramatisation	243
Appendix K: Rubrics for Case Study	244
SECTION 10: INVASION SPORTS	245
STRAND: ACADEMIC AND CAREER PATHWAYS	245
Sub-Strand: Coaching and Officiating of Games	245
WEEK 21	247
Focal Area: Concepts and principles of coaching and officiating invasion games	247
WEEK 22	258
Focal Area: Applying the concepts and principles of coaching and officiating invasion games	258
Appendix L: Marking Scheme for Checklist	273
SECTION 11: RUNNING SPORTS	274
STRAND: ACADEMIC AND CAREER PATHWAYS	274
Sub-Strand: Coaching and Officiating of Athletics	274
WEEK 23	276
Focal Area: Concepts and principles of coaching and officiating of track events/marathons	276
WEEK 24	292
Focal Area: Application of the concepts and principles of coaching and officiating running events	292
Appendix M: End of Second Semester Table of Specifications	316
BIBLIOGRAPHY	317

Introduction

The National Council for Curriculum and Assessment (NaCCA) has developed a new Senior High School (SHS) curriculum which aims to ensure that all learners achieve their potential by equipping them with 21st Century skills, competencies, character qualities and shared Ghanaian values. This will prepare learners to live a responsible adult life, further their education and enter the world of work.

This is the first time that Ghana has developed an SHS Curriculum which focuses on national values, attempting to educate a generation of Ghanaian youth who are proud of our country and can contribute effectively to its development.

This Teacher Manual for Physical Education and Health (Elective) is a single reference document which covers all aspects of the content, pedagogy, teaching and learning resources and assessment required to effectively teach Year Two of the new curriculum. It contains information for all 24 weeks of Year Two including the nine Key Assessments required for the Student Transcript Portal (STP).

Thank you for your continued efforts in teaching our children to become responsible citizens.

It is our belief that, if implemented effectively, this new curriculum will go a long way to transforming our Senior High Schools and developing Ghana so that we become a proud, prosperous and values-driven nation where our people are our greatest national asset.

Acknowledgements

Special thanks to Professor Samuel Ofori Bekoe, Director-General of the National Council for Curriculum and Assessment (NaCCA) and all who contributed to the successful writing of the Teacher Manuals for the new Senior High School (SHS) curriculum.

The writing team was made up of the following members:

National Council for Curriculum and Assessment	
Name of Staff	Designation
Eric Amoah	Deputy Director-General, Technical Services
Reginald Quartey	Ag. Director, Curriculum Development Directorate
Anita Cordei Collison	Ag. Director, Standards, Assessment and Quality Assurance Directorate
Rebecca Abu Gariba	Ag. Director, Corporate Affairs
Anthony Sarpong	Director, Standards, Assessment and Quality Assurance Directorate
Uriah Kofi Otoo	Senior Curriculum Development Officer (Art and Design Foundation & Studio)
Nii Boye Tagoe	Senior Curriculum Development Officer (History)
Juliet Owusu-Ansah	Senior Curriculum Development Officer (Social Studies)
Ayuuba Sullivan Akudago	Senior Curriculum Development Officer (Physical Education & Health)
Godfred Asiedu Mireku	Senior Curriculum Development Officer (Mathematics)
Samuel Owusu Ansah	Senior Curriculum Development Officer (Mathematics)
Thomas Kumah Osei	Senior Curriculum Development Officer (English)
Godwin Mawunyo Kofi Senanu	Assistant Curriculum Development Officer (Economics)
Joachim Kwame Honu	Principal Standards, Assessment and Quality Assurance Officer
Jephtar Adu Mensah	Senior Standards, Assessment and Quality Assurance Officer
Richard Teye	Senior Standards, Assessment and Quality Assurance Officer
Nancy Asieduwaa Gyapong	Assistant Standards, Assessment and Quality Assurance Officer
Francis Agbalenyo	Senior Research, Planning, Monitoring and Evaluation Officer
Abigail Birago Owusu	Senior Research, Planning, Monitoring and Evaluation Officer
Ebenezer Nkuah Ankamah	Senior Research, Planning, Monitoring and Evaluation Officer
Joseph Barwuah	Senior Instructional Resource Officer
Sharon Antwi-Baah	Assistant Instructional Resource Officer
Dennis Adjasi	Instructional Resource Officer

Samuel Amankwa Ogyampo	Corporate Affairs Officer
Seth Nii Nartey	Corporate Affairs Officer
Alice Abbew Donkor	National Service Person

Subject	Writer	Designation/Institution
Additional Mathematics	Dr. Nana Akosua Owusu-Ansah	University of Education Winneba
	Gershon Kwame Mantey	University of Education Winneba
	Innocent Duncan	KNUST Senior High School
Agricultural Science	David Esela Zigah	Achimota School
	Prof. J.V.K. Afun	Kwame Nkrumah University of Science and Technology
	Issah Abubakari	Half Assini Senior High School
	Mrs. Benedicta Carbilba Foli	Retired, Pope John SHS and Minor Seminary
Agriculture	Esther Fobi Donkor	University of Energy and Natural Resources, Sunyani
	Prof. Frederick Adzitey	University for Development Studies
	Eric Morgan Asante	St. Peter's Senior High School
Automotive and Metal Technology	Dr. Sherry Kwabla Amedorme	Akerten Appiah Menka University of Skills Training and Entrepreneurial Development (AAMUSTED)
	Kunkyuuri Philip	Kumasi Senior High Technical School
	Emmanuel Korletey	Benso Senior High Technical School
	Philip Turkson	G E S
Electrical and Electronics Technology	Walter Banuenumah	Akerten Appiah Menka University of Skills Training and Entrepreneurial Development (AAMUSTED)
	Akuffo Twumhene Frederick	Koforidua Senior High Technical School
	Gilbert Second Odjamgba	Ziavi Senior High Technical School
Building Construction and Woodwork Technology	Wisdom Dzidzienyo Adzraku	Akerten Appiah Menka University of Skills Training and Entrepreneurial Development (AAMUSTED)
	Michael Korblah Tsorgali	Akerten Appiah Menka University of Skills Training and Entrepreneurial Development (AAMUSTED)
	Dr. Prosper Mensah	CSIR-FORIG

Building Construction and Woodwork Technology	Isaac Buckman	Armed Forces Senior High Technical School
	Firmin Anewuoh	Presbyterian College of Education, Akropong-Akuapem
	Lavoe Daniel Kwaku	Sokode Senior High Technical School
Arabic	Dr. Mohammed Almu Mahaman	University for Development Studies
	Dr. Abas Umar Mohammed	University of Ghana
	Mahey Ibrahim Mohammed	Tijjaniya Senior High School
Art and Design Studio and Foundation	Dr. Ebenezer Acquah	University of Education Winneba
	Seyram Kojo Adipah	GES – Ga East Municipal Education Directorate
	Dr. Jectey Nyarko Mantey	Kwame Nkrumah University of Science and Technology
	Yaw Boateng Ampadu	Prempeh College
	Kwame Opoku Bonsu	Kwame Nkrumah University of Science and Technology
	Angela Owusu-Afriyie	Opoku Ware School
Aviation and Aerospace Engineering	Opoku Joel Mintah	Altair Unmanned Technologies
	David Kofi Oppong	Kwame Nkrumah University of Science and Technology
	Sam Ferdinand	Afua Kobi Ampem Girls' Senior High School
Biology	Paul Beeton Damoah	Prempeh College
	Jo Ann Naa Dei Neequaye	Nyakrom Senior High Technical School
	Abraham Kabu Otu	Prampram Senior High School
Biomedical Science	Dr. Dorothy Yakoba Agyapong	Kwame Nkrumah University of Science and Technology
	Davidson Addo	Bosomtwe Girls STEM SHS
	Jennifer Fafa Adzraku	
Business Management	Ansbert Baba Avole	Bolgatanga Senior High School
	Dr. Emmanuel Caesar Ayamba	Bolgatanga Technical University
	Faustina Graham	Ghana Education Service, HQ
Accounting	Nimako Osei Victoria	SDA Senior High School, Akyem Sekyere
	Emmanuel Kodwo Arthur	ICAG
	Bernard Adobaw	West African Examination Council
Chemistry	Awumbire Patrick Nsobila	Bolgatanga Senior High School

Chemistry	Paul Michael Cudjoe	Prempeh College
	Bismark Kwame Tunu	Opoku Ware School
	Michael Amissah	St. Augustine's College
Computing and Information Communication Technology (ICT)	Raphael Dordoe Senyo	Ziavi Senior High Technical School
	Kwasi Abankwa Anokye	Ghana Education Service, SEU
	Osei Amankwa Gyampo	Wesley Girls High School, Kumasi
	Dr. Ephriam Kwaa-Aidoo	University of Education Winneba
	Dr. Gaddafi Abdul-Salaam	Kwame Nkrumah University of Science and Technology
Design and Communication Technology	Gabriel Boafo	Kwabeng Anglican Senior High Technical School
	Joseph Asomani	Akerten Appiah Menka University of Skills Training and Entrepreneurial Development (AAMUSTED)
	Phyllis Mensah	Akerten Appiah Menka University of Skills Training and Entrepreneurial Development (AAMUSTED)
Economics	Dr. Peter Anti Partey	University of Cape Coast
	Charlotte Kpogli	Ho Technical University
	Salitsi Freeman Etornam	Anlo Senior High School
Engineering	Daniel Kwesi Agbogbo	Kwabeng Anglican Senior High Technical School
	Prof. Abdul-Rahman Ahmed	Kwame Nkrumah University of Science and Technology
	Valentina Osei-Himah	Atebubu College of Education
English Language	Esther Okaitsoe Armah	Mangoase Senior High School
	Kukua Andoh Robertson	Achimota School
	Beatrice Antwiwaa Boateng	Oti Boateng Senior High School
	Perfect Quarshie	Mawuko Girls Senior High School
French	Osmanu Ibrahim	Mount Mary College of Education
	Maurice Adjete	Retired, CREF
	Mawufemor Kwame Agorgli	Akim Asafo Senior High School
General Science	Dr. Comfort Korkor Sam	University for Development Studies
	Robert Arhin	SDA Senior High School, Akyem Sekyere
Geography	Raymond Nsiah-Asare	Methodist Girls' High School

Geography	Prof. Ebenezer Owusu-Sekyere	University for Development Studies
	Samuel Sakyi-Addo	Achimota School
Ghanaian Languages	David Sarpei Nunoo	University of Education Winneba
	Catherine Ekua Mensah	University of Cape Coast
	Ebenezer Agyemang	Opoku Ware School
Government	Josephine Akosua Gbagbo	Ngleshie Amanfro Senior High School
	Augustine Arko Blay	University of Education Winneba
	Samuel Kofi Asafua Adu	Fettehman Senior High School
History	Dr. Anitha Oforiwaah Adu-Boahen	University of Education Winneba
	Prince Essiaw	Enchi College of Education
Management in Living	Grace Annagmeng Mwini	Tumu College of Education
	Dorcus Akosua Opoku	Winneba Secondary School
Clothing and Textiles	Jusinta Kwakyewaa (Rev. Sr.)	St. Francis Senior High Technical School
	Rahimatu Yakubu	Potsin T.I Ahmadiyya SHS
Food and Nutrition	Ama Achiaa - Afriyie	St. Louis SHS
	Lily-Versta Nyarko	Mancell Girls' Senior High Technical School
Literature-in-English	Blessington Dzah	Ziavi Senior High Technical School
	Juliana Akomea	Mangoase Senior High School
Manufacturing Engineering	Benjamin Atribawuni Asaaga	Kwame Nkrumah University of Science and Technology
	Dr. Samuel Boahene	Kwame Nkrumah University of Science and Technology
	Ali Morrow Fatormah	Mfantsipim School
Mathematics	Edward Dadson Mills	University of Education Winneba
	Zakaria Abubakari Sadiq	Tamale College of Education
	Collins Kofi Annan	Mando Senior High School
Music	Pros Cosmas W. K. Mereku	University of Education Winneba
	Prof. Emmanuel Obed Acquah	University of Education Winneba
	Joshua Amuah	University of Ghana
	Benjamin Ofori	CRIG Primary School, Akim Tafo
	Davies Obiri Danso	New Juaben Senior High School
Performing Arts	Dr. Latipher Amma Osei Appiah-Agyei	University of Education Winneba
	Prof. Emmanuel Obed Acquah	University of Education Winneba
	Chris Ampomah Mensah	Bolgatanga Senior High School

Core Physical Education and Health	Dr. Mary Aku Ogum	University of Cape Coast
	Paul Kofi Yesu Dadzie	Accra Academy
Elective Physical Education and Health	Sekor Gaveh	Kwabeng Anglican Senior High Technical School
	Anthonia Afosah Kwaaso	Jukwa Senior High School
Physics	Dr. Linus Kweku Labik	Kwame Nkrumah University of Science and Technology
	Henry Benyah	Wesley Girls' High School, Cape Coast
	Sylvester Affram	Kwabeng Anglican Senior High School
Christian & Islamic Religious Studies	Dr. Richardson Addai-Mununkum	University of Education Winneba
	Dr. Francis Opoku	Valley View University College
	Dr. Francis Normanyo	Mount Mary College
	Dr. Haruna Zagoon-Sayeed	University of Ghana
	Kabiru Soumana	GES
	Seth Tweneboa	University of Education Winneba
Religious and Moral Education	Anthony Mensah	Abetifi College of Education
	Joseph Bless Darkwa	Volo Community Senior High School
	Clement Nsorwineh Atigah	Tamale Senior High School
Robotics	Dr. Eliel Keelson	Kwame Nkrumah University of Science and Technology
	Isaac Nzoley	Wesley Girls' High School, Cape Coast
Social Studies	Mohammed Adam	University of Education Winneba
	Simon Tengan	Wa Senior High Technical School
	Dr. Adwoa Dufie Adjei	University Practice Senior High School
	Dr. Isaac Atta Kwenin	University of Cape Coast
Spanish	Setor Donne Novieto	University of Ghana
	Franklina Kabio-Danlebo	University of Ghana
	Mishael Annoh Acheampong	University of Media, Art and Communication
Technical Support	Benjamin Sundeme	St. Ambrose College of Education
	Dr. Isaac Amoako	Atebubu College of Education
	Eric Abban	Mt. Mary College of Education

SECTION 1: SEXUAL AND REPRODUCTIVE HEALTH

STRAND: HEALTH EDUCATION

Sub-Strand: Health and Wellness

Learning Outcome: *Design physical activities that can be used to develop each of the components of health and wellness*

Content Standard: *Demonstrate understanding of the relationships between health and wellness as well as physical activity that helps develop components of health and wellness*

HINT



Assign **Group Project Work** in Week 2. See **Appendix A**, which has been provided at the end of this section, detailing the structure of the group project. The group project will be submitted in Week 8.

INTRODUCTION AND SECTION SUMMARY

Sexual and Reproductive Health (SRH) is essential for the overall well-being of individuals, influencing both physical health and emotional stability. Understanding SRH helps learners make informed choices about their health, relationships and personal responsibilities. This section provides foundational knowledge on sexual health, reproductive rights and responsibilities, focusing on topics like safe practices, bodily autonomy and healthy relationships. By the end of this section, learners will gain insights into how SRH impacts overall wellness, self-esteem and personal growth.

Through guided discussions and practical activities, learners will explore the critical role SRH plays in fostering positive mental and emotional health. They will understand how SRH knowledge contributes to long-term physical health and promotes healthier, more fulfilling relationships. This section is structured to empower learners to actively take charge of their health and make responsible decisions that benefit them now and in the future.

The weeks covered by the section are

Week 1: Explain sexual and reproductive health and its impact on health and wellness.

Week 2: Identify types of contraception and their impact on health and wellness.

SUMMARY OF PEDAGOGICAL EXEMPLARS

To ensure an inclusive learning experience, engage students in group discussions, promoting collaboration, respect and teamwork. Use real-life scenarios and relatable examples to connect Sexual and Reproductive Health concepts to learners' daily experiences, making them more relevant and understandable. Encourage learners to research SRH topics using digital resources, fostering digital literacy and critical thinking. Special consideration should be given to learners with diverse needs including gifted learners and those with Special Educational Needs (SEN),

ensuring everyone participates and benefits equally. Varied instructional strategies such as interactive discussions and hands-on activities, support different learning styles and reinforce the importance of Sexual and Reproductive Health in maintaining health and Wellness.

ASSESSMENT SUMMARY

Learners' understanding of Sexual and Reproductive Health will be evaluated through a mix of formative and summative assessments. Formative assessments will include class discussions, reflective journals and group presentations where learners share insights and personal learning experiences. These activities will assess learners' ability to relate SRH knowledge to their personal lives and demonstrate its understanding in meaningful ways.

Summative assessments will involve quizzes and scenario-based assessments that test learners' comprehension of key concepts and decision-making skills related to SRH. Practical tasks, like creating informative posters or presentations on contraception and wellness, will allow learners to apply what they have learnt creatively. This combination of assessments will ensure that learners retain and can apply SRH knowledge to promote healthier lifestyles.

WEEK 1

Learning Indicator: Explain sexual and reproductive health and its impact on health and wellness

FOCAL AREA: EXPLANATION OF SEXUAL AND REPRODUCTIVE HEALTH

SEXUAL AND REPRODUCTIVE HEALTH (SRH)

Sexual and reproductive health is very important for the overall health and well-being of people in Ghana, and there have been improvements in recent years. For instance, about 1.7% of adults have HIV, with women having a higher rate (2.1%) compared to men (1.2%). Although many people know about HIV, detailed knowledge on how to prevent it is still lacking. Many teenagers also find it hard to access sexual and reproductive health services, and only 17.6% of them have received services like birth control, treatment for sexually transmitted infections (STIs), or pregnancy-related care.

There is a noticeable difference in the use of contraception/birth control among women: about 25% of married women and 37% of unmarried, sexually active women use modern contraceptives. However, usage among adolescents is significantly lower, reflecting gaps in access and education. The adolescent fertility rate is fairly high, with about 14% of young women aged 15-19 starting to have children. These numbers highlight the need for better sexual health education and services to improve the health and well-being of everyone in Ghana.

Common Terms

1. **Sex:** the biological and physical characteristics that define humans as female or male. These characteristics are caused by chromosomes, hormone levels, reproductive/sexual organs and other physical traits. It also means the engagement in physical activities or behaviours involving sexual organs and often aiming for sexual pleasure or reproduction.
2. **Sexuality:** a broad range of concepts related to sexual feelings, thoughts, attractions and behaviours toward other people. It includes sexual orientation, sexual behaviour and sexual identity.
3. **Sexual orientation:** It describes a person's pattern of emotional, romantic or sexual attraction to others.
4. **Gender:** It refers to the binary categories of male and female determined at birth and the behavioural, cultural and psychological traits typically associated with each.
5. **Gender expression:** This refers to the external display of one's gender, through a combination of dress, demeanour, social behaviour, and other factors, generally measured on scales of masculinity and femininity.
6. **Consent:** Consent is an agreement between participants to wilfully engage in sexual activity without any external pressure or factors. For someone to consent to sexual activity, participants must continuously communicate – before, during and after sexual activity.
7. **Sexual boundary:** It refers to the limits and rules that individuals set for themselves and others regarding sexual behaviour and interactions. These boundaries help maintain a sense of safety, respect and personal integrity in sexual relationships.

8. **Fertility rate:** It refers to the average number of children that a woman will give birth to in her lifetime. It is determined by calculating the average number of births among women in a community or a country over a period of time.

Sexual Health

Sexual health refers to a state of physical, emotional, mental and social well-being in relation to sexuality. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all individuals must be respected, protected and fulfilled (WHO, 2006a).

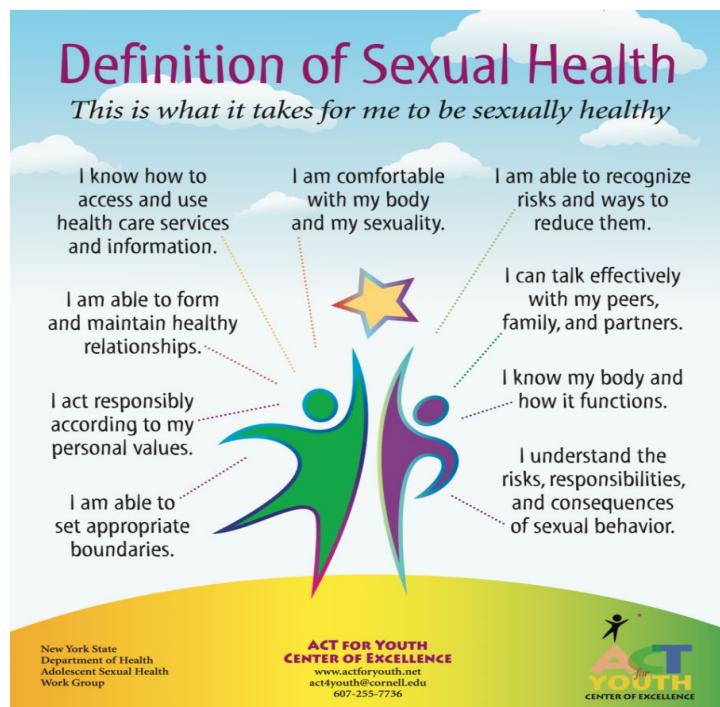


Figure 1.1: Awareness of sexual health



Figure 1.2: Championing sexual and reproductive health issues

The Meaning of Reproductive Health

Reproductive health is a state of complete physical, mental and social well-being in all matters relating to the reproductive system, its functions and processes. Reproductive health implies that people can have a satisfying and safe sex life and have the capability to reproduce and the freedom to decide if, when and how often to do so. Reproductive Health is for males and females and is important throughout a person's entire life.



Figure 1.3: A family that seems to have planned its reproductive life and appears pleased about it

Key Components of Sexual and Reproductive Health

1. **Access to information:** Individuals should have access to accurate and comprehensive information about sexuality, sexual health and reproductive health.
2. **Access to services:** The individual should have access to affordable and confidential healthcare services related to sexual and reproductive health such as contraception, fertility treatments and testing and treatment for sexually transmitted infections (STIs).
3. **Rights and choices:** SRH emphasises the right of individuals to make informed decisions about their sexual and reproductive lives without discrimination, coercion or violence.
4. **Gender equality:** Promoting SRH involves addressing gender inequalities that affect access to health services and information.
5. **Family planning and contraception:** This includes access to a range of safe, effective, affordable and acceptable methods of their choice.
6. **Prevention and treatment of STIs:** This includes preventive measures (such as education and barrier methods) and treatment for infections.
7. **Pregnancy and childbirth:** Ensuring safe pregnancy and childbirth experiences, including access to prenatal care and skilled attendance during childbirth.
8. **Sexual rights:** The recognition of sexual rights includes the right to sexual pleasure, autonomy over one's own body as well as freedom from violence and discrimination based on sexual orientation and gender.



Figure 1.4: Components of sexual and reproductive health

The Importance of Sexual and Reproductive Health

The importance of sexual and reproductive health is an essential part of the overall health, well-being and development of individuals and societies, which contributes to building healthier, and prosperous communities. It is a person's right to control their body and be educated to make informed decisions about their sex life. This includes knowledge about how to avoid Sexually Transmitted Infections (STIs) and unintended pregnancy.

Some of the benefits that come from educating people on their sexual and reproductive health include:

1. **Social stability:** Promoting sexual and reproductive health fosters more stable communities by reducing unintended pregnancies, supporting family planning and enhancing the well-being of women and children.
2. **Economic benefits:** Good sexual and reproductive health contributes to economic stability by reducing healthcare costs, enabling individuals to complete their education, participate in the workforce and support their families.
3. **Family planning:** Access to contraception and family planning services allows individuals and couples to decide the number and spacing of their children, leading to healthier families and communities.
4. **Public health:** Effective sexual and reproductive health programmes can control the spread of STIs, including HIV, which benefits the overall public health.
5. **Physical health:** Good sexual and reproductive health care prevents and treats sexually transmitted infections (STIs), reduces maternal and infant mortality and addresses reproductive health conditions like endometriosis and polycystic ovary syndrome (PCOS).

6. **Mental health:** Access to comprehensive sexual and reproductive health services can reduce anxiety and stress related to reproductive health issues, promote healthy relationships, and support mental well-being.
7. **Empowerment and rights:** Ensuring sexual and reproductive health empowers individuals to make informed decisions about their bodies and lives, supporting gender equality and the right to bodily autonomy.
8. **Safe pregnancy and childbirth:** Better prenatal care and safe childbirth practices reduce maternal and infant mortality rates.
9. **Gender equality:** Addressing sexual and reproductive health issues promotes gender equality by ensuring women and men have equal access to services and rights.
10. **Adolescent health:** Comprehensive sexual education and services support healthy transitions into adulthood and prevent risky behaviours among adolescents.
11. **Satisfaction:** It helps a person to have a satisfying sex life.
12. **Valued life:** Through education, people will value and feel good about themselves.
13. **Being at peace:** Having peace of mind.
14. **Positive relationships:** Relationships are progressive and enjoyable, whether short-term or long-term.
15. **Strong bond:** Experiencing pleasure, intimacy, and joy.
16. **Prevention of undesired experiences:** Avoiding sexually transmitted infections (STIs) and unplanned pregnancies



Figure 1.5: 19-year-old Fatima advocating for sexual and reproductive health education

How to Maintain Sexual and Reproductive Health

To maintain one's sexual and reproductive health, people need access to accurate information and to safe, effective, affordable and acceptable contraception methods of their choice. They must be informed and empowered to protect themselves from sexually transmitted infections (STIs). Sexual health means having respect, safety and freedom from sexual discrimination and violence. Sexual and reproductive health is a key part of everyone's right to the best possible physical and mental health. The guidelines include:

1. **Vaccinations:** Getting vaccinated against viral disease can protect us against certain sexually transmitted infections.

2. **Regular check-ups:** Routine visits to healthcare providers for screenings, such as pap smears, STI tests and prostate exams help detect and address issues early.
3. **Healthy lifestyle:** Eating a balanced diet, exercising regularly, avoiding smoking and excessive alcohol consumption and managing stress contribute to overall reproductive health.
4. **Safe sex practices:** Using condoms and other barrier methods can prevent STIs and unintended pregnancies.
5. **Access to healthcare services:** Ensuring access to quality healthcare services, including prenatal and postnatal care and contraception.
6. **Contraception use:** Using appropriate contraceptive methods to prevent unintended pregnancies and to ensure a planned family size.
7. **Education and awareness:** Staying informed about sexual and reproductive health topics, including consent, safe sex and the importance of regular health screenings.
8. **Mental health care:** Addressing mental health issues and seeking support for emotional well-being is crucial for a healthy sex life and overall reproductive health.
9. **Physical activities:** Integrating a variety of physical activities (jogging, brisk walking, cycling, hiking dancing etc.) into a weekly routine can help maintain good sexual and reproductive health and improve overall well-being and quality of life.



Figure 1.6: Seven ways to maintain good sexual and reproductive health



Figure 1.7: Responsible approaches to sexual health

Sexual and Reproductive Rights and Responsibilities

Sexual and reproductive rights and responsibilities help create a society where individuals can enjoy their sexual and reproductive health to the fullest while respecting and supporting others in doing the same.

1. Sexual and Reproductive Rights

Sexual and reproductive rights are basic human empowerments granted by nature and the law for individuals to make informed and personal choices about their reproductive life and family planning. These rights encompass a broad range of issues relating to reproductive health, including access to healthcare, education and freedom from discrimination and coercion.

Key aspects of sexual and reproductive rights include:

- **Right to health:** Access to comprehensive sexual and reproductive health services, including contraception, safe abortion (where legal), STI prevention and treatment, prenatal and postnatal care and cancer screenings.
- **Right to education:** Individuals have the right to comprehensive, accurate and age-appropriate sexual education that provides knowledge about sexual and reproductive health.
- **Right to privacy:** A person has the right to confidentiality in healthcare services, ensuring that personal health information is protected.
- **Right to consent:** A person has the right to agree or refuse any sexual invitations.
- **Right to freedom from discrimination:** Every individual has equal access to sexual and reproductive health services without discrimination based on gender, age, sexual orientation, marital status, disability or socioeconomic status.
- **Right to bodily autonomy:** An individual has the right to make decisions about their own body, including the right to choose if, when and how to have children.
- **Right to safety and security:** A person has the right to protection from sexual violence, coercion and harmful practices such as female genital mutilation and forced marriage.
- **Right to family planning:** An individual has the right to access a full range of contraceptive options and family planning services to decide the number and spacing of children.
- **Right to equality and non-discrimination:** This ensures that all individuals have equal access to sexual and reproductive health services and education, regardless of their background.

2. Sexual and Reproductive Responsibilities

Sexual and reproductive responsibilities refer to the obligations and duties that individuals and societies must fulfil to ensure healthy, informed, and ethical practices regarding reproductive health and family planning. These responsibilities are essential for fostering a supportive environment where reproductive rights can be fully realised.

Key aspects of reproductive responsibilities include:

- **Informed decision-making:** Make informed and responsible choices about sexual activity, contraception, and family planning based on accurate information.

- **Respect for others:** Respect the rights, autonomy, and decisions of others regarding their sexual and reproductive health.
- **Safe practices:** Engage in safe sex practices to prevent STIs and unintended pregnancies, including the use of condoms and regular STI testing.
- **Communication:** Have open and honest communication with partners about sexual health, boundaries, and consent.
- **Seeking medical care:** Regularly visit healthcare providers for check-ups, screenings, and consultations about sexual and reproductive health.
- **Education:** Continuously look for current information and tell others about sexual and reproductive health issues, including prevention and treatment options.
- **Parenting:** For those who choose to have children, provide a safe, healthy and supportive environment for the children's upbringing.
- **Advocacy:** Support policies and initiatives that promote sexual and reproductive health rights and access for all individuals.
- **Responsibility to report:** Report instances of sexual violence, coercion or discrimination to appropriate authorities to protect oneself and others.
- **Supporting partners:** Encourage and support partners to make informed and healthy decisions about their sexual and reproductive health.

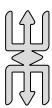


Figure 1.8: A planned happy family

Learning Tasks

1. Research and present on different aspects of sexual health using multimedia tools.
2. Develop a poster highlighting the key elements of reproductive health.
3. Create a Venn diagram showing the overlap and differences between sexual and reproductive health.
4. Write a short essay on the importance of integrating sexual and reproductive health education in schools.

5. Develop a group presentation on different components of sexual and reproductive health.
6. Design an infographic that explains the components of sexual and reproductive health.
7. Conduct a survey on peers' understanding of sexual and reproductive health and analyse the results in class.
8. Write a reflective journal on how sexual and reproductive health affects overall health and wellness and sports performance.
9. Role-play scenarios on maintaining sexual and reproductive health.
10. Develop a health maintenance plan that includes strategies for sexual and reproductive health.
11. Debate the importance of sexual and reproductive rights.
12. Discuss case studies that highlight sexual and reproductive responsibilities in your community.



Note

Select from the list provided, the tasks that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** Show a video on sexual and reproductive health to draw learners' minds to the lesson.



A video on Sexual and Reproductive Health

<https://www.youtube.com/watch?v=LXKgRzl38IU>

2. **Introduction:** Invite learners to share their thoughts on the video they watched and what they made out of it. Provide brief facts and figures on the sexual and reproductive health situation in your community, region, or Ghana.
3. **Digital-based Learning:** With the aid of digital devices, learners research the meaning of Sexual and Reproductive Health. Set clear guidelines and expectations for device use and online behaviour.
4. **Activity-based Learning:** In mixed-gender groups, learners develop a group presentation on different components of sexual and reproductive health.
5. **Talk-for-Learning:** Learners in groups share ideas on the relevance of studying sexual and reproductive health in relation to their health and wellness.

6. **Collaborative learning:** Learners discuss healthy ways of maintaining sexual and reproductive health.
7. **Group-based Learning:** Learners in mixed-ability groups, discuss the rights and responsibilities regarding sexuality and reproductive health to enhance health and wellness.

Key Assessment

Level 1

1. Define sexual health.
2. Define reproductive health.
3. State one right and responsibility each, associated with sexual and reproductive health.

Level 2

1. Describe the importance of sexual and reproductive health to the health and wellness of the body.
2. Explain the differences between sexual health and reproductive health.
3. Describe three components of sexual and reproductive health.

Level 3

1. Describe three rights and responsibilities associated with sexual and reproductive health.
2. Explain four actions that can improve our sexual and reproductive health and our ability to engage in physical activity.
3. Explain why consent is important in any sexual activity.
4. Explain the differences between sexual health and reproductive health.

Level 4

1. Create a brochure that educates peers on their sexual and reproductive rights.
2. Create a code of conduct for maintaining sexual and reproductive responsibilities.

HINT



*The recommended mode of assessment for Week 1 is a **class exercise**. Refer to Key Assessment Level 3, Item 4 in the Key Assessment for an example of a Class exercise question.*

WEEK 2

Learning Indicator: Identify the types of contraception and their impact on health and wellness

FOCAL AREA: CONTRACEPTION, ITS TYPES, AND IMPACT ON HEALTH AND WELLNESS

CONTRACEPTION

Introduction

Among the 1.9 billion women of reproductive age group (15–49 years) worldwide in 2021, 1.1 billion need family planning; of these, 874 million are using modern contraceptive methods, and 164 million have an unmet need for contraception. Only one contraceptive method, condoms, can prevent both pregnancy and the transmission of sexually transmitted infections, including HIV. The use of contraception advances the human rights of people to determine the number and spacing of their children.

The most appropriate method of birth control depends on an individual's overall health, age, frequency of sexual activity, number of sexual partners, desire to have children in the future, and family history of certain diseases. Ensuring access to everybody's preferred contraceptive methods advances several human rights including the right to life and liberty. Additionally, it ensures freedom of opinion, expression and choice. Finally, it supports the right to work and education and brings significant health and other benefits.

Contraception is the act of preventing pregnancy

Birth control or contraception also means the use of medicines, devices or surgery to prevent pregnancy. It works by interfering with the normal process of fertilisation or implantation. The aim of contraception is to prevent the sperm from meeting an egg or inhibiting the development of a fertilised egg and enable individuals to control when they want to have children.

Types of Contraception

There are many different types or methods of contraception, but not all types are appropriate for all situations. The most appropriate method of birth control depends on an individual's overall health, age, frequency of sexual activity, number of sexual partners, desire to have children in the future, family history of certain diseases and personal choices. It is essential to consult a healthcare provider to discuss options and make an informed decision.

Contraception methods or types can be broadly categorised into

1. Barrier methods

- a. **Male condom:** A thin sheath that covers the penis to collect sperm and prevent it from entering the woman's body. Condoms that are made of latex and polyurethane can help prevent STIs.
- b. **Female condom:** It is a thin, flexible plastic sack, part of which, is inserted into the vagina before intercourse to prevent sperm from entering the uterus. The uterus or womb is the place where the baby grows during pregnancy. Female condoms can also help prevent STIs.

- c. **Contraceptive sponge:** A small sponge that you put into the vagina to cover the cervix (the opening of the uterus/womb). The sponge also contains a spermicide to kill sperm.
- d. **Spermicide:** A substance that can kill sperm cells. It comes in a foam, jelly, cream, suppository or film form. It is put inside the vagina near the uterus. Spermicide can be used alone or with a diaphragm or cervical cap.
- e. **Diaphragm and cervical cap:** These are cups that are placed inside the vagina to cover the cervix. They may be used with spermicide. They come in different sizes, so it is important to see a healthcare provider to find out which size works best for you.



Figure 2.1: Barrier methods of contraception

2. Hormonal methods

- a. **Oral contraceptives (“the pill”):** These are pills that a woman takes every day. They may contain only progestin or both progestin and oestrogen.
- b. **Contraceptive patch:** It is a birth control device that a woman puts on her skin each week. The patch releases hormones into the bloodstream.
- c. **Vaginal ring:** It is a thin, flexible ring. The woman inserts the ring into the vagina where it continually releases hormones for three weeks. She takes it out for the fourth week. After that week, she puts in a new ring.
- d. **Injectable birth control:** It is an injection of a hormone that a woman gets once every three months.
- e. **Implant:** This is a single, thin rod that a provider inserts under the skin of a woman’s upper arm. It is done in your provider’s office. The implant can last for four years.



Figure 2.2: Hormonal birth control kits

3. Long-acting reversible contraceptives (LARCs)

These are small T-shaped reversible intra-uterine devices (IUDs) that are inserted into the uterus or womb and can act for a long time. **There are two types:**

- Hormonal IUDs:** They release a small amount of progestin hormone which thickens cervical mucus to block sperm, thins the uterine lining to prevent implantation and sometimes suppresses ovulation. It is effective for 3 to 6 years depending on the specific IUD.
- Copper IUDs:** They release copper ions, which create an inflammatory reaction in the uterus that is toxic to sperm, thus preventing fertilisation. It is effective for up to 10 to 12 years.



Figure 2.3: Long-acting reversible contraceptives (IUDs)

4. Sterilisation

Sterilisation is a permanent method of contraception that involves surgical procedures to prevent pregnancy. It is considered a highly effective form of birth control, suitable for individuals or couples who are certain they do not want to have any or more children in the future. The types of sterilisations are:

- Tubal ligation:** This procedure involves cutting, tying or sealing the fallopian tubes to prevent eggs from travelling from the ovaries to the uterus. It is, in many cases, permanent and is for women. It is commonly known as “getting your tubes tied”.
- Vasectomy:** It is a surgical procedure where the vas deferens, the tubes that carry sperm from the testicles to the urethra are cut, tied or sealed. This prevents sperm from being included in the ejaculate (semen). It is permanent, in many cases.

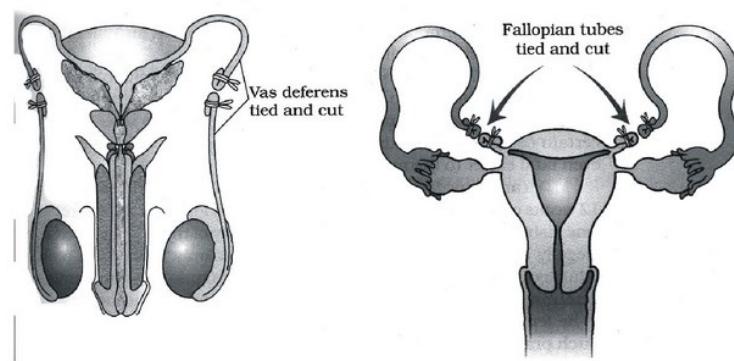


Figure 2.5: Sterilisation of the male and female reproductive systems

5. Emergency contraception: This comes in the form of emergency contraceptive pills (ECPs), which are hormonal pills that a woman takes as soon as possible after having unprotected sexual intercourse or if a condom breaks during a sexual act. It is not a regular method of birth control but is used to prevent pregnancy.

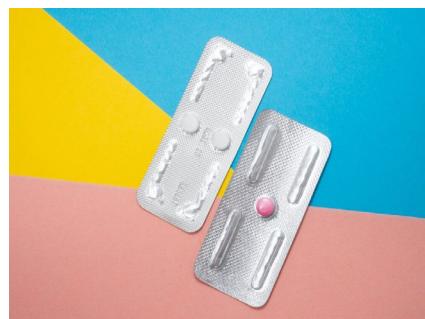


Figure 2.6: Emergency contraception pills

6. Natural Methods

Natural methods of birth control (contraception), also known as fertility awareness-based methods (FABMs), involve tracking natural bodily signs to determine fertile and infertile periods in a woman's menstrual cycle. These methods do not involve hormonal or physical interventions and are often preferred by those who wish to avoid artificial contraceptives.

The natural methods are:

- Fertility awareness-based methods:** They involve tracking the woman's fertility cycle and avoiding sex or using barrier methods on the days when she is most likely to get pregnant. This method may have a higher risk of pregnancy than other methods of contraception.

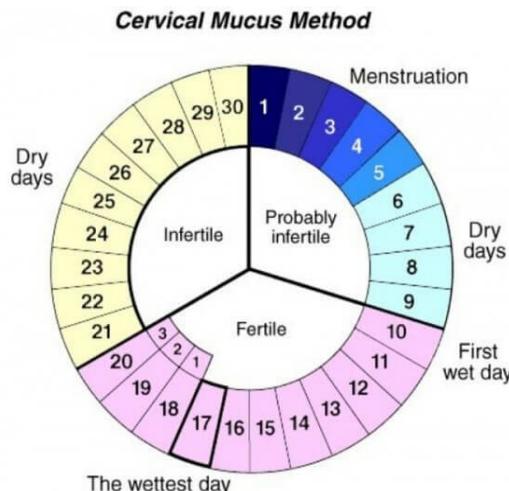
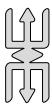


Figure 2.7: Menstrual and fertility cycle of women

- Lactational amenorrhea method (LAM):** A form of natural birth control for breastfeeding mothers. It relies on the new mother feeding her baby only breastmilk for up to six months and having no periods or spotting during that time. Spotting refers to light bleeding from the vagina that occurs outside of a regular menstrual period.
- Withdrawal:** The withdrawal method, also known as coitus interruptus or 'pulling out' is a contraceptive technique where the male partner withdraws his penis from the female partner's vagina before ejaculation to prevent sperm from entering the female reproductive tract. But it can fail because the sperm can leak out before the penis is pulled out, so this method has higher pregnancy rates than other methods of contraception.



Note

Each method has its own effectiveness, benefits and considerations, so the choice of contraception depends on individual preferences, medical history and lifestyle factors.

Positive Impacts of Contraception on Health and Wellness

Contraception plays a key role in promoting health and well-being by preventing unintended pregnancies, supporting maternal health, managing menstrual disorders, reducing the risk of certain cancers and enhancing sexual and psychological health. Some benefits of contraception are:

- Preventing unintended pregnancies:** One of the most immediate benefits of contraception is its ability to prevent unintended pregnancies. This allows individuals and couples to plan if and when they want to have children, leading to better family planning and economic stability.
- Education and career opportunities:** Access to effective contraception enables individuals, particularly women, to pursue education and career goals without the immediate concern of unplanned pregnancies. This contributes to broader socio-economic advancement and empowerment.
- Health benefit:** Some forms of contraception such as hormonal methods like birth control pills can provide health benefits beyond pregnancy prevention. For example, they can regulate menstrual cycles, reduce menstrual cramps and lower the risk of certain reproductive cancers.
- Reducing maternal and infant mortality:** Family planning through contraception helps reduce maternal mortalities by allowing women to space pregnancies appropriately and avoid risks associated with frequent childbirth. It also contributes to healthier pregnancies and births, thus reducing infant mortality.
- Social and psychological well-being:** Contraception can enhance relationships by allowing couples to focus on emotional intimacy and shared goals without the stress of unplanned pregnancy. It also supports mental health by reducing anxiety related to unintended pregnancy and providing individuals with greater control over their reproductive choices.
- Economic benefits:** Effective contraception can lead to economic benefits. Family planning through contraception reduces the incidence of high-risk pregnancies and maternal mortality, thereby improving overall maternal and child health outcomes. This, in turn, reduces healthcare costs associated with pregnancy-related complications. Governments and societies also benefit from reduced spending on social welfare programmes and healthcare services related to unplanned pregnancies and their consequences.
- Physical activity:** Contraception can positively impact physical activity levels. Unplanned pregnancies can disrupt physical activity routines due to the physical changes and demands of pregnancy. By allowing individuals to delay pregnancy until they are ready, contraception supports ongoing engagement in physical activities that contribute to overall health and well-being.
- Wellness:** Contraception contributes to overall wellness by allowing individuals to plan and space their pregnancies, leading to healthier outcomes for both parents and children, this allows time for parents to recover between pregnancies and to adequately prepare for parenting responsibilities.

Side Effects of Contraception on Health and Wellness and Their Impact on Physical Activity

Side effects and impact on physical activity of contraceptive use may include:

1. **Weight changes:** Some hormonal contraception may lead to weight gain or changes in body composition. This can influence a person's physical performance and comfort during exercise.
2. **Mood changes:** Hormonal contraceptives, such as birth control pills or hormonal IUDs, can cause mood swings or changes in emotional state. This might affect motivation and levels of energy for physical activity.
3. **Nausea:** Some individuals experience nausea, especially when starting a new type of contraceptive. This could make vigorous physical activity uncomfortable or difficult.
4. **Bone health:** Long-term use of certain hormonal contraceptives, especially those containing progestin, may affect bone density. This potentially can influence exposure to injuries during physical activity.
5. **Fatigue:** Hormonal contraceptives might cause fatigue or tiredness as a side effect. This could potentially reduce the desire or ability to engage in physical activity.
6. Non-hormonal contraceptives such as intrauterine devices (non-hormonal IUDs) can cause heavy menstrual bleeding, cramping and pain, infections, infertility and perforation of the uterus.

Positive Impacts of Contraception on Physical Activities and Sports Performance

1. **Increased muscle mass and performance:** Some studies suggest that hormonal fluctuations during the menstrual cycle can affect muscle mass and athletic performance. Hormonal contraceptives can stabilise these fluctuations, potentially benefiting female athletes.
2. **Maintained energy level:** Properly chosen contraception can help maintain consistent energy levels by regulating menstrual cycles and reducing symptoms like severe cramps and heavy bleeding.
3. **Reduced injury risk:** Stabilising hormone levels can also reduce the risk of injuries related to the menstrual cycle such as ligament laxity changes.
4. **Bone health:** Some contraceptives, especially those that contain both oestrogen and progesterone can support bone health, which is crucial for athletes to prevent stress fractures and other bone-related injuries.
5. **Mood regulation:** By stabilising hormone levels, contraceptives can help manage mood swings and improve mental well-being. A more stable mood can lead to better focus and motivation during training and competition.
6. **Reduced anxiety and stress:** Knowing that they have control over their reproductive health can reduce anxiety and stress for athletes, allowing them to concentrate better on their physical activities.

Abstinence – The Most Effective Contraceptive

Abstinence refers to the strong decision or choice to refrain from all forms of sexual activity by a person of sexual activity age. It is the only method that is 100% effective in preventing pregnancy and sexually transmitted infections (STIs) when practised consistently.

Types of abstinence

- Complete abstinence:** This is refraining from all forms of sexual activity, including vaginal, oral and any other form of sex.
- Periodic abstinence:** It refers to refraining from sexual activity during certain times, such as the fertile window in the menstrual cycle. This is often practised together with other natural methods like the calendar method.

Benefits of Abstinence

- Abstinence is 100% effective:** When followed completely, it effectively prevents pregnancy and the transmission of STIs.
- No medical side effects:** Unlike other contraceptive methods, abstinence does not involve any drugs or devices, so there are no associated medical side effects.
- Cost-free:** Abstinence does not require any purchases or medical visits, making it a cost-effective method of birth control.

Conditions for Abstinence

- Personal and mutual commitment:** Abstinence requires a strong commitment and mutual agreement between partners.
- Education and support:** The individuals need quality education and strong social support to maintain abstinence, especially in situations where there might be pressure to engage in sexual activity. It can be part of a great approach to sexual health and requires communication, education, and planning.
- Strong will to abstain:** Abstinence is a viable option for those who wish and have a strong conviction to abstain from sexual intercourse to avoid pregnancy and STIs without using hormonal, barrier, or natural methods of contraception.

Learning Tasks

- Debate the pros and cons of various contraception methods, including abstinence, and their impact on physical activity or sports performance.
- Research different types of contraception and create a presentation on one method, including its effectiveness, benefits and side effects and impact on physical activity.
- Create posters, brochures or digital media campaigns promoting awareness about contraception and its benefits.
- Develop a journal on contraception and recommend contraceptives for certain categories of sexually active people in your community. Give reasons for your recommendations.

Pedagogical Exemplars

1. **Starter:** Show a video or pictures on contraception to prepare learners for the lesson. Show the following video or any ideal one to the class:



Video Education on Contraception

<https://www.youtube.com/watch?v=C3eQljm72go&t=120s>

2. **Introduction:** Present statistics or a video highlighting trends in sexual health and contraceptive use among young people in Ghana. Encourage learners to discuss their observations and share their interpretations of the information provided.



Detailed Video Education on Contraception

<https://www.youtube.com/watch?v=Br2x8AdVikI>

3. **Group-Based learning:** In mixed-ability groups, learners use their digital devices to research the meaning of contraception. Be available to answer questions and provide guidance as learners conduct their research. Ensure members of the group are assigned roles in the groups to cater for the different strengths and abilities (facilitator, researcher, summariser, organiser, presenter, etc.). This allows students to contribute in ways that play to their strengths. Offer additional explanations and resources as needed to ensure all learners can access the information.
4. **Collaborative learning:** In their groups, learners identify the impact of contraceptive use on their health and the ability to engage in physical activities. Learners focus on the specific methods of contraception (e.g., hormonal methods, barrier methods, natural methods) and their impact on health and the ability to engage in physical activities. Academically stronger learners pair up with those who need more assistance to encourage peer teaching. Give further explanation of the concept to help better understanding. Provide individualised feedback and guidance as needed to ensure each learner contributes efficiently and effectively. Support groups to present their findings in different formats (writing reports, creating multimedia projects or designing posters).
5. **Think pair share:** Through think-pair-share, learners think about the types of contraception available and those ideal for both males and females and share their ideas with their partners. Encourage learners to respect the divergent views of each other. Learners should be patient

with their partners. The pairing of learners should be guided by their mixed abilities so that highly proficient ones can assist those approaching proficiency.

6. **Digital-based Learning:** Here, learners research and come up with pictures and drawings of different contraception types. They prepare PowerPoint presentations on the pictures and images and categorise them into those ideal for males and females. Encourage learners to give reasons for their choices. Support quiet and shy learners to participate in class. Provide feedback that is specific to each learner's needs and abilities.
7. **Workshop:** Invite a family health professional or similar qualified personnel to speak about contraception and its importance. Learners are assisted to prepare questions and share experiences for further education on the matter. Prepare learners in advance against cultural and social stereotypes so they develop the confidence to participate in an open and free environment. You can organise a private behind closed door counselling sessions for learners who need special attention with the health personnel.
8. **Talk-for-Learning:** In mixed-gender and ability groups, learners delve into the social and health-related aspects of contraception through guided dialogue. Assist learners approaching proficiency with additional attention. Encourage shy learners to come out of their shells and share their perspectives.

Key Assessment

Level 1

1. What is contraception/a contraceptive in your own words?
2. List two different types of contraception methods.
3. Name two examples of barrier methods of contraception.
4. Name at least three benefits of using contraception.
5. State three positive impacts of contraception on health and wellness.

Level 2

1. State three contraceptives and their functions.
2. Describe three primary functions of a condom.
3. Describe how hormonal contraceptives prevent pregnancy.
4. Compare three differences between barrier methods and hormonal methods of contraception.
5. Summarise three positive impacts of contraception on health and wellness.
6. Describe three side effects of contraception and its influence on a person's ability to engage in physical activity.
7. Discuss any five types of contraceptives and their effect.

Level 3

1. Which contraception method do you think is most effective and why?
2. Analyse the impact of contraception on education and career opportunities.
3. Examine how access to contraception can influence education and career opportunities, particularly for women.

4. Compare and contrast the benefits and risks associated with hormonal IUDs and copper IUDs.
5. Formulate a plan to discuss contraception options with a healthcare provider.
6. Describe four key topical areas you will have a conversation with a healthcare provider about, concerning choosing the best contraception method. Give reasons for your choice.
7. Analyse four conditions and reasons for which an adolescent will need to abstain from sex.
8. Examine four positive impacts of contraceptive use on health and the ability to engage in physical activities.

Level 4

1. Develop a comprehensive contraceptive plan considering an individual's health, lifestyle and physical activity or sports engagements.
2. Create a long-term contraceptive plan for an individual considering their future sports career and family-making desires. Explain your choices.
3. Investigate and propose five solutions to reduce the unmet need for contraception locally, nationally and globally.
4. Design a detailed educational campaign aimed at raising awareness about the benefits of contraception. Include key messages, target audience and delivery methods.
5. Assess the long-term societal impacts if access to contraception were significantly increased in your community, country or worldwide. Consider health, economic, physical activity and social factors in your assessment.

HINT



Assign Group Project Work in Week 2. See Appendix A, which has been provided at the end of this section, detailing the structure of the group project. The group project will be submitted in Week 8.

SECTION 1 REVIEW

In Week 1, learners explored the concept of Sexual and Reproductive Health (SRH) and its significance to overall health and wellness. Through group discussions, visual aids and interactive presentations, learners explain the importance of SRH in maintaining their physical and general well-being. Engaging discussions on SRH risk factors, such as unhealthy relationships and personal rights and responsibilities, encourage learners to reflect critically on their personal choices and the impact of SRH on their overall wellness.

Week 2 shifts focus to various types of contraception, emphasising their role in preventing unintended pregnancies and managing reproductive health. Learners analyse how different contraception methods affect health, including their benefits, potential side effects, and effectiveness. Through group activities, role-play scenarios and case studies, learners gain a balanced perspective on responsible contraceptive choices, enhancing their capacity to make informed decisions regarding their health and well-being.



APPENDIX A: STRUCTURE AND RUBRICS FOR GROUP PROJECT WORK

Research and gather relevant information and resources related to the challenges of law enforcement in Ghana for the display and exhibition to engage more meaningfully with other learners.

1. Introduction

- a) Topic Overview
- b) Project Objective

2. Background

- a) History of Law Enforcement in Ghana
- b) Legal and Institutional Framework

3. Main Challenges of Law Enforcement in Ghana

- a) Corruption and Lack of Accountability
- b) Resource Constraints, etc.

4. Real-Life Examples and Case Studies

- a) Case Studies
- b) Public Reactions

5. Proposed Solutions and Reforms

- a) Short-term Solutions
- b) Long-term Reforms
- c) Role of Civil Society

6. Recommendations

- a) Practical Steps
- b) Stakeholder Involvement

7. Conclusion

- a) Summary of Key Points
- b) Call to Action

8. Visual and Interactive Elements for the Exhibition

- a) Posters or Infographics
- b) Videos or Interviews

9. References

Suggested approach for administering the group project on the challenges of law enforcement in Ghana

1. Group Formation

- a) **Assign Groups:** Divide students into small groups, ensuring a mix of skills and perspectives.
- b) **Set Roles:** Assign specific roles within each group (e.g., researcher, presenter, designer) to encourage collaboration and accountability.

2. Project Timeline

- a) **Set Deadlines:** Establish a clear timeline with milestones for each phase of the project (e.g., research, drafting, design, rehearsals).
- b) **Regular Check-ins:** Schedule regular progress meetings to monitor group progress and address any challenges.

3. Research Phase

- a) **Guided Research:** Provide resources and guidance on where to find relevant information (e.g., online databases, local libraries, interviews).
- b) **Collect Data:** Encourage groups to gather data through various methods, including literature reviews, surveys, and interviews with relevant stakeholders.

4. Preparation Phase

- a) **Outline Creation:** Each group should create an outline based on the provided structure to organise their findings and ideas.
- b) **Content Development:** Groups will develop content for each section, focusing on clarity, coherence, and engagement.

5. Design and Visuals

- a) **Visual Aids:** Encourage groups to create visual aids (posters, infographics, videos) to enhance their presentations.
- b) **Interactive Elements:** Suggest incorporating interactive components (e.g., Q&A sessions, discussions) to engage the audience during the exhibition.

6. Rehearsal: Allocate time for groups to rehearse their presentations, focusing on timing, clarity, and delivery.

7. How to Administer (Exhibition Day)

- a) **Set Up Displays:** Allow time for groups to set up their displays and arrange their visual materials.
- b) **Presentation Format:** Determine the format for the exhibition (e.g., open house style, scheduled presentations).
- c) **Audience Engagement:** Encourage interaction with the audience, allowing for questions and discussions.

Refer to the teacher Assessment Manual and Toolkits for how to administer the project

8. Assessment rubrics

Criteria	4 – Excellent	3 – Good	2 – Fair	1 – Poor
Content Understanding	Provide 4 information; of challenges such as corruption, resource constraints, Excessive Use of Force and public perception.	Provide 3 information; of challenges such as corruption, resource constraints, Excessive Use of Force and public perception	Provide 2 information; of challenges such as corruption, resource constraints, Excessive Use of Force and public perception	Provide 1 information; of challenges such as corruption, resource constraints, Excessive Use of Force and public perception.
Organisation	Exceptionally organised; seamless flow; clear connections between sections.	Well-organised; clear structure; sections connect logically.	Some organisation; sections present but may not flow logically.	Disorganised; difficult to follow; lacks clear structure.
Visual and Interactive Elements	Presentation contains any 4 of illustrations, and graphics Sliders Topography Colour scheme Layout background	Presentation contains any 3 of illustrations, and graphics Sliders Topography Colour scheme Layout background	Presentation contains any 2 of illustrations, and graphics Sliders Topography Colour scheme Layout background	Presentation contains any 1 of illustrations, and graphics Sliders Topography Colour scheme Layout background
Communication Skills	Showing 4 of the skills e.g. Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture	Showing 3 of the skills e.g. Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture.	Showing 2 of the skills e.g. Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture.	Showing 1 of the skills e.g. Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture
Team Collaboration	Exhibit 4 of these Contributing to the group. Respecting the views of others Tolerating others Resolving conflicts Taking responsibility	Exhibit 3 of these Contributing to the group. Respecting the views of others Tolerating others Resolving conflicts Taking responsibility	Exhibit 2 of these Contributing to the group. Respecting the views of others Tolerating others Resolving conflicts Taking responsibility	Exhibit 1 of these Contributing to the group. Respecting the views of others Tolerating others Resolving conflicts Taking responsibility

Total Score: 20 marks

9. Reflection and Feedback

- Group Reflection:** After the exhibition, facilitate a session for groups to reflect on their experiences and what they learned.
- Provide targeted feedback on the project process and presentations, highlighting strengths and areas for improvement.

SECTION 2: IMPACT OF FOOD QUALITY, TYPE, AND CHOICE ON HEALTH

STRAND: HEALTH EDUCATION

Sub-Strand: Nutrition and Diet in Health

Learning Outcome: *Analyse the relationship between nutrition and diet in healthy living*

Content Standard: *Demonstrate knowledge and understanding of the relationship between nutrition and diet in health.*

HINT



Assign learners their **Portfolio Assessment** by Week 3. Refer to **Appendix B** for details of the structure and rubrics of the portfolio. The **Portfolios** will be collected in week 21 in the 2nd semester, scored, and recorded.

INTRODUCTION AND SECTION SUMMARY

Food safety and wholesomeness are crucial components of a healthy lifestyle, significantly impacting the well-being and longevity of individuals. This section introduces learners to the concept of food safety, emphasising the importance of choosing, handling, and preparing food to prevent illness. Learners will explore topics such as organic foods, genetically modified foods (GMOs), sugary foods, and processed foods, analysing how each impacts health. By the end of this section, learners will gain a deeper understanding of how various food choices impact their wellness and the importance of practicing mindful eating.

Through practical examples and discussions, learners will learn about the factors that affect their food choices, such as cultural influences, personal preferences, economic considerations, and marketing. Section 2 encourages learners to make informed choices about what they consume, empowering them to prioritise foods that contribute to their long-term health. Learners will be better equipped to understand and recognise the impact of various food types on their energy, focus, and overall well-being, which will lead them to make healthy food choices.

The weeks covered by this section are

Week 3: Explain the concept of food safety and wholesomeness.

Week 4: Discuss the impact of organic, genetically modified, sugary and processed foods on health.

Week 5: Analyse the factors that affect food choices.

SUMMARY OF PEDAGOGICAL EXEMPLARS

Create an inclusive learning environment by engaging students in group discussions that encourage collaboration and respect for diverse opinions on food choices and dietary habits. Use real-life examples, such as comparing food labels, to make the concept of food safety and wholesomeness more tangible. Encourage students to research food safety practices and the health effects of organic, GM, sugary, and processed foods, fostering critical thinking and digital literacy.

Pay close attention to the diverse needs of learners, including those with Special Educational Needs (SEN), ensuring that all learners benefit from varied instructional strategies. Activities like taste testing, creating posters on food safety and role-playing grocery shopping decisions allow learners to relate food safety concepts to their daily lives. These methods will make the lessons engaging and ensure students gain practical knowledge about choosing nutritious foods.

ASSESSMENT SUMMARY

Learners' understanding of food safety and the impact of various food types on health will be assessed through practical and hands-on participation as well as through quizzes. The during-class assessments will include group discussions, reflective journals and presentations where learners share their insights on topics like GMOs and processed foods. These activities will help assess how well learners relate the information to their personal food choices.

Other forms of assessments will consist of quizzes and case studies that will gauge learners' knowledge of food safety practices and the health effects of specific food types. Practical tasks, like creating balanced meal plans or food safety guides will allow learners to demonstrate what they have learned in a creative, applicable way. This combination of assessments will ensure that learners can confidently apply food safety and nutrition principles in their daily lives, promoting a foundation for lifelong health.

WEEK 3

Learning Indicator: Explain the concept of food safety and wholesomeness

FOCAL AREA: THE MEANING OF FOOD SAFETY AND WHOLESOMENESS

FOOD SAFETY AND WHOLESALNESS

In Ghana, food safety and wholesomeness are critical concerns due to various challenges in the food supply chain. Issues such as inadequate hygiene practices, lack of proper food storage facilities, and limited enforcement of food safety regulations contribute to the prevalence of foodborne illnesses. Contamination from pathogens, chemicals, and improper handling during production, processing, and distribution stages poses significant health risks. Efforts to improve food safety are ongoing, with government agencies like the Food and Drugs Authority (FDA) working to strengthen regulations, conduct inspections, and educate the public on safe food handling practices.

Despite these efforts, ensuring food safety and wholesomeness in Ghana remains a complex task. The informal food sector, which includes street vendors and small-scale producers, is particularly challenging to regulate. Many consumers rely on the informal sector due to its affordability and accessibility, increasing their exposure to unsafe food. Public awareness campaigns and community-based interventions are crucial to promoting better food safety practices. Additionally, improving infrastructure, enhancing regulatory frameworks and fostering collaboration between stakeholders are essential steps toward ensuring a safer and healthier food environment in Ghana.

Common Terms

- Additives:** Substances added to food to enhance flavour, appearance or shelf life.
- Preservatives:** Chemicals used to prevent spoilage and extend the shelf life of food products.
- Contamination:** The presence of harmful substances or microorganisms in food.
- Pasteurisation:** A treatment process that kills harmful bacteria in food and beverages by using heat.
- Toxins:** Poisonous substances produced by certain microorganisms, plants or animals.
- Dairy Product:** Foods made from milk, such as cheese, yoghurt and butter.

1. Food Safety

Food safety refers to handling, preparing and storing food in a way that best reduces the risk of individuals becoming sick from foodborne illnesses. Food safety is a global concern that covers a variety of different areas of everyday life. The principles of food safety aim to prevent food from becoming contaminated and causing food poisoning. This is achieved through a variety of ways, some of which are:

- Properly cleaning and sanitising all surfaces, equipment and utensils.
- Maintaining a high level of personal hygiene, especially handwashing.
- Storing, chilling and heating food correctly with regard to temperature, environment and equipment.

- d. Implementing effective pest control.
- e. Understanding food allergies, food poisoning and food intolerance.



Figure 3.1: Safe and healthy fruits and vegetables

2. Food Wholesomeness

Food wholesomeness is a concept that refers to the quality and condition of food that makes it healthy, nutritious and safe to eat, leading to good health and well-being.

Wholesome food refers to a raw, cooked, processed or prepared edible substance or beverage that is intended for human consumption and meets all quality, processing, packaging, age, labelling and storage standards laid down by state and local regulatory authorities. Wholesome foods help our bodies grow, stay strong and function properly.

3. Qualities of a Safe and Wholesome Food

A safe and wholesome food must possess the following qualities:

- a. **Nutritional quality:** A safe and wholesome food provides essential nutrients in appropriate proportions for maintaining health and well-being. This includes a balance of macronutrients (carbohydrates, proteins, and fats) and micronutrients (vitamins and minerals).
- b. **Safety:** A safe and wholesome food must be good for consumption and free from harmful substances such as bacteria, toxins, chemicals or objects that could pose health risks.
- c. **Freshness:** A fresh food that is safe and wholesome retains its natural flavour, texture and nutritional value without being spoilt or degraded.
- d. **Naturalness:** A safe and wholesome food is associated with its natural state, with no excessive additives, preservatives or artificial substances.
- e. **Cultural and social acceptance:** A safe and wholesome food aligns with cultural and societal norms regarding what is considered healthy and acceptable for consumption.



Figure 3.2: Wholesome Ghanaian foods for consumption

4. Food Handling

Food handling refers to the practices and procedures involved in preparing, storing and serving food to ensure it remains safe for consumption. Safe and proper food handling is important because unsafe practices can lead to outbreaks of foodborne illnesses (commonly known as food poisoning). These illnesses can cause long-lasting disability and even death, making food handling an essential aspect of public health and safety.

Food safety involves storing, handling, and preparing of food carefully to reduce the spread of bacteria and minimise the risk of becoming sick or causing illness in people who eat the foods you prepare. Preparing and cooking food properly and to the right temperature reduces the risk of food poisoning.



Figure 3.3: A cook handling Ghanaian foods



Figure 3.4: A butcher handling meat

5. Food Handling Practices

The food handling processes/practices include

- a. **Keep clean:** Wash your hands, utensils and surfaces before and after handling food. Food handlers must always wash their hands before they begin food preparation. The key tip for handwashing is to use warm water and regular soap. Hand washing should last for at least 20 seconds. Aside from keeping their hands and arms clean, food handlers must also ensure that the tools they will be using for food preparation, such as cutting boards, knives, pans and spatulas are clean and dry.
- b. **Separate raw and cooked food:** Avoid cross-contamination by using different cutting boards and plates for raw and cooked food. Raw meat, poultry, seafood and eggs should always be kept separate from other ingredients. Do not use containers, plates, or cutting boards that have held raw meat, poultry, seafood or eggs for other ingredients, unless they have been washed in hot soapy water. The same rule applies to utensils.
- c. **Cook thoroughly:** Apply the required heat to food to ensure it is well cooked for consumption.
- d. **Keep food at safe temperatures:** Once they have finished cooking a dish, food handlers are required to check its internal temperature by using a food thermometer. There are specific internal temperature ranges for each food type. Food handlers must not send food out for serving if it is not within the required temperature range. This is to ensure that all harmful microorganisms are killed before the plate reaches the customer (e.g. poultry - 74°C; beef, pork, lamb, chevon - 71°C; fish and shellfish - 63°C). Refrigerate or freeze perishable food within two hours of cooking or buying. Reheat leftovers to at least 64°C.
- e. **Use safe water and raw materials:** Wash fruits and vegetables under clean running water. Choose fresh and wholesome food and avoid expired or damaged products.

- f. **Eat a balanced diet:** A balanced diet encourages regular meals, appropriate portions of food nutrients, appropriate portions of food and mindful eating, contributes to better food choices and reduces the risk of overeating and consuming harmful substances.
- g. **Read food labels:** Reading food labels is very important in food safety and wholesomeness. Food labels provide buyers with essential information that helps them to make informed decisions about the food they buy and consume. The labels give information on the expiry date, storage instructions, ingredient list, allergies instructions etc.



Figure 3.5: Handling Ghanaian foods skilfully and beautifully

6. Food Handling Practices for Dairy Products

- a. Do not purchase, use or serve dairy products containing unpasteurised milk, except for hard cheeses aged 60 days.
- b. Boil fresh milk obtained from the local cattle farmer in your community.
- c. Do not return milk and other dairy products to their original containers once taken out.
- d. In general, milk, cream, yoghurt and cheese should be kept chilled in the refrigerator at a temperature below 4°C.
- e. Packaged milk, such as evaporated, condensed, and ultra-high-temperature (UHT) milk, can be stored at room temperature. However, once opened, these shelf-stable kinds of milk should be kept chilled in the refrigerator at a temperature below 4°C.
- f. Butter can be kept in the refrigerator at a temperature below 4°C for a maximum of 2 weeks. If it passes 2 weeks, it must be wrapped in packaging and then kept in a freezer at or below -17°C.
- g. Ice cream should be kept in a freezer at or below -17°C.
- h. Do not freeze yoghurt, cream or milk except for fresh whole or skimmed milk.
- i. If mould is visible on hard cheese, cut out the part with mould and the area surrounding it.
- j. If mould is visible on soft cheese (excluding blue cheese), discard the cheese.



Figure 3.6: Packaged dairy food

7. Food Handling Practices for Meat and Fish

- a. Do not wash meat, poultry or seafood with soap.
- b. If meat or poultry is defrosted using a microwave, cook immediately after defrosting.
- c. Keep the original packaging of meat and poultry or seal it in an airtight, leak-proof bag before thawing it in cold water. Change the cold water every 30 minutes.
- d. Do not use a slow cooker to cook frozen meat or poultry.
- e. Only marinate meat in the refrigerator.
- f. Ground meat should be cooked at 72°C or higher.
- g. Beef, pork (including uncooked ham, both fresh and smoked), veal and lamb should be cooked at 63°C or higher and left to rest for 3 minutes before serving.
- h. Poultry (whether whole, in parts or ground and including stuffing) should be cooked at 74°C or higher.
- i. Fish should be cooked at 63°C or higher. Another way to determine if fish has been sufficiently cooked is to check if the flesh is opaque and separates easily when using a fork.
- j. Shrimp, lobster and crabs are sufficiently cooked when their flesh is pearly and opaque.
- k. Oysters and mussels are sufficiently cooked when their shells open.



Figure 3.7: Frozen meat and a mussel



Figure 3.8: A well-dressed fish safe for consumption

8. Some Body Reactions Related to Food

- a. **Food allergies:** Describes an immune system's uncomfortable reaction, which occurs soon after eating a certain food. Even a tiny amount can trigger symptoms.

Symptoms of food allergies

- i. Hives.
- ii. Swelling.
- iii. Digestive problems.
- iv. Anaphylaxis (a severe and rapid systemic allergic reaction causing a tightening of the trachea and preventing breathing: anaphylactic shock).

How to prevent/manage food allergies

- i. Visit a health professional to know your allergies.
- ii. Avoid the allergen.
- iii. Read food labels carefully.
- iv. Carry emergency medications with you.

- b. **Food poisoning:** Describes an illness caused by consuming contaminated food or drink. Some causes of food poisoning are bacteria, viruses, parasites or toxins.

Symptoms of food poisoning

- i. Nausea.
- ii. Vomiting.
- iii. Diarrhoea.
- iv. Abdominal pain.
- v. Fever.

How to prevent food poisoning

- i. Practice safe food handling.
- ii. Cook food thoroughly.
- iii. Store food properly.
- c. **Food Intolerance:** Describes the difficulty digesting certain foods leading to unpleasant physical reactions. Common food intolerances are lactose intolerance i.e. (the inability to digest lactose, the sugar found in milk and dairy products.) and gluten sensitivity (a condition where individuals experience symptoms after consuming gluten, a protein found in cereals and grains).

Symptoms of food Intolerance

- i. Bloating.
- ii. Gas.
- iii. Diarrhoea.
- iv. Abdominal pain.

How to manage food intolerance

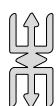
- i. Limit or avoid problematic foods.
- ii. Use substitutes.

9. Impact of Food Safety and Wholesomeness on Physical Activity

- a. **Prevents illness:** It reduces the risk of foodborne diseases, keeping the body healthy and active.
- b. **Boosts energy levels:** It provides necessary nutrients for sustained energy during exercise.
- c. **Enhances performance:** It ensures optimal nutrient intake for peak physical performance.
- d. **Aids recovery:** It supports muscle repair and reduces soreness after workouts.
- e. **Improves Immunity:** It strengthens the immune system, reducing unexpected crises during sicknesses.
- f. **Maintains weight:** It supports healthy weight management, crucial for physical activities.
- g. **Promotes hydration:** It contributes to proper hydration.
- h. **Supports mental focus:** Nutrient-rich foods enhance concentration and mental clarity.
- i. **Reduces Injury Risk:** Proper nutrition strengthens bones and muscles and lowers injury chances.
- j. **Increases Endurance:** Wholesome foods improve stamina and endurance in physical activities.

Learning Tasks

1. State three pieces of information found on a food label.
2. Analyse three precautions you will take to prevent a foodborne illness when preparing food at home.
3. What is food safety and why is it important?
4. Describe how processing, transporting and serving food for a school picnic should be done to ensure its safety and wholesomeness.
5. Create a series of posters illustrating different aspects of food safety (cleaning, hygiene, temperature control, etc.).
6. Conduct a simulated scenario of safe food handling practices in the classroom.
7. Research a recent foodborne illness outbreak in your school, community or elsewhere.
8. Plan a campaign to raise awareness about food safety in the local community.
9. Analyse a real-life case study of a food safety situation in your school kitchen, canteen or local community market and give a report.



Note

These tasks are serving as a guide. Select those that are feasible and practicable in your school context. Consider the duration of the lesson as well. However, you must do a learning task before the lesson comes to an end.

Pedagogical Exemplars

1. **Starter:** Learners watch a video or pictures of people handling or using food in diverse ways (i.e. a mix of proper food handling and unsafe food handling). Ask learners to share their views on what they see and what they make of those images.



A Video on Food Safety in Ghana

<https://www.youtube.com/watch?v=UUgP7Urc0OQ>

2. **Introduction:** Share some brief (two-paragraph) statistics on food safety and wholesomeness either globally or nationally. Invite learners in mixed-ability groups to study the data and come up with their own interpretations. Encourage learners to respect everybody's opinion.

The following links can assist with some statistics:



<https://www.who.int/news-room/fact-sheets/detail/food-safety>

<https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Unsafe-food-unhealthy-nation-The-devastating-effects-of-food-safety-in-Ghana-1750565>

3. Group-based Learning: Learners are divided into mixed-ability and gender-neutral groups. They use their multimedia and digital devices to research and design posters or PowerPoint presentations covering subtopics such as:

- The meaning of food safety and wholesomeness.
- Qualities of a safe and wholesome food.
- Ideal ways to process, handle, transport and preserve foods of different kinds.
- The body's reactions to food if not kept safe and wholesome.
- The benefits a sportsperson will get from eating safe and wholesome food.
- The implications of a majority of people eating safe and wholesome food on the health of the community.
- Suggestions and recommendations on how food safety and wholesomeness can be improved in their local communities.

Guide learners to cooperate with each other. Encourage them to seek every learner's view in planning the work, including idle and shy members. Share roles widely among members so that everybody gets to play a role by the end of the project.

4. Digital-based learning: In groups, learners use their digital devices to source pictures and videos of various food handling practices from the internet and discuss their findings. Learners are assisted to summarise and share their information with other groups. Encourage learners to search for and select pictures and videos that relate to the concept and their communities.

Discuss online ethics relating to the use of pictures and videos sourced from the internet with the learners. Monitor learners' progress with the use of digital devices and adjust instruction for learners approaching proficiency. Encourage learners to accept the views of other group members.

5. Collaborative Learning: In groups, learners are tasked to make a collection of various food categories found in their local communities and demonstrate their proper preparation, handling, hygiene and storage. Each group presents their findings for a whole class discussion. Give further explanation and support to struggling learners. Encourage shy and slow learners to take an active part in the group work. Provide individualised feedback after the completion of the group work.

6. Problem-Based Learning: Learners plan a semi-structured interview guide to engage a nutritionist, dietician, public health officer or other health experts to gather information on food safety and wholesomeness and their impact on nutrition and diet quality. Encourage learners to analyse the information gathered from the interviews. Task them to identify key themes, trends and insights related to food safety practices, the importance of wholesomeness in food and how these factors influence nutrition and diet quality as well as sports performance. Provide differentiated questioning strategies to guide learners throughout the interview. Allow learners to present the information gathered in different formats (written report, presentation etc.). Give individual and group feedback after the work to motivate the learners to do more.

Key Assessments

Level 1

1. Define food safety.
2. Define wholesome food.
3. List two qualities of a safe and wholesome food.
4. State two healthy food handling practices of two food products of your choice.
5. Mention two ways of preventing food allergies.
6. Name two benefits a sportsperson will get from eating safe and wholesome food.

Level 2

1. Discuss three safety practices individuals and food vendors can observe to contribute to improving food safety and wholesomeness in your community.
2. Describe the safe internal cooking temperatures for each of the following categories of meat:
 - a. Poultry
 - b. Beef
 - c. Chevon
 - d. Fish
3. Describe three key principles of food safety and their importance to health and sports performance.

Level 3

1. Examine four roles food safety regulations play in preventing foodborne illnesses in a community.
2. Provide four reasons why community awareness and education are vital to improving food safety and wholesomeness in local the market.
3. Analyse four effects of unsafe and unwholesome foods on the sports performance of an athlete.
4. Design a concept map to explain the concept of food safety and wholesomeness.

Level 4

1. Design a plan to inform your family members of the need for them to observe high standards of food safety practices. After the plan, provide a weekly update on the progress of your actions to the class individually and in turn.
2. Debate the effectiveness of current food safety regulations and their enforcement in your district/municipal/metropolitan area.

HINT



Assign **Portfolio** task this Week. See **Appendix B**, which has been provided at the end of this section, detailing the structure of the group project. The portfolio will be submitted in **Week 22**, but can be scored partially in **Week 12**.

WEEK 4

Learning Indicator: Discuss the impact of organic, genetically modified, sugary and processed foods on health

FOCAL AREA: THE IMPACT OF ORGANIC, GENETICALLY MODIFIED, SUGARY AND PROCESSED (OGMSP) FOODS ON HEALTH

ORGANIC, GENETICALLY MODIFIED, SUGARY AND PROCESSED (OGMSP) FOODS

Organic, genetically modified, sugary, and processed (OGMSP) foods each affect health in different ways. Some are believed to lower exposure to harmful chemicals and promote overall well-being. Others are seen as more nutritious and beneficial to the body. Certain foods are thought to boost traits like pest resistance or nutritional content. While some types of food may offer advantages like higher crop yields and better food security, concerns about their long-term health effects and environmental impact have sparked ongoing debates. Sugary and processed foods are generally linked to negative health outcomes. Processed foods often contain high levels of added sugars, unhealthy fats and sodium, contributing to poor dietary quality and increased risk of chronic diseases. They may also lack essential nutrients found in whole foods. Reducing the consumption of sugary and processed foods while choosing organic and minimally processed options can promote better health and well-being. Understanding the health implications of these food categories is crucial for making informed dietary choices.

Common Terms

1. **Genetically Modified:** The changing of the natural and biological features in plants inside a laboratory by scientists.
2. **Additive:** A substance that is added to something (usually food) to improve or preserve it.
3. **Shelf life:** The length of time a product, especially food substances, can be stored before it starts to spoil or lose its quality.
4. **Conventional foods:** Foods produced from farming practices that use synthetic chemicals like pesticides, herbicides, fertilisers and genetically modified organisms.
5. **Grocery store:** A retail shop where people can buy their common and household items for daily or weekly use.

Organic Foods

Organic foods are foods produced using farming practices that avoid synthetic pesticides, fertilisers, genetically modified organisms (GMOs) and often antibiotics or growth hormones. Examples include organic fruits, vegetables, grains, dairy products and meat.



Figure 4.1: Organic foods

Impact/Importance/Purpose of Organic Foods

- Reduced chemical exposure:** Organic foods are grown without synthetic/artificial pesticides, herbicides or fertilisers, which can reduce the intake of potentially harmful chemicals.
- Nutritional benefits:** Studies suggest that organic foods have higher levels of certain nutrients including antioxidants.
- Environmental benefits:** Organic farming practices often promote soil health, reduce pollution and enhance biodiversity, which can have positive effects on the environment. By utilising sustainable farming practices, organic foods seek to minimise environmental impact and preserve natural resources.
- Healthier choices:** For individuals concerned about pesticide residues and synthetic additives, organic foods offer a safer alternative. Organic foods aim to provide healthier options free from synthetic chemicals and GMOs, potentially leading to better overall health.
- Support for sustainable practices:** Purchasing organic foods supports farming practices that are more sustainable, environmentally friendly and ethical.
- Changing consumer interests:** Increasing demand for organic products can drive market changes, encouraging more producers to adopt organic methods.

Identifying Organic Foods on the Market

- Organic certification labels:** Look for official organic certification labels, seals or logos on products. Products with these descriptions must contain at least 95% organic ingredients. The remaining 5% can be non-organic ingredients that are on an approved list. Any product with a “100% Organic” label must contain only organically produced ingredients and processing aids, excluding water and salt.
- Packaging and ingredients list:** Check the ingredients list for the word “organic” before individual items. For example, “organic sugar,” “organic wheat flour,” etc.

3. **Company branding:** Some brands specialise in organic products. Familiarising oneself with these brands can help quickly identify organic items.
4. **Specialty store sections:** Many grocery stores have sections dedicated to organic products, making it easier to find them.
5. **Price look-up codes:** Look at the price look-up (PLU) code stickers for fruits and vegetables at the supermarket. Organic products typically have a five-digit code starting with the number 9. For example, organic bananas might have a PLU code of 94011, while conventional bananas would be 4011.
6. **Signage and banners:** Stores often use signs or banners to designate organic sections or highlight organic products.
7. **Farmers' markets local certification:** At farmers' markets, ask vendors if their produce is organic. Some small farms may follow organic practices but might not be certified due to the cost.

Factors to Consider When Selecting Organic Foods

1. **Higher price:** Organic foods will cost the consumer more money than conventionally grown foods due to more labour-intensive farming practices and certification costs.
2. **Limited availability:** Organic products may not always be available, especially in smaller grocery stores or in areas with less demand for organic goods.
3. **Nutrient content:** While some studies suggest organic foods may have higher levels of certain nutrients, the differences are not always significant and eating a balanced diet of conventional foods can also provide necessary nutrients.
4. **Shelf life:** Organic foods, especially farm produce, may have a shorter shelf life due to the absence of preservatives. They can spoil more quickly than their conventional counterparts.
5. **Misleading labels:** Be cautious of labels like “natural” or “eco-friendly,” which are not regulated and do not necessarily mean the product is organic. Only certified organic labels guarantee that the product meets organic standards.
6. **Food safety:** Organic foods are not immune to foodborne diseases. Proper washing, handling and cooking are still necessary to ensure safety. Organic produce should be washed thoroughly to remove any bacteria or dirt.
7. **False sense of security (The health halo effect):** Consumers might overeat organic processed foods, assuming they are healthier than conventional processed foods. Organic cookies, chips and snacks can still be high in sugar, fat and calories.
8. **Trust in certification:** Ensure that the organic products you buy are certified by reputable organisations. Some small farms may follow organic practices but are not certified due to the cost of certification. It's important to understand the source of your organic products.



Figure 4.2: A variety of organic foods

Genetically Modified Foods

Genetically Modified (GM) Foods are foods derived from organisms whose DNA has been changed (modified) using “gene” engineering techniques to enhance certain traits. The modifications often aim to enhance certain traits such as pest resistance or nutritional content. Common GM foods include certain varieties of corn, soybeans, canola, and cottonseed oil.

Importance of Genetically Modified Foods

- Increased crop yields:** GM crops are engineered to be more resistant to pests, diseases and harsh environmental conditions, which can lead to higher yields. This is crucial for feeding a growing global population and reducing food insecurity.
- Enhanced nutritional content:** Some GM foods are designed to have improved nutritional profiles, such as rice, which is fortified with vitamin A to combat deficiencies in developing countries. This can help address malnutrition and improve public health.
- Reduced pesticide use:** GM crops that are resistant to pests can reduce the need for chemical pesticides. This does not only lower the cost of farming but also lessens the environmental impact and potential health risks associated with pesticide exposure.
- Herbicide tolerance:** Certain GM crops are engineered to be tolerant of specific herbicides, making weed control easier and more efficient. This can lead to better crop management and higher productivity.
- Climate resilience:** GM crops can be designed to withstand extreme weather conditions such as drought, salinity and extreme temperatures. This resilience is vital for maintaining food production in the face of climate change.
- Economic benefits:** Increased crop productivity and reduced losses from pests and diseases can lead to higher incomes for farmers. This is especially important for smallholder farmers in developing countries like Ghana.

7. **Improved food quality and shelf life:** Genetic modifications can enhance the taste, texture, and shelf life of food products. For example, GM tomatoes have been developed to ripen slower, extending their shelf life and reducing food waste.
8. **Reduction in food waste:** By engineering crops that are more resistant to spoilage and damage, GM foods can help reduce food waste throughout the supply chain, from the farm to the dining table.
9. **Pharmaceutical and industrial uses:** GM crops are not limited to food production. They can be used to produce pharmaceuticals (such as insulin) and biofuels, contributing to advances in medicine and sustainable energy.
10. **Environmental conservation:** With higher yields and reduced need for pesticides and herbicides, GM crops can contribute to more sustainable farming practices, preserving natural resources and biodiversity.



Figure 4.3: Genetically modified corn

Identifying GM Foods on the Market

1. **Labelling regulations:** In some countries, foods that are bioengineered or contain bioengineered ingredients must be labelled as “Bioengineered” or “Derived from Bioengineering.” In other countries, any food or feed that contains more than 0.9% of authorised GMOs must be labelled as “Genetically Modified” or “produced from genetically modified (name of organism) material.” Foods labelled as “organic” in many countries, including the U.S. and EU, are not allowed to contain GMOs. Look for certified organic seals to avoid GM foods.
2. **Ingredient lists and packaging information:** Certain ingredients are more likely to be genetically modified. These include corn, soybeans, cowpea, cottonseed oil, sugar beets and their derivatives (e.g. high-fructose corn syrup, soybean oil). If a product contains these ingredients and is not labelled as organic or non-GMO, it may be genetically modified.
3. **Mobile apps and databases:** There are apps and online databases that help consumers identify GM foods. These tools can scan product barcodes and provide information about GMO content.

4. **Contact manufacturers (direct inquiry):** If consumers are uncertain about a product, they can contact the manufacturer directly. Many companies provide information about their use of GM ingredients on their websites or customer service lines.

Factors to consider when selecting GM foods

1. **Health and Safety:** At this moment, consider the broad scientific consensus that GM foods currently on the market are safe to eat. Regulatory agencies like the Food and Drugs Authority (FDA) and WHO have evaluated and approved these foods.
2. **Regulatory approval:** Verify that the GM food has been approved by relevant regulatory bodies in your country, ensuring it has undergone safety evaluations and meets health standards.
3. **Allergy:** Although GM foods are tested for potential allergens before approval, consumers must go the extra mile to check if the GM product includes genes from food sources, they suffer an allergy from.
4. **Nutritional content:** Evaluate whether the GM foods offer enhanced nutritional benefits. Some GM foods are designed to be more nutritious, such as some long-grain rice, which are fortified with vitamin A.
5. **Environmental impact:** Consider how a particular GM food affects the environment. Some GM crops reduce the need for chemical pesticides, which can benefit the environment and reduce chemical residues in food.
6. **Biodiversity:** Be aware of concerns regarding the impact of GM crops on biodiversity. GM crops can potentially reduce the growth and survival of other non-target plant and animal species in an ecosystem and contribute to monoculture farming practices.
7. **Labelling and transparency:** Ensure that the GM foods selected are properly labelled, providing transparency about their genetic modifications. This helps to make informed decisions based on personal preferences and values.
8. **Farmer rights:** Consider the impact of GM seeds on farmers' easy access to cheaper seeds. Some GM seeds are patented, requiring farmers to purchase new seeds each season, which can affect their financial stability.
9. **Global food security:** GM foods can play a role in addressing global food security by increasing crop yields and resilience to climate change. Consider how supporting GM foods might contribute to broader societal benefits.
10. **Personal values and beliefs (Consumer choice):** Reflect on your own values and beliefs regarding genetic modification. Some people prefer to avoid GM foods due to personal, ethical, or religious reasons.
11. **Economic factors:** GM foods may be more affordable due to higher yields and reduced losses from pests and diseases. Weigh the cost benefits against any personal or ethical concerns you may have.

Sugary Foods

Sugary foods are foods containing high amounts of added sugars, which provide calories but little nutritional value. Examples include candy, soda, pastries, ice cream and sweetened cereals. High consumption of sugary foods is linked to various health issues like obesity and diabetes.

Reasons Why People Use Sugary Foods

1. **Quick energy boost:** Sugary foods provide a rapid source of energy due to their high glucose content, which is quickly absorbed into the bloodstream. This can be useful for athletes, individuals engaging in intense physical activity or anyone needing a quick energy boost.
2. **Taste and enjoyment:** Sugary foods are often enjoyed for their taste and can contribute to the pleasure and satisfaction of eating. This can enhance overall quality of life and social experiences, especially during celebrations and social gatherings.
3. **Treating hypoglycaemia:** For people who experience low blood sugar (hypoglycaemia), sugary foods or drinks can quickly raise blood glucose levels, preventing potentially serious health issues.
4. **Cultural and traditional significance:** Sugary foods often play a significant role in cultural and traditional practices. They are commonly used in celebrations, rituals and holidays, contributing to cultural heritage and social cohesion.
5. **Enhancing taste and palatability:** Sugar can enhance the flavour of other foods, making them more palatable. It is often used to balance acidity in sauces and dressings and to enhance the flavour of fruits and vegetables in desserts.
6. **Convenience and availability:** Many sugary foods are highly convenient, requiring no preparation and being easily portable. This makes them a quick and accessible option for busy individuals needing a fast energy source.

Processed Foods

Processed foods are foods that have been altered (changed) from their original form through various methods such as canning, freezing, refrigeration, dehydration and the use of additives. Processed foods can range from minimally processed items like bagged yam chips to heavily processed products like ready-to-eat meals, snack foods, and fast foods like instant noodles. They often contain added sugars, unhealthy fats and sodium, which can contribute to poor health if consumed in excess.

Reasons Why People Use Processed Foods

1. **Convenience**
 - a. **Timesaving:** Processed foods are often quick and easy to prepare, making them convenient for busy individuals who may not have time to cook from scratch.
 - b. **Ready-to-eat:** Many processed foods are ready-to-eat, requiring no preparation, which is ideal for on-the-go lifestyles.
2. **Taste and pleasure**
 - a. **Flavour enhancement:** Sugary and processed foods are often designed to be highly palatable, with flavours that appeal to the taste buds.
 - b. **Comfort food:** Many people enjoy sugary and processed foods as comfort foods, which can provide a sense of pleasure and emotional satisfaction.
3. **Long shelf life:** Processed foods generally have a longer shelf life compared to fresh foods, making them more practical for storage and reducing the frequency of grocery shopping.

4. **Storage convenience:** These foods often require less refrigeration and can be stored easily in pantries.
5. **Widespread availability:** Processed and sugary foods are widely available in most grocery stores, convenience stores, and vending machines, making them easily accessible.
6. **Affordability:** Many processed foods are cost-effective, providing a cheaper option for feeding individuals and families.
7. **Attractive packaging:** Processed foods often come in appealing packaging that attracts consumers, especially children.
8. **Advertising:** Aggressive marketing and advertising campaigns promote processed and sugary foods, influencing consumer choices.
9. **Cultural norms:** In many cultures, processed and sugary foods are part of traditional celebrations, holidays, rituals and social gatherings.
10. **Peer influence:** People may choose these foods due to social influences and the desire to fit in with friends or family.
11. **Quick energy boost:** Sugary foods provide a rapid source of energy, which can be beneficial for athletes, individuals engaging in intense physical activities or those needing a quick energy pick-me-up.
12. **Convenient snacking:** Processed snacks are convenient for maintaining energy levels throughout the day.
13. **Stress relief:** Some individuals turn to sugary and processed foods for stress relief or as a coping mechanism during emotional distress.
14. **Reward system:** Sugary foods can trigger the release of dopamine in the brain, creating a pleasurable feeling and reinforcing the behaviour of consuming these foods.
15. **Lack of alternatives:** In some areas, especially food deserts, there may be limited access to fresh, whole foods, making processed and sugary options more readily available.
16. **Poor cooking skills:** Some individuals may lack the skills or knowledge to prepare healthy meals, leading them to rely more on processed foods.

Cautions to take in selecting sugary and processed foods

1. **Health risks**
 - a. Excessive consumption of sugary foods can lead to obesity, type 2 diabetes, heart disease and other health issues. Aim to limit the intake of added sugars according to dietary guidelines.
 - b. **Hidden sugars:** Be aware that many processed foods contain hidden sugars. Check ingredient lists for terms like high fructose corn syrup, cane sugar, sucrose, glucose, and fructose.
2. **Nutritional benefits:** Processed foods are often low in essential nutrients and high in empty calories. Choose options that provide nutritional value such as fortified cereals or whole grains. For sugars, choose fruits that contain natural sugars, along with vitamins, minerals and fibres, making them a healthier choice compared to candy or soda.

3. **Dental issues (oral hygiene):** Sugary foods can contribute to tooth decay and cavities. If consuming sugary foods, maintain good oral hygiene by brushing and flossing regularly and visiting the dentist.
4. **Glycaemic index:** Consider the glycaemic index (GI) of sugary foods, which measures how quickly they raise blood sugar levels. Foods with a high GI can cause spikes in blood sugar, so opt for lower GI options when possible.
5. **Portion control:** Be mindful of portion sizes. Even small amounts of sugary foods can add up in terms of calories and sugar content, so control your portions to avoid overconsumption.
6. **Quality and ingredients:** Many sugary and processed foods contain artificial colours, flavours and preservatives. Go for products with fewer artificial ingredients (additives) and more natural components.
7. **Special dietary needs:** If you have specific dietary needs or health conditions, such as diabetes, consult with a healthcare professional for personalised advice.
8. **Reading labels:** Always read nutrition labels to check the quantity of sugars added. Sugars are required to be listed separately on nutrition labels, making it easier to identify and limit them.
9. **Natural vs. added sugars:** Differentiate between naturally occurring sugars (found in fruits and dairy) and added sugars (found in processed foods). Naturally occurring sugars are generally part of more nutritious foods.
10. **Natural hydration (beverage choices):** Be cautious with sugary beverages like soda, energy drinks, and sweetened teas. They can be a significant source of added sugars and contribute to weight gain. Choose water, unsweetened teas or natural fruit juices instead.

Frequency of consumption: Limit how often you consume sugary and processed foods. Saving them for special occasions rather than making them a regular part of your diet can help manage overall sugar and artificial ingredient intake.

Impact of Organic, Genetically Modified, Sugary and Processed Foods on Sports Performance

1. Organic Foods

Organic foods can help improve athletes' health by reducing their exposure to harmful chemicals. They have plenty of vitamins and minerals which can help athletes recover faster and reduce soreness after exercising or injury. Eating organic foods might not give a big boost in an athlete's performance right away but a clean diet high in organic produce can support long-term and endurance overall health.

2. Genetically modified (GM) foods

Some GM crops may have higher nutrient content, which could benefit athletes by providing enhanced fuel sources. Though they are considered safe, there is no proof that GM food can improve an athlete's performance. It is advisable for an athlete to focus more on the nutrients in their diets and not look for other sources to improve performance.

3. Sugary Foods

Sugary foods, especially those high in simple carbohydrates, can provide quick energy which can be helpful during intense sports activities. For instance, athletes in high energy sports sometimes rely on sugar-rich snacks or drinks to quickly restore glycogen levels. While sugary foods can provide short term energy boosts, they can hinder performance in

the long-term by promoting weight gain, reducing energy level, easy injuries and reducing recovery. It is also possible to become addicted to glucose and energy drinks therefore it is advisable for young athletes to avoid overuse. On the contrary, fruits like banana do provide healthy and quick energy.

4. Processed Foods

Some processed foods like fortified energy drinks or snacks can provide convenient and fast-acting energy sources during or after exercise. However, heavily processed foods usually have high levels of unhealthy fats, sugars and soda with lower nutritional value. Over time, this can lead to weight gain, poor cardiovascular health and reduced athletic performance due to nutrient deficiencies. Finally, highly processed foods can lead to poor health, including organ damage (e.g. kidney), increased injuries and slower recovery times all of which will negatively affect performance. Whole foods generally provide greater benefits for sustained athletic output.

Learning Tasks

1. Identify three (3) food items from your school's grocery store (provision shop). Check the labels and identify if they are organic, genetically modified (GM), sugary or processed foods. Write down the type of food.
2. Select five processed foods. Write a short description of each item, including its primary ingredients and the processing methods used.
3. List four (4) cautionary measures to take when considering sugary and processed foods.
4. Choose three processed foods, examine and write a brief report on the purpose of additives and preservatives they contain.

Pedagogical Exemplars

1. **Starter:** Show a short video that covers the key aspects of organic, genetically modified, sugary, and processed (OGMSP) foods and their impact on health to activate learners' interest on the lesson. Encourage learners to share their views on the video watched.
2. **Introduction:** Ask learners to share their favourite foods and categorise them into organic, genetically modified (GM), sugary and processed food. Write the categories on the board and invite learners individually to call out the examples of each category and write them down. Briefly explain the focus of the lesson and share how these categories of food impact health.
3. **Collaborative Learning:** Learners in groups, are assigned one type of food (i.e. organic, GM, Sugary or processed) to each group. They research and present their findings on the food type, its importance, impact and the cautionary measures to take with its use. Offer access to a range of resources and give specific areas for the research. Offer tips on public speaking and presentation skills and provide practice opportunities. Assign specific roles to bring out the strengths of learners to help shy and slow learners feel more confident and integral to the group.
4. **Activity-based Learning/Debate:** In two groups, learners debate the pros and cons of GM foods citing scientific evidence. One side supports the motion, and the other side opposes it. Define roles within the group to ensure everyone has a specific contribution and

responsibility. Appoint group leaders to help manage the discussion and ensure all voices are heard. Provide a structured format with clear instructions on how to build arguments and counterarguments. Offer a template for learners to prepare their debate points. Provide guidance on effective group collaboration and presentation strategies.

5. **Reflective Learning:** Bring various food items to class and guide learners to analyse the labels for ingredients, nutritional content, expiration date, regulatory authority approvals and any certifications (e.g., organic). Assign specific roles within each group (e.g., ingredient analyser, nutrition expert, certification checker) to ensure all students contribute based on their strengths. Offer one-on-one guidance to support individual analysis.
6. **Collaborative Learning:** Learners exchange notes with other groups, compile the facts all the groups researched and jot down their own summaries of the entire work. Pair stronger learners with those who may need more support to ensure a balanced exchange of ideas. Monitor progress of group work and address any issues or concerns, offering guidance when needed and encouraging shy and struggling learners to take an active part in their group.

Key Assessments

Level 1

1. Define one of the following types of food:
 - a. Organic foods
 - b. Genetically modified foods
 - c. Sugary foods
 - d. Processed foods
2. List two common examples of foods in your community that will fall under organic foods, genetically modified foods, sugary foods or processed foods.

Level 2

1. Describe one benefit for two of the following types of food: organic, genetically modified, sugary or processed food.
2. Describe two features or characteristics that will classify foods as either organic, genetically modified, sugary or processed.

Level 3

1. Analyse three impacts of a selected food type (organic, genetically modified, sugary and processed foods) on health.
2. Examine three cautionary measures to take with OGMSP foods.
3. Debate on the motion “genetically modified foods are beneficial than organic foods”

Level 4: Create a healthy recipe by using organic and minimally processed ingredients for your school’s sports teams. Present your recipe and give reasons for the choice of ingredients.

HINT



*The recommended mode of assessment for Week 4 is a **Debate**. Refer to Key Assessment Level 3, and use Item 3 as an example of a debate question.*

WEEK 5

Learning Indicator: Analyse the factors that affect food choices

FOCAL AREA: FOOD CHOICES

FOOD CHOICES

As humans, we have individual preferences regarding the food we eat. Factors such as location, health, beliefs, upbringing and culture influence our food choices. Thus, food choices refer to people's preferences on what to eat. Everyone's food choices are different because each person has unique influences that shape what they decide to eat.



Figure 5.1: Choose the healthy food, avoid the unhealthy ones

Factors That Influence Food Choices

Several factors determine what we eat

- Personal preferences:** Individuals' likes, dislikes, age and lifestyle play a pivotal role in their food choices. People buy and eat certain foods at certain stages of their lives. For example, adolescents tend to consume more sugar than adults. Again, consumers with children may purchase more child-friendly products, for example, those that are colourful and tasty than consumers without children.
- Nutritional knowledge:** Nutritional knowledge plays a significant role in food choices. When people understand the benefits of different nutrients, they are more likely to make healthier decisions about what to eat. Nutritional knowledge can influence consumers' ability to identify healthy foods, which will enable them to avoid or better manage diet-related diseases. They become more aware of the health benefits of healthy dieting and avoid unhealthy foods. This knowledge helps people to understand portion size management and calorie intake leading them to eat more appropriate amounts of food.
- Health factors:** Factors affecting the health of individual consumers can have a major influence on their choice of food. For example, consumers who suffer from an allergy will avoid purchasing foods that contain the product they are allergic to. Another example is consumers with diabetes will choose low-sugar foods to manage the condition.

4. **Food availability:** This refers to how easily accessible certain foods are in a particular area. Depending on where you live, you may or may not have easy access to a variety of foods. In fact, people in some famine-stricken or war-torn areas may not have access to food at all. Food availability plays a role in shaping what people choose to eat. The food choices that are made are entirely based on what is currently available. At times, limited availability may make it difficult to eat nutritionally balanced meals.
5. **Physical activity/sports:** Taking part in sporting competitions and activities can have an enormous impact on the food choices we make. Athletes of all ages and genders choose the foods they eat to help them fuel, sustain, recover and repair their bodies. For those whose goal is achieving peak performance in a given discipline, selecting foods that will help the cause is likely the most important factor that will influence their food choices.



Figure 5.2: Food choices that support sports performance

6. **Economic factors/affordability:** The amount of money an individual earns influences their food purchases and consumption. Consumers with a high income can afford to spend money on luxury foods. They may also often shop at high-end retail shops than those in the low-income group. Affordability also significantly impacts food choices as people with little income will have to purchase products, they can afford so that they will factor in the price of food and their income. Due to these factors, many people will have limited options and will need to choose foods within their budget, even if they are not the healthiest choices. Even if you have the ability to spend money on good food, it is advisable to take the time to learn about nutritious foods.
7. **Cultural preferences:** The way of life of a group of people, their identity, tradition and training affect their food choices. Different cultures have specific foods and eating styles.



Figure 5.3: A vegetarian showing a stop sign to other unhealthy foods

8. **Education:** Educated individuals are more likely to know the importance of a balanced diet and the health benefits of various foods. They tend to read and understand food labels better, allowing them to select foods with better nutritional value and avoid harmful ingredients. Education provides information about the risks of consuming certain foods thereby leading to healthier food choices to prevent diseases like obesity, diabetes etc.
9. **Beliefs/ethics:** Our beliefs certainly affect food choices. There are several ethical concerns that lead us to eat certain foods while avoiding others. For example, some people abstain from eating animal products, not just for health reasons, but also because they are concerned with the welfare of animals.

Negative Factors That Affect the Choice of Food

1. **Lack of nutritional knowledge:** People who are unaware of the importance of a balanced diet may choose unhealthy foods high in sugar, salt and fats without considering their long-term health impacts.
2. **Busy lifestyles:** With busy schedules, people may opt for fast foods, takeout or processed convenience foods that are often unhealthy, instead of taking time to prepare nutritious meals.
3. **Emotional eating:** Stress, anxiety or emotional issues can lead people to make poor food choices such as overeating or indulging in unhealthy comfort foods.
4. **Cultural/religious preferences:** In some cultures, or regions, traditional foods may be high in fat, sugar or salt leading to poor dietary choices if healthier alternatives are not introduced.
5. **Social pressure:** Social situations or group settings can lead to unhealthy food choices, especially when surrounded by people who favour junk food or overeating.

Guide to Making Healthy Food Choices

1. **Balanced diet:** Our desire to eat a balanced meal will help us make good food choices that meet our goals. A preference for balanced meals will help cut down on the consumption of junk foods, saturated fats etc.
2. **Portion control:** This refers to the practice of managing the amount of food you eat in one sitting to maintain a healthy balance of nutrients and calories. Lack of portion control can lead to overeating, weight gain, insulin resistance and other health problems. Portion control is a great tool that can help improve digestion by reducing the amount of food consumed in one sitting and aligning food consumption with the body's energy needs.
3. **Reading nutrition labels:** Reading nutritional labels can support your personal dietary needs. This can help you prioritise foods high in beneficial nutrients and limit those best consumed in moderation.



Figure 5.4: Reading the label of an item before purchase

4. **Limiting added sugars:** Eating or drinking too much added sugar contributes to excessive calories with no vital nutrients. This can make it harder to maintain healthy eating habits. Excessive calories are associated with health problems like weight gain, obesity, diabetes and heart disease. Limiting sugar intake can positively influence ideal blood pressure and lessen the risk of a heart attack and tooth decay.
5. **Choosing whole grains:** The vitamins and minerals in whole grains are important for our overall health. Also, the high fibre content of whole grains may help lower bad cholesterol, insulin and blood pressure levels and raise good cholesterol levels, which will create a feeling of fullness that can help with weight loss or control.



Figure 5.5: Choosing from whole grains

6. **Including plenty of fruits and vegetables:** These are a good source of vitamins and minerals, including folate, vitamin C, and potassium. They are an excellent source of dietary fibre, which can help to maintain a healthy gut and prevent constipation and other digestive problems. A diet high in fibre can also reduce your risk of bowel cancer.
7. **Opting for lean meat:** These are sources of protein that contain relatively low amounts of fat. They are considered healthier options for providing the body with the necessary protein for muscle repair, growth, and overall body function without excessive saturated fats, which can lead to health issues like heart disease. Examples of lean proteins include:

- a. Skinless chicken or turkey breast
- b. Fish (such as salmon, cod, or tilapia)
- c. Eggs (particularly egg whites)
- d. Legumes (like peanuts and beans)
- e. Low-fat dairy products (such as yoghurt and cheese)

8. **Selecting healthy fats:** Fats provide needed energy in the form of calories. Fats help our bodies absorb important vitamins called fat-soluble vitamins, including vitamins A, D, and E. Choosing foods that contain mostly healthy fats instead of foods that contain mostly saturated fat can help lower our risk of heart disease.

9. **Staying hydrated:** It is important to take in fluids/liquids into our bodies. The amount of fluid to consume each day from food and drink depends on your body size, occupation and health needs. Staying hydrated can guide you to improve regulating your kidneys and digestion. Hydration also improves lubrication and stability at the joints thereby preventing aches.



Figure 5.6: Healthy food choices build a stronger immune system against diseases

The Impact of Food Choices on Sports Performance

1. **Energy levels:** Carbohydrate is the primary energy source during high-intensity physical activity. Choosing complex carbohydrates (e.g. whole grains) provides sustained energy, while simple sugars cause a quick rise in energy but will quickly get used up.
2. **Muscle repair and recovery:** Proteins are essential for muscle repair after exercise. Adequate protein intake (e.g. lean meats and legumes) helps athletes recover faster and build muscle mass.
3. **Endurance and stamina:** Healthy fats (e.g. avocados, nuts) serve as an energy reserve during prolonged, lower-intensity exercise, helping to maintain endurance over long periods.
4. **Bone and joint health:** Calcium and Vitamin D are crucial for strong bones, while magnesium and potassium support muscle and nerve function, reducing the risk of cramps and injury.
5. **Hydration and performance:** Drinking plenty of water is critical to regulate body temperature, maintain muscle function and prevent fatigue. Dehydration can lead to poor performance and even heat-related illnesses during physical activities.
6. **Recovery from exercise:** Foods rich in antioxidants (e.g. berries, leafy greens) reduce inflammation and speed up recovery after intense physical activity.
7. **Weight management:** Processed foods, which are high in unhealthy fats and sugars, contribute to weight gain and reduced athletic performance. Whole foods (e.g. fruits, vegetables, lean proteins) promote better body composition and performance.
8. **Mental focus and concentration:** Omega-3 fatty acids (e.g. from fish and seeds) support brain health, improving focus, coordination and decision-making during sports.

Learning Tasks

1. Create a wall poster highlighting the reasons for making healthy food choices.
2. Select a common health condition, such as diabetes or allergies, and explain how it can influence a person's food choices.
3. Compare two meals: One that fits a budget and one you would choose if money were not a concern. Explain how economic factors affect your food choices in each case.

PEDAGOGY

1. **Starter:** Show learners a few food labels from everyday products like snacks, drinks and cereals (either printed or on their devices). Ask them to take a closer look and identify key details like calories, sugar, vitamins and other important information (being guided by the previous lesson on sugary, processed, genetically modified and organic foods).
2. **Introduction:** In 3-5 minutes, guide learners to write down what they eat for breakfast, lunch, and dinner. Ask them to think about why they picked those foods – Was it for taste, convenience, because it's something they always eat, a family favourite, part of their culture, or it's healthy? Connect their responses to the lesson by discussing how different factors play a role in shaping our food choice.
3. **Digital-based Learning:** Show a video or pictures for learners to watch on people choosing their foods and giving reasons for those choices. They use their digital devices to quickly search for the meaning of food choices. Guide those who are not familiar with digital devices with how to operate them. Encourage learners to respect the individual differences of their peers.
4. **Group-based Learning:** Learners in groups discuss the reasons/factors for their choices of food. They research the general factors affecting people's food choices and relate them to their daily lives. Learners classify the factors under positive and negative factors. Based on your class dynamics, put learners in mixed-ability groups and lead them to cooperate with each other.
5. **Enquiry-based Learning:** With the aid of their digital devices and using their previous knowledge of nutrition and diet in year 1, learners research the elements to consider in selecting their foods. Carefully present learners with guided questions to assist them recall what they learnt in year 1 on nutrition and diet. Guide less able learners with simpler questions and give them more time to think out the answers. They can refer to their old notes.
6. **Problem-based Learning:** Learners in their groups discuss the reasons why food choices are important to improve their health and wellness and sports performance. Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech etc impairments. Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.). You could use other appropriate approaches to engage learners.

KEY ASSESSMENT

Level

1. Define food choices.
2. State two factors that influence food choices.
3. List two negative factors that influence food choices.

Level 2

1. Explain three factors that influence food choices.
2. Discuss three negative and positive factors affecting food choices and how they impact health and wellness.

Level 3

1. Outline four factors that influence food choices and give reasons why it is important to make those choices.
2. Examine four impacts that your food choices can have on physical activity or sports engagement.
3. Design posters to explain the factors that influence food choices

Level 4: Organise a seminar to educate your colleagues on factors to avoid in their food choices.

HINT

*The recommended mode of assessment for Week 5 is a **Poster**. Refer to Key Assessment **Level 3**, and use Item 3 as an example of a poster question. See **Appendix C** for a sample rubric to score the poster.*

SECTION 2 REVIEW

In Week 3, learners examine the concept of food safety and wholesomeness, focusing on safe food-handling practices and the importance of consuming nutritious, uncontaminated food. Through discussions, visual aids and hands-on activities, learners explore how food safety impacts their health and wellness and learn key skills for making safe food choices. Interactive examples, such as analysing food labels, help learners understand the role of food safety in daily life, encouraging mindfulness around food quality and storage.

Week 4 delves into the health effects of different food types, such as organic, genetically modified, sugary and processed foods. Students assess how each category affects physical and mental health, discussing the potential benefits and risks.

In Week 5, learners analyse various factors that influence food choices, including cultural backgrounds, economic factors and personal preferences. Through group activities and case studies, they reflect on how these factors affect dietary habits and consider strategies for making informed and healthy food choices. Together, these weeks build a comprehensive understanding of the impact of food quality, type and choice on long-term health and wellness.



APPENDIX B: PORTFOLIO STRUCTURE AND RUBRIC

Purpose of the portfolio

To provide a comprehensive record of learners' academic achievements, progress, and growth over time.

The portfolio will be compiled throughout the academic year. This comprehensive portfolio of assessments will be administered in week 1 and collected at the end of week 22 of the second semester, scored and recorded.

Portfolio task

Complete and compile the listed items below as portfolio for the academic year. Place the collected items in a file.

E.g.,

- 1) Learners' class exercise and homework books for Social Studies (handwritten or photocopied)
- 2) A copy of group project, handwritten or photocopied.
- 3) Individual project(s)
- 4) Reflective journal: task learners to record what they recall after every lesson in an exercise book or any preferred booklet. They are to include the focal areas and date of every lesson.
- 5) Give learners a copy of the Learner Reflection Template either written on the board or printed to fill as academic work unfolds, etc.

Structure and organisation of the Portfolio

As part of the structure of the portfolio, learners should ensure the following details have been provided:

- a) Cover Page (Title, Learner's name, Class, Date of submission)
- b) Table of Contents

How to administer

Collect evidence related to the outcomes being assessed;

Select the best and appropriate evidence and label each piece of evidence according to the learning outcome being demonstrated.

- Be guided on how to write a one or two-page reflective essay/memo that explains why they selected the particular examples, how the pieces demonstrate their achievement of the program outcomes, and/or how their knowledge/ability/attitude changed.

Assessment Rubrics

1. Cover page-In block letters which should include:

- a. name of school

- b. Academic year
- c. Name of learner
- d. Name of teacher
- e. Form and specific subject
- f. Date and signature **2 marks**

2. A collection of all the artefacts(documents) in a clear file. **2 marks**

3. Table of content-should include

- a. Portfolio task arranged in order of the weeks they were given
- b. Labelled as A. **2 marks**

4. Completed learner Academic Reflection Template; Reflective journal (Record of what learners recall after every lesson) **10 marks, etc.**

5. Any additional relevant contributions like ‘their view of social studies’ presented and clarity of work with evidence of participation in all the years’ activities. **2 marks**

6. A written summary of the portfolio **2 marks**

Total score of portfolio is 20 marks

Feedback

Provide detailed feedback on the entire portfolio to individual learners, allowing them to identify their challenges and strengths, etc.



APPENDIX C: RUBRICS FOR POSTER

Criteria	Excellent (4 Marks)	Very Good (3 Marks)	Good (2 Marks)	Fair (1 Mark)
Content knowledge	<p><i>The poster depicts any 4 representations of factors that influence food choices:</i></p> <p><i>Personal preferences, Nutritional knowledge, Health factors, Food availability, physical activities, affordability, cultural preference</i></p>	<p><i>The poster depicts any 3 representations of factors that influence food choices:</i></p> <p><i>Personal preferences, Nutritional knowledge, Health factors, Food availability, physical activities, affordability, cultural preference</i></p>	<p><i>The poster depicts any 2 representations of factors that influence food choices:</i></p> <p><i>Personal preferences, Nutritional knowledge, Health factors, Food availability, physical activities, affordability, cultural preference</i></p>	<p><i>The poster depicts any 1 representations of factors that influence food choices:</i></p> <p><i>Personal preferences, Nutritional knowledge, Health factors, Food availability, physical activities, affordability, cultural preference</i></p>
Communication Skills	<p><i>Showing 4 of the skills e.g.</i></p> <p><i>Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture</i></p>	<p><i>Showing 3 of the skills e.g.</i></p> <p><i>Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture</i></p>	<p><i>Showing 2 of the skills e.g.</i></p> <p><i>Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture</i></p>	<p><i>Showing 1 of the skills e.g.</i></p> <p><i>Audible voice, Keeping eye contact Pay attention to audience Engaging the audience with interaction Use of gesture</i></p>
Team work	<p><i>Exhibit 4 of these Contributing to the group.</i></p> <p><i>Respecting the views of others Tolerating others Resolving conflicts Taking responsibility ..</i></p>	<p><i>Exhibit 3 of these Contributing to the group.</i></p> <p><i>Respecting the views of others Tolerating others Resolving conflicts Taking responsibility ..</i></p>	<p><i>Exhibit 2 of these Contributing to the group.</i></p> <p><i>Respecting the views of others Tolerating others Resolving conflicts Taking responsibility ..</i></p>	<p><i>Exhibit 1 of these Contributing to the group.</i></p> <p><i>Respecting the views of others Tolerating others Resolving conflicts Taking responsibility ..</i></p>

Criteria	Excellent (4 Marks)	Very Good (3 Marks)	Good (2 Marks)	Fair (1 Mark)
Design & Creativity	<i>The poster shows creativity and organisation of any 4 of these: layout that draws attention to key points. Visuals are eye-catching, relevant, and enhance understanding of the content. Text and images are balanced and easy to follow.</i>	<i>The poster shows creativity and organisation of any 3 of these: layout that draws attention to key points. Visuals are eye-catching, relevant, and enhance understanding of the content. Text and images are balanced and easy to follow.</i>	<i>The poster shows creativity and organisation of any 2 of these: layout that draws attention to key points. Visuals are eye-catching, relevant, and enhance understanding of the content. Text and images are balanced and easy to follow.</i>	<i>The poster shows creativity and organisation of any 1 of these: layout that draws attention to key points. Visuals are eye-catching, relevant, and enhance understanding of the content. Text and images are balanced and easy to follow.</i>

Total – 16 marks

SECTION 3: EMOTIONAL AND MENTAL HEALTH ISSUES

STRAND: HEALTH EDUCATION

Sub-Strand: Common Human Diseases

Learning Outcome: *Discuss factors that promote positive mental and emotional health*

Content Standard: *Demonstrate knowledge and understanding of emotional and mental health*

HINT



Mid-Semester Examination for the first semester is in Week 6. Refer to **Appendix D** for a Table of Specification to guide you to set the questions. Set questions to cover all the indicators covered for at least weeks 1 to 5.

INTRODUCTION AND SECTION SUMMARY

This section introduces learners to key aspects of mental health including various mental health conditions and the factors that promote positive mental and emotional well-being. Learners will explore common mental health conditions, their characteristics and how they affect daily life. They will build awareness around the importance of mental health as a component of overall wellness. Additionally, they will discuss the role of emotional resilience, support systems and self-care practices in fostering mental well-being.

By the end of this section, learners will gain a foundational understanding of mental health conditions, identifying symptoms and possible impacts on individuals. They will also explore strategies to promote positive mental and emotional health, such as engaging in supportive relationships, maintaining a balanced lifestyle and practising effective stress management. This section reinforces the importance of empathy, self-awareness and proactive approaches to mental health, which connects to subjects such as psychology and social studies.

The weeks covered by this section are

Week 6: Explain the various mental health conditions.

Week 7: Discuss factors that promote positive mental and emotional health.

SUMMARY OF PEDAGOGICAL EXEMPLARS

Employ diverse teaching methods, using visual aids and discussions to illustrate various mental health conditions and foster understanding of their effects. Group discussions and scenario-based activities will encourage learners to connect the content to real-life experiences, promoting

empathy and awareness. For gifted learners, additional content may include exploring historical perspectives on mental health, analysing case studies, and engaging in discussions on current global mental health issues.

Differentiated instruction is essential to support varied learning needs, with attention to students requiring additional guidance. Activities that promote self-reflection and the discussion of healthy coping mechanisms will reinforce positive mental and emotional health practices. By using digital resources for research, learners can explore self-care techniques, support networks and emotional health resources, fostering both critical thinking and digital literacy.

ASSESSMENT SUMMARY

Assessments will include quizzes on mental health conditions and their characteristics, group presentations on factors that enhance emotional well-being and reflective journals documenting self-care practices. Practical assessments such as scenario analysis and demonstrations of stress management techniques will provide learners with opportunities to apply their knowledge. Provide timely feedback and monitor progress to support learners' understanding of mental health conditions and their ability to identify positive mental health strategies.

WEEK 6

Learning Indicator: Explain the various mental health conditions

THEME OR FOCAL AREA: MENTAL HEALTH CONDITIONS

MENTAL HEALTH

Mental health impacts how we think, feel and act. It influences our ability to handle stress, relate to others and make decisions. Understanding mental health helps us to recognise signs of stress, anxiety and depression early. Just like we exercise our bodies, we need to care for our minds through practices like mindfulness, healthy relationships and seeking help when needed. Promoting mental health awareness can reduce stigma and encourage open discussions, which will create a supportive environment for everyone.

The Concept of Mental Health

Mental health refers to the overall state and function of the mind and its well-being. It encompasses the way we think, feel and behave and influences how we handle stress, relate to others and make choices. In other words, it is a state of the mind and how well it functions and copes with the stresses of life. A healthy mind will help individuals to realise their abilities, cope with the normal stresses of life, realise their potential, learn, work well and contribute to their community. Mental health is part of health and well-being which we studied in Year 1. It is a basic human right and is crucial to personal, community and socio-economic development. Mental health is a complex condition, which is experienced differently from one person to another. It comes, in different forms and with different reactions and distress. People with mental health conditions are more likely to experience lower levels of mental well-being but this is not always the case for everyone. Good mental health is not just the absence of a mental disorder. It is also about maintaining a positive state of mind and having resilience in the face of challenges.



Figure 6.1: A person suffering from a mental health issue

Common Terms in Mental Health

1. **Anxiety:** A feeling of worry or fear that can be mild or severe. It's a normal response to stress but can become a problem if it interferes with daily life.
2. **Depression:** A persistent feeling of sadness and loss of interest that can affect how a person thinks, feels and handles daily activities.
3. **Stress:** The body's response to any demand or challenge. It can be positive (eustress) or negative (distress).
4. **Resilience:** The ability to recover quickly from difficulties or setbacks. This is mental toughness.
5. **Self-esteem:** How much you value and respect yourself. High self-esteem means having a positive view of yourself.
6. **Coping strategies:** Techniques or methods people use to manage stress and difficult emotions. These can be healthy (like exercise) or unhealthy (like avoiding problems).
7. **Mindfulness:** Being fully present and engaged in the moment, aware of your thoughts and feelings without judgment.
8. **Therapy:** Professional treatment for mental health issues, often involving talking with a therapist to understand and manage problems.
9. **Stigma:** Negative attitudes and beliefs that lead to discrimination against people with mental health issues.

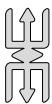
Mental Health Disorders

Mental health disorders refer to a wide range of mental health conditions or deviations that affect the mood, thinking and behaviour of a person. Examples include depression, anxiety disorders, schizophrenia, eating disorders and addictive behaviours. Many people have mental health concerns from time to time. However, a mental health concern becomes a mental disorder when ongoing signs and symptoms cause frequent stress and affect a person's ability to function. It can make a person miserable and cause problems in their daily lives, such as at school, work or in relationships. In most cases, symptoms can be managed with a combination of medications and talk therapy (psychotherapy).

Examples of Mental Health Disorders

Mental health disorders are diagnosed conditions that significantly affect a person's thinking, feeling, mood or behaviour. These disorders can affect daily functioning and the ability to relate to others. **Examples of mental health disorders include:**

1. **Anxiety disorders:** Conditions like panic disorders and phobias.
2. **Mood disorders:** Conditions like depression and bipolar disorder.
3. **Schizophrenia:** A disorder that affects a person's ability to think clearly, manage emotions and interact with others.
4. **Eating disorders:** Conditions like anorexia nervosa and bulimia nervosa.
5. **Trauma-related disorders:** Conditions like post-traumatic stress disorder (PTSD).

**Note**

All these conditions or disorders will be studied in detail in Year 3.

Key Differences between Mental Health and Mental Health Disorders

- Scope:** Mental health is a broad term that includes overall emotional and psychological well-being, while mental health disorders refer specifically to diagnosable conditions that affect mental health.
- Diagnosis:** Mental health is a state and can be self-assessed, whereas mental health disorders require a professional diagnosis based on specific criteria.
- Management:** Maintaining good mental health involves daily practices like exercise, social connections and stress management. Managing mental health disorders may require professional treatment, including therapy and medication.

Data on Mental Health and Mental Health Disorders in Ghana

In Ghana, mental health is a significant concern affecting a large portion of the population. According to recent data, about 10% of Ghanaians, which translates to approximately 3.1 million people, suffer from mental health disorders. Furthermore, around 41% of Ghanaians experience psychological distress, highlighting the widespread nature of mental health issues in the country.

Despite efforts to improve mental health services such as integrating mental health care into general health services and building new psychiatric hospitals, challenges like inadequate funding, shortage of mental health professionals and limited access to affordable treatment persist. Addressing these issues requires increased investment, better training for mental health professionals and more comprehensive support systems for those affected by mental health conditions (citnewsroom.com, 2021, 2023; Modern Ghana, 2016)

Factors that Contribute to Mental Health Disorders

The factors contributing to mental health disorders may include social, economic, geopolitical and environmental circumstances. Examples of the factors are poverty, violence, relationships, inequality and environmental destruction. Some of the contributing factors include:

- Genetic factors:** Having a close family member with a mental illness can increase the chance that others in the family might get a mental disorder. However, if one family member has a mental illness, it doesn't mean that others in the family will have it too.
- Other biological factors:** Some medical conditions or hormonal changes can cause mental health problems.
- Personality factors – Some traits such as perfectionism or low self-esteem can increase the risk of depression or anxiety
- Childhood abuse, trauma, or neglect.
- Social isolation or loneliness.
- Experiencing discrimination and stigma, including racism
- Social disadvantage, poverty or debt.
- Bereavement (losing someone close to you).

9. Severe or long-term stress.
10. Having a long-term physical health condition.
11. Unemployment or losing your job.
12. Homelessness or poor housing.
13. Being a long-term carer for someone.
14. Drug and alcohol misuse.
15. Domestic violence, bullying or other abuse as an adult.
16. Significant trauma as an adult, such as military combat, being involved in a serious incident in which you feared for your life or being the victim of a violent crime.
17. **Physical causes:** For example, a head injury or a neurological condition such as epilepsy can have an impact on a person's behaviour and mood.



Figure 6.2: What could be the cause of this mental health condition?

Signs and Symptoms of Poor Mental Health

1. Unusual or illogical thoughts.
2. Feeling sad or down.
3. Excessive fears or worries or extreme feelings of guilt.
4. Unreasonable anger or irritability.
5. Inability to cope with daily problems or stress.
6. Poor concentration and memory, not being able to follow a conversation.
7. Hearing voices that no one else can hear.
8. Increased or decreased sleep.
9. Increased or low appetite, major changes in eating habits.
10. Lack of motivation.
11. Withdrawing from people.
12. Problems with alcohol or drug use.
13. Feelings that life is not worth living or suicidal thoughts.
14. Becoming obsessed with a topic, like death or religion.

15. Not looking after personal hygiene or other responsibilities.
16. Not doing as well as usual at school or work.

Impact of Sound Mental Health on Sports Performance

1. **Focus and concentration:** Good mental health improves focus and concentration, allowing athletes to stay mentally present and execute skills effectively under pressure.
2. **Motivation:** A positive mental state enhances athletes' zeal to give their best. It helps them to push through challenges, stay committed to training and maintain a competitive edge.
3. **Stress management:** Athletes with strong mental health cope better with stress, anxiety and pressure, which reduces the likelihood of mental blocks or performance anxiety.
4. **Confidence and self-belief:** Healthy mental well-being fosters self-confidence, enabling athletes to trust in their abilities, take calculated risks and perform at their best.
5. **Resilience:** Mental health boosts resilience, allowing athletes to recover from setbacks, such as injuries or losses and maintain a positive outlook on their progress.
6. **Team dynamics:** Good mental health promotes effective communication and cooperation within teams, contributing to better teamwork and togetherness.
7. **Emotional regulation:** Athletes with stable mental health can regulate emotions, avoid frustration and remain composed during intense moments in competitions.

Impacts of Poor Mental Health on Sports Performance Include

1. **Loss of focus and concentration:** Mental health issues like anxiety or depression can cause distractions and reduce an athlete's ability to focus on tasks, leading to errors during competition.
2. **Decreased motivation:** Poor mental health can lead to a lack of drive or enthusiasm, resulting in low energy levels, missed training sessions and reduced effort during games.
3. **Performance anxiety:** High levels of anxiety or stress can create mental blocks, causing athletes to get blank under pressure, experience fear of failure and perform below their potential.
4. **Low confidence and self-esteem:** Depression or negative self-talk can erode self-confidence, making athletes doubt their abilities and avoid taking necessary risks in performance.
5. **Fatigue and burnout:** Mental health issues often lead to physical fatigue, difficulty sleeping or emotional stress, which affects an athlete's endurance and overall physical performance.
6. **Poor decision-making:** Negative mental health impacts can lead to poor judgement, leading to poor decisions during competition, especially under stressful conditions.
7. **Withdrawal from social interaction:** Athletes struggling with mental health may isolate themselves, leading to poor communication, decreased teamwork and strained relationships within teams.
8. **Injury risk:** Mental distress can make athletes less attentive and more prone to physical mistakes, increasing the likelihood of injury during training or competition.

Prevention and Management of Poor Mental Health

1. **Prevention of mental health issues**
 - a. Maintain a healthy lifestyle

- i. **Regular exercise:** Physical activity boosts mood and reduces anxiety and stress.
- ii. **Balanced diet:** Eating nutritious foods supports brain function and emotional well-being.
- iii. **Adequate sleep:** Proper rest is crucial for mental health.
- b. **Build strong relationships**
 - i. **Social support:** Connecting with family, friends and community provides emotional support and reduces feelings of isolation.
 - ii. **Healthy communication:** Open and honest conversations about our feelings can help manage stress and prevent mental health issues.
- c. **Stress management:** Practise mindfulness and relaxation techniques like meditation, yoga and deep breathing to help reduce stress.
- d. **Time management:** Prioritising tasks and setting realistic goals can prevent feelings of being overwhelmed.
- e. **Seek professional help early**
 - i. **Therapy and counselling:** Professional support can help address issues before they become more serious.
 - ii. **Regular check-ups:** Routine mental health check-ups can identify early signs of mental health issues.
- f. **Limit harmful behaviours**
 - i. **Avoid substance abuse:** Limiting alcohol and avoiding drugs can prevent mental health problems.
 - ii. **Healthy coping mechanisms:** Finding positive ways to cope with stress, such as hobbies or exercise can prevent unhealthy behaviours.

7. Management of Mental Health Issues

- a. Professional treatment
 - i. **Therapy:** Cognitive-behavioural therapy (CBT), psychotherapy and other forms of counselling can help manage mental health conditions.
 - ii. **Medication:** Antidepressants, anti-anxiety medications and other prescriptions can be effective for managing symptoms.
- b. Self-care practices
 - i. **Regular exercise:** Continues to be important for managing symptoms of anxiety and depression.
 - ii. **Healthy eating and sleep:** Maintaining a balanced diet and proper sleep routine supports overall well-being.
- c. Support systems
 - i. **Support groups:** Joining groups for people with similar experiences can provide comfort and advice.
 - ii. **Family and friends:** Leaning on loved ones for support can help manage mental health issues.

- d. Stress reduction techniques
 - i. **Mindfulness and meditation:** Continuous practice of this technique can help manage chronic stress and anxiety.
 - ii. **Relaxation techniques:** Techniques like deep breathing, progressive muscle relaxation (e.g. massage, body grooming), visualisation (engaging positive mental imaginations) and sightseeing can reduce symptoms.
- e. Lifestyle adjustments
 - i. **Routine:** Establishing a daily routine can provide structure and order in life.
 - ii. **Hobbies and interests:** Engaging in activities you enjoy can improve a person's mood and provide a sense of accomplishment.
- f. Avoiding triggers
 - i. **Identifying triggers:** Knowing what causes or brings about your symptoms can help you avoid or manage them (e.g. negative lifestyle like smoking).
 - ii. **Healthy boundaries:** Setting limits in relationships and work can prevent stress. For examples moving away from an abusive relation, saying no to a sexual partner and meaning it.
- g. Continuous learning
 - i. **Education:** Learning about your condition can empower you to manage it better.
 - ii. **Staying informed:** Keeping up with the latest research and treatment options can provide new strategies for management.

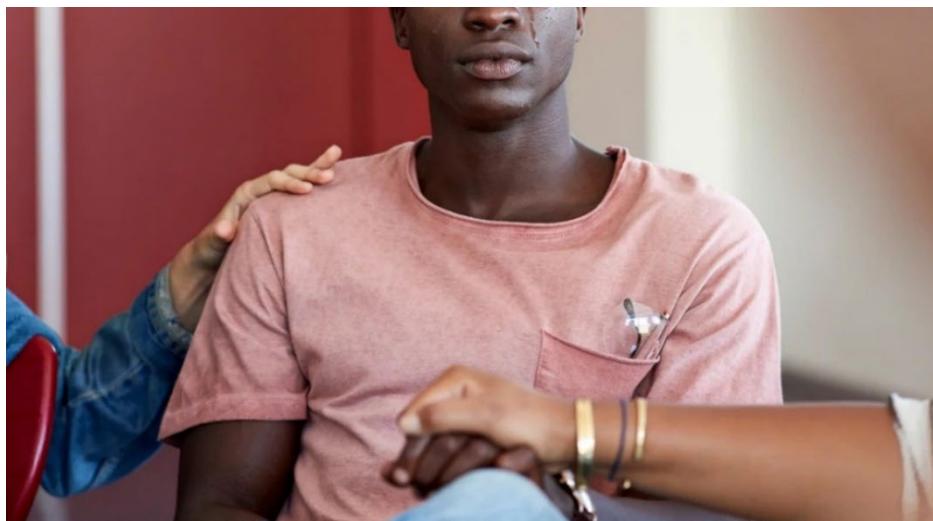


Figure 6.3: A person receiving therapy and social support

Learning Tasks

1. Create a poster to illustrate the meaning of mental health.
2. Conduct a group discussion on how good mental health can prevent mental health disorders.

3. Present a PowerPoint presentation on how programmes and activities in Physical Education and Health can help prevent mental health issues and mental health disorders.
4. Create a brochure that highlights the causes, signs and symptoms of mental health issues and how they can impact sports performance.
5. Write a report on the challenges of mental health care and how they can impact sports performance in your community.
6. Create flashcards with mental health terms and definitions for class review.

Pedagogical Exemplars

1. **Starter:** Show learners this YouTube video or any other relevant video on mental health to spark their interest in the lesson.



A YouTube Video on the Basics of Mental Health

2. **Introduction:** Research the data on mental health in your community, region or the country and briefly share with learners.
3. **Digital-based Learning:** Learners research from the internet and other relevant sources to come up with the definition of mental health including the definition by WHO.
4. **Discovery Learning:** In their mixed-gender and ability groups, learners research mental health disorders and discuss the differences between Mental Health and Mental Health Disorders.
5. **Group-based Learning:** Learners in their mixed-ability groups, research the causes, signs and symptoms of mental health and mental health disorders.
6. **Reflective Learning:** Search the media, Ghana Health Service and the Ministry of Health websites to search for data on mental health situations in Ghana and present a report on its impact on our communities.
7. **Collaborative Learning:** With their digital devices, learners search the internet, books and other materials to find out and familiarise themselves with the common words or terms associated with mental health.
8. **Activity-based Learning:** In mixed-ability and mixed-gender groups, learners research ways to prevent and manage mental health issues, prepare a report and present it to the class.

KEY ASSESSMENTS

Level 1

1. Define mental health.
2. Define mental health disorder.
3. List three examples of good mental health.
4. List three examples of poor mental health.

5. List three potential causes of mental health disorders.
6. State two common signs of anxiety.
7. Which of the following factors is a negative influence on food choices?
 - A. Availability of fresh produce
 - B. Cost of food items
 - C. Nutritional information
 - D. Variety of food options

Level 2

1. Name two common mental health disorders and describe them briefly.
2. Describe five differences between mental health and mental health disorders.
3. Discuss one major challenge facing mental health care in Ghana.
4. Describe two ways to prevent mental health issues.

Level 3

1. Describe why mental health is important for overall well-being.
2. Explain why it is important to understand the difference between mental health and mental health disorders.
3. Describe how recognising symptoms early can help in managing mental health disorders.
4. Explain three actions an individual can take if they think they have a mental health disorder.

Level 4

1. Project Work (Teacher to research and guide learners through this)
2. Develop a personal mental health action plan with preventive measures and coping strategies to enable you to achieve your PEH and sports goals.
3. Design a physical activity programme for a week that will help prevent mental health issues in your school and community.

HINT



*The recommended mode of assessment for Week 6 is **Mid-Semester Examination**. Refer to **Appendix D** for a Table of Specifications to guide you in setting the questions. Set questions to cover all the indicators covered for at least weeks 1 to 5.*

Additional Reading

The following areas can be researched to prepare for the continuation of mental health and mental health disorders in year 3:

1. Concept of mental health
 - a. Importance of mental health
 - b. Barriers to mental health.
2. The common forms of mental health.
3. How to cope with stress and anxiety.
4. How to cope with depression and prevent suicide.

WEEK 7

Learning Indicator: Discuss factors that promote positive mental and emotional health

THEME OR FOCAL AREA: FACTORS PROMOTING POSITIVE MENTAL AND EMOTIONAL HEALTH

PROMOTING POSITIVE MENTAL AND EMOTIONAL HEALTH

According to the World Health Organization (WHO), Ghana has made significant strides in improving mental health services. The WHO's Special Initiative for Mental Health aims to provide 5.2 million more Ghanaians with access to quality mental health care by integrating mental health services into the primary healthcare system. This initiative is crucial for promoting positive mental and emotional health across the country (WHO, 2024; Ghana News Agency, 2024).

Positive Mental and Emotional Health

Positive mental and emotional health refers to a state of well-being where individuals can cope with the normal stresses of life, work productively and contribute to their community. Positive mental and emotional health is about feeling good about yourself, being able to handle stress and having fulfilling relationships. It is an important part of a person's overall health and well-being.



Figure 7.1: Happy people

The Importance of Positive Mental and Emotional Health

Positive mental and emotional health is crucial for overall well-being and quality of life. Here are some key reasons why it is important

- Improved physical health:** Positive mental and emotional health is closely linked to physical health. People with good mental health often have better physical health outcomes, including lower rates of chronic diseases such as heart disease and diabetes. This is because they are more likely to engage in healthy behaviours, such as regular exercise, balanced nutrition and adequate sleep.
- Better stress management:** Individuals with positive mental health are better equipped to handle stress. They use effective coping mechanisms to manage stress, which reduces the negative impact of stress on the body and mind. This leads to fewer stress-related illnesses and a higher overall quality of life.

3. **Enhanced relationships:** Good mental and emotional health allows individuals to build and maintain strong, healthy relationships. With enhanced relationships, they can communicate effectively, show empathy and provide and receive support from others. Strong social connections are a significant protective factor against mental health issues.
4. **Increased productivity:** Positive mental health contributes to higher performance and performance in both academic and professional settings. People with positive mental health tend to be more focused, motivated and able to concentrate on their tasks. This leads to better outcomes and achievements in their personal and professional lives.
5. **Resilience and adaptability:** Individuals with positive mental and emotional health are better able to withstand pressure. They can bounce back from setbacks and adapt or adjust to changes more effectively. This resilience helps them navigate life's challenges and recover more quickly from difficulties.
6. **Prevention of mental health disorders:** Maintaining positive mental health can prevent the development of mental health disorders. Engaging in healthy behaviours, participating in regular physical activity, building strong relationships and managing stress effectively reduce the risk of conditions such as depression, anxiety and other mental health issues.
7. **Enhanced self-esteem and confidence:** Good mental health boosts how a person values themselves and increases their belief in their abilities. Individuals feel better about themselves and their abilities, which encourages them to take on new challenges and pursue their goals. High self-esteem is associated with better mental health and overall well-being.
8. **Overall life satisfaction:** Positive mental and emotional health leads to a higher level of overall life satisfaction. Individuals are more likely to experience joy, fulfilment and contentment in their lives. They can appreciate and enjoy the positive aspects of life, leading to a greater sense of happiness and well-being.

Factors that Promote Positive Mental and Emotional Health

To promote positive mental and emotional health, the following factors in our lives must be given the necessary attention:

1. **Self-esteem:** This refers to how a person values and respects themselves. Having high self-esteem helps you feel confident and capable, while low self-esteem can lead to feelings of worthlessness and insecurity.

Examples of activities that can help boost self-esteem are:

- a. Being encouraged by your own progress however big or small.
- b. Feeling proud of your achievements.
- c. Not being too critical of one's mistakes.
- d. Learning new skills.
- e. Engaging in regular physical activity to develop sporting talents in new disciplines such as pickleball, basketball, swimming, dancing, etc.

2. **Emotional awareness:** This refers to understanding, knowing and taking control of your feelings. Emotional awareness helps you manage/control your reactions and communicate better with others. Emotional awareness helps a person recognise when they are feeling angry and know when to pause and take a deep breath, instead of choosing to yell or react. Engaging in regular physical activities like walking, cycling and traditional games can help control your emotions.

3. **Resilience:** This is the ability to bounce back from setbacks and challenges. Resilience helps you cope with stress and adapt to difficult situations. An example is: you failed a test, but you decided to study harder and try again. Another example is: being on the verge of losing a football match because your opponents have scored against you but, with resilience, you fight back, score more goals than them and you win the match.
4. **Social skills:** This is the ability to interact and communicate effectively with others. Social skills help to build strong relationships and support networks. Examples of activities that will help develop social skills are:
 - a. Sharing your issues with a trusted person who can offer support.
 - b. Engaging in physical activity programmes that can enable you to interact with people.
 - c. Joining clubs or teams to meet new people.
 - d. Building friendships or making new friends.
5. **Healthy relationships:** This deals with having positive connections with family, friends and peers. It helps to provide emotional support and a sense of belonging. An example is spending time with family and friends who encourage and support you.
6. **Stress management:** This deals with how to cope with and reduce stress. Stress management prevents stress from overwhelming you and affecting your health. Practising relaxation techniques like deep breathing or yoga can help prevent stress.
7. **Cognitive health:** This is how well you think, learn and remember. Cognitive health affects our ability to make decisions and solve problems. It can be improved by engaging in activities that challenge your brain, like puzzles, reading and physical activities like social fun games e.g. sack race, lime and spoon race, tug of war etc.
8. **Behavioural health:** This is how your actions and habits affect your overall health and well-being. Positive behaviours contribute to good mental health. Actions that can improve behavioural health include:
 - a. Exercising regularly.
 - b. Avoiding harmful substances like drugs and alcohol.
 - c. Spending less time using your digital screens.
 - d. Not engaging in harmful habits that might cause deformities, sickness and permanent damage.



Figure 6.3: Awareness campaign on a World Mental Health Day – 10th October.

Learning Tasks

1. Prepare three coping strategies/plans for dealing with exam pressure or family conflict pressure and explain how they can contribute to positive mental and emotional health.
2. Create posters to illustrate the importance of healthy lifestyle choices like nutrition, sleep and exercise for positive mental and emotional health.
3. Prepare a daily plan of healthy habits like regular exercise, balanced eating and adequate sleep and at the end of one month, explain how it has positively contributed to your mental and emotional health.

Pedagogical Exemplars

1. **Starter:** Show learners this YouTube video or any other relevant videos on mental health to spark their interest in the lesson. Invite contributions from learners about their views and opinions on the video.



A YouTube Video on the Basics of Mental Health

2. **Introduction:** Research how to provide sustainable or positive mental and emotional health and share with learners. Also play a video on how to positively handle mental and emotional health.



National Library of Medicine: <https://www.ncbi.nlm.nih.gov/books/NBK350318/>

3. **Talk-for-Learning:** In mixed-ability groups, learners research and discuss the meaning of mental and emotional health, the importance of mental and emotional health and factors that contribute to mental and emotional health. Encourage learners to work together.
4. **Activity-based Learning:** In mixed-gender groups, learners create posters to illustrate the benefits of positive mental and emotional health. Guide learners to assist each other and be patient with one another working together as a team. Individuals are assigned roles such as leaders, secretaries, delivery persons, organisers etc across both genders and ability levels.
5. **Case Studies:** In groups, learners research cases or situations of individuals who have undertaken activities to maintain positive mental and emotional health and discuss the outcomes. Encourage learners to assist those who cannot easily find such scenarios on the internet. They should respect the social, economic and digital backgrounds of other people.
6. **Guest Speaker:** Invite a mental health professional to speak about the importance of mental and emotional health and share their experiences. In a workshop, learners are guided by the health professional to practise different techniques that will enable them to achieve good mental and emotional health e.g. deep breathing, progressive muscle relaxation, yoga etc.

Learners should concentrate on their own activities during the workshop and respect the physical abilities, body compositions and emotions experiences of others.

7. **Reflective Journals:** Learners are guided to prepare and keep journals where they reflect on how their mental and emotional health affects different aspects of their lives. Guide them to avoid actions and comments that might bruise the emotions and egos of others.
8. **Group-based Learning:** In mixed-ability groups, learners research and discuss the factors that promote mental and emotional health and share their ideas with the class. Invite digitally proficient learners to assist those approaching proficiency. Encourage shy and inactive learners to lead their groups.
9. **Project-Based Learning:** In mixed-gender groups, learners create a project or presentation on strategies to promote mental and emotional health in their school. Learners research the topic with their digital devices. Encourage them to seek guidance from experts and other staff members like the social studies teachers. Encourage females to lead in this project.

Key Assessments

Level 1

1. State the definition of positive mental and emotional health.
2. State three benefits of positive mental and emotional health.
3. Provide an example of how you can practice positive mental and emotional health in your daily life.
4. Identify two factors that promote positive mental and emotional health.
5. State five (5) benefits of positive mental and emotional health.

Level 2

1. Explain with examples, three factors that positively influence mental and emotional health.
2. Describe with examples, three benefits of maintaining positive mental and emotional health.
3. Describe one scenario of positive mental and emotional health in either your life or somebody else's life.

Level 3

1. Examine three reasons why positive mental and emotional health is important for good health and wellness.
2. Describe how positive mental and emotional health impacts your physical health and relationships.
3. Explain three strategies that can be used to enhance mental and emotional well-being. Give an example of each.
4. Explain how positive mental and emotional health impacts physical health, relationships and productivity. Give one explanation for each.

Level 4

1. Design four positive mental and emotional well-being strategies for a student preparing for exams.

2. Create a personal plan that includes activities and habits to promote your mental and emotional health.

HINT

*The recommended mode of assessment for Week 7 is a **Peer Assessment**. Refer to **Key Assessment Level 1**, and use Item 5 as an example of a peer assessment question.*

SECTION 3 REVIEW

In Week 6, learners explore various mental and emotional health conditions, gaining an understanding of their causes, symptoms, and impact on individuals. Through class discussions, visual aids, and case studies, learners identify common conditions such as anxiety, depression, and stress and consider the importance of seeking help and support. Interactive activities should encourage empathy and self-awareness, helping learners to recognise the value of mental and emotional health in overall well-being.

Week 7 shifts focus to the factors that promote positive mental and emotional health, such as strong support networks, healthy coping mechanisms, and self-care practices. Learners engage in group activities to brainstorm strategies for managing stress, building resilience, and nurturing emotional strength. By sharing experiences and exploring practical strategies, learners develop an understanding of the essential roles these factors play in enhancing mental well-being. Group discussions and collaborative exercises foster a supportive environment for learners to learn from each other.

Throughout the section, providing guidance, coupled with learner-led discussions and reflective activities create a supportive and interactive classroom atmosphere. By engaging in these collaborative experiences, learners develop the skills and awareness necessary to prioritise their mental and emotional health, fostering habits that contribute to long-term well-being.



APPENDIX D: MID-SEMESTER EXAMINATION

Structure

The mid-semester examination questions should cover Weeks 1-5 focal areas in the Teacher Manual.

This mid semester examination will consist of 20 multiple-choice questions for 20 marks

Example

Which of the following factors is a negative influence on food choices?

- A. Availability of fresh produce
- B. Cost of food items
- C. Nutritional information
- D. Variety of food options

Table of specifications

Week	Focal Area	Type of question	DoK Level				Total
			1	2	3	4	
1	<i>Sexual and Reproductive Health</i>	Multiple choice	1	1	1	-	3
2	<i>Contraception, its types and impact on health and wellness</i>	Multiple choice	1	2	2	-	5
3	<i>The meaning of food safety and wholesomeness</i>	Multiple choice	1	2	1	-	4
4	<i>The impact of organic, genetically modified, sugary and processed (OGMSP) foods on health.</i>	Multiple choice	1	2	1	-	4
5	<i>Food choices.</i>	Multiple choice	2	1	1	-	4
	<i>Total</i>		6	8	6	-	20

SECTION 4: LIFE CHOICES AND DISEASES

STRAND: PHYSICAL EDUCATION

Sub-Strand: Physical Activity for Healthy Living

Learning Outcome: *Discuss factors that influence the adoption and adherence to regular physical activity participation for healthy living*

Content Standard: *Demonstrate knowledge and understanding of factors influencing regular physical activity participation for healthy living*

INTRODUCTION AND SECTION SUMMARY

This section introduces learners to the relationship between life choices and disease prevention, focusing on how habits such as healthy eating, regular physical activity, avoiding harmful substances and stress management can influence long-term health. Learners will explore how lifestyle decisions affect the risk of developing chronic diseases such as diabetes, heart disease and certain cancers, while also considering the role of genetics, environment and access to healthcare.

By the end of this section, learners will gain foundational knowledge about the impact of life choices on disease prevention and management. They will understand the significance of adopting health-promoting behaviours and how these behaviours can reduce disease risk and improve quality of life. This section connects with topics such as biology, nutrition, and health education, emphasising the role of personal responsibility in maintaining overall well-being.

The week covered by the section is

Week 8: Discuss the impact of life choices on diseases

SUMMARY OF PEDAGOGICAL EXEMPLARS

Show graphical data on lifestyle factors like diet, exercise and smoking and their links to chronic diseases. Use real-life examples or infographics to explain the effects of unhealthy habits versus healthy ones. Facilitate small group discussions where learners identify unhealthy life choices and propose alternatives. Groups can also discuss barriers to healthy living and brainstorm practical solutions. You can assist learners to evaluate hypothetical scenarios depicting individuals with various lifestyle habits. They assess the disease risks and recommend healthier choices. Guide learners to create posters or presentations to promote awareness of healthy life choices among peers.

Through role-play, engage learners in skits where they act out everyday situations requiring decisions about diet, exercise or stress management, followed by class reflections. Provide differentiated instruction to support learners who may need help understanding the concepts, while advanced learners can explore case studies on public health campaigns or the interplay of genetics and lifestyle in disease prevention.

ASSESSMENT SUMMARY

Assessments will incorporate quizzes or short-answer tests on how life choices like smoking or exercise affect disease risks. Engage learners to apply knowledge in previous lessons to engage in practical demonstrations of creating balanced meal plans or designing exercise routines. Encourage learners to work under guided freedom to work on group projects or presentations on preventing a specific lifestyle-related disease. Learners write personal reflections on their current habits and identify changes they can make to reduce disease risks. Track progress through class assessments, providing individualised feedback to reinforce the connection between informed decisions and disease prevention.

WEEK 8

Learning Indicator: Discuss the impact of life choices on diseases

FOCAL AREA: THE IMPACT OF LIFE CHOICES ON DISEASES

LIFE CHOICES ON DISEASES

Daily routines and life decisions have a significant impact on one's general health and risk of contracting illnesses. The prevention and advancement of disease are strongly linked to several lifestyle factors, including nutrition, exercise, smoking, alcohol use, sleep patterns, and stress management. We may lower our risk of many common diseases by making healthier decisions based on our understanding of how these factors affect the body.

Diet and Nutrition

- **Diet** refers to the food and drinks we regularly consume.
- **Nutrition** is the science of how food affects health and growth. It focuses on the quality and impact of nutrients.

Our general health and well-being are greatly influenced by the foods we eat. Diet and nutrition are essential health pillars that affect almost every facet of our mental and physical health. Our diet supplies the building blocks for our body's operation, maintains our energy levels, and affects our risk of developing several illnesses. Making thoughtful dietary decisions can improve quality of life and dramatically lower the risk of chronic disease. Bad food choices can have negative health effects, especially when it comes to controlling weight and metabolic health.

Negative Health Outcomes of Poor Diet and Nutrition

1. **Obesity and metabolic diseases:** Consuming meals that are overly heavy in calories, sweets, and highly processed foods frequently leads to obesity. In addition to having an impact on looks, obesity dramatically increases the risk of major health problems like type 2 diabetes, heart disease, and some types of cancer. Metabolic disease relates to conditions that impact the body's capacity to efficiently transform food into energy. A series of health issues can arise from poor food choices that interfere with this essential activity. See Figure 8.1
2. **Heart disease and stroke:** Blood pressure and cholesterol can be raised by eating a diet high in unhealthy fats, especially saturated and trans fats, as well as too much salt and sugar. A major cause of death globally, heart disease is largely caused by these factors. Atherosclerosis, a disorder marked by the hardening of the arteries, can also be brought on by a bad diet. This severe medical condition may eventually lead to potentially fatal situations like heart attacks or strokes. See Figure 8.2



Figure 8.1: Causes of obesity



Figure 8.2: A Man Suffering from a Heart Attack

3. **Cancer:** A higher risk of acquiring some cancers, such as colon and breast cancer, has been linked to diets high in processed meats, red meat, and sweets and low in vital fruits, vegetables, and fibres. Our meals' nutritional value can have a significant impact on both preventing cancer and maintaining general health.



Figure 8.3: A doctor with a cancer patient

4. Physical Activity

Maintaining general health and well-being requires regular physical activity. A healthy lifestyle must include physical activity to sustain mental and physical health. Frequent exercise helps manage weight, builds muscles, increases flexibility, and supports bodily systems. In addition to these advantages, physical activity is essential for improving quality of life and lowering the risk of several chronic diseases. Walking, running, swimming, and strength training are a few examples of activities that can have significant, long-term health advantages.

Positive Health Outcomes of Engaging in Regular Physical Activity

- a. **Cardiovascular health:** Participating in regular exercise has a significant effect on heart health. It can dramatically reduce blood pressure and lower cholesterol, two important factors in reducing the risk of heart disease. Additionally, leading an active lifestyle helps one reach and maintain a healthy weight, which lessens the strain on the heart.



Figure 8.4: People exercising to build their cardiovascular endurance

- b. **Type 2 diabetes prevention:** Regular physical activity is crucial for controlling blood sugar levels and reducing the risk of type 2 diabetes. Exercise improves insulin sensitivity, helps muscles use glucose more efficiently, and supports better overall metabolism. This not only lowers blood sugar levels but also aids in weight management and reduces abdominal fat, which are key factors in preventing insulin resistance. For those with type 2 diabetes, exercise is an essential part of managing the condition alongside diet and medication, helping to maintain stable blood sugar and reduce complications.
- c. **Cancer prevention:** An active lifestyle significantly reduces the risk of various cancers, particularly endometrial, breast, and colon cancers. Exercise enhances immune function, regulates hormones, and reduces inflammation, which collectively helps prevent cancer development. By controlling hormones like oestrogen and insulin and managing body weight, exercise lowers cancer risks linked to hormone imbalances and obesity-related inflammation. Regular physical activity is thus a powerful tool for cancer prevention, supporting a healthier immune response, balanced hormones, and reduced body fat.

5. Smoking and Alcohol Consumption

Both smoking and excessive alcohol consumption pose significant risks to our health, contributing to a myriad of serious medical conditions. Smoking and excessive alcohol consumption are major lifestyle factors that negatively impact health. Both habits introduce harmful substances into the body, leading to immediate and long-term health risks. Smoking is a leading cause of preventable diseases, particularly affecting the lungs and cardiovascular system, while excessive alcohol use impairs liver function, weakens the immune system, and affects nearly every organ in the body. Understanding these risks is crucial for making informed choices that promote longevity and well-being.

Some of the effects of smoking and excessive alcohol intake

- Cancer:** Smoking is the foremost cause of lung cancer, accounting for a substantial percentage of cases. Furthermore, it is intricately linked to various other cancers, including those of the mouth, throat, pancreas, and bladder. The harmful substances in cigarette smoke directly damage cells and result in mutations that can lead to cancer development over time. On the other hand, excessive alcohol intake is also a major player in cancer risk, particularly for cancers affecting the liver, oesophagus, mouth, and breast. Chronic heavy drinking can disrupt normal cellular processes, leading to the proliferation of abnormal cells that may culminate in cancer.
- Respiratory and liver diseases:** Smoking is notorious for its damaging effects on respiratory health, leading to chronic obstructive pulmonary disease (COPD), which results in persistent respiratory symptoms and airflow limitation. Additionally, it can exacerbate pre-existing conditions like asthma, making them significantly more difficult to manage. Meanwhile, heavy alcohol consumption is a leading cause of liver diseases, manifesting in conditions such as cirrhosis, the scarring of liver tissue that impairs its functionality, and liver cancer, which can develop after years of excessive drinking.
- Immune system suppression:** Smoking weakens the immune system, making the body more susceptible to infections, including respiratory infections and autoimmune diseases and excessive alcohol suppresses the immune system, lowering the body's ability to fight infections and recover from illnesses.



Figure 8.5: Habits we must avoid as a lifestyle choice

6. Sleep Patterns

Good sleep is essential for both mental and physical health. Quality sleep is a cornerstone of good health, playing a critical role in both mental and physical well-being. During sleep, the body undergoes processes of repair, immune strengthening, and memory consolidation, all essential for maintaining energy, focus, and emotional balance throughout the day. Consistent, restful sleep improves cognitive functions, supports the immune system, regulates mood, and helps maintain metabolic health. Conversely, insufficient or poor-quality sleep can lead to a range of health issues over time.



Figure 8.6: Having quality sleep every day is necessary

a. Positive impact of sleep

- i. **Mental health and cognitive function:** Good sleep enhances memory, learning, problem-solving skills, and emotional stability. It lowers the risk of mood disorders such as depression and anxiety, while chronic sleep deprivation has been linked to impaired cognitive function, irritability, and increased stress levels.
- ii. **Physical health and immune system:** Sleep supports physical health by allowing the body to repair tissues, strengthen the immune system, and regulate hormones. Poor sleep has been associated with a higher risk of cardiovascular diseases, obesity, diabetes, and weakened immunity, making the body more susceptible to infections.
- iii. **Metabolic health and weight management:** Quality sleep is essential for maintaining a healthy metabolism. Sleep deprivation can disrupt hormones that regulate hunger (such as ghrelin and leptin), leading to increased appetite, unhealthy food cravings, and potential weight gain.
- iv. **Heart health:** During sleep, blood pressure drops, and the heart has a chance to rest, reducing the risk of high blood pressure and heart disease.

b. Impact of poor sleep

- i. **Mental health and cognitive function:** Poor sleep is linked to mood disorders, including depression and anxiety. It also impairs memory, concentration, and decision-making skills, making it harder to handle daily tasks effectively.
- ii. **Physical health and immune system:** Poor sleep has been associated with a higher risk of cardiovascular diseases, obesity, diabetes, and weakened immunity, making the body more susceptible to infections. People who don't get enough sleep experience slower recovery from sickness.

- iii. **Heart health:** Chronic sleep deprivation raises blood pressure and increases the risk of heart disease, stroke, and other cardiovascular conditions by keeping the heart under constant strain.
- iv. **Weight gain and metabolic issues:** Sleep deprivation disrupts hunger-regulating hormones, leading to increased appetite and potential weight gain. It also raises the risk of developing type 2 diabetes by affecting blood sugar regulation.

7. Stress Levels

Chronic stress can have a damaging effect on the body. Chronic stress is a significant health concern that can have a profound impact on both mental and physical well-being. While occasional stress is a normal response to life's challenges, prolonged or unmanaged stress can lead to a range of negative health outcomes. Stress activates the body's "fight or flight" response, releasing hormones like cortisol and adrenaline, which are useful in short bursts but can become harmful when sustained over time. The effects of chronic stress extend to virtually every organ system in the body, increasing the risk of developing various diseases and impairing overall health.

Harmful effects of chronic stress

- a. **Cardiovascular health:** Chronic stress can lead to elevated blood pressure, increased heart rate, and inflammation, all of which heighten the risk of heart disease, stroke, and other cardiovascular problems.
- b. **Mental health:** Prolonged stress is strongly linked to mental health issues such as anxiety, depression, and burnout. It can impair cognitive function, leading to difficulty concentrating and making decisions, and can disrupt sleep patterns, further affecting emotional well-being.
- c. **Immune system suppression:** High levels of stress can weaken the immune system, making the body more susceptible to infections and illnesses. Chronic stress has been shown to reduce the body's ability to fight off disease and recover from injuries.
- d. **Digestive health:** Stress can cause gastrointestinal issues, including irritable bowel syndrome (IBS), acid reflux, and stomach ulcers. It affects the digestive system by altering gut motility and increasing the production of stomach acid, leading to discomfort and long-term digestive problems.

8. The Preventive Impact of Healthy Lifestyle Choices

Positive lifestyle changes not only lower disease risk but can also improve quality of life and help reverse certain health conditions. Adopting healthy lifestyle choices is one of the most effective ways to prevent disease and enhance overall well-being. By making positive changes in diet, physical activity, sleep, and stress management, individuals can significantly lower their risk of developing chronic diseases such as heart disease, diabetes, and obesity. Moreover, healthy habits can also improve quality of life, increase longevity, and, in some cases, even reverse or manage existing health conditions. These preventive actions empower individuals to take control of their health and reduce the burden of disease.

Effects of adopting healthy lifestyle choices

- a. **Disease prevention and risk reduction:** Healthy choices, such as regular exercise, balanced nutrition, and avoiding harmful habits like smoking and excessive alcohol consumption, can reduce the risk of developing chronic conditions like cardiovascular disease, diabetes, and certain cancers.

- b. **Improved mental and emotional well-being:** Lifestyle changes that include stress reduction techniques (e.g., mindfulness, meditation) and adequate sleep can reduce anxiety, and depression, and improve mood, fostering greater mental resilience.
- c. **Enhanced longevity and quality of life:** Positive lifestyle choices not only contribute to longer life but also improve its quality by increasing energy levels, promoting mobility, and reducing the need for medical interventions, leading to a more active and fulfilling life.
- d. **Management and reversal of health conditions:** In some cases, lifestyle changes can reverse or significantly improve conditions such as hypertension, type 2 diabetes, and obesity. For example, regular exercise and dietary adjustments can help lower blood sugar levels and improve insulin sensitivity, potentially reducing or eliminating the need for medication in some cases.

Making healthy lifestyle choices, from a balanced diet and regular exercise to getting enough sleep and managing stress, plays a crucial role in preventing disease, supporting mental and physical health, and enhancing quality of life.

Learning Tasks

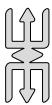
1. Give three benefits of physical activity on cardiovascular health.
2. Analyse the nutritional labels of two food products and compare their health benefits and problems.
3. Make a table outlining three (3) health risks each of smoking and excessive alcohol.
4. Describe three (3) ways in which regular exercise can improve mental health and reduce stress.
5. Choose three (3) unhealthy habits and create a one-week plan to replace these habits with healthier options.

Pedagogical Exemplars

1. **Starter:** Show images or videos depicting different lifestyles (e.g., exercise, diet choices, smoking, alcohol consumption). Ask students to share quick thoughts on what they think could be the long-term impacts of these habits. Which of these choices do you think could lead to health problems in the future? Why?
2. **Introduction:** Explain how certain choices, like smoking, lack of exercise, or unhealthy eating, are linked to diseases such as heart disease, diabetes, and cancer. Briefly touch on the role of genetics versus lifestyle and emphasise how choices play a significant role in health. Use a diagram that links specific lifestyle choices to potential diseases.
3. **Think-Pair-Share:** Have learners think about the lifestyle choices they make daily and write down any that could potentially impact their long-term health. Pair learners to discuss their lists, comparing choices and possible outcomes. Then, have each pair share one or two ideas with the whole class.
4. **Experiential Learning:** Use a health simulation activity or a case study. For example, create profiles of fictional characters with different lifestyles and have learners predict the health outcomes of each character based on their choices. After the activity, discuss as a class how each character's choices influenced their risk of diseases, reinforcing the importance of making healthy choices.

5. Activity-Based Learning: Organise a role-play or skit where learners act out scenarios involving lifestyle choices, such as a person choosing between healthy and unhealthy foods, deciding whether to exercise, or managing stress. After each skit, the audience discusses the potential health outcomes of the choices made in each scenario. Have each group reflect on the factors influencing lifestyle choices and consider strategies to make healthier decisions.

Closure: Summarise key points and ensure students understand the impact of lifestyle choices on disease risk. Have students complete an “Exit Ticket” where they list two healthy lifestyle changes, they can make and one thing they learned about the impact of lifestyle choices on health.



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, etc. impairments.
- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.)
- Use other appropriate approaches to engage learners as required.

Key Assessments

Level 1

1. How do common lifestyle choices, such as diet and physical activity, influence the risk of developing chronic diseases like diabetes and heart disease?
2. What impact does smoking have on the development of respiratory diseases and cancers?
3. How does alcohol consumption affect the likelihood of liver disease and other health conditions?

Level 2

1. To what extent can regular exercise and a balanced diet prevent diseases like hypertension and osteoporosis?
2. How does the choice to avoid processed foods contribute to reducing the risk of inflammatory diseases?
3. How does the decision to engage in stress management techniques impact the occurrence of stress-related disorders?

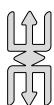
Level 3

1. How do life choices around environmental exposure, such as limiting exposure to pollution, influence the onset of respiratory diseases?
2. What role do social support and mental health care play in mitigating diseases related to depression and anxiety?
3. How do sleep habits affect the long-term risk of neurological diseases, such as dementia?
4. What impact do social support and mental health care have on managing diseases associated with depression and anxiety?
 - A. They provide emotional comfort but do not affect physical health
 - B. They enhance coping skills, leading to better outcomes.

- C. They are only effective in acute situations, not in the long term.
- D. They focus solely on medication, limiting overall effectiveness.

Level 4

1. How do combinations of lifestyle choices interact to influence the risk of complex diseases like cancer and metabolic syndrome?
2. How does the interplay between genetic predispositions and lifestyle choices contribute to the risk of chronic diseases?
3. In what ways can public health policies encourage specific lifestyle choices to lead to a measurable reduction in disease prevalence?



Note

Select from the list provided the assessment that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

HINT



*The recommended mode of assessment for Week 8 is **Multiple Choice Questions MCQ**. Refer to the Assessment level 3 under the key assessment for an example of a task for MCQ.*

SECTION 4 REVIEW

In Week 8, learners explored the profound impact of life choices on preventing diseases. Through discussions, role-play and interactive activities, they examined how habits such as healthy eating, regular exercise and avoiding harmful substances can reduce the risk of chronic conditions like heart disease, diabetes and cancer.

Learners evaluate the influence of stress management and social support on maintaining overall well-being. Through practical examples and personal reflections, learners gain insights into the importance of making health-conscious decisions. As the week concludes, learners are equipped with the knowledge to assess their daily choices critically and adopt practices that promote long-term health and prevent diseases. This understanding will prepare them for future discussions on healthcare systems and public health strategies.

SECTION 5: INJURY PREVENTION AND REGULAR PHYSICAL ACTIVITY

STRAND: PHYSICAL EDUCATION

Sub-Strand: Physical Activity for Healthy Living

Learning Outcome: *Discuss factors that influence the adoption and adherence to regular physical activity participation for healthy living*

Content Standard: *Demonstrate knowledge and understanding of factors influencing regular physical activity participation for healthy living*

INTRODUCTION AND SECTION SUMMARY

This section introduces learners to essential aspects of maintaining physical well-being through injury prevention and sustained physical activity. Learners will explore strategies for preventing injuries before, during and after physical activities. This will help them develop an understanding of the importance of preparation, safe practices and recovery. Additionally, they will examine factors that influence regular participation in physical activities, including motivation, goal setting and the health benefits of an active lifestyle.

By the end of this section, learners will gain foundational knowledge of injury prevention techniques and an understanding of how to apply these strategies to various activities to minimise risks. They will also identify factors that encourage regular engagement in physical activities, focusing on how these elements support long-term health and wellness. This section connects with subjects such as biology and health education, emphasising the role of physical activity in preventing chronic conditions and promoting a balanced lifestyle.

The weeks covered by the section are

Week 9: Discuss injury prevention before, during and after physical activity.

Week 10: Discuss factors that influence adherence to regular participation in physical activity for healthy living practice

SUMMARY OF PEDAGOGICAL EXEMPLARS

Incorporate diverse teaching methods, such as demonstrations, class discussions and role-play exercises, to illustrate key concepts in injury prevention and encourage practical application of these techniques. Group activities and interactive demonstrations will provide learners with opportunities to practice warm-up exercises, safe movement techniques, and cooldown routines that enhance injury prevention. For gifted learners, additional content may include exploring advanced recovery techniques, evaluating case studies on sports injuries, or engaging in critical discussions on the psychology of injury prevention.

Differentiated instruction should support varied learner needs, with attention given to learners requiring additional guidance during practical activities. Activities that reinforce safe practices and encourage discussion on maintaining regular physical activity will help instil positive habits. Digital resources, including videos and articles on injury prevention and motivational strategies, will enhance learners' understanding and foster critical thinking.

ASSESSMENT SUMMARY

Assessments will include quizzes on injury prevention strategies, group presentations on factors that support regular physical activity and reflective journals where students document personal injury prevention practices. Practical assessments, such as demonstrations of warm-up and cooldown routines, will allow learners to apply knowledge in real-world contexts. Provide feedback and track individual progress, ensuring understand the importance of injury prevention and are prepared to maintain an active lifestyle safely.

WEEK 9

Learning Indicator: Discuss injury prevention before, during and after physical activity

FOCAL AREA: INJURY PREVENTION BEFORE, DURING AND AFTER PHYSICAL ACTIVITY

INJURY PREVENTION

For physical activity to be both safe and beneficial, injuries must be avoided. Before, during, and after an activity, the body should be prepared and maintained to lower the chance of injury, enhance performance, and aid in recovery.

You may reduce the chance of injury and make sure your body is prepared for the demands of exercise by taking the appropriate precautions beforehand.

1. Before Physical Activity: Preparation

a. Examine the environment and equipment

Make sure your clothes, shoes, and other belongings are in good condition and appropriate for the activity. Check for hazards in the surroundings. To support the body and lessen the strain on the joints and muscles, put on safety gear and shoes that fit appropriately.

b. Warm-up

Warming up is crucial to get muscles and joints ready for exercise, warming up is essential. A good warm-up improves muscular flexibility, boosts blood flow, and raises body temperature - all of which lower the chance of injury. This typically entails active stretching (e.g., lunges, arm circles) after a brief cardiovascular exercise, such as jogging or jumping jacks.

The Importance of Warm-up to Physical Activity

- Improved joint mobility makes it simpler to move and complete exercises with perfect form.
- Lowers the chance of injury.
- Increases blood flow, bringing more oxygen and nutrients to your muscles for higher efficiency.



Figure 9.1: A group of people warming up before the main activity.

The Effects of Skipping a Warm-up

- Without a warm-up, muscles remain tight and less flexible, making movements more difficult.
- The heart and lungs may struggle to keep up with sudden intense activity, leading to fatigue.
- Mental focus and coordination can be slower, affecting your reaction times and overall performance.

c. Stretching

Introduce both dynamic stretching (before activity) and static stretching (after activity). Stretches help increase the range of motion and activate the muscles you will be using. Emphasise dynamic stretches before exercise to improve flexibility and joint mobility, and static stretching after to help muscles relax and improve flexibility over time.



Figure 9.2: Stretching Activities

Dynamic stretching (before activity)

Purpose: Dynamic stretches are active movements that help increase blood flow, warm up the muscles, and activate the muscles you'll be using during exercise.

The benefits of dynamic stretching

- Improves joint mobility and flexibility, preparing the body for dynamic movements.
- Increases heart rate and circulation, enhancing muscle performance.

- Reduces the risk of injury by gently stretching muscles and joints through controlled movements.

Examples: Leg swings, arm circles, walking lunges, high knees, or butt kicks.

Static stretching (after activity)

Purpose: Static stretches involve holding a stretch for 20-30 seconds after exercise, helping to relax the muscles and increase flexibility over time.

The benefits of static stretching

- Helps muscles cool down and return to their resting length, reducing tightness.
- Increases flexibility and range of motion when performed consistently.
- Promotes muscle relaxation and aids in recovery by reducing muscle tension and soreness.

Examples: Hamstring stretch, quadriceps stretch, shoulder stretch, calf stretch.



Figure 9.3: Warm-up activities

The effects of skipping dynamic stretching before physical activity

- Without dynamic stretching, muscles may not be properly activated, leading to poor coordination during exercise.
- Skipping dynamic stretches can make it harder to achieve a full range of motion, limiting movement efficiency.
- Not warming up with dynamic stretches can result in early fatigue, as muscles aren't adequately prepared for higher-intensity activity.

d. Progressive Training

Follow a structured plan that allows for gradual increases in intensity and volume to help prevent overuse injuries. Avoid pushing yourself too hard without proper conditioning. Progressive training is a methodical approach to improving fitness that focuses on gradually increasing the intensity, volume, or difficulty of exercise over time.

Gradual increases in intensity

- **Purpose:** Progressively challenging your body helps it adapt to higher levels of exertion, reducing the risk of injury.
- **Benefits:** By slowly increasing the intensity or weight, you allow your muscles, joints, and cardiovascular system to adjust without overwhelming them.

Avoids overuse injuries

- **Purpose:** Jumping into high-intensity workouts without proper preparation can lead to overuse injuries (e.g., stress fractures, tendinitis).
- **Benefits:** Progressive training helps prevent these injuries by allowing sufficient recovery time and gradually building strength and endurance.

Structured plan for consistent improvement

- **Purpose:** A structured training plan helps you track progress and ensure that you're gradually improving, not overexerting yourself too soon.
- **Benefits:** By following a plan that progressively increases demands, you can maximise performance gains while reducing the risk of burnout or injury.

Proper conditioning

- **Purpose:** Adequate conditioning prepares your body for higher-intensity work, building a strong foundation before tackling more advanced challenges.
- **Benefits:** Proper conditioning improves overall fitness, strength, and endurance, which makes future training sessions more effective and safer.

The effects of not following progressive training principles

- Pushing too hard without proper progression can cause injuries like strains or stress fractures.
- Overtraining can lead to burnout, leaving you mentally and physically exhausted.
- Rapid increases in intensity can lead to plateaus, where progress stalls or performance decreases.

2. During Physical Activity: Injury Awareness

Being mindful of your body is crucial for preventing injuries when engaging in physical activity. This includes paying attention to your technique, tempo, and any indications of discomfort. You may maximise your performance, prevent excessive workload, and lower your risk of strain or injury by paying attention to good form and your body's cues.

- a. **Proper Technique:** Maintain proper form and technique throughout the activity. Poor technique can strain muscles and joints, while sudden, excessive movements can lead to acute injuries. Gradually increasing intensity allows muscles to adapt safely.

The importance of effecting proper technique

- Proper technique reduces the risk of injuries.
- Gradually increasing intensity allows muscles to adapt safely over time.
- Maintaining proper technique helps to gain good form and enhances the efficiency and effectiveness of exercise.

Potential side effects of improper technique

- **Muscle strain:** Poor form can overstress muscles, leading to tears or strains.
- **Joint injury:** Incorrect alignment or excessive movement can damage joints, ligaments, and tendons.
- **Chronic pain:** Repeated poor technique can cause long-term discomfort, especially in the back, knees, or shoulders.

b. **Pacing and Progression:** Encourage participants to gradually build up the intensity and duration of activity, particularly if they are new to exercise or returning after an injury. Overexertion is a common cause of injury, so it's crucial to teach the value of pacing and listening to the body's signals of fatigue or discomfort.

The importance of pacing and progression in exercise

- **Prevents injury:** Gradually increasing exercise intensity helps avoid injuries like strains and sprains.
- **Boosts consistency:** Starting slow and building up helps you stick with exercise over time.
- **Builds strength:** Slowly increasing effort helps muscles grow stronger without overloading them.
- **Supports heart health:** Gradually improving exercise intensity lets your heart and lungs adapt safely.

The side effects of not pacing and progressing properly

- **Risk of injury:** Jumping into intense exercise too fast can cause muscle strains or joint injuries.
- **Overtraining:** Pushing too hard without enough rest can lead to exhaustion, illness, or injury.
- **Burnout:** Overdoing it can cause physical and mental fatigue, making you lose interest in exercise.
- **Excessive soreness:** Too much intensity too soon can leave you sore for days, making it hard to stay active.

c. **Body Awareness:** Listen to your body's signals and avoid pushing through pain. Pain is often a sign that something is wrong and ignoring it can turn a small problem into a serious injury. Always listen to your body and rest when needed to avoid long-term damage.

The importance of body awareness

- **Prevents injuries:** Paying attention to pain or discomfort helps you avoid pushing too hard and getting hurt.
- **Aids recovery:** Resting when needed speeds up muscle healing and prevents overuse injuries.
- **Improves performance:** Knowing when to stop or push helps you work out smarter, not harder, and progress safely.

The side effects of ignoring body awareness

- **Higher injury risk:** Ignoring pain can lead to serious injuries like strains, sprains, or fractures.
- **Chronic pain:** Pushing through discomfort can cause lasting pain that's harder to treat.
- **Slower recovery:** Not taking breaks when needed means longer recovery times and more soreness.
- **Overtraining:** Overworking your body without rest can lead to fatigue, decreased performance, and mental burnout.

d. **Hydration:** Drink water throughout physical activity to maintain hydration. This is especially important during prolonged exercise or in hot weather, to replace fluids lost through sweat and prevent muscle cramps or heat-related issues.

The importance of hydration

- **Prevents dehydration:** Drinking water during exercise helps replace lost fluids, keeping your body functioning properly.
- **Boosts performance:** Proper hydration helps maintain energy levels, allowing you to work out harder and longer.
- **Reduces muscle cramps:** Staying hydrated helps prevent painful muscle cramps that can stop you from exercising.

The side effects of not staying hydrated

- **Dehydration:** Not drinking enough water can lead to fatigue, dizziness, and difficulty concentrating.
- **Muscle cramps:** Lack of hydration can cause painful muscle cramps, reducing your ability to exercise.
- **Heat exhaustion:** In hot weather, not drinking enough can lead to heat exhaustion, which can make you feel weak or dizzy.



Figure 9.4: An athlete drinking water

e. **Pain Awareness:** Distinguish between normal exertion and pain. If you feel any sharp or sudden pain, stop and assess the situation. Pushing through pain can exacerbate injuries.



Figure 9.5: An athlete with joint fatigue and leg pain

The importance of pain awareness

- **Prevents serious injuries:** Recognising the difference between normal exertion and pain helps you avoid worsening injuries.
- **Protects long-term health:** Stopping at the first sign of sharp or sudden pain prevents long-term damage to muscles, joints, or ligaments.
- **Improves recovery:** Knowing when to stop and rest allows the body to heal properly, speeding up recovery.

The side effects of ignoring pain awareness

- **Worsened injuries:** Pushing through pain can make a small injury much worse, leading to more severe damage.
- **Prolonged recovery:** Continuing to work through pain can extend recovery time and make healing more difficult.
- **Increased risk of overuse injuries:** Pushing through pain can lead to injuries like sprains and strains.

f. **Rest and Recovery:** Take breaks as needed, particularly during high-intensity or endurance activities. Micro-breaks help prevent fatigue, reduce injury risk, improve performance and allow muscles to maintain efficiency. By taking appropriate breaks, you can exercise longer, harder, and more efficiently while also ensuring that you stay safe and healthy in the process.

The importance of rest and recovery

- **Prevents fatigue:** Taking breaks during intense activities helps prevent exhaustion and keeps your energy levels up.
- **Reduces injury risk:** Resting allows muscles to recover, lowering the chance of strains, sprains, or overuse injuries.
- **Improves performance:** Micro-breaks during exercise help maintain muscle efficiency and strength, allowing you to perform better.
- **Muscle development:** Rest is when muscles repair and grow stronger, improving overall fitness.

The side effects of not taking time to rest and recover

- **Increased injury risk:** Continuous activity without rest can lead to muscle strains, joint injuries, or overuse injuries.
- **Fatigue:** Skipping breaks can cause fatigue, reduce your energy and make it harder to keep up with workouts.
- **Decreased performance:** Overworking muscles without recovery leads to poor performance and slower progress.



Figure 9.6: A fitness group resting after physical activities.

3. After Physical Activity: Recovery and Maintenance

Recovery and maintenance are just as crucial as preparation and awareness during physical activity. Proper recovery allows your body to repair and rebuild, helping to prevent injuries and enhance future performance. By incorporating effective recovery strategies after exercise, you can promote muscle healing, reduce soreness, and maintain long-term physical health.

- a. **Cool-down properly:** A cool-down period allows your heart rate and breathing to gradually return to normal. Walking, light jogging, or gentle movements help reduce lactic acid buildup, promote recovery and improve your long-term fitness progress.

The importance of cooling down

- **Gradual heart rate reduction:** After intense exercise, your heart rate is elevated. A cool-down allows it to gradually return to a normal resting state, which helps prevent dizziness or fainting.
- **Prevents muscle stiffness:** Gentle movement, like walking or light jogging, helps flush out metabolic waste products like lactic acid, which can contribute to muscle soreness. It also helps to stretch tight muscles and maintain flexibility.
- **Promotes circulation:** A cool-down keeps blood circulating, preventing blood from pooling in the extremities and supporting overall recovery.
- **Mental relaxation:** A cool-down also gives you time to reflect on your workout and transition from an intense activity back to a more relaxed state, which can help reduce stress and improve overall recovery.

The side effects of not cooling down

- **Increased muscle soreness:** Without a cool-down, muscles may stiffen and become sorer after exercise.
- **Poor circulation:** Blood may not circulate properly, delaying recovery and nutrient delivery to muscles.
- **Increased risk of injury:** Without proper cooling down, muscles and tendons are more prone to strains or sprains.

b. **Static Stretching:** After exercise, static stretching helps release muscle tension, improve flexibility, and reduce soreness. Stretch major muscle groups used during your activity, holding each stretch for 20-30 seconds.

The benefits of static stretching after exercise

- **Releases muscle tension:** After exercise, your muscles may feel tight due to contractions during activity. Static stretching helps to gently elongate the muscles, reducing this tightness and promoting relaxation.
- **Improves flexibility:** Regular static stretching over time can increase the range of motion of your joints and improve overall flexibility. This can enhance your performance in future workouts and reduce the risk of injury.
- **Reduces muscle soreness:** Stretching can help reduce delayed onset muscle soreness (DOMS) that may occur 24-48 hours after intense physical activity. By increasing blood flow to the muscles, it helps to flush out metabolic waste products.

How to Perform Static Stretches

- **Hold each stretch for 20-30 Seconds:** The key with static stretching is to hold the position without bouncing or forcing it, allowing the muscle fibres to lengthen slowly.
- **Focus on major muscle groups:** Stretch the muscles that were most engaged during your workout. Common areas to focus on include the hamstrings, quadriceps, calves, back, and shoulders.
- **Breathe deeply:** Deep, slow breathing while stretching helps your body relax and allows for deeper stretches.

Example Static Stretches

- **Hamstring stretch:** Sit on the floor with one leg extended and reach for your toes while keeping your back straight.
- **Quadriceps stretch:** Stand on one leg, pulling the opposite ankle toward your glutes, keeping your knees close together.
- **Shoulder stretch:** Cross one arm over your chest and use the opposite arm to pull it closer for a deeper stretch.
- **Calf stretch:** Stand facing a wall, step one foot back, and press the heel of the back leg toward the floor.

The risks of skipping stretching

- **Higher injury risk:** Tight muscles and limited range of motion can increase the chance of sprains or strains during exercise.

- **Reduced flexibility:** Skipping stretching can make it harder to improve or maintain flexibility over time.
- **Poor posture:** Tight muscles can lead to poor posture, which can cause back and neck pain.

c. **Hydration and Nutrition:** Rehydrate after exercise, ideally with water or electrolyte-replenishing drinks if sweating is heavy. Consuming a balanced meal or snack with protein and carbohydrates within 30-60 minutes post-activity aids in muscle repair and replenishes glycogen stores. Rehydrating and eating the right nutrients after exercise is crucial for recovery, performance, and overall health.

The importance of hydration and nutrition

- **Rehydrates the body:** After exercise, your body loses water and electrolytes through sweat. Drinking water or electrolyte drinks helps replenish fluids and prevent dehydration.
- **Supports muscle recovery:** Eating a balanced meal or snack with protein and carbs within 30-60 minutes helps repair muscle damage and replenish glycogen (energy stores) used during exercise.
- **Boosts energy levels:** Proper nutrition after exercise refuels your body, helping you feel energised and ready for the next workout or daily activities.

The side effects of not hydrating and nourishing properly

- **Dehydration:** Not drinking enough fluids after exercise can lead to dehydration, causing fatigue, headaches, and muscle cramps.
- **Decreased performance:** Poor hydration and nutrition can leave you feeling tired and weak, affecting your performance in the next workout or activity.
- **Reduced immune function:** Not refuelling properly can weaken your immune system, making you more susceptible to illness or infection.

d. **Ice and elevate if needed:** For any sore or inflamed areas, applying ice for 10-20 minutes can help reduce swelling. Elevating sore limbs can also alleviate discomfort.

Apply ice to reduce swelling, discomfort and to speed up recovery. Ice reduces inflammation and numbs the area, which helps with pain and Elevation helps reduce swelling by allowing fluids to drain away from the affected area.

The importance of ice and elevation

- **Reduces swelling:** Ice helps limit blood flow to an injured area, which reduces swelling and inflammation.
- **Alleviates pain:** Cold therapy numbs the affected area, providing temporary pain relief.
- **Speeds up recovery:** Ice and elevation work together to prevent further damage and help tissues heal faster.

The side effects of not using ice and elevation

- **Increased swelling:** Without ice and elevation, swelling can worsen, delaying healing.
- **Longer recovery time:** Not reducing inflammation can make the injury take longer to heal.

- **Possible further injury:** If swelling isn't managed, it may put pressure on nearby tissues or joints, causing more damage.
- e. **Rest and Recovery:** Rest is essential for tissue repair. Incorporate adequate sleep and allow rest days or lighter activity days to prevent overuse injuries. For higher-intensity routines, consider additional recovery techniques like foam rolling, ice or heat therapy, and even massage to alleviate soreness.

The importance of rest and recovery

- **Tissue repair:** Rest allows your muscles and tissues to repair and rebuild after exercise, helping you get stronger.
- **Better performance:** Proper recovery improves overall performance by giving your body time to adapt and become stronger for future workouts.
- **Improved sleep:** Getting enough sleep is critical for recovery, as it supports muscle growth, energy restoration, and overall health.

The side effects of not resting and recovering

- **Increased injury risk:** Skipping rest can lead to overuse injuries, like tendinitis or stress fractures, from repetitive strain on muscles and joints.
- **Decreased performance:** Lack of recovery can result in fatigue, weakness, and reduced endurance, making it harder to perform well in workouts.
- **Chronic fatigue:** Overtraining without proper recovery can lead to chronic fatigue, making it harder to function in everyday activities or workouts.

Assess for Signs of Injury: Post-exercise pain that is sharp or persists longer than usual soreness might indicate an injury. Early identification of strains, sprains, or other signs of overuse allows for timely intervention. Recognising and addressing signs of injury quickly helps prevent more serious complications and keeps you on track for better health and performance.

The importance of assessing for signs of injury

- **Early detection:** Recognising unusual pain early, such as sharp or long-lasting discomfort, helps catch injuries before they become worse.
- **Prevents further damage:** Identifying an injury early allows you to rest the affected area and avoid aggravating it, leading to quicker recovery.
- **Timely treatment:** Early intervention with rest, ice, or medical treatment can speed up healing and prevent long-term issues.

The side effects of not assessing for injury

- **Worsening of injury:** Ignoring persistent or sharp pain can cause small injuries to become more serious, requiring longer recovery times.
- **Chronic pain:** Failing to address an injury early can lead to ongoing pain or recurring issues, even after the activity is over.
- **Longer recovery time:** If an injury isn't identified and treated early, the healing process may take much longer, limiting your ability to train or perform.

Learning Tasks

1. Give three (3) side effects of not resting in injury prevention.
2. What is the difference between dynamic and static stretching and give examples of each.
3. Explain the effects of dehydration on exercise performance and how to stay hydrated during physical activity.
4. Create a 5–10-minute warm-up routine, including three (3) dynamic stretches and the importance of their use.

Pedagogical Exemplars

1. **Starter:** Show the class a short video or series of images showing common sports injuries (e.g., sprained ankle, muscle strain, back injury). After the video, conduct an interactive survey on:
 - a. which of these injuries do you think could have been prevented?
 - b. what do you think these athletes missed out on before, during, or after their workout?
 Briefly discuss the answers and how injury prevention strategies are key in keeping people safe and performing at their best.
2. **Introduction:** Provide the class with a presentation outlining the three stages of injury prevention before, during, and after physical activity. Then, give a brief overview of each stage.
3. **Think-Pair-Share:** Empower learners to think and reflect individually on the three key injury prevention strategies that you will use in your daily physical activity routine. They jot down their responses and pair up with a partner to compare their answers and discuss their strategies. Encourage each pair to share their findings with the whole class. Pair learners of mixed ability to allow them to exchange ideas and learn from each other. Supports learners requiring additional assistance by giving further explanations of the keywords and giving individualised feedback. Less confident and shy learners can be supported by partners through collaboration.
4. **Digital-based Learning:** Allow learners to use digital resources/devices and tools for learning, research on proper techniques for dynamic and static stretches, identify hydration tips and the best post-exercise nutrition, and explore injury prevention tips and safety guidelines for specific activities (e.g., running, weightlifting, soccer). Support learners having challenges with the use of digital devices by providing keywords to guide their search and explain the keywords to the learners. Encourage teacher communication and peer to peer assistance. Guide learners to maintain ethics in the world. Provide options for both written and oral feedback from learners.
5. **Group based learning:** Learners in mixed ability and gender groups research from the internet, books and other available sources to gather information on the importance of injury prevention and the side effects of neglecting it. Learners write down their findings into their jotters. Supports learners to select tasks or roles within the group that align with their interests or strengths. For example, in a group project, learners can choose whether they want to focus on research, presentation, or writing. Encourage learners to give constructive feedback to each other in groups. This provides additional perspectives and supports collaborative learning. Offer prompts, questions, and guiding materials to help learners who may struggle with their tasks. For example, for a project, give learners a checklist of steps to follow. Teach learners how to provide constructive feedback to one another.

Key Assessment

Level 1

1. What is the primary purpose of a warm-up before physical activity?
2. What should you check before beginning any physical activity to prevent injury?

Level 2

1. Give two reasons why it is important to use proper technique during physical activity.
2. Write a short explanation on how drinking water during exercise helps prevent injury.

Level 3

1. Why is skipping a warm-up dangerous?
2. Explain three risks of ignoring your body's signals, like feeling tired or sore, during exercise.
3. Make a presentation on injury prevention before, during, and after physical activity

HINT



*The recommended mode of assessment for Week 9 is **presentation**. Refer to the **Assessment level 3** under the key assessment for an example of a presentation task.*

WEEK 10

Learning Indicator: Discuss factors that influence adherence to regular participation in physical activity for healthy living practice

FOCAL AREA: FACTORS THAT INFLUENCE ADHERENCE TO REGULAR PARTICIPATION IN PHYSICAL ACTIVITY

REGULAR PARTICIPATION IN PHYSICAL ACTIVITY

Adherence to regular physical activity participation requires personal discipline, which can be influenced by several factors either positively or negatively. Positive factors may include setting clear, achievable goals, building intrinsic motivation, and enjoying the health benefits of physical activity. On the other hand, negative factors might include health and injury concerns, poor time management, and environmental challenges, among others.

1. Adherence to Regular Physical Activity Participation

Adherence to regular physical activity participation is the commitment and consistent engagement in physical activity over time, making it a habit or a regular part of one's lifestyle. It involves maintaining a routine of exercise or physical activity that will enhance the achievement of long-term health and fitness benefits, even in the event of challenges such as time constraints, lack of motivation, lack of facilities, etc. (Dishman et al., 2013).

2. Factors that Positively Influence Adherence to Physical Activity Participation

a. **Goal setting:** Clear and achievable goal setting which is specific, measurable, attainable, relevant, and time-bound (SMART) positively influences adherence by providing direction, motivation, and a sense of accomplishment. Setting short-term, medium-term and long-term goals encourages individuals to persevere and sustain a routine of physical activity participation.

How to Set Clear SMART Goals

- **Specific (S)**

What activity do I engage in?

Define the exact physical activity you want to engage in, avoiding vague goals like “exercise more”. Be explicit about what type of activity you will do.

Example: Instead of saying, “I want to be more active,” say, “I will skip for 30 minutes, three days in a week.”

- **Measurable (M)**

How many times will I work out?

Quantify your goal so you can track progress. Include numbers, distances, or time commitments that make it easy to measure success.

Example: “I will skip 50 times non-stop for 3 sets in 30 minutes a day for 3 days in a week.

- **Attainable (A)**

What do I consider?

Consider setting goals that are challenging but realistic based on your current fitness level, time availability, and resources. Ensure your goal is achievable to avoid frustration.

Example: If you are new to exercise, a realistic goal might be “I will start with 20 times non-stop skip for 3 sets in 30 minutes for 3 days in a week and gradually increase to 30, 40 and 50 non-stop skips as my fitness improves.”

- **Relevant (R)**

Why do I engage in this?

Ensure the goal aligns with your broader health and fitness objectives and personal circumstances. It should be meaningful to you and fit your lifestyle and values.

Example: “I want to improve my cardiovascular health, so I will incorporate aerobic exercises like skipping, jogging or cycling into my weekly routine.”

- **Time-Bound (T)**

How long will I engage in these activities?

Set a clear timeframe for when you want to achieve your goal. A timeline creates a sense of determination and allows you to assess your progress within the timeframe.

Example: “I will achieve my goal of skipping 50 times non-stop for 3 sets in 30 minutes a day for 3 days in a week, for the next three months.”

- b. **Intrinsic motivation:** This is the inherent enjoyment or satisfaction one derives from engaging in an activity. It is a key factor that promotes adherence by the individual who find pleasure in the activity itself which is more likely to be sustained over a long period of time.
- c. **Perceived health benefits:** Knowing the physical and psychological benefits of exercise and physical activities, such as improved fitness, reduced risk of chronic diseases, and enhanced mood, positively influences adherence to physical activity participation. When individuals recognise the long-term benefit of physical activity, they are more likely to prioritise it.

3. Factors that Negatively Affect Adherence to Physical Activity Participation

- a. **Environmental factors:** Environmental factors such as poor access to safe and convenient facilities, bad weather, or lack of space can limit participation in physical activity. For example, unsafe neighbourhoods or a lack of nearby parks or gyms create significant barriers.
- b. **Time constraints/poor time management skills:** The most common barriers to regular exercise are the perceived lack of time due to work, family responsibilities, poor time management, etc. Busy schedules make it difficult for people to adhere to routine physical activity. Also, the inability to manage time effectively can affect individuals plans from incorporating physical activity into their daily lives. Full schedules coupled with lack of planning make it easy to skip workouts, particularly when other responsibilities are prioritised (Trost et al., 2002).

- c. **Health factors and injuries:** Both chronic and acute conditions like heart disease, diabetes, arthritis, asthma, respiratory diseases, etc. often reduce an individual's ability to engage in physical activity. Also, pain from injuries or other conditions like musculoskeletal problems make it difficult to adhere to regular exercise routines.
- d. **Monotony and boredom:** When physical activity becomes monotonous, boredom sets in making individuals often feel less motivated to continue. Repeating the same exercises, routines, or activities without variation can lead to a decline in enthusiasm and drive.

4. Strategies for Performing Physical Activities in Groups to Promote Adherence

- a. **Plan and schedule:** Organise sessions with a clear structure, including start and end times, the sequence of exercises or drills, and rest breaks.
- b. **Pacing:** Ensure the pace of the activity is appropriate for the group, offering breaks when necessary and adjusting the intensity based on participants' needs.
- c. **Commitment to participation:** Encourage participants to commit to the schedule, attend regularly, and be punctual. This fosters discipline and adherence to routines.
- d. **Teamwork and cooperation:** Highlight the importance of working together, especially in team-based activities, to promote a sense of unity and mutual encouragement.
- e. **Adapt to changing circumstances:** Be prepared to adjust activities due to weather, group size, or other factors. Flexibility ensures that the group can continue despite obstacles.
- f. **Individual adjustments:** Leaders should be able to modify exercises for individuals with injuries, mobility issues, or other special needs.
- g. **Regular schedule:** Schedule sessions at the same time and days each week to create a sense of structure.
- h. **Aim for consistency over perfection:** Encourage members to attend even if they can't participate fully.

Learning Tasks

1. Explain adherence to regular participation in physical activity
2. Analyse factors that positively and negatively affect adherence to participation in physical activity.
3. Discuss the strategies for performing physical activities in groups to promote adherence.

Pedagogical Exemplars

1. **Starter:** Display a video or series of pictures showcasing people of different age groups participating in various physical activities to draw learners' attention to the lesson.
2. **Introduction:** Start the lesson with a short, fun physical activity to get students moving. This could be something simple like a quick 5-minute group warm-up, a quick stretching session, or a small relay race. After the activity, gather learners and ask: "How did you feel during the activity? Was it challenging? Was it enjoyable?" Use the learners' responses as

a base for a discussion on what factors influence their ability or desire to regularly participate in physical activities (e.g., motivation, time, enjoyment, etc.).

3. Flipped classroom

- Engage learners to do personal research at home or outside school hours on their understanding about adherence to regular physical activity participation as well as factors that positively and negatively influence physical activity participation.
- Have learners engage in active discussion in classroom with their findings and use them to set SMART goals and strategies that will promote adherence to participation in physical activity.

4. Activity-based Learning

- Engage learners in groups to plan and perform physical activities taking into consideration factors and strategies that will influence an individual's desire for regular participation. Encourage them to selected physical activities that enhances fitness and healthy living.
- Ensure that all members in a group plays a role in their performance.
- Be conscious of learners with special needs e.g., learners with mobility, vision, hearing, speech impairments etc. and provide support.

5. Project based learning

- Put learners into groups and assign them either same or different activities e. g. aerobics, circuit training, yoga or geocaching adventurous activity (where learners hide objects at various points in specific locations and place the location on the GPS for colleagues to use and trace to locate the hidden objects).
- Learners design attractive physical activities to perform with their family, community clubs, colleagues in school, etc. and keep record of their activities and submit for assessment.
- Consider groupings based on proximity for non-resident learners and ensure that all learners irrespective of their physical and health status perform roles in the group activities.

Key Assessment

Level 1: Mention any three factors that promote adherence to participation in physical activity.

Level 2

1. Explain any two factors that negatively affect adherence to participation in physical activity.
2. Explain any two factors that negatively affect adherence to participation in physical activity.

Level 3: Adapt/modify activities that promote regular participation in physical activity.

Level 4: Create an activity that will enhance regular participation in physical activity.

HINT



*The recommended mode of assessment for Week 10 is **questioning**. Refer to the Assessment level 2 under the key assessment for an example of a presentation task.*

SECTION 5 REVIEW

In Week 9, learners explore injury prevention strategies to be used before, during and after physical activities. Through discussions, demonstrations and visual aids, learners learn the importance of preparation techniques such as warming up, maintaining proper form and cooling down to reduce injury risks. By engaging in hands-on activities, they practice these methods, gaining a practical understanding of how to prevent common injuries and maintain physical well-being across various activities.

In Week 10, the focus shifts to understanding the factors that influence regular participation in physical activities. Learners discuss the role of motivation, goal setting, and enjoyment in developing a habit of physical activity as well as the long-term health benefits of active living. Through group activities and self-reflection, learners identify personal barriers and motivators for staying active, working together to create actionable strategies that encourage lifelong participation in healthy physical practices.

Throughout the section, your guidance, coupled with active class participation and reflective discussions, should foster a supportive environment where learners develop a well-rounded understanding of injury prevention and the factors that support sustained physical activity. By engaging in collaborative learning, learners should gain the tools and knowledge to prioritise their physical health and integrate safe, consistent physical activity into their daily lives.

SECTION 6: TRAINING PRINCIPLES

STRAND: PHYSICAL EDUCATION

Sub-Strand: Training Principles for Sports Performance

Learning Outcome: *Discuss and apply training principles for sports performance*

Content Standard: *Demonstrate understanding and application of the principles of training for sports performance*

HINT



The end of semester examination for the first semester is in Week 12. Refer to Appendix E for a Table of Specification to guide you in setting the questions. Set questions to cover all the indicators covered for at least weeks 1 to 12.

INTRODUCTION AND SECTION SUMMARY

To pursue excellence in sports performance, athletes need to adopt scientifically backed training principles to maximise performance and minimise the risks of injury. This section therefore, covers two key areas that enables learners to critically examine the principles of training and the application of these principles with specific reference to the principle of periodisation which ensures a progressively structured approach to improving various aspects of the athlete's performance, including strength, endurance, flexibility, speed, among others. By understanding and applying this scientifically structured training approach, athletes can optimise their physical conditioning, enhance skill acquisition, and achieve peak performance for excellence.

The weeks covered by this section are:

Week 11: Discuss the principles of training for sports performance.

Week 12: Apply the principles of training for sports performance.

SUMMARY OF PEDAGOGICAL EXEMPLARS

In these lessons, teachers are expected to use effective teaching methods to help students achieve the learning outcomes. Approaches may include:

- **Collaborative and Activity-Based Learning:** Engage students in group activities where they share ideas and work together to achieve common goals.
- **Digital Learning:** Incorporate technology such as smartphones, videos, podcasts, interactive simulations, and animations, to make learning more engaging and accessible, enhancing skill development.

- **Project-Based Learning:** Assign tasks or projects that span an extended period, allowing students to plan and create training routines that develop various fitness components for specific sports.

Using these and other approaches, the teacher should aim to make learning engaging and motivating. This will encourage consistent participation and foster respect for individual differences, including beliefs, religions, abilities, temperaments, and cultures.

ASSESSMENT SUMMARY

Learners' achievement should be the primary focus of every teacher, and assessments are key to measuring this. It is therefore expected that teachers use appropriate assessment methods to ensure accurate evaluation. With this in perspective, assessment tasks should be well crafted to reflect the various levels of assessment which include; Level 1 – Recall, Level 2 – Skills of Conceptual Understanding, Level 3 – Strategic Reasoning and Level 4 - Extended Critical Thinking and Reasoning. These levels help address the varying abilities of learners, providing a comprehensive view of their understanding and progress.

WEEK 11

Learning Indicator: Discuss the principles of training for sports performance

FOCAL AREA: PRINCIPLES OF TRAINING

TRAINING FOR SPORTS PERFORMANCE

Several key principles of sports training help athletes optimise physical conditioning and improve skills, strength, and endurance for better performance. The principles of overload, specificity, progression, reversibility, variation, and individualisation are essential for effective sports training and were covered in year one lessons. Another important principle is periodisation which involves structuring training programmes into specific phases, each with distinct goals and focus areas. We will now explore this. This will further together with the various training components.

Components of Training for Fitness (The Fitness Components)

Fitness is the ability to perform physical activity, and it incorporates a wide range of abilities. Fitness is generally divided into specific fitness categories or components, and each can be tested and trained individually. These sub-divisions make it easier to understand fitness and also to understand the different requirements of sporting activities and the different roles within the same activity.

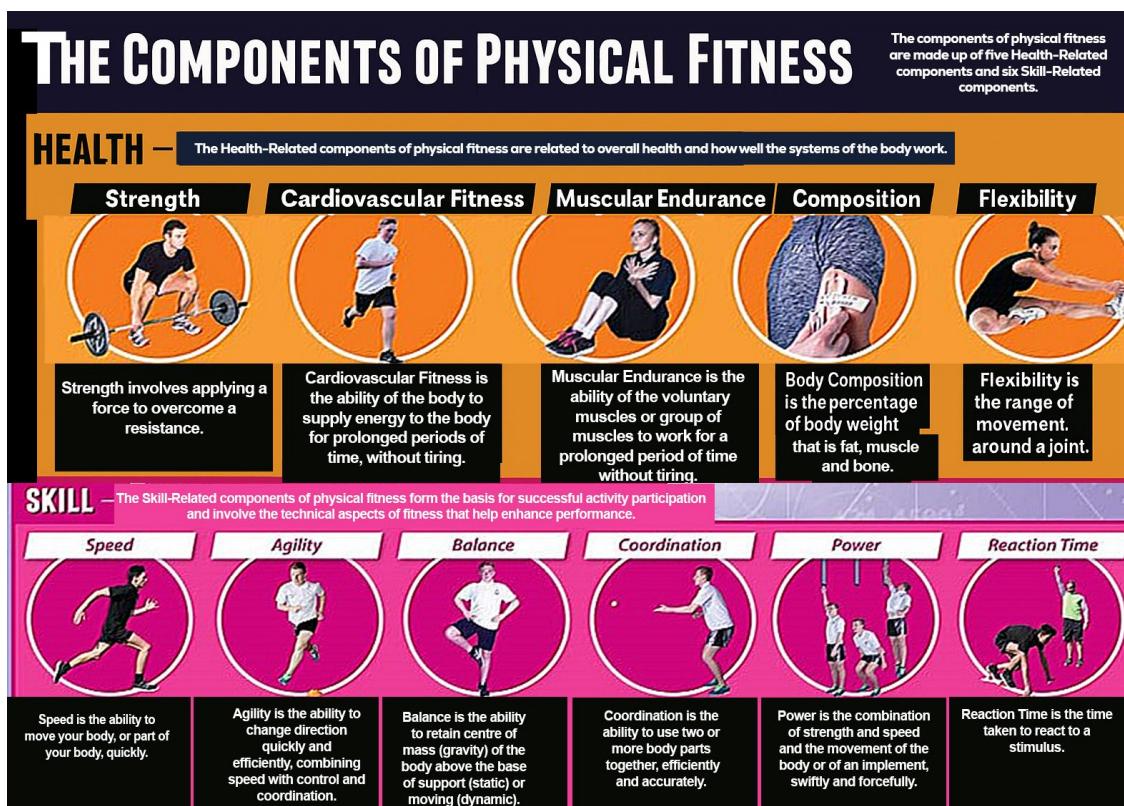


Figure 11.1: Components of physical fitness

Health-related Components

These components focus on developing a foundation for general well-being, disease prevention, and maintaining a high quality of life.

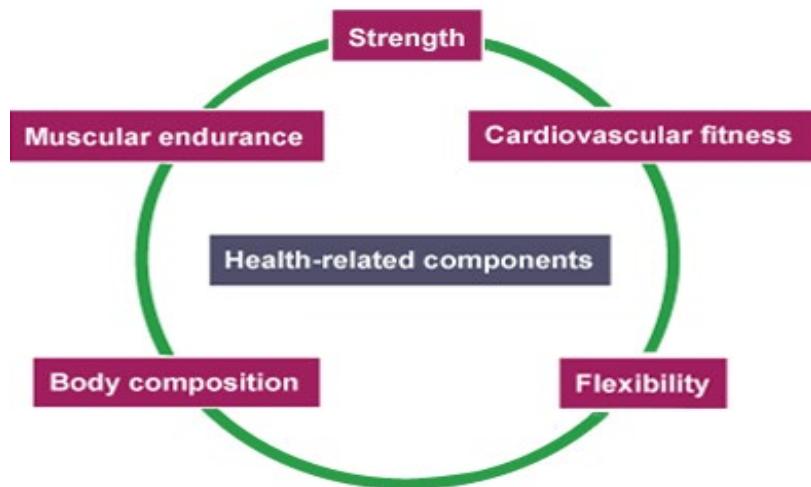


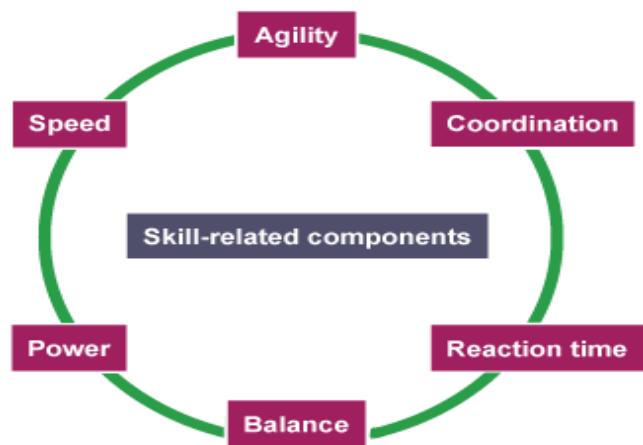
Figure 11.2: Health-related components

Table 11.1: Health-related components

Component	Explanation	Example of exercise	Practical application
Body composition	The percentage of body weight which is fat, muscle and bone.	Body Mass Index (BMI), skinfold measurements, bioelectrical impedance.	A marathon runner with a lean body composition, enhances his/her endurance and efficiency, leading to faster race times and a greater ability to sustain a high pace over long distances.
Cardiovascular fitness	The ability of the heart, lungs and blood to transport oxygen.	Running, swimming, cycling, brisk walking.	Completing a half marathon with consistent split times across all parts of the run.
Flexibility	The range of motion (ROM) at a joint.	Stretching, yoga, Pilates, dynamic stretches.	A gymnast training to increase hip mobility to improve the quality of their split leap on the beam.
Muscular endurance	The ability to use voluntary muscles repeatedly without tiring.	Planks, push-ups, bodyweight squats, cycling.	A rower repeatedly pulling their oar against the water to propel the boat towards the line.
Muscular Strength	The amount of force a muscle can exert against a resistance.	Weightlifting, bench press, squats, deadlifts.	Pushing with all one's force in a rugby scrum against the resistance of the opposition pack.

Skill-related Components

These components enhance a person's ability to perform physical tasks with agility, speed, coordination, and precision.

**Figure 11.3: Skill-related components****Table 11.2: Skill-related components**

Components	Explanation	Example of exercise	Practical application
Agility	The ability to change the position of the body quickly and control the movement.	Agility ladder drills, cone drills, shuttle runs.	A badminton player moving around the court from back to front and side to side at high speed and efficiency.
Balance	The ability to maintain the body's centre of mass above the base of support.	Standing on one leg, balance beam exercises, yoga, stability ball exercises.	A sprinter holds a perfectly still sprint start position and is ready to go into action as soon as the gun sounds.
Coordination	The ability to use two or more body parts together.	Juggling, dribbling a soccer ball, hand-eye coordination drills, catching and throwing exercises.	A trampolinist timing their arm and leg movements to perform the perfect tuck somersault.
Power	The ability to perform strength performances quickly.	Box jumps, Olympic lifts (clean and jerk, snatch), plyometric exercises, medicine ball throws.	A javelin thrower applies great force to the spear while moving their arm rapidly forward.
Reaction time	The time taken to respond to a stimulus.	Reaction ball drills, sprint starts, fast-paced catching drills.	A boxer perceives a punch from their left and rapidly moves their head to avoid being struck.
Speed	The ability to put body parts into motion quickly.	Sprinting, interval training, resistance sprinting, speed drills.	A tennis player moving forward from the baseline quickly to reach a drop shot close to the net.

Principle of Periodisation Training

1. The training cycles (periodisation)

This is a training principle that involves the structuring of training programmes into specific phases or cycles, each with its own goals and focus. It works on the physiological concept of overload and adaptation, by stressing the body over time, allowing it to recover, and then stressing it again, to enable athletes gradually build fitness.

2. Phases of Periodisation Training

To develop an effective periodised training programme, it is important to understand the foundation of periodisation. This foundation consists of three cycles: macrocycles, mesocycles and micro cycles.

- **Macrocycle:** This is the big picture planning cycle. It typically spans a longer period of time, such as a year, before a competition. However, it can span longer periods, such as 4 years, for athletes competing in the Olympic games. It includes all four stages of a periodised training programme (endurance, intensity, competition and recovery).
- **Mesocycle:** The mesocycle represents a specific block of training within the season (macrocycle) designed to accomplish a particular goal. It can be 4–6-week cycles within the macrocycle. For example, mesocycle typically involves 3 weeks of progressive intensity training followed by a week of lower intensity training.
- **Micro cycle:** This is the shortest training cycle within the mesocycle which details the day-to-day training over the period of a week. It has the goal of facilitating a focused block of training and can vary in intensity on the different training days of the week.

Three Main Types of Periodisation Models

1. **Linear periodisation:** This involves changing load and volume over several intermediate or mesocycles (usually every 1–4 months). Each intermediate cycle has progressive weeks of increasing intensity followed by a recovery week with light load and intensity.
2. **Nonlinear or undulating periodisation:** Load and volume are changed more frequently, such as daily or weekly, typically with the load increasing but volume decreasing.
3. **Reverse periodisation:** This is a form of nonlinear periodisation, except that the load is decreased while the volume increases. These may be more appropriate for those competing in endurance races with longer distances.

How to Incorporate Periodisation Training into a Fitness Routine to Enhance Sports Performance

Periodisation can be incorporated into a fitness routine by setting a timeline for achieving a certain goal and then breaking that timeline into smaller cycles to focus on specific training goals. For example:

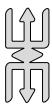
1. **Macrocycle:** Begin with a timeline for when you want to achieve a certain goal.
2. **Mesocycle:** Then, break the time up into intermediate phases, working on specific physical attributes such as strength or endurance, focusing on one at a time.
3. **micro cycle:** In each phase, divide the weekly training sessions to address those attributes at different volumes and intensities, making sure to incorporate weeks into the programme that account for recovery at lower intensities or volumes.

Learning Tasks

1. Identify and explain the health related and skill related components of training / fitness.
2. Discuss the practical application of activities that develop the training / fitness components.
3. Explain the principle of periodisation and the phases of periodisation training.
4. Design a plan to incorporate the components of training into the phases of periodisation training cycles.

Pedagogical Exemplars

1. **Starter:** Offer descriptions of various sports (e.g., “This sport demands quick, explosive actions and rapid direction changes.” or “This sport requires long-term stamina and sustained effort over a prolonged period.”). Ask learners to guess which sport is being described.
2. **Introduction:** Divide the class into small groups and assign each group a specific sport (e.g., sprinting, football, gymnastics). Each group must come up with four exercises that are specific to their assigned sport. Use the feedback from the learners to introduce the lesson.
3. **Collaborative learning**
 - In groups learners use the internet and other relevant sources to list the various health and skill related components of training / fitness (cardio endurance, flexibility, strength, speed, agility, etc.)
 - Learners in their groups discuss the various components and activities that will best cater for or develop them.
4. **Digital-based Learning**
 - In groups learners explore and gather information on the principle of periodisation and the types and phases of periodisation training.
 - Learners discuss their findings and write down their final results in their various groups.
 - Engage learners in their groups to prepare presentations on the phases of the training cycles and present to the whole class for contributions and finalisation.
5. **Project based learning**
 - In groups, learners design a periodisation plan with the phases of the training cycles using any discipline of their choice.



Note

The plan should be suitable for use by groups or individuals either in school or at home.

Key Assessment

Level 1: Name the components of training/fitness

Level 2

1. Differentiate between health and skill-related components with two examples each.
2. Discuss the benefits of Pan-Africanism towards the liberation of Africa

Level 3: Analyse the first two phases of the periodisation training cycle for volleyball

Level 4: Design a periodisation plan for the school's football team to follow in preparation for their inter-school sports festival.

HINT



*The recommended mode of assessment for Week 11 is **discussion**. Refer to the Assessment level 2, Item 2 under the key assessment for an example of a presentation task.*

WEEK 12

Learning Indicator: Apply the principles of training for sports performance

FOCAL AREA: APPLYING PRINCIPLES OF TRAINING

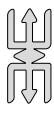
PRINCIPLES OF TRAINING

Applying training principles is essential for optimising physical conditioning to improve skills, strength, and endurance in sports performance. In this lesson, the application of the principle of periodisation training is combined with various training components to develop holistic fitness and skills for effective performance.

Approaches to the Performance of the Various Components of Training

Table 12.1: Various components of training and steps to performing them

Component	Body composition
Activities	Squats-lunges, push-ups, planks, and pull-ups, etc.
Steps / approaches	
<p>Example: Squats-lunges</p> <ul style="list-style-type: none"> • Stand with feet shoulder-width apart. • Keep the chest up, back straight, and shoulders relaxed. • Engage the core for stability. • Push the hips back as if sitting into a chair. • Bend the knees while keeping the chest lifted and the spine neutral. • Keep the weight on the heels and make sure the knees don't extend beyond the toes. • Lower the body until the thighs are parallel to the floor or as low as the flexibility allows. • Push through the heels to straighten the legs and return to the starting position. • Take a big step forward with the right leg (about 2-3 feet). • Keep the torso upright as you step. • Bend both knees to lower the body until the right thigh is parallel to the floor. • The back knee should hover just above the floor (without touching). • Make sure the front knee is aligned with the ankle (not pushed past the toes). • Press into the heel of the front foot and extend the legs to return to the starting position. • Keep the movement controlled and smooth. • Repeat the same movement on the other leg, alternating between the right and left. 	



Note

The exercises should be performed with proper form to avoid injury and maximise their effectiveness.

Adjust the depth of the squat or lunge based on one's flexibility and strength.

Component	Cardiovascular fitness
Activities	Interval running, outdoor / stationary cycling, swimming, skipping, shuttle run, aerobics, exergaming, etc.
Steps / approaches	
<p>Example: Interval running</p> <ul style="list-style-type: none"> Start with a light jog or brisk walk to gradually increase the heart rate. Include dynamic stretches like leg swings, high knees, and butt kicks to prepare your muscles for high-intensity work. Using a ratio of work (high intensity) for sports excellence; Advanced: 2:1 (e.g. 40 seconds of sprinting followed by 20 seconds of rest or light jogging). Sprint or run at a fast pace during the work interval. Focus on pushing oneself to about 80–90% of one's maximum effort. Maintain proper running form (upright posture, arms pumping, and landing lightly on the feet). Perform cool down activities for recovery. 	
Component	Flexibility
Activities	Ballet stretching, hamstring stretch, quadriceps stretch, leg swings, backbend, calf roll, etc.
Steps / approaches	
<p>Example: Ballet stretching</p> <ul style="list-style-type: none"> Stand with feet together or hip-width apart, spine straight, and arms overhead. Slowly bend forward at the hips, keeping your legs straight or slightly bent if necessary. Reach the hands toward the floor or the ankles, allowing the head and neck to relax. Hold the stretch for 20–30 seconds, feeling the stretch in the hamstrings and lower back. Take between 10 – 20 seconds recovery period and repeat the activity for 3 – 4 sets. 	
Component	Muscular strength / endurance
Activities	Plank hold, squats, deadlifts, push-ups, pull-ups, dips, bench press, plank holds, lunge hold, circuit training, etc.
Steps / approaches	
<p>Example: Plank hold</p> <ul style="list-style-type: none"> Go on all four with the forearms and knees on the ground, placing the forearms directly under the shoulders, and slightly wider than shoulder-width apart. Extend the legs straight behind, coming onto the balls of the feet. The body should form a straight line from the head to the heels. Keep the body in a straight line. Engage the core by pulling the belly button toward the spine, tightening the abdominal muscles to support the lower back. Keep the neck in a neutral position, looking slightly ahead to avoid straining the neck or allowing the head to drop. Ensure that the shoulders, hips, and ankles are in alignment. Press firmly into the floor with the hands to engage the shoulders and upper body. 	

- Squeeze the glutes (buttocks) and thighs to maintain full-body tension. This helps keep the legs engaged and supports the lower body.
- To come out of the plank, lower the knees gently to the ground, sit back onto the heels, and stretch the arms forward into a child's pose for a brief stretch if needed.

Component	Agility
Activities	Cone drills, reaction ball drills, sprints with directional changes, agility ladder, T-drill, etc.

Steps / approaches

Example: Cone drills

- Place 4 cones with 2 pair, 5 metres' width apart and 10 metres apart in length.
- Place another 4 cones in the middle of the 4 arranged cones with equal interval in length.
- Start from the first outer cone and sprint through the length to the next outer cone.
- Go round the cone and sprint back to the first middle cone parallel to the start cone.
- Go round that 1st middle cone and sprint to the 4th middle cone meandering through the other 2 middle cones and back to the 1st middle cone in the same pattern.
- Sprint back to the 3rd outer cone, going round it, and sprint back to the last (finish) cone.
- Take 60 seconds recovery break.
- Repeat the process by integrating lateral shuffles through the middle cones and backpedal to the outer cones.

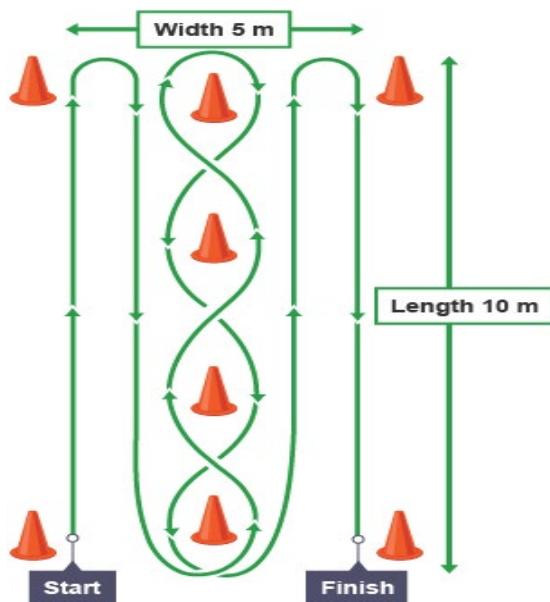


Figure 12.1: Agility cone drill

Component	Balance
Activities	Single-leg balance, walking heel to toe, side planks, lateral leg raises, tandem stance, etc.

Steps / approaches

Example: Single-leg balance

- Stand with the feet together, keeping the body in a neutral position.
- Lift one foot (e.g., right foot) off the ground by bending the knee at a 90-degree angle.

- Hold this position, balancing on the left leg, with the core engaged to maintain stability.
- Place the hands either on the hips, extended to the sides, or in front of to help with balance.
- Hold the single-leg balance for 20–30 seconds, or longer, if possible, with open eyes.
- Repeat the same steps by lifting the left leg.
- Perform the same exercise but with the eyes closed to challenge one's proprioception.

Component	Coordination
Activities	Ball tossing and catching, hopscotch, jump rope, juggling, play table tennis, reaction ball drills, etc.

Steps / approaches

Example: Ball toss

- Choose a ball that fits comfortably in the hands (e.g. a tennis ball).
- Stand with your feet shoulder-width apart, knees slightly bent at a comfortable stance.
- Hold the ball and toss it gently into the air using both hands or one hand.
- Keep your eyes on the ball, tracking its path as it rises and falls back toward the hands.
- Bring the hands together as the ball descends, with the fingers slightly spread and palms facing upward, allowing the ball to gently fall into the hands.
- Repeat this process, by varying the hands, height of the toss, direction of the ball, etc., focusing on smooth and controlled movements.

Component	Power
Activities	Jump squats, kettlebell swings, depth jumps, battle ropes, power slams, jumping lunges, tire flips etc.

Steps / approaches

Example: Jump squats

- Stand with the feet shoulder-width apart.
- Keep the chest up, back straight, and engage the core.
- Place the arms at the sides or clasp them in front of the chest.
- Bend the knees and hips to lower the body into a squat position.
- Keep the thighs parallel to the ground or slightly lower.
- Push off the ground explosively using the legs and jump as high as possible.
- Land softly on the balls of the feet, bending the knees to absorb the impact.
- Land back in the squat position to maintain control.
- Avoid locking the knees when landing.

Component	Reaction time
Activities	Dodgeball, ball drops, partner reaction drills, shadowing, speed ball, etc.

Steps / approaches

Example: Dodgeball

- Mark a playing area, (e.g. a rectangular court) with boundaries.
- Mark a centre line down the middle of the court.

- Designate areas for each team on either side of the centre line.
- Obtain a dodgeball (a soft rubber ball) appropriate for the age group and skill level.
- Place the dodgeballs on the centre line at the start of the game.
- On a signal (e.g. whistle or countdown), the players from both teams, sprint to the centre line to retrieve the ball.
- Players who first retrieve the ball, throw it at the opponents to try to hit them.
- If a player is hit by the thrown ball, he/she is eliminated from the game.
- A player can catch a thrown ball to eliminate the thrower.
- Players can dodge, duck, and weave to avoid getting hit by the ball.
- Teams can use teamwork to coordinate attacks where some players can distract opponents while others throw.
- Players must always stay aware of the position of opponents and teammates to avoid being caught off guard.
- The game ends when all players on one team are eliminated or a predetermined time limit is reached. The team with the most players remaining wins.

Component	Speed
Activities	Resisted sprint, shuttle runs, agility ladder drill, dot drills, high knees, sled push, etc.

Steps/approaches

Example: Resisted sprint

- Attach a resistance harness or belt securely around the waist.
- Tie the resistance band to the harness, ensuring that it is properly secured and not tangled.
- On the move, drive the legs forward explosively while maintaining good posture.
- Focus on pushing off with the back leg and driving the knees up with each stride.
- Use the arms to help propel oneself forward by pumping them in sync with the legs.
- Sprint at maximum effort for a predetermined distance (e.g., 20 – 40 meters) while maintaining good form.
- Avoid leaning too far forward, keeping the body aligned to minimise strain.

Practical Application of the Principle of Periodisation Training to Enhance Sports Performance.
(Using the activities under components of training in Table 12.1 above)

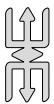
Table 12.2: Example of periodisation training plan for sprint event (macrocycle)

Phases	Description of Activity
Phase 1 (MESOCYCLE) General Preparation Phase (3 – 4 months)	<p>Goal: To improve sprinting speed, acceleration, power, and technique.</p> <p>Training Frequency: 5–6 times per week (MICROCYCLE)</p> <p>Workouts</p> <ul style="list-style-type: none"> • Strength and endurance training <ul style="list-style-type: none"> • Duration: 3–4 times per week. • Type of activity: Plank hold, squats, deadlifts, push-ups, pull-ups, lunges, overhead press, etc. • Load: Normal body weight.

Phase 1 (MESOCYCLE) General Preparation Phase (3 - 4 months)	<ul style="list-style-type: none"> • Volume: 3-4 sets of 20 reps per session. • Speed endurance training <ul style="list-style-type: none"> • Duration: 3 times per week. • Warm-up: 10-20 mins • Type of activity: Longer sprint intervals (e.g. 150 – 300 metres) resisted sprint, shuttle runs, agility ladder drill, dot drills, etc. • Load: Sprinting at 70 – 80% of maximum speed. • Volume: 3 sets per session. • Plyometrics (explosive movements) <ul style="list-style-type: none"> • Duration: 2 times per week. • Type of activity: Jump squats, kettlebell swings, depth jumps, battle ropes, box jumps, tuck jumps, bounding, single-leg hops, etc. • Load: Making quick and forceful consecutive jumps. • Volume: 3 sets of 10 repetitions per session. • Mobility and flexibility <ul style="list-style-type: none"> • Duration: 3 times per week. • Type of activity: Ballet stretching, hamstring stretch, quadriceps stretch, leg swings, shoulder stretch, etc. • Load: Holding a stretch for about 60 sec., increasing the depth and force applied to a stretch. • Volume: 3 sets of 5 repetitions per session.
Phase 2 (MESOCYCLE) Specific Preparation Phase (2 - 3 months)	<p>Goal: Sprint-specific workouts, focusing on speed, power, and technique.</p> <p>Training Frequency: 5-6 times per week (MICROCYCLE)</p> <p>Workouts</p> <ul style="list-style-type: none"> • Sprint Technique Work <ul style="list-style-type: none"> • Duration: 2-3 times per week. • Type of activity: Acceleration drills, max-speed sprints, flying sprints, etc. • Load: 20 – 40 metre sprints for acceleration drills. <ul style="list-style-type: none"> 60 – 80 metres for max-speed sprint 20 – 30 metres for flying sprint (At 80 – 95% intensity) • Volume: 3-4 sets / reps per session. • Strength and endurance training <ul style="list-style-type: none"> • Duration: 2-3 times per week. • Type of activity: Jump squats, snatch, lunges, hip thrusts, etc. • Load: With 45-65kg load / weight, dumbbells, barbells, etc. • Volume: 4-6 sets of 10-20 reps per session. • Plyometrics (explosive movements) <ul style="list-style-type: none"> • (Continue explosive plyometric exercises but with lower volumes) • Duration: 1-2 times per week. • Type of activity: Box jumps, tuck jumps, bounding, single-leg hops, etc. • Load: Making quick and forceful consecutive jumps.

Phase 2 (MESOCYCLE) Specific Preparation Phase (2 - 3 months)	<ul style="list-style-type: none"> • Volume: 2-3 sets of 8-10 repetitions per session. • Mobility and Flexibility <ul style="list-style-type: none"> • Duration: 3 times per week. • Type of activity: Bouncing toe touches, leg swings, arm circles, front kick, foam rolling, etc. • Load: Increasing the depth and force applied to a stretch. • Volume: 2-3 sets of 5-10 repetitions per session.
Phase 3 (MESOCYCLE) Competition Phase (2 - 3 months)	<p>Goal: Peak performance in sprinting, tapering training for competition.</p> <p>Training Frequency: 4-5 times per week (MICROCYCLE)</p> <p>Workouts</p> <ul style="list-style-type: none"> • Sprint Work <ul style="list-style-type: none"> • Duration: 2-3 times per week • Type of activity: Block starts, short sprints, acceleration work, transitions from start to full speed, etc. • Load: 30-60 metre sprints for acceleration drills, (At 90 – 95% intensity) • Volume: 3-4 sets / reps per session. • Strength and endurance training <ul style="list-style-type: none"> • Duration: 1-2 times per week. • Type of activity: Jump squats, snatch, lunges, power cleans, squats, deadlifts, etc. • Load: With 50-75kg load / weight, dumbbells, barbells, etc. • Volume: 2-3 sets of 5-10 reps per session. • Plyometrics (explosive) <ul style="list-style-type: none"> • Duration: 1 time per week. • Type of activity: Bounding, skipping, jump squats, etc. • Load: Making quick and forceful consecutive jumps • Volume: 1-2 sets of 8-10 repetitions per session. • Mobility and Flexibility <ul style="list-style-type: none"> • Continue regular mobility work to ensure optimal movement patterns and reduce risk of injury.
Phase 4 (MESOCYCLE) Transition / Recovery Phase (1 - 2 months)	<p>Goal: Active recovery and mental / physical restoration.</p> <p>Training Frequency: 3-4 times per week (MICROCYCLE)</p> <p>Workouts</p> <ul style="list-style-type: none"> • Active Recovery (2-3 times per week) <ul style="list-style-type: none"> • Duration: 2-3 times per week • Type of activity: Light jogging, swimming, cycling, skipping, etc. • Load: 20-30 minutes. (At 20 – 50% intensity) • Volume: 1-2 sets / reps per session. • Strength Training: <ul style="list-style-type: none"> • Duration: 1-2 times per week.

Phase 4 (MESOCYCLE) Transition / Recovery Phase (1 - 2 months)	<ul style="list-style-type: none"> • Type of activity: Push-ups, Press-ups, lunges, curl-ups, etc. • Load: Normal body weight. • Volume: 2-3 sets of 5-10 reps per session. • Flexibility and Mobility: <ul style="list-style-type: none"> • Duration: 2-3 times per week. • Type of activity: Foam rolling, dynamic stretching, yoga etc. • Load: Light stretching to aid recovery. • Volume: 2-3 sets of 5-10 repetitions per session.
---	---



Note

1. This plan can be applied to all disciplines under sports performance (e.g. middle-distance race, long distance race, games, jumps, throws, gymnastics, martial art and swimming).
2. Before the start of each session, warm-up for about (5-20 minutes) depending on:
 - a. The demand/intensity of the activities
 - b. The weather condition at the time.
3. After every session, cool down for about (3-5 minutes) with light jogging, walking, etc. to gradually bring the heart rate down.
4. The recovery phase allows the heart rate to decrease and gives the muscles time to recover.

Learning Tasks

1. Select and perform any three of the health- and skill-related components of training.
2. Design a periodisation cycle plan that includes health and skill related training components for your discipline. This plan can be used for group or individual performance.

Pedagogical Exemplars

1. Activity based learning

In their assigned groups, learners use the learning experiences and plans from the previous week's lesson to perform the activities listed in Table 1. They follow the appropriate steps and approaches to develop various health- and skill-related components.

Learners carefully perform the activities following the micro cycle phases and using the various components under the workouts, while observing the workout requirements.

2. Project based learning

In groups learners plan and follow a periodisation training programme towards their inter-school sports festival. Note, when forming the groups take learners proximity as well as their areas of discipline into consideration.

Learners keep record of their routine engagement/performance to track progress and submit a report.

Key Assessments

Level 2: Describe how any two activities each are used to develop:

1. Cardiorespiratory endurance
2. Flexibility
3. Coordination

Level 3: Demonstrate how an appropriate activity is executed to develop agility.

Level 4: Create/adapt any two activities to develop one health-related and one skill-related component.

HINT



The Recommended Mode of Assessment for Week 12 is the End-of-Semester Examination. Refer to Appendix E for a Table of Specifications to guide you in setting the questions. Set questions to cover all the indicators covered for at least weeks 1 to 11.

SECTION 6 REVIEW

In Week 11, learners delve into the foundational principles of training for sports performance, exploring key concepts such as specificity, overload, progression and recovery. Through group discussions, visual aids and practical demonstrations, learners gain an understanding of how each principle supports physical development and enhances performance in sports. By engaging in interactive activities, learners analyse how these principles apply to different sports and physical activities, promoting an understanding of structured training methods that optimise improvement and reduce injury risk.

In Week 12, learners apply these training principles. Learners participate in activities that allow them to design and implement training routines tailored to specific sports goals. By working in groups to create training plans, learners apply the principles learned, adjusting intensity, frequency and type of exercise to meet specific performance needs. This week emphasises the importance of personalised training approaches and helps learners build skills in planning effective routines for sports performance.

Throughout the section, provide guidance, coupled with learner-centred activities and collaborative discussions. These activities create an engaging environment where learners deepen their knowledge of training principles and their practical application. By participating in these experiences, learners gain the ability to design well-structured training programmes that contribute to both their sports performance and overall physical well-being.



APPENDIX E: END OF SEMESTER EXAMINATION

Structure of the end of semester examination

The end of semester examination questions should cover Weeks 1-12 focal areas in the Teacher Manual. It should include;

- a) **Five (5) Essay questions** (set questions at DoK level 3 and 4) where learners will select and answer three of them
- b) **Objective type questions 1-40**

Table of Specification

Week	Focal Area	Type of question	DoK Level				Total
			1	2	3	4	
1	Sexual and Reproductive Health	Multiple choice	1	1	1	-	4
2	Contraception, its types and impact on health and wellness The meaning of food safety and wholesomeness	Multiple Choice	2	2	1	-	5
		Essay				1	1
3	The impact of organic, genetically modified, sugary and processed (OGMSP) foods on health.	Multiple choice	2	2	1	-	5
		Essay			1		1
4	Sexual and Reproductive Health Contraception, its types and impact on health and wellness	Multiple choice	2	3	-	-	5
		Essay			1		1
5	The meaning of food safety and wholesomeness	Multiple choice	1	2	1	-	3
6	The impact of organic, genetically modified, sugary and processed (OGMSP) foods on health.	Multiple Choice	-	1	-	1	2
		Essay			1		1
7	Factors promoting positive mental and emotional health	Multiple Choice	-	1	1	1	3
8	The impact of life choices on diseases.	Multiple Choice	-	1	1	-	2
9	Injury prevention before , during and after physical activities	Multiple Choice	1	1	-	1	3
10	Factors that influence adherence to regular participation in physical activity..	Multiple Choice	1	1	1	-	3
11	Principles of training	Multiple Choice	1	1	-	-	2
12	Applying Principles of Training	Multiple Choice	1	-	1	1	3
		Essay			1		1
Total			12	16	12	5	45

SECTION 7: PRINCIPLES OF BIOMECHANICS

STRAND: PHYSICAL EDUCATION

Sub-Strand: Scientific Bases of Physical Activity

Learning Outcome: *Discuss and apply biomechanical principles in physical activity*

Content Standard: *Demonstrate knowledge, understanding and application of biomechanical principles in physical activity*

HINT



Assign Individual Project Work in Week 14. See Appendix G, which has been provided at the end of this section, detailing the structure and structure of the individual project. The individual project will be submitted in Week 18.

INTRODUCTION AND SECTION SUMMARY

This section focuses on biomechanical principles and their application in physical activity, enabling learners to enhance movement efficiency, reduce injury risks and improve performance. Learners will be guided to understand how these principles influence various physical activities, emphasising techniques such as balance, stability and force application.

The aim is to help learners develop a foundation for analysing and refining their physical movements, ultimately improving their overall physical capabilities and awareness.

Through practical and theoretical learning, learners will explore how to apply biomechanical principles in sports, exercise and daily activities. By the end of this section, they will be equipped to identify areas for improvement in their movements, make informed adjustments, and appreciate the science behind physical activity. This knowledge fosters a deeper understanding of how biomechanics contributes to health and performance across different activities.

The weeks covered by the section are

Week 13: Discuss biomechanical principles in physical activity.

Week 14: Apply biomechanical principles in physical activity.

SUMMARY OF PEDAGOGICAL EXEMPLARS

Employ a variety of methods, including demonstrations, discussions and interactive activities, to explain and illustrate biomechanical concepts. Encourage learners to observe and analyse their movements during physical activities, using digital tools like stopwatches, video recordings or sports analysis apps for feedback. Incorporate group work to promote collaborative problem-solving, where learners can apply principles like levers or motion in real-world scenarios.

Differentiated instruction should be used to address the needs of all learners, with additional support for students requiring assistance in understanding complex concepts. Gifted learners can be challenged with tasks like designing movement strategies based on biomechanical principles or analysing sports techniques. Interactive and inclusive activities will ensure that all students grasp the relevance and application of biomechanics in physical activity.

ASSESSMENT SUMMARY

Assessments will involve practical demonstrations where learners apply biomechanical principles in specific activities, highlighting areas like balance and force application. Group projects may include analysing the biomechanics of a chosen sport or movement, with presentations to showcase their findings. Written reflections on how biomechanical principles influence their daily movements will help consolidate theoretical understanding.

Quizzes and peer evaluations can also be incorporated to assess comprehension and application of biomechanical concepts. Provide constructive feedback to help learners refine their movements and deepen their understanding, ensuring they can confidently apply these principles in various contexts.

WEEK 13

Learning Indicator: Discuss biomechanical principles in physical activity

FOCAL AREA: BIOMECHANICAL PRINCIPLES

THE CONCEPT OF BIOMECHANICS



Figure 13.1: The study of biomechanics

Humans can move from one place to another through a wide range of postures and movements, known as locomotion. This ability is made possible by our musculoskeletal system, which supports body loads and movements and is grounded in the principles of biomechanics. Biomechanics is the scientific study of the movement of the body. It falls within the broader field of kinesiology, the scientific study of the mechanics, anatomy, physiology and psychology behind movement and physical activity. Biomechanics examines how the various components of the body work together to bring about athletic and everyday movements.

In sports and athletic performance, biomechanics contributes to the development of optimal sports equipment, injury rehabilitation methods and training regimes. It also examines human motion during exercise and sports, applying the laws of physics and mechanics to athletic performance. For instance, in sports, the analysis of a squat involves considering the positioning and movement of the feet, hips, knees, back, shoulders and arms to establish correct movement patterns and avert potential injuries. Understanding how and why the body moves empowers experts and athletes to prevent and address injuries, reduce discomfort and enhance performance.

1. Understanding Movement

Biomechanics is the scientific study of the physical principles of movement in humans. It is also the science that examines the internal forces acting on the human body and their mobility effect.

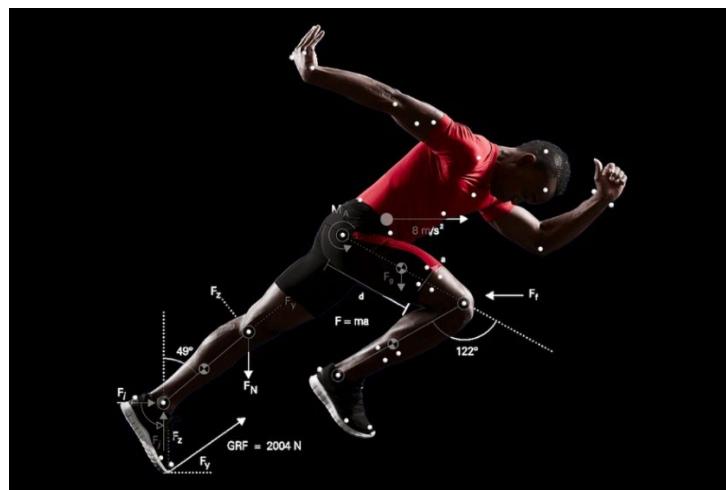
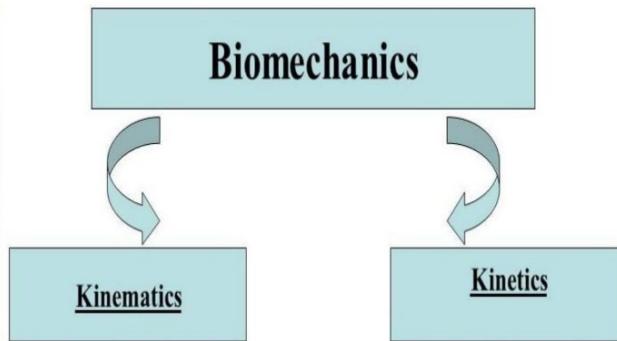


Figure 13.2: Biomechanics in Sports

2. Aspects of Biomechanics



a. Kinematics

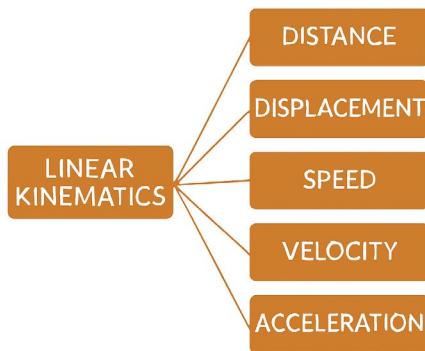
This aspect studies the characteristics of motion such as position, distance, displacement, speed, velocity and acceleration, without considering the forces that cause it.

Types of kinematics

- **Linear kinematics:** Studies the movement along a straight or curved path without considering the forces involved. Track and field athletes rely on linear kinematics to optimise their displacement and acceleration in races. Cyclists aim to maintain high velocities and manage their acceleration to finish races efficiently.

Factors influencing linear kinematics

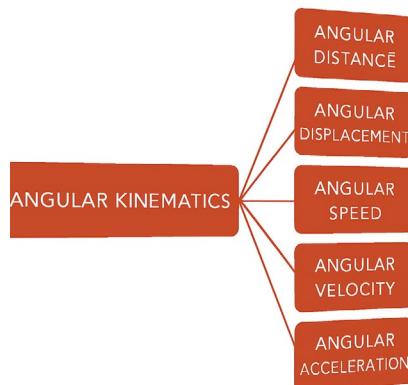
- Position:** Where an object is located e.g. A sprinter's starting position on the track.
- Displacement:** The change in position of an object e.g. The distance a swimmer moves in a 100-meter race.
- Velocity:** The rate of change of displacement with respect to time e.g. The rate at which a cyclist covers ground during a race, such as 25 km/h.
- Acceleration:** The rate of change of velocity with respect to time e.g. The increase in speed of a basketball player during a fast break.



- **Angular kinematics:** Focuses on the rotational or circular motion of objects or body parts around an axis e.g. A gymnast somersaulting and a skater spinning with the aid of the wheels are applications of angular kinematics. Typically, divers perform somersaults and twists, which require controlled angular displacement and velocity to execute dives cleanly. Also, skaters adjust their angular velocity to control the speed of their spins.

Factors influencing angular kinematics

- Angular position:** The orientation of a line with respect to a reference e.g. The position of a diver's body during a somersault.
- Angular displacement:** The change in angular position e.g. The amount a gymnast rotates in a backflip.
- Angular velocity:** The rate of change of angular displacement e.g. The speed at which a figure skater spins on the ice.
- Angular acceleration:** The rate of change of angular velocity e.g. The rate at which a soccer player's leg accelerates when kicking.



b. Kinetics

It is the study of the forces that cause motion and produce change in motion. It is simply the study of force that causes motion. Kinetics delves into the forces that cause or result from motion and has components such as inertia, mass, momentum, weight, force, impulse, pressure, work, power and energy. A comprehensive understanding of these forces is how athletes generate speed or apply force in activities such as throwing or kicking a ball.

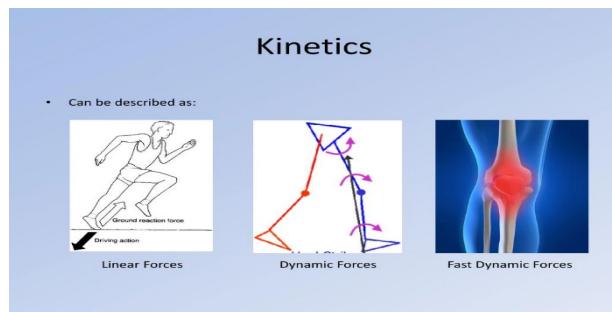


Figure 13.3: Aspects of kinetics

Types of Kinetics

- **Linear kinetics:** Examines forces that cause linear motion. In physical education, understanding linear kinetics can explain why stronger pushes generate faster movements such as kicking a soccer ball. Linear kinetics apply when soccer players kick a ball, they apply impulse to change its momentum and control distance and direction (linear). Weightlifters apply force to overcome the mass of weights in a vertical lift, which demonstrates linear kinetics.

Factors influencing linear kinetics

- i. **Force:** A push or pull acting on an object, influencing its acceleration (Newton's Second Law) e.g. The amount of push or pull a weightlifter applies to lift a barbell.
- ii. **Mass:** The amount of matter in an object, affecting how it responds to force e.g. How the mass of a shot put affects its motion when thrown.
- iii. **Momentum:** The quantity of motion produced with mass and velocity e.g. A football player's level of motion as they run down the field.
- iv. **Impulse:** The product of force and the time over which it acts, changing an object's momentum e.g. The force applied over a period to kick a soccer ball, which changes its momentum.

- **Angular Kinetics:** Focuses on forces causing rotational motion. Angular kinetics is significant for analysing actions such as twisting in figure skating, where torque and moment of inertia influence the spin rate.

Factors influencing angular kinetics

- i. **Torque:** A force that causes an object to rotate around an axis e.g. The turning force a gymnast uses to initiate a spin.
- ii. **Moment of inertia:** The distribution of mass around an axis, impacting how much torque is needed to rotate the object e.g. How a figure skater controls the distribution of body mass to increase or decrease spin speed.
- iii. **Angular momentum:** The product of moment of inertia and angular velocity e.g. A diver's angular momentum during a somersault.
- iv. **Angular impulse:** The torque applied over time, affecting angular momentum e.g. The torque (pivot) applied over time to control the rotational speed of a basketball or netball player.

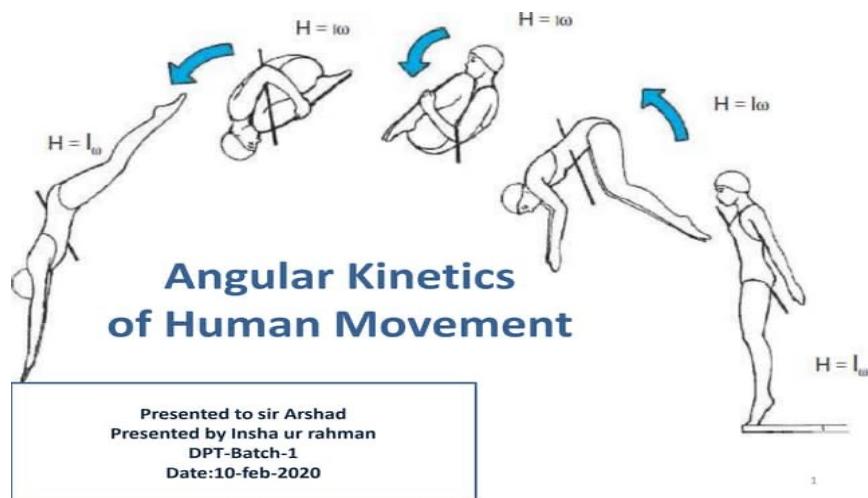


Figure 13.4: Angular kinetics

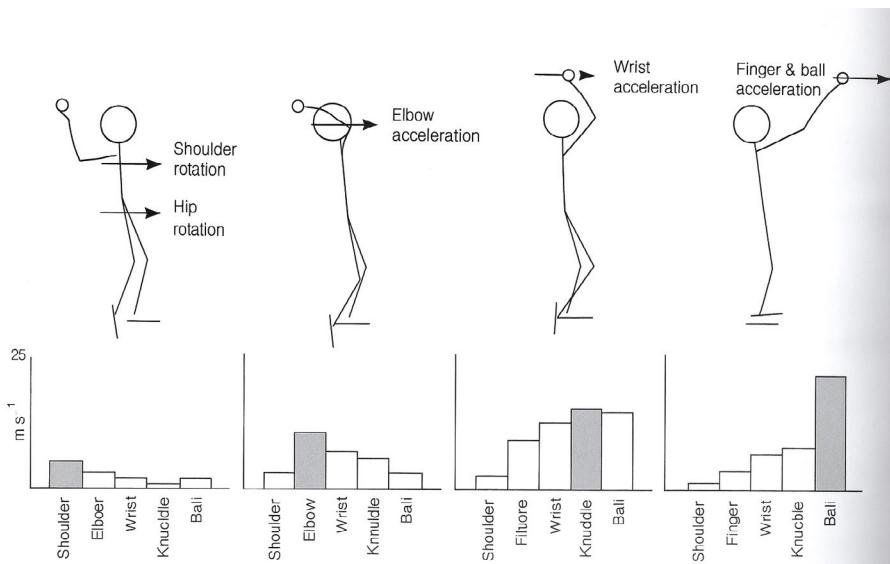
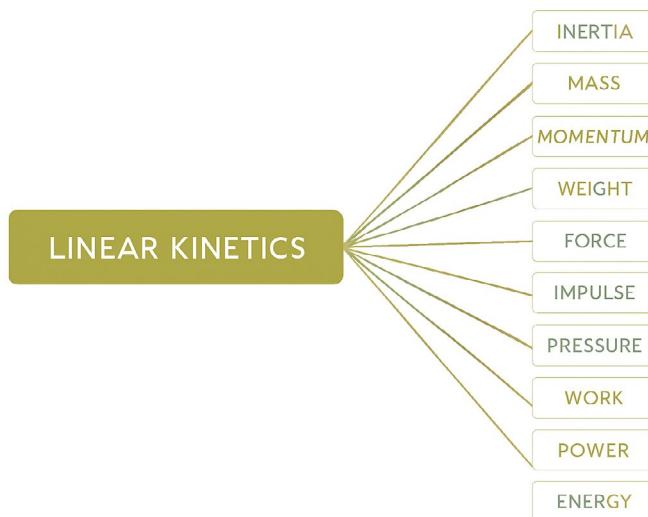


Figure 13.5: Linear kinetics in javelin throw

Table 13.1: Summary of kinematics and kinetics

Concept	Description	Sports Example
Linear Kinematics	Straight/curved motion without force	Running, Swimming
Angular Kinematics	Rotational motion without force	Diving, Skating
Linear Kinetics	Forces causing linear motion	Weightlifting, Soccer
Angular Kinetics	Forces causing rotational motion	Basketball, Gymnastics

3. Mechanical Principles

Biomechanics is centred on applying mechanical principles and using the laws of physics to understand human movement.

a. Newton's Laws of Motion

- First Law (Inertia):** An object will remain at rest or in uniform motion unless acted upon by an external force. This is exemplified in sports like sprinting, where athletes must overcome inertia at the beginning of a race.
- Second Law (Acceleration):** The force applied to an object is equal to the mass of the object multiplied by its acceleration ($F = ma$). For instance, in weightlifting, the force applied to the barbell determines its acceleration.
- Third Law (Action and Reaction):** For every action, there is an equal and opposite reaction. This principle is evident when a swimmer pushes off the pool wall; the wall pushes back with an equal force, propelling the swimmer forward.

b. **Levers:** A lever is a simple machine that consists of a rigid bar or beam that pivots around a fixed point known as the fulcrum. Levers are used to amplify force, allowing a smaller force applied at one end of the lever to move a larger load on the other end. The body utilises lever systems, consisting of bones and joints, to generate movement. For example, in a bicep curl, the elbow joint acts as a fulcrum and the forearm as a lever, with the biceps applying force to lift a weight.

Types of Levers

- First Class Levers:** The Fulcrum is located between the Load and the Effort. This type of lever helps to change the direction of a force e.g. During throw-in in soccer or push-up arm extension, the elbow acts as the Fulcrum, the triceps provide the Effort, and the forearm becomes the Load.

Another example can be found in the pole vault where the top hand holding the pole acts as the **Fulcrum**, as it remains stationary while the pole pivots around. The bottom hand gripping the pole experiences the **Load**, as it supports the athlete's weight and the force applied by the running momentum. Finally, the top arm and shoulder muscles provide the **Effort** to press the pole downward into the box and initiate the bend

o Body example in physical activity

Neck movement

- Load:** The weight of the head.
- Fulcrum:** The joint where the skull meets the spine (atlanto-occipital joint).

- **Effort:** The muscles at the back of the neck pulling downward to balance or tilt the head.

- o **Sports example**

Heading a soccer ball

- **Load:** The soccer ball's weight.
- **Fulcrum:** The neck joint.
- **Effort:** The neck muscles contracting to push the head upward for impact.

- ii. **Second Class Levers:** The Load is between the Fulcrum and Effort. This lever provides a mechanical advantage as it allows a smaller effort to move a larger load.

- o **Body example in physical activity**

Calf raises

- **Fulcrum:** The ball of the foot.
- **Load:** The body's weight.
- **Effort:** The contraction of the calf muscles pulling the heel upward.

- o **Sports example**

Jumping in basketball or volleyball:

- **Fulcrum:** The toes or ball of the foot.
- **Load:** The athlete's body weight.
- **Effort:** The calf muscles contracting to lift the body off the ground.

- iii. **Third Class Lever:** The Effort is between the Fulcrum and the Load. This type of lever favours speed/distance and range of motion, rather than amplifying force.

- o **Body example in physical activity**

Bicep curl

- **Fulcrum:** The elbow joint.
- **Effort:** The contraction of the biceps muscle.
- **Load:** The weight being lifted (dumbbell or forearm).

- o **Sports example**

Hitting a baseball or tennis ball

- **Fulcrum:** The shoulder joint.
- **Effort:** The contraction of the muscles in the arm to swing.
- **Load:** The weight of the bat or racket and ball resistance.

c. Force and Torque

Force: Force is a push or pull on an object that can cause it to move, stop, change direction or change its shape. It is the effect one body has over another to change the state of the second body. Force is also any interaction that changes the motion of an object when unopposed.

Applications of Force in PEH

- **Throwing a ball:** Force determines the ball's speed and distance e.g. a stringer force applied to a baseball result in a faster pitch.
- **Hitting in sports:** In tennis or baseball, the force exerted by a racket or bat impacts the velocity and direction of the ball.
- **Jumping and landing:** Force absorption skills are taught to avoid injuries e.g. Bending knees upon landing reduces the impact of force on joints.
- **Running and sprinting:** In the principle of acceleration, sprinters use force to push off the ground explosively, increasing speed.
- **Deceleration:** Proper running techniques to reduce force on the body help prevent injuries while slowing down.

Types of Force

- **Gravitational Force:** The force of gravity pulls objects and athletes toward the Earth. e.g.
 - **High jump:** Gravity pulls the athlete down after the jump.
 - **Gymnastics:** A gymnast relies on gravitational force during flips and landings.
- **Frictional Force:** The resistance force between two surfaces in contact. e.g.
 - **Sprinting:** Friction between the shoes and the track allows athletes to propel forward.
 - **Soccer:** The interaction between the ball and the grass slows the ball down.
- **Drag Force (Air Resistance):** A type of friction caused by air opposing the motion of a moving object. e.g.
 - **Cycling:** Cyclists experience air resistance, especially at high speeds.
 - **Javelin throw:** Air resistance affects the flight of the javelin.
- **Viscous Force:** A force that acts parallel to the surface of an object moving through a fluid or between fluid layers moving at different velocities (i.e. viscosity). e.g.
 - **Swimming:** Swimmers experience resistance due to the viscous force in water. Streamlined body movements help reduce drag caused by this resistance.
 - **Oil in sports equipment:** In lubrication (e.g. for bicycles or treadmills), the viscous force in oils ensures smooth functioning by reducing friction.
- **Applied Force:** The force directly exerted by muscles or external objects themselves. e.g.
 - **Weightlifting:** The athlete applies force to lift the barbell.
 - **Boxing:** A boxer exerts force during a punch.
- **Elastic Force:** The force exerted by a material when it is stretched or compressed. e.g.
 - **Pole vault:** The bending of the pole stores elastic energy, which propels the pole-vaulter.
 - **Trampoline:** The stretched trampoline mat exerts an upward elastic force.

- **Centripetal Force:** The inward force required for an object to move in a circular path. e.g.
 - **Hammer throw:** The hammer provides the centripetal force as the athlete rotates.
 - **Cycling:** Cyclists rely on centripetal force when navigating curves on a track.
- **Centrifugal Force:** The outward force experienced by a body moving in a circle. e.g.
 - **Hammer throw:** The hammer experiences an outward force as the athlete rotates it in a circular motion, making the athlete lose balance.
 - **Cycling on a curved track:** A cyclist in a curve feels an outward push as they navigate the curve.
- **Inertial Force:** The resistance of an object to a change in its state or motion (inertia). e.g.
 - **Soccer:** A stationary ball resists motion until kicked.
 - **Basketball:** A moving ball continues rolling unless stopped by a player or friction.
- **Buoyant Force:** The upward force exerted by a fluid that opposes the weight of an object. e.g.
 - **Swimming:** Buoyant force keeps the swimmer afloat.
 - **Water polo:** Players rely on buoyancy to remain above water.
- **Tensional Force:** The force exerted through a string, rope or cable. e.g.
 - **Tug of war:** Tension builds up in the rope as teams pull against each other.
 - **Rock climbing:** The rope supports the climber's weight through tensional force.
 - **Sailing:** Tension in the sail's ropes adjusts the sail position.
- **Gyroscopic Force:** Gyroscopic force refers to the stabilising force created by a spinning object. When an object with angular momentum is spinning, it resists changes to its axis of rotation due to the principles of angular momentum and torque. e.g.
 - **Cycling:** The spinning wheels of a bicycle create gyroscopic stability, helping the rider maintain balance.
 - **Football:** When a soccer ball is kicked with spin, the gyroscopic force helps maintain the ball's axis, affecting its curve or trajectory.

Torque: Torque is a measure of the rotational force that causes an object to rotate about an axis. It determines how effectively a force can produce rotational motion. The concept is similar to linear force, but instead of causing linear acceleration, torque causes angular acceleration. In opening a door, applying force at the edge (farther from the hinges) creates more torque, making it easier to open. A longer spanner provides a greater lever arm, increasing torque and making it easier to loosen or tighten bolts. Torque determines how children of different weights can balance a seesaw by sitting at varying distances from the fulcrum. Applying force on the outer rim of a steering wheel (greater lever arm) requires less effort to turn the wheel.

Factors Influencing Torque

- **Magnitude of force:** The larger the applied force, the greater the torque. e.g. In weightlifting, lifting heavier weights requires more force, producing higher torque on the joints.
- **Lever arm (Distance from pivot):** The farther the point of force application from the pivot, the greater the torque. e.g. In tennis, holding the racket closer to the end of the grip (increasing the lever arm), generates more torque, allowing for a more powerful swing. In pilolo (traditional game), torque is generated when a player swings the bat (stick). The hands act as the pivot and the force applied at the long end of the stick produces rotational motion.
- **Angle of force application:** Torque is maximised when the force is applied perpendicular to the lever arm (90°). e.g. In gymnastics, a gymnast performing on parallel bars adjusts the angle of their arms to optimise rotational force.
- **Moment of inertia:** The distribution of mass affects how easily an object rotates. e.g. A cyclist applies force on the pedals, creating torque that rotates the crankshaft and moves the bicycle forward.
- **Rotational equilibrium:** For an object to remain stationary or rotate uniformly, the sum of torques must equal zero. e.g. In a seesaw, two children of different weights balance the torque by sitting at different distances from the pivot. In weightlifting, athletes maintain stability by aligning their centre of gravity to counterbalance the torque from the weights.

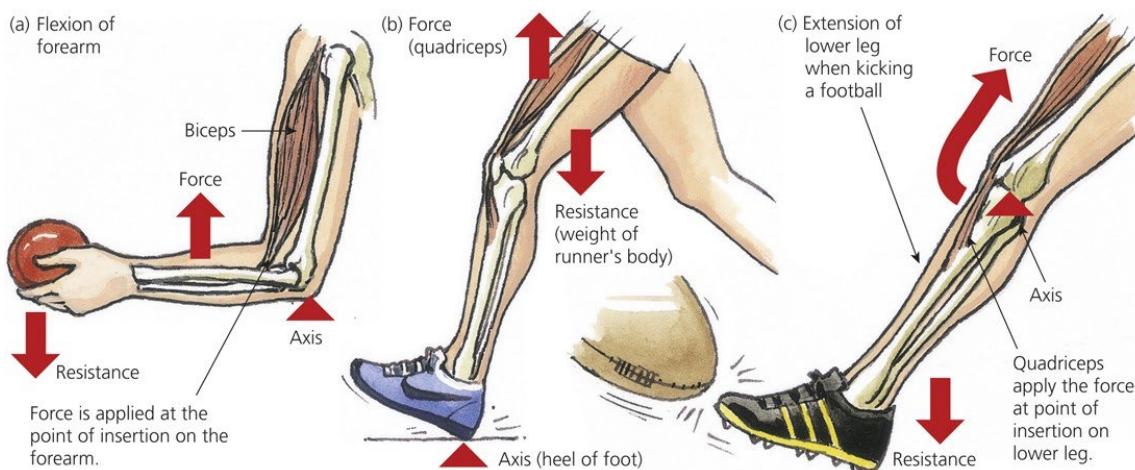


Figure 13.6: The mechanical movement principle

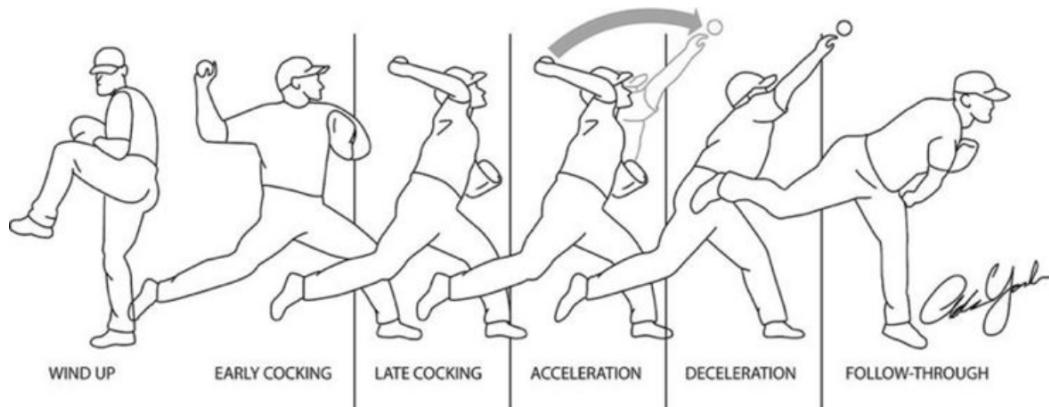


Figure 13.7: Mechanical movement of a baseball player

d. Applications of Biomechanics in Sports and Exercise

Biomechanics plays a crucial role in improving athletic performance, minimising injuries, and developing training regimens for sports and exercise.

- i. **Performance enhancement:** Coaches and athletes enhance efficiency and performance by analysing the mechanics of specific movements. For example, in sprinting, biomechanical analysis helps refine stride length and frequency for improved speed. Additionally, in swimming, understanding drag forces and body movement through water enables swimmers to optimise their technique for enhanced speed and endurance.
- ii. **Injury prevention:** Biomechanical principles help identify improper movement patterns that may lead to injury. For instance, overpronation in running can stress the knee joint, leading to injury. Correcting such movements through technique modification or the use of supportive material can reduce the risk of injury. Biomechanics also aids in the rehabilitation process by assisting in designing exercises that promote healing without placing undue stress on the injured area.
- iii. **Equipment design:** Biomechanics provides insights into the design of sports equipment, such as shoes, rackets, or protective gear. For example, running shoes are designed to absorb shock and offer stability based on biomechanical studies of foot motion. Similarly, tennis rackets are engineered to minimise vibration and optimise power transmission to the ball, based on biomechanical analysis of the arm's motion when swinging.
- iv. **Exercise technique:** Proper biomechanics guarantees that exercises are performed in a way that maximises effectiveness while reducing the risk of injury. For instance, during a squat, ensuring that the knees do not extend beyond the toes and the back remains neutral minimises strain on the knees and lower back, which helps in injury prevention.

e. Basic Principles of Biomechanics

Knowledge of the basic principles of biomechanics gives insight of how the body moves, how injuries happen and how to enhance movement and physical performance.

i. Principle of rotational motion

The concept of rotational motion in biomechanics pertains to the movement of a body around an axis, and it is a fundamental principle in sports and physical activities that require rotational movement, such as gymnastics, diving, or throwing sports.

- **Angular velocity:** This refers to the speed at which a body or a segment of the body is rotating. The higher the rotation speed, the greater the angular velocity.
- **Moment of inertia:** This is the measure of an object's resistance to rotation. It depends on the object's mass and the distribution of that mass from the axis of rotation. A smaller mass distribution (closer to the axis) makes rotation easier and faster.
- **Torque:** To initiate rotational motion, a force (torque) must be applied around a pivot point or axis. The greater the torque, the greater the rotational motion.

For instance, in gymnastics, when an athlete tucks their body during a somersault, they reduce their moment of inertia, allowing them to rotate faster. Conversely, stretching out their body would slow down the rotation.

ii. Principle of equilibrium

The principle of equilibrium pertains to the state in which the forces acting on a body are balanced, resulting in either stationary (static equilibrium) or constant velocity motion (dynamic equilibrium).

- **Static equilibrium:** Is achieved when all forces and torques acting on a body are balanced, causing the body to remain at rest. This is crucial in gymnastics, where maintaining static equilibrium is necessary for holding positions like handstands.
- **Dynamic equilibrium:** Involves maintaining balance while the body is in motion. Runners, cyclists, and dancers all rely on dynamic equilibrium to stay balanced during continuous movement.

Equilibrium is influenced by factors such as the centre of gravity, the base of support, and the mass of the body. For example, a wider base of support and a lower centre of gravity enhances stability, which is why athletes often adjust their stance and bend their knees to maintain balance.

iii. Principle of segmental analysis

The principle of segmental analysis centres on dividing the body's motion into smaller, individual segments or parts. In the field of biomechanics, the human body is seen as a series of unified segments, like the limbs, that collaborate to execute complex movements. Each body segment, such as the arm, leg, or torso, can be assessed for its role in overall movement. In numerous movements, such as tennis and badminton serve, the body progresses in a sequence from one segment to the other. Proficient coordination of these segments results in an effective and forceful movement. Misalignment, also known as improper movement, in one segment can have an impact on performance or cause injury to another segment. For instance, during a shot-put throw, the legs, hips, torso, and arms all function in a coordinated sequence to generate maximum throwing velocity. Failing to properly engage one segment could lead to reduced throwing speed and increase the risk of being injured.

iv. Principle of biomechanical analysis

Biomechanical analysis involves the study and assessment of movements to understand how forces and motions impact performance. This principle involves the application of scientific methods to analyse how the body moves and responds to different forces. **There are two primary types of biomechanical analysis:**

- **Qualitative analysis:** This type entails observing and describing the movements of an athlete or performer, often utilising visual observation or video analysis to evaluate posture, technique, and movement efficiency.
- **Quantitative analysis:** This type involves the measurement and calculation of forces, velocities, angles, and other variables, often utilising tools like motion capture systems or force plates to gather precise data.

Biomechanical analysis plays a critical role in injury prevention, performance enhancement, and equipment design. For example, sports scientists may use biomechanical analysis to determine the optimal running form for a sprinter to improve their speed while reducing the risk of injury.

Learning Tasks

1. Research and write a summary on the following
 - a. What are Biomechanics?
 - b. Why is Biomechanics important in sports and human movement?"
2. Plan an experiment using a rotating chair. Sit with your arms extended and then pull them in close to their bodies. Feel the change in spinning speed. Afterwards, write about their experience and its connection to sports like gymnastics.
3. Record a learner performing a basic sports skill (e.g., a soccer kick or basketball jump shot). Use slow-motion playback to break down the movement into different body segments.
4. Choose a sport (e.g., tennis, basketball, or running) and identify where biomechanical principles like force, torque, equilibrium, and segmental analysis come into play.
5. How does applying force at different points on a lever affect its rotation?

Pedagogical Exemplars

1. **Starter:** Begin the lesson by showing a video to the learners and ask intriguing questions on everyday movements relating to the video.
2. **Introduction:** Introduce the fundamental concepts of biomechanics, such as force, motion, and equilibrium, with real-life examples. Use a short video or animation showing various sports movements like running, throwing etc and discuss the basic biomechanical principles involved. Ensure to relate these concepts to practical examples that learners are familiar with.
3. **Activity-based Learning:** In mixed-gender groups, design activities where learners perform different physical tasks like jumping, and running and then measure and analyse the forces and angles involved by using simple tools like protractors or motion sensors etc. Rotate task to give all learners exposure to different aspects of the activity. Offer additional resources for those who need extra support, such as simplified guides or one-on-one assistance.
4. **Talk-for-Learning:** Learners in mixed-gender and diverse ability groups organise a classroom discussion where they explain how biomechanics principles apply to different sports by encouraging them to use biomechanical terminologies and support their explanations with evidence from their activities or observations. Assign specific roles within each group to ensure active participation and accountability of each group member. Supports the various groups to research biomechanics principles relevant to their chosen sports, using class materials, and online resources.
5. **Collaborative learning:** Learners in mixed ability and gender groups are assigned projects for them to research and present on specific biomechanics topics. Groups share their findings through oral presentations, posters, or reports. Ensure learners have access to a variety of resources, including textbooks, academic journals, online databases and videos. Supports the various groups to establish norms for communication and collaboration. Encourage learners to respect, listen attentively, and give constructive feedback to other group members.
6. **Group-based Learning:** Learners in mixed-ability groups work together to conduct experiments on biomechanics principles. Pair shy and quiet learners with more outgoing

peers who can help them feel comfortable sharing their ideas. Each group presents their findings and receives feedback from peers to promote a deeper understanding through collective effort. Offer clear instructions, including safety protocols, materials needed, and specific biomechanical concepts to focus on. Encourage learners to give structured feedback, ask relatable questions and provide constructive criticism.

Key Assessment

Level 1

1. Define biomechanics.
2. Identify the three types of levers in the human body.

Level 2

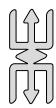
1. Explain Newton's three laws in the context of sports.
2. Identify the role of stability and centre of gravity in performing a handstand.
3. Describe the kinetic chain involved in a basic push-up.

Level 3

1. Examine the effect of different surfaces on running performance using biomechanical principles.
2. Compare and contrast the efficiency of different jumping techniques using force analysis.

Level 4

1. Analyse the biomechanics of jumping by describing the forces acting on the body.
2. Perform a biomechanical analysis of a sprinter's start, including torque and muscle activation.
3. Conduct a community-based research project, visiting local leisure and recreational facilities like parks, sports or cultural centres, among others to identify the opportunities they offer for leisure and recreation



Note

Select from the list provided, the assessment that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

HINT



The Recommended Mode of Assessment for Week 13 is project-based. Refer to Appendix F. Rubric on the assessment. Item 3 of level 4 can be used as an exemplar

WEEK 14

Learning Indicator: Apply biomechanical principles in physical activity

FOCAL AREA: APPLYING BIOMECHANICAL PRINCIPLES

APPLICATION OF THE PRINCIPLES OF BIOMECHANICS

Show learners the following video to demonstrate the concept of biomechanics. This video highlights what learners will learn from this unit.



<https://youtu.be/Aqo0w0PwZgk>

Principles of Motion in Biomechanics

The concept of motion refers to the movement of objects in a linear or circular path (on a fixed axis). Through this process, the moment of inertia acts as a resistance to motion. It has key features that include linear velocity and acceleration as well as angular velocity and acceleration. In biomechanics, principles of motion are essential for understanding movements like throwing, kicking, running turning etc where body parts move around joints.

1. Principle of angular velocity and acceleration

In gymnastics, during a somersault, gymnasts reduce their moment of inertia by tucking their bodies while going over the bar to increase angular velocity for faster rotations.

Application of angular velocity and acceleration

A diver performs a somersault in the air, completing 2 full rotations during the dive. The diver's angular velocity is 4 radians per second (rad/s).

Question: How long does it take the diver to complete one full rotation?

Solution

Formula for Angular Velocity: $\omega = \frac{\theta}{t}$

Where

- ω is the angular velocity (in radians/s).
- θ is the angular displacement (in radians).
- t is the time (in seconds).

For one full rotation: A full rotation is 2π rad (i.e. 360 degrees)

For 2 full rotations: Total angular displacement

$$\theta = 2 \times 2\pi = 4\pi \text{ rad.}$$

Solve for time t using the formula

$$\omega = \frac{\theta}{t}$$

Substituting the given values: $4 \text{ rad/s} = \frac{4\pi}{t}$

$$4 = \frac{4\pi}{t}$$

Solve for t : Multiply through by t and cancel like terms

$$t \times 4 = \frac{4\pi}{t} \times t \quad , \quad t \times 4 = 4\pi$$

Divide through by 4

$$\frac{t \times 4}{4} = \frac{4\pi}{4}$$

4 cancels each other out, so $t = \pi = 3.14$

Answer: It takes approximately **3.14 seconds** for the diver to complete one full rotation.

2. Moment of inertia

Divers manipulate their body shape (tuck or pike) to control rotational speed during spins.

Application of moment of inertia

A chaskele player swings a bat with a mass of 1.2 kg and the distance from the axis of rotation to the end of the bat is 0.8 m.

Question

What is the moment of inertia of the bat?

Solution

Formula for moment of inertia (for a rod about one end): $I = m \times r^2$

Where:

- I is the moment of inertia (in kg/m^2).
- m is the mass of the object (in kg).
- r is the radius (distance) from the axis of rotation (in metres).

Substitute the given values

$m = 1.2 \text{ kg}$ and $r = 0.8 \text{ m}$

Solving for I , $I = 1.2 \times (0.8)^2 = 1.2 \times 0.64 = 0.768 \text{ kgm}^2$

Answer: The moment of inertia of the bat is **0.768 kg/m²**.

3. Torque

In tennis, during a serve, players generate torque at the shoulder joint to rotate the racket for maximum power.

Application of torque

A football player kicks a ball with a force of 50N at 0.4 m from the centre of the ball.

Question: What is the torque applied to the ball?

Solution

Formula for Torque: $T = F \times r$

Where:

- T is the torque (in Newton-meters, Nm).
- F is the force applied (in Newtons, N).
- r is the radius (distance) from the axis of rotation (in metres, m).

Substitute the given values

$$F = 50 \text{ N}$$

$$r = 0.4 \text{ m}$$

$$T = 50 \times 0.4 = 20 \text{ Nm}$$

Answer: The torque applied to the ball is **20 Nm**.

4. Conservation of angular momentum

To maintain balance and control during rotation, skaters pull their arms inward to move faster and extend them to slow down.

Application of conservation of angular momentum

A skater spins and pulls her arms in. Initially, her moment of inertia is $5 \text{ kg}\text{m}^2$ and her angular velocity is 3 radians per second (rad/s). After pulling her arms in, their moment of inertia reduces to $3 \text{ kg}\text{m}^2$. What is their new angular velocity?

Question: What is the skater's new angular velocity after pulling her arms in?

Solution

Formula for conservation of angular momentum: $I_1 \times \omega_1 = I_2 \times \omega_2$

Where

- I_1 and I_2 are the moments of inertia before and after the skater pulls her arms in.
- ω_1 and ω_2 are the angular velocities before and after the skater pulls her arms in.

Substitute the given values

$$I_1 = 5 \text{ kg}\text{m}^2 \quad \omega_1 = 3 \text{ rads/s} \quad I_2 = 3 \text{ kg}$$

Solve for ω_2 : $5 \times 3 = 3 \times \omega_2$

Dividing through by 3

$\frac{5 \times 3}{3} = \frac{3 \times \omega_2}{3}$, 3 cancels each other out, so $\omega_2 = 5$ rad/s

Answer: The skater's new angular velocity after pulling her arms in, is **5 rad/s**.

5. Gyroscopic stability

Spinning wheels provide stability, helping cyclists maintain balance.

Application of gyroscopic stability

A cyclist is riding with the front wheel spinning at an angular velocity of 25 radians per second (rad/s). The moment of inertia of the wheel is 0.3 kg/m².

Question: What is the angular momentum of the wheel and how does it contribute to stability?

Solution:

Formula for Angular Momentum: $L = I \times \omega$

Where:

- L is angular momentum (in kg/m²/s).
- I is moment of inertia (in kg/m²).
- ω is angular velocity (in rad/s).

Substitute the values

$$L = 0.3 \times 25 = 7.5 \text{ kg/m}^2/\text{s}$$

Answer: The angular momentum of the wheel is **7.5 kg/m²/s**, which helps the cyclist stay stable by resisting sudden changes in the wheel's direction.

6. Angular kinetic energy

In discuss throwing, rotational energy is used to enhance the release speed of the discuss.

Application of angular kinetic energy

A discuss thrower rotates with an angular velocity of 10 radians per second (rad/s) and the discuss has a moment of inertia of 1.2 kg/m².

Question: What is the rotational kinetic energy of the discuss?

Solution

Formula for Angular Kinetic Energy: $KE_{Rot} = \frac{1}{2}I \times \omega^2$

Where:

KE_{Rot} is rotational Kinetic Energy (in Joules, J).

I is moment of inertia (in kg/m^2).

ω is angular velocity (in rad/s).

Substitute the values: $KE_{\text{rot}} = \frac{1}{2} \times 1.2 \times (10)_2$

$$KE_{\text{rot}} = 0.6 \times 100 = 60 \text{ J}$$

Answer: The rotational kinetic energy of the discus is **60 Joules**, which contributes to the power and distance of the throw.

7. Axis of Rotation

In high jump, athletes rotate their bodies over the bar (Fosbury Flop) to minimise the height of the centre of mass, reducing energy requirements.

Application of axis of rotation

In the Fosbury Flop high jump technique, an athlete rotates his body over the bar. The axis of rotation is approximately along his centre of gravity as he arches his back. Assume the athlete's moment of inertia about the centre of gravity is 5.0 kg/m^2 and his angular velocity during the motion is 3 radians per second.

Question: What is the angular momentum of the athlete as he rotates over the bar?

Solution

Formula for Angular Momentum: $L = I \times \omega$

Note: This formula is the same as the one for gyroscopic stability.

Where

- L is angular momentum (in $\text{kg/m}^2/\text{s}$).
- I is moment of inertia (in kg/m^2).
- ω is angular velocity (in rad/s).

Substitute the values:

$$L = 5.0 \times 3 = 15.0 \text{ kg/m}^2/\text{s}$$

Answer: The angular momentum of the high jumper is **15.0 $\text{kg/m}^2/\text{s}$** , allowing the athlete to control his rotation and effectively clear the bar while maintaining stability.

8. Centripetal and centrifugal forces

In hammer throw, athletes lean into the curve, adjust their speeds, extend the missile to control the radius of rotation and coordinate arm movements for efficient release.

Application of Centripetal Force

In a hammer throw, the hammer's mass is 7.26 kg, and it moves in a circular path with a radius of 1.2 m at a speed of 15 m/s.

Question: What is the centripetal force acting on the hammer?

Solution

Formula for Centripetal Force: $F = \frac{m \times v^2}{r}$

Where:

- F is centripetal force (in N).
- m is mass (in kg).
- v is velocity (in m/s).
- r is radius (in m).

Substitute the values: $F = \frac{7.26 \times (15)^2}{1.2}$

$$F = \frac{7.26 \times 225}{1.2} = \frac{1633.5}{1.2} = 1361.25 \text{ N}$$

Answer: The centripetal force acting on the hammer is **1361.25 N**, keeping it in a circular motion.

Application of centrifugal force

A biker leans into a curve with a radius of 20 m moving at 10 m/s. The combined mass of the rider and bike is 150 kg.

Question: What is the centrifugal force experienced by the rider?

Solution

Formula for Centrifugal Force: $F = \frac{m \times v^2}{r}$

Where

- F is centripetal force (in N).
- m is mass (in kg).
- v is velocity (in m/s).
- r is radius (in m).

Substitute the values

$$F = \frac{150 \times (10)^2}{20}$$

$$F = \frac{150 \times 100}{20} = \frac{15000}{20} = 750 \text{ N}$$

Answer: The centrifugal force experienced by the rider is **750 N**, which they counter by banking (leaning) into the turn.



Figure 14.1: Rotational motion showing angular velocity

Principle of Equilibrium

The principle of equilibrium in biomechanics refers to a state where all forces and torques acting on a body are balanced, resulting in either static or dynamic stability. In static equilibrium, the body remains at rest, with no net force or movement. In dynamic equilibrium, the body moves with constant velocity without acceleration. Maintaining equilibrium is crucial for tasks like standing, walking or performing athletic movements where the body must control its centre of gravity and balance against external forces. Equilibrium is a state of motion where there are no unbalanced forces or torques acting on the body. Equilibrium can be static or dynamic.

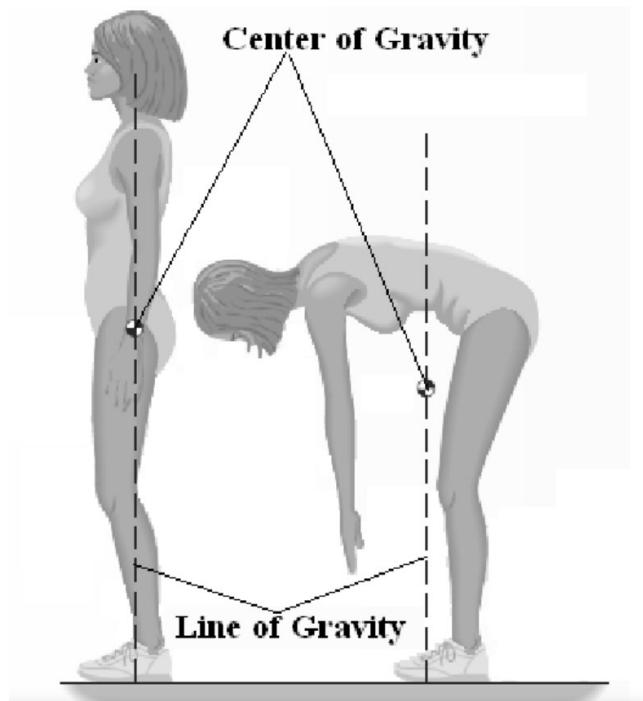


Figure 14.2: Centre of gravity and line of gravity of a human body

Principle of Segmental Analysis

The principle of segmental analysis in biomechanics involves breaking down the body into individual segments (such as the arm, leg, or trunk) to analyse their movement and contribution to overall motion. Each segment is treated as an independent entity, and its kinematics (motion) and kinetics (forces and torques) are studied. This approach helps in understanding how different

body parts coordinate to produce complex movements like running, jumping or lifting and it aids in optimising performance and injury prevention.

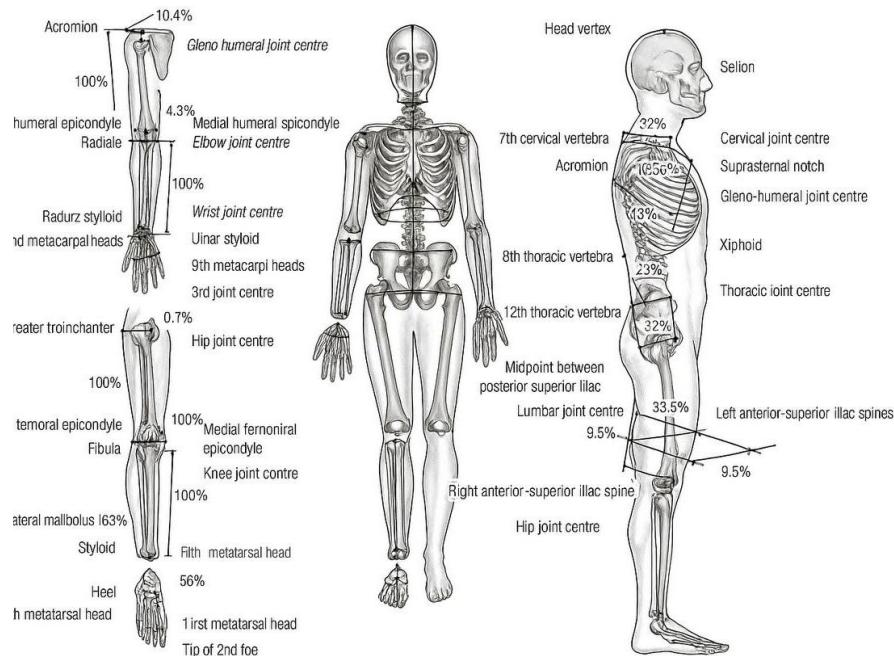


Figure 14.3: Estimation of the body segment inertial parameters

Principle of biomechanics analysis

The principle of biomechanics analysis involves examining human movement through the application of mechanical laws. It focuses on understanding the forces acting on the body and how these forces affect motion. These principles include:

1. Stability

This is a fundamental concept within mechanics that focuses on the behaviour of objects or bodies moving at a constant velocity. This field of study examines how these entities maintain their state of motion without external influences causing them to accelerate, decelerate or alter their trajectory. In essence, stability has the qualities and characteristics that enable an object to remain unchanged in its motion. It demonstrates resilience against disturbances that could disrupt its steady course. Understanding stability is crucial for predicting how the body, sports structures, missiles, equipment and systems behave in response to forces acting upon them.

Stability increases when:

- Mass increases:** Greater mass increases inertia, making it harder to move the body from a stable position e.g.
 - In a rugby scrum (i.e. a restart where players bind together), a heavier player is harder to push out of position, enhancing their stability against opposing players.
 - Wrestlers gain an advantage by having greater body mass, which increases their resistance to being moved by their opponents.
- Distance from centre of mass (COM) to the edge of base of support decreases. This reduces the likelihood of tipping or falling e.g.
 - Gymnasts keep their COM directly over (perpendicular to) their BOS (their feet) to maintain balance on the narrow balance beam.

- ii. In martial arts or combat sports, fighters lower their body by bending their knees to bring the COM closer to the middle of BOS, increasing stability for counterattacks or defence.
- c. **Size of base of support increases (BOS):** A larger base provides more area for the COM to remain within, increasing stability e.g.
 - i. In basketball, players widen their stance to create a larger BOS, making it harder to be pushed or lose balance when defending an opponent.
 - ii. Weightlifters adopt a wide stance when lifting heavy weights to increase the BOS and maintain stability.
- d. **Position of centre of mass is closer to base of support:** A lower COM relative to the BOS reduces the likelihood of tipping, enhancing stability e.g.
 - i. Skaters bend their knees and lean slightly forward, keeping their COM low to maintain stability during turns.
 - ii. Cyclists bend down and lean forward, keeping their COM low to maintain stability during turns.

Application of the Principle of Stability

Scenario 1

A gymnast performs a handstand with a total body weight of 600 N. Their hands are spaced 0.4 m apart, forming their base of support. The gymnast's centre of gravity is directly above their hands.

Question: What happens to the gymnast's stability if their centre of gravity shifts 0.1 m outside the base of support?

Solution

Condition for stability: The gymnast remains stable if the centre of gravity (CoG) lies within the base of support.

Base of support width: Hands are 0.4 m apart, so the CoG must remain within ± 0.2 m from the centre.

Shift in CoG: The CoG shifts 0.1 m outside the base of support.

Result: Since $0.1 > 0.20$, the gymnast's CoG falls outside the base of support.

Answer: The gymnast loses stability and falls out of the handstand.

Explanation: In a handstand, keeping the CoG directly above or in line with the base of support (hands) is essential for stability. Even a small shift outside this base can cause instability and a loss of balance.

Scenario 2

A soccer player takes a penalty kick. To maintain stability during the kick, they plant their non-kicking foot 0.6 m away from the ball. Their body weight is 700 N and the friction force from the ground is 400 N.

Question: If the player leans forward, will their stability be affected?

Solution

Condition for stability: Stability depends on whether the line of gravity remains within the base of support.

Base of support: The planted foot provides a base of support. If the player leans too far forward, their line of gravity may shift outside this base.

Friction role: The friction force (400 N) resists forward motion. If the lean generates a forward force greater than 400 N, stability is lost.

Answer: If the player leans too far forward, they may lose stability if the forward force exceeds 400 N.

Explanation: To maintain stability while kicking, players should keep their CoG within the base of support and ensure friction with the ground is sufficient to counteract any leaning forces. This helps to prevent a slip and a fall.



Figure 14.4: Young adult exhibiting stability in a one leg yoga stance

Production of Maximum Force Velocity

The principle suggests that the greatest possible force is generated when all muscles contributing to a movement work together in a coordinated manner. It is using all possible joint movements to produce maximum force to achieve an objective (full joint range of motion or ROM). Overall, the principle emphasises coordination, strength, and technique to produce the highest amount of force.

Factors to Consider for Maximum Force Velocity

1. Engage large muscle groups
2. Effective combination of muscle action
3. Must have a stable base of support
4. Optimal joint angles

Examples include

- Running as fast as we can; relying on joint rotation of ankle, knee, and hip joints.
- Full rotation at each joint achieved through contraction of multiple muscle.

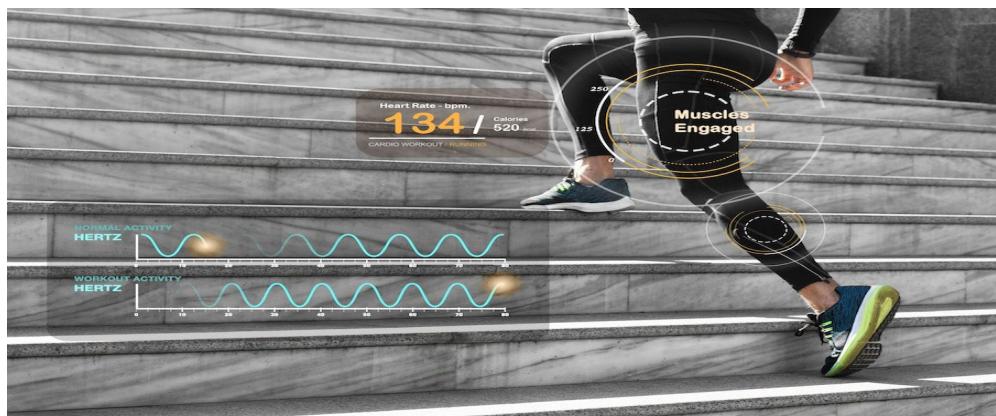


Figure 14.5: Stats of an athlete doing physical activity

Principle of Maximum Velocity

Maximum velocity on the other hand deals with speed of action. The principle states that to achieve the highest possible speed, body movements must be coordinated in a sequential manner, with energy transferring from larger, slower segments to smaller, faster ones. It involves “going all out”. This principle is crucial in activities that require rapid movement, such as throwing, sprinting, or kicking.

Factors to Consider for Maximum Velocity

1. Sequential segmental action
2. Optimal timing
3. Minimised resistance
4. Summation of speed

Application of Sequential Segmental Action

Principle: Body segments act in a coordinated sequence, with larger, slower segments initiating movement and smaller, faster segments completing the action. This generates optimal force and speed.

Question: In a chaskele game, the thrower’s shoulder, elbow and wrist contribute sequentially to the ball’s speed. The shoulder generates 10 m/s the elbow adds 5 m/s and the wrist adds 3 m/s. What is the total speed of the ball at release?

Solution

Add contributions sequentially

$$\text{Total Speed} = \text{Shoulder Speed} + \text{Elbow Speed} + \text{Wrist Speed}$$

Substitute values

$$\text{Total Speed} = 10 \text{ m/s} + 5 \text{ m/s} + 3 \text{ m/s}$$

$$\text{Total Speed} = 18 \text{ m/s}$$

Answer: The ball’s total speed is **18 m/s**.

Application of Optimal Timing

Principle: Movements must be timed perfectly to transfer maximum energy from one segment to the next.

Question: During a serve in tennis, the player's racket accelerates from 0 m/s to 25 m/s in 0.5 seconds. What is the acceleration of the racket?

Solution

Formula for Acceleration

$$a = \frac{v_f - v_i}{t}$$

Where:

a is Acceleration.

v_f is Final velocity.

v_i is Initial velocity.

t is Time.

Substitute values

$$a = \frac{25\text{ m/s} - 0\text{ m/s}}{0.5\text{ s}}$$

$$a = 50\text{ m/s}^2$$

Answer: The acceleration of the racket is **50 m/s²**.

Application of Minimised Resistance

Principle: Reducing resistance (e.g., air or water drag) allows athletes to achieve greater speed and efficiency.

Formula: $F_d = 0.5 \times C_d \times A \times v^2$

What the terms mean

- **Drag Force (F_d):** Drag force, measured in Newtons (N), is the force resisting motion in water.
- **0.5 (Constant):** 0.5 is a constant fluid dynamics figure used in drag force calculations. It is a standard value in fluid dynamics equations. It accounts for how force is distributed across the frontal area in a fluid.
- **Drag Coefficient (C_d):** This measures how streamlined the swimmer's body shape is. Lower values of (C_d) means the swimmer moves more smoothly through the water, reducing drag. Lower values mean less resistance.
- **Surface Area (A):** A Surface area, in square meters (m^2), is the frontal area of the swimmer's body that pushes against the water. This is the part of the swimmer's body facing forward in the water. Larger surface areas create more resistance.

- For example, if the swimmer spreads their arms too wide, A increases, causing more drag.

Velocity (v): Speed (linear velocity) of the swimmer, in meters per second (m/s).

Scenario: A swimmer reduces their drag coefficient from 0.4 to 0.3 while maintaining a speed of 2 m/s. The frontal surface area of the swimmer's body is 1.5 m^2 .

Question: How much drag force is reduced when the swimmer improves their body position to reduce drag?

Solution

Step 1: Calculate the initial drag force (F_{d1})

Substitute the values into the formula: $F_{d1} = 0.5 \times C_d \times A \times v^2$

Where $C_d = 0.4$, $A = 1.5\text{ m}^2$, $v = 2\text{ m/s}$

$$F_{d1} = 0.5 \times 0.4 \times 1.5 \times (2)^2$$

$$F_{d1} = 0.5 \times 0.4 \times 1.5 \times 4$$

$$F_{d1} = 0.5 \times 2.4 = 1.2\text{ N}$$

The initial drag force is **1.2 N**.

Step 2: Calculate the reduced drag force (F_{d2})

Same formula: $F_{d2} = 0.5 \times C_d \times A \times v^2$

Now where $C_d = 0.3$:

$$F_{d2} = 0.5 \times 0.3 \times 1.5 \times (2)^2$$

$$F_{d2} = 0.5 \times 0.3 \times 1.5 \times 4$$

$$F_{d2} = 0.5 \times 1.8 = 0.9\text{ N}$$

The reduced drag force is **0.9 N**.

Step 3: Calculate the difference in drag force (ΔF_d)

Subtract F_{d2} from F_{d1}

$$\Delta F_d = F_{d1} - F_{d2}$$

$$\Delta F_d = 1.2\text{ N} - 0.9\text{ N}$$

$$\Delta F_d = 0.3\text{ N}$$

Answer: The swimmer reduces the drag force by **0.3 N**.

Application of summation of speed

Principle: The principle of summation of speed states that in sequential movements, such as throwing or kicking, the speed generated at each segment of the body adds up to maximise the final velocity of the object or action.

Scenario: A soccer player kicks a ball by using his legs and hips in a sequential motion. The hip generates an angular velocity of 3 rad/s and the knee adds an additional angular velocity of 5 rad/s. The foot contributes an extra 8 rad/s as it strikes the ball.

Question: What is the total velocity of the ball if the summation of speed principle holds and each segment transfers its velocity effectively to the ball?

Solution

Step 1: Identify the contributions

- **Hip angular velocity:** 3 rad/s
- **Knee angular velocity:** 5 rad/s
- **Foot angular velocity:** 8 rad/s

Step 2: Add the contributions

Total angular velocity is the sum of all the contributions

$$\text{Total angular velocity} = \text{Hip} + \text{Knee} + \text{Foot}$$

$$\text{Total angular velocity} = 3 + 5 + 8$$

$$\text{Total angular velocity} = \mathbf{16 \text{ rads/s}}$$

Step 3: Interpret the result

The ball is struck with a total angular velocity of 16 rad/s. This high velocity is achieved by summing the speed contributions from each body segment, demonstrating how coordinated movements maximise performance.

In sequential motion, using the hips, knees and feet in a coordinated sequence transfers energy effectively.

In practical application, the principle of summation of speed through sequential motion is the reason why proper technique is crucial in all sports e.g. soccer, tennis, throwing events etc.

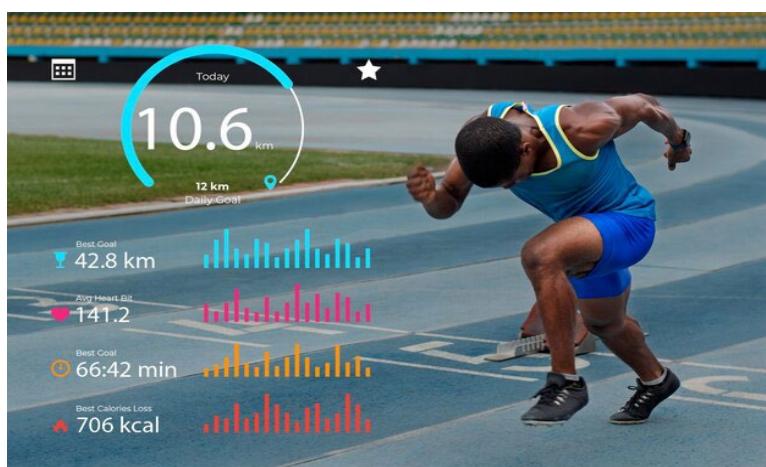


Figure 14.6: Maximum velocity of a sprinter

Principle of impulse-momentum relationship

This principle is related to linear (or translational) motion. It states that, the greater the applied impulse, the greater the increase in velocity. This describes how the change in an object's momentum is directly related to the impulse applied to it. **IMPULSE=CHANGE IN MOMENTUM**. When applying greater force in activities like jumping, throwing or sprinting, the time of force application should be optimised, meaning it must be both swift and strong to achieve maximum efficiency. Extending the time of contact and explosion will reduce performance rather than enhance it. This principle explains how changes in an object's momentum are directly related to the impulse applied to it. In long jumping, the athlete applies maximum force against the ground swiftly at take-off to achieve the required forward and upward momentum. In sprinting, the sprinter generates quick and strong ground contact to propel them forward efficiently. In throwing, the athlete ensures the force is applied quickly and effectively to maximise the implement's velocity. This principle emphasises the need for precision, power and timing in maximising athletic performance.

Factors to consider in the impulse-momentum relationship

1. Time duration (Impulse Time)
2. Initial momentum
3. Friction or resistance
4. Angle of application

Application of impulse-momentum relationship

Question: In a long jump, an athlete with a mass of **60 kg** pushes off the ground with an average force of **1,200 N**. The force is applied for **0.2 seconds**. Calculate the impulse generated by the athlete during take-off.

Solution

The formula for impulse is, Impulse = $F \times t$

Where

$F = 1.200$ N (force applied)

$t = 0.2$ seconds (time of force application)

$$\text{Impulse} = 1.200 \times 0.2 = 240$$

N. Answer: The impulse generated is **240 N**.

Direction of application of the applied force

This is a type of movement principle that occurs directly opposite the force applied. This principle is closely related to Newton's third law of motion; for every action, there is an equal and opposite reaction.

Factors to consider in applied force

1. **Force alignment with desired motion:** The applied force should be directed along the line or path of the intended motion to maximise efficiency. Misaligned forces can lead to wasted energy or reduced performance. (e.g., in horizontal and vertical jumps, the body posture and composition must be properly aligned to achieve the best result).

- Angle of application:** The angle at which the force is applied relative to the object's motion is crucial. Forces applied at different angles result in different combinations of speed and direction. In jumping, an optimal upward angle ensures maximum height.
- Resistance forces:** The applied force should counteract resistance forces such as gravity, friction or air resistance, in the most effective direction to overcome them and achieve an optimum outcome. The presence of these external resistant forces affects output especially when performing in an opposite direction.

Examples include

- In getting up from a chair, an individual will push on the armrests and a reaction force equal in magnitude will push back to assist them in standing up.
- In aquatic pool sports, free-style swimmers turn and push against the wall of the pool with their legs to propel themselves forward in the direction opposite to that of the applied force.

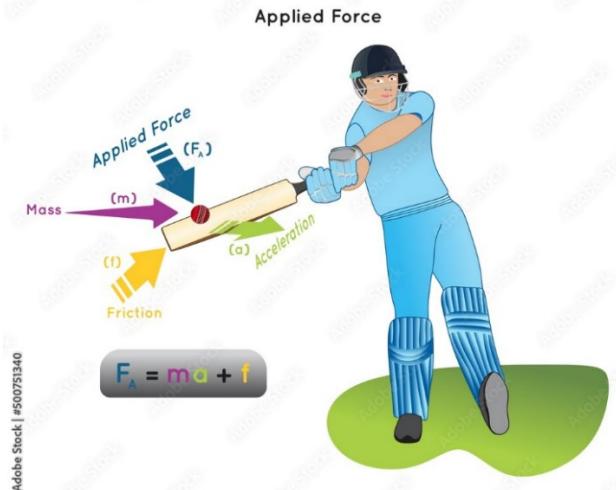


Figure 14.7: Applied force in baseball

Principle of conservation of angular momentum

This is related to angular motion. It is the quantity of motion contained within an object or a body. This is constant when an individual or object is free in the air.

Factors to consider for angular momentum

- External torque:** Angular momentum is conserved only if no external torque acts on the system. Any external torque will result in a change in the system's angular momentum.
- Closed system:** For angular momentum to be conserved, the system must be closed, meaning no external forces or torques are acting on it. This ensures that external interactions do not affect the total angular momentum.
- Moment of inertia (rotational inertia):** Angular momentum depends on an object's moment of inertia, which is influenced by how mass is distributed relative to the axis of rotation. If the distribution changes (e.g., arms pulling in), the moment of inertia changes, affecting the rotational speed to conserve angular momentum.

For example: Physical activities such as trampoline, gymnastics, tumbling, aerial skiing, aerial snowboarding and diving apply the principle that requires conservation of angular momentum.

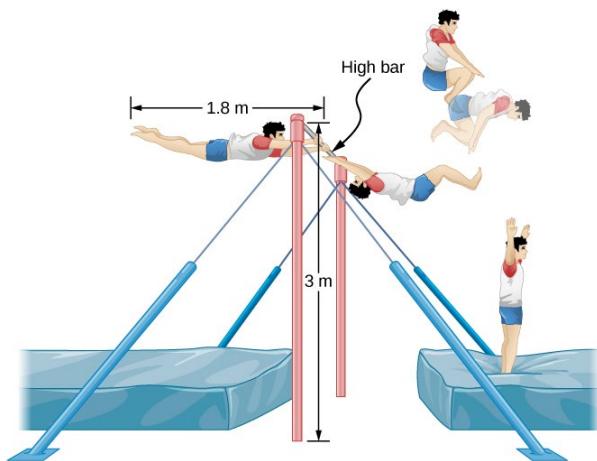


Figure 14.8: Conservation of angular momentum

Learning Tasks

1. Choose a sport that involves rotational motion (e.g., baseball, javelin throw) and describe how rotational motion helps the athlete perform their movement effectively.
2. Choose a basic movement (e.g., a jump or throw) and break down the motion of each body segment (arms, legs, torso). Describe how each segment contributes to the overall movement.
3. Perform a yoga pose and adjust your posture to see how the centre of mass and base of support affect your stability. Write down which adjustments improved your balance.
4. Throw a ball using only your arm, then again using your full body. Reflect on how using more joints and muscles allowed you to throw farther, and connect this to the principle of maximum force

Pedagogical Exemplar

1. **Starter:** Instruct the learners to stand on one foot, allowing them to find their centre of balance and maintain the position with poise. Encourage them to focus on a specific point to help stabilise themselves. After a few moments, invite them to close their eyes while continuing to balance gently. Ask them to pay close attention to any sensations or shifts in their stability, reflecting on how the absence of sight affects their ability to maintain equilibrium.
2. **Introduction:** Provide a quick overview of the key biomechanical principles they'll learn:
 - **Rotational motion:** When you throw a ball or kick a soccer ball, parts of your body move in circles to create powerful movements.
 - **Equilibrium:** Maintaining balance is key for tasks like standing on one foot or performing athletic stunts.
 - **Force production and velocity:** Generating force helps in jumping high, sprinting fast, or lifting weights effectively.
3. **Exploratory Learning:** Instruct learners to stand on one foot to find their balance. Encourage them to focus on a specific point for stability. After a moment, invite them to gently close their eyes while balancing, and reflect on how the lack of sight affects their equilibrium. Learners explore how the various principles of biomechanics are applied in physical activity/training and sports contexts. Support shy learners by offering frequent,

small compliments to enhance their confidence. Employ positive body language to create a sense of support for them. Give slower learners additional time to understand instructions and formulate their responses. Pressuring them to finish an activity quickly can increase their anxiety and make them less likely to participate. Guide learners to practice the application of the principles in a sports context.

4. **Project-based Learning:** Learner's design specific types of training, e.g., (strength training, flexibility training, endurance training, etc.) and apply the various principles of biomechanics in performing them at home/school during their personal scheduled activity periods. Learners keep a record of their performance and submit it in school. Allow highly proficient learners to work independently or to explore deeper biomechanics principles. Provide additional resources and allow them to support others. Support learners by highlighting their strengths while offering constructive feedback on areas where they can improve. This fosters confidence, especially in individuals who might face challenges with self-motivation or self-esteem.

Key Assessment

Level 1: State three types of training to which the principles of biomechanics can be applied.

Level 2

1. Define biomechanics and explain its relevance to physical training.
2. Describe how the principle of rotation affects the movement of a part of the body in physical activity.

Level 3

1. Demonstrate the application of the various principles of biomechanics in specific types of training.
2. Demonstrate how you would apply the principle of alignment during a push-up in strength training.

Level 4: Develop a personal plan by incorporating leisure and recreation into your daily activities to enhance your personal well-being and development.

HINT



Assign Individual Project Work in Week 14. See Appendix G, which has been provided at the end of this section, detailing the structure and structure of the individual project. The individual project will be submitted in Week 18.

SECTION 7 REVIEW

In Week 13, learners explore the fundamental biomechanical principles that govern physical activity, focusing on concepts such as balance, stability, leverage and force. Through discussions, visual aids and practical demonstrations, learners analyse how these principles influence performance in various physical activities and sports. By engaging in hands-on activities, they observe their movements and identify how adjustments to posture, technique and force application can enhance performance and reduce injury risks. This week emphasises theoretical understanding and introduces practical applications of biomechanics in physical activity.

In Week 14, the focus shifts to applying these biomechanical principles in real-world settings with some mathematical applications. Learners engage in activities that require

them to refine techniques in sports and exercises, using the knowledge gained in Week 13. By participating in group work and problem-solving tasks, learners practice applying biomechanical principles to optimise movement efficiency and performance. They also evaluate their peers' movements, offering feedback based on biomechanical insights. This week highlights the importance of practical applications, enabling learners to integrate biomechanics into their daily activities and sports for improved performance and injury prevention.

Throughout the section, provide guidance through interactive and learner-centred activities, fostering collaboration and critical thinking. This approach creates a supportive environment where learners develop both theoretical and practical understanding of biomechanics. By participating in these activities, learners will gain valuable skills to analyse and optimise their movements, contributing to better physical performance and overall well-being.



APPENDIX F: RUBRICS FOR PROJECT-BASED ASSESSMENT

Criteria	3 Marks	2 Marks	1 Mark
1. Identification of Local Leisure and Recreational Facilities	Identifies 3 facilities. Example: Parks, sports complexes, community centers, cultural centers, libraries.	Identifies 2 facilities. Example: Parks, sports complexes, community centers.	Identifies 1 facility. Example: Only mentions parks.
2. Description of Activities Offered	Describes 3 activities with examples for each facility. Example: Parks (walking, jogging), Sports Complexes (football, swimming), Cultural Centers (art exhibitions, music classes).	Describes 2 activities with fewer details. Example: Parks (walking), Sports Complexes (football), Cultural Centers (art exhibitions).	Describes 1 activity. Example: Mentions walking without detailing other activities.
3. Evaluation of Accessibility and Inclusivity	Evaluates 3 accessibility for all groups with specific examples. Example: Parks are free for all; sports complexes have ramps for people with disabilities.	Evaluates 2 accessibility for all groups with specific examples. Example: Parks are free for all; sports complexes have ramps for people with disabilities.	Evaluates 1 accessibility for all groups with specific examples. Example: Parks are free for all; sports complexes have ramps for people with disabilities.
4. Participation and Engagement	Show 3 of the following such as: Contributing to the group, supporting colleagues, respect for each other, etc.	Show 3 of the following such as: Contributing to the group, supporting colleagues, respect for each other, etc.	Show 3 of the following such as: Contributing to the group, supporting colleagues, respect for each other, etc.
5. Social and Economic Benefits of Leisure and Recreation	Explains 3 benefits with examples. Example: Improved health (exercise in parks), social cohesion (community events), job creation (hiring staff for cultural centers).	Explains 2 benefits with fewer details. Example: Health improvement and social cohesion but no mention of job creation.	Explains 1 benefit. Example: Only mentions health benefits, with no social or economic aspects.

Total – 15 marks



APPENDIX G: A SAMPLE INDIVIDUAL PROJECT

Assign individual project tasks to learners in week 14 of the academic year. Below is an example of a project task for individual learners.

E.g.

Project Task: Develop a detailed action plan or proposal on how the specific expectations of the Ghanaian youth can be met

Submission and Presentation

1. Submit your action plan or proposal in week 17.
2. You will do a brief presentation of your proposal in class.

How to Administer

Provide necessary resources, materials, and support to help each learner to succeed in their project. Design the project and provide a project description in line with learning outcomes, etc.

Refer to the Teacher Assessment Manual and Toolkit (pages 34-36) for more details on how to administer the assessment

Scoring guide

This scoring guide outlines the criteria for evaluating proposals aimed at addressing the needs and challenges of Ghanaian youth. Each criterion includes specific expectations and guidance on how to meet them effectively.

Criteria	Excellent – 4 marks	Very good – 3 marks	Good – 2 marks	Satisfactory – 1
<i>Content and Relevance</i>	<i>Identify 4 specific needs and challenges of Ghanaian youth (e.g., employment, education, mental health support, civic engagement).</i>	<i>Identify 3 specific needs and challenges of Ghanaian youth (e.g., employment, education, mental health support, civic engagement).</i>	<i>Identify 2 specific needs and challenges of Ghanaian youth (e.g., employment, education, mental health support, civic engagement).</i>	<i>Identify 1 specific needs and challenges of Ghanaian youth (e.g., employment, education, mental health support, civic engagement).</i>
<i>Clarity of Objectives</i>	<i>State 4 specific objectives that are realistic and achievable. Objectives must be specific, time-bound, and aligned with youth aspirations.</i>	<i>State 3 specific objectives that are realistic and achievable. Objectives must be specific, time-bound, and aligned with youth aspirations.</i>	<i>State 2 specific objectives that are realistic and achievable. Objectives must be specific, time-bound, and aligned with youth aspirations.</i>	<i>State 1 specific objectives that are realistic and achievable. Objectives must be specific, time-bound, and aligned with youth aspirations.</i>

<i>Presentation Structure</i>	<i>introduction explanation of issues, and concluding with a summary of expected outcomes.:</i>	<i>introduction explanation of issues, and concluding without a summary of expected outcomes.:</i>	<i>introduction explanation of issues, and no conclusion with a summary of expected outcomes.:</i>	<i>introduction explanation of issues, and concluding with a summary of expected outcomes.:</i>
<i>Communication Skills</i>	<p><i>Showing 4 of the skills, e.g.</i></p> <p><i>Audible voice,</i></p> <p><i>Keeping eye contact</i></p> <p><i>Pay attention to the audience</i></p> <p><i>Engaging the audience with interaction</i></p> <p><i>Use of gesture</i></p>	<p><i>Showing 3 of the skills, e.g.</i></p> <p><i>Audible voice,</i></p> <p><i>Keeping eye contact</i></p> <p><i>Pay attention to the audience</i></p> <p><i>Engaging the audience with interaction</i></p> <p><i>Use of gesture</i></p>	<p><i>Showing 2 of the skills, e.g.</i></p> <p><i>Audible voice,</i></p> <p><i>Keeping eye contact</i></p> <p><i>Pay attention to the audience</i></p> <p><i>Engaging the audience with interaction</i></p> <p><i>Use of gesture</i></p>	<p><i>Showing 1 of the skills, e.g.</i></p> <p><i>Audible voice,</i></p> <p><i>Keeping eye contact</i></p> <p><i>Pay attention to the audience</i></p> <p><i>Engaging the audience with interaction</i></p> <p><i>Use of gesture</i></p>

Total – 16 marks

Feedback

Provide feedback to guide

SECTION 8: PROFESSIONALS IN HEALTH EDUCATION

STRAND: ACADEMIC AND CAREER PATHWAYS

Sub-Strand: Health Education Pathways

Learning Outcome: *Identify and discuss professional pathways in Health Education*

Content Standard: *Demonstrate knowledge and understanding of professional pathways in Health Education*

INTRODUCTION AND SECTION SUMMARY

This section introduces learners to the field of health education. It focuses on understanding the roles and contributions of professionals in promoting public health and individual well-being. Learners will identify various health education professions, such as community health workers, public health educators and school health coordinators. They explore the essential skills and responsibilities these roles entail. The aim is to provide learners with insight into the diverse career opportunities within health education and how these professions contribute to a healthier society.

Learners will also discuss the preparation required to pursue careers in health education, including relevant academic pathways, professional certifications, and the importance of lifelong learning in this dynamic field. By the end of the section, they will gain a clearer understanding of how to align their interests and skills with potential careers in health education, fostering awareness of the steps needed to achieve their professional goals. This knowledge will empower learners to make informed decisions about pursuing a career that positively impacts public health.

The weeks covered by the section are

Week 15: Identify professionals in Health Education

Week 16: Discuss professional preparation of career pathways in Health Education

SUMMARY OF PEDAGOGICAL EXEMPLARS

Employ a blend of research activities, discussions and guest speaker engagements to introduce learners to health education professions and career pathways. Encourage learners to investigate various roles through digital research, group presentations and case studies that showcase real-world health education initiatives. Interactive activities, such as role-playing exercises, can allow learners to simulate the responsibilities of health education professionals, which will help deepen their understanding of the field.

Differentiated instruction is key to addressing the diverse learning needs of your learners. While gifted learners may take on advanced tasks like evaluating the impact of health education

programmes or designing their own health campaigns, other learners may benefit from guided discussions or visual aids that outline professional preparation steps. Inclusive activities ensure that all learners actively engage with the topic, fostering a comprehensive understanding of health education careers and pathways.

ASSESSMENT SUMMARY

Assessment will focus on learners' ability to identify and describe health education professions and articulate the pathways required to pursue these careers. Individual assignments may include creating profiles of specific health education roles or researching the educational requirements for a chosen profession. Group projects could involve designing a mock health education campaign or conducting interviews with local health professionals to gain practical insights.

Reflection activities, such as journaling on personal career interests within health education, can help learners connect theoretical knowledge to their aspirations. Provide constructive feedback on all assignments. Ensure that learners grasp the relevance of health education careers and understand the steps required to enter the field. Assessments should aim to reinforce critical thinking and practical application of the concepts covered in the section.

WEEK 15

Learning Indicator: Identify professionals in Health Education

FOCAL AREA: PROFESSIONALS IN HEALTH EDUCATION

PROFESSIONALS IN HEALTH EDUCATION

Introduction

A vital area, health education seeks to enhance the health of people and communities by giving them the knowledge and tools they need to adopt healthier lifestyles. Health education professionals aim to improve health and prevent diseases in a variety of settings, including workplaces, public health organisations, healthcare institutions, and schools. These specialists work to inform the public about critical issues such as illness prevention, mental health, physical exercise, and nutrition. Their efforts are crucial to raising living standards and fostering healthier surroundings.

The main goal of health education is to provide individuals and communities with the knowledge, skills, and resources to make informed decisions about their health and adopt healthy behaviours to improve their overall well-being.

1. Professionals

A **professional** is an individual who has acquired specialised education, training, and expertise in a specific field with knowledge, skills, and qualifications in a particular field or occupation, often having undergone extensive education, training, or certification. They are often certified or licensed by a regulatory body and adhere to ethical standards and guidelines within their practice.



Figure 15.1: Professional settings

A. Qualities of a professional

A professional is someone who demonstrates a high standard of behaviour, skills, and responsibility in their work. They not only possess technical expertise but also exhibit qualities that build trust, respect, and credibility in their field. These qualities contribute to a positive work environment and are essential for career growth and success.

- i. **Competence:** Professional competencies are the abilities that bring together soft and hard skills. These abilities enable employees to competently manage tasks assigned to them as part of their role. These are acquired through personal or work life.
- ii. **Reliability:** This refers to the ability of the professional to dependably perform job-related tasks, finish assigned projects, meet deadlines and appointments.
- iii. **Accountability:** This explains how professionals take responsibility for their actions, decisions, and outcomes. It involves transparency, owning up to mistakes, and following through on commitments. Professionals who demonstrate accountability build trust and reliability, ensuring they meet both personal and organizational goals with integrity.
- iv. **Commitment to continuous learning and improvement:** Continuous learning is the ongoing expansion of knowledge and skill sets. In the context of professional development in the workplace, it is about developing new skills and knowledge, while also reinforcing what has been previously learned. It reflects a proactive attitude towards personal and professional growth, staying updated with industry trends, and embracing feedback and new challenges. This dedication fosters adaptability and long-term success in a rapidly evolving work environment.

B. Common ethics of a professional

Professional ethics are the foundational principles that guide behaviour and decision-making in the workplace. These ethics ensure that professionals maintain high standards of honesty, fairness, and responsibility, building trust with clients, colleagues, and the broader community. Adhering to ethical standards is essential for a successful and respected career.

Common professional ethics, regardless of the field, include the following principles

- i. **Integrity:** Professionals are expected to be honest, truthful, and maintain strong moral principles in their work and interactions with others.
- ii. **Accountability:** They take responsibility for their actions, decisions, and the outcomes of their work, whether positive or negative.
- iii. **Confidentiality:** Professionals often handle sensitive information, so protecting the privacy of learners, clients, patients, or athletes is crucial.
- iv. **Competence:** This involves maintaining and improving their knowledge, skills, and abilities through continuous education and professional development to provide the best possible service.
- v. **Respect:** Treating all individuals with dignity, fairness, and courtesy, regardless of their background, beliefs, or status, is a key ethical responsibility.
- vi. **Objectivity:** Professionals provide unbiased advice and make decisions based on facts and established standards, avoiding personal conflicts of interest.
- vii. **Professionalism:** This encompasses behaving in a way that reflects well on their profession, including appropriate dress, communication, and conduct in both formal and informal settings.
- viii. **Fairness:** As professionals, they ensure that they act justly and impartially, giving equal consideration and opportunity to all clients, colleagues, or students.

- ix. **Ethical decision-making:** They navigate ethical dilemmas by weighing the potential impact of their actions on others and considering the long-term effects.
- x. **Service orientation:** Professionals prioritise the needs and well-being of those they serve, whether they are clients, patients, students, or athletes, ensuring that the public good is central to their practice.

Professionals are not only recognised for their expertise but also for their ability to provide services or perform tasks that require specific skills and knowledge. Examples of professionals include Teachers, Athletes, Doctors, Lawyers, etc.

2. What is Health Education? (WHO, NCPM, and JCHEPT)

a. World Health Organization (WHO)

According to WHO, **health education** is a **process** that enables individuals and communities to make informed decisions about their health. It involves the provision of information, strategies, and tools to help people adopt healthy behaviours and lifestyles. Health education can be seen as both a **preventive** and **interventional** approach to health.

b. National Commission on Prevention and Management (NCPM)

Health education, according to NCPM, emphasises the importance of **prevention** within healthcare systems. The focus is educating the public and healthcare workers to reduce the risk of diseases, thereby improving overall health and reducing healthcare costs.

c. Joint Committee on Health Education and Promotion Terminology (JCHEPT)

According to the Joint Committee on Health Education and Promotion Terminology (JCHEPT), health education is defined as a combination of learning experiences designed to help individuals and communities improve their health behaviours and make informed decisions about their well-being. The core objective of health education, as outlined by JCHEPT, is to promote healthy lifestyle choices through a variety of methods such as the dissemination of knowledge, the development of practical skills, and fostering attitude changes.

3. Identification of Professionals in Health Education

Health education specialists play a critical role in promoting healthy behaviours, avoiding illnesses, and enhancing the well-being of both individuals and communities. They operate in a variety of areas and interact with individuals of varying ages, socioeconomic origins, and health conditions.

These experts work together across industries to enhance health outcomes, lessen the impact of illness, and establish settings that encourage people to lead healthier lives. Professionals in the field of health education include:

a. Physical Activity Instructors

Physical activity instructors are professionals who design, and lead exercise programmes aimed at improving physical fitness and promoting overall health. They play an important role in encouraging individuals to integrate regular physical activity into their daily routines as a key component of a healthy lifestyle. These instructors work in various settings, including gyms, fitness centres, schools, rehabilitation centres, and community

health organisations. The work of the physical activity instructor addresses the physical, mental, and emotional aspects of well-being, offering a holistic approach to health. Physical activity instructors help people of all ages and fitness levels improve their health and quality of life by promoting the benefits of physical activity for the body and mind.

i. Roles and responsibilities of Physical Activity Instructors

- **Exercise programme design:** Creating tailored exercise programmes based on individual fitness levels, goals, and needs, whether for weight loss, muscle strengthening, flexibility, or rehabilitation.
- **Motivation and guidance:** Providing encouragement and support to individuals to help them stay consistent with their exercise routines, offering strategies to overcome barriers such as lack of time or motivation.
- **Health education:** Educating participants on the importance of regular physical activity for improving cardiovascular health, boosting energy levels, managing stress, and reducing the risk of chronic conditions such as diabetes, hypertension, and obesity.
- **Monitoring progress:** Tracking participants' progress and adjusting exercise plans as needed to ensure continued improvement and safety.

ii. Examples of Physical Activity Instructors

- **Personal Trainers:** Help individuals achieve fitness goals through personalised workout programmes.
- **Fitness Instructors:** Lead group exercise classes, such as strength training, cycling, or dance.
- **Yoga Instructors:** Teach yoga practices that improve flexibility, strength, and mental focus, while promoting relaxation and stress reduction.
- **Aerobics Instructors:** Guide group fitness classes focused on cardiovascular health, such as step aerobics or high-intensity interval training (HIIT).



Figure 15.2: A Physical Activity Instructor instructing an athlete during a training session

b. School Health Education Programme (SHEP) Coordinators

SHEP Coordinators are professionals who supervise and coordinate health education programmes in schools are known as SHEP Coordinators. Through the implementation of comprehensive health education programmes, they play a critical role in supporting learners' overall well-being. To guarantee that learners have the information and abilities

to lead healthy lives, these coordinators collaborate closely with community health specialists, school personnel, and other stakeholders. To foster an atmosphere where students' health and well-being are given priority, SHEP Coordinators are crucial. Through their efforts, they ensure that learners not only comprehend the value of leading a healthy lifestyle but also form lifelong habits. SHEP Coordinators help lower health risks, boost academic achievement, and create a pleasant school climate by offering information, services, and support.

i. **Roles and responsibilities of School Health Education Programme (SHEP) Coordinators**

- **Promote a healthy school environment:** Advocate for policies supporting learners' health, and work with school health staff to create safe, inclusive spaces for all learners.
- **Raise awareness and advocate:** Partner with local organisations to support learner's health and involve parents through workshops and community outreach.
- **Develop and run health programmes:** Create and manage health education programmes on topics like nutrition, mental health, and substance abuse, ensuring they meet learner's needs and educational standards.
- **Collect data and evaluate programmes:** Gather data on learner's health needs, monitor programme effectiveness, and report progress to school leaders.
- **Professional development:** Stay updated on the latest health education trends and practices and provide training on health topics like CPR and mental health first aid.
- **Handle health emergencies:** Assist with managing health crises and help create emergency plans for health-related issues like outbreaks or mental health concerns.
- **Encourage physical activity and healthy eating:** Promote physical activity through sports and exercise programmes and teach healthy eating habits in collaboration with meal programmes.
- **Focus on mental health:** Advocate for mental health services, identify at-risk learners and connect them to appropriate resources.
- **Ensure legal compliance:** Ensure health programmes comply with regulations and manage student health records while protecting privacy.
- **Support teachers and staff:** Assist teachers in integrating health topics into lessons and provide training and resources to help them teach effectively.

ii. **Areas managed by SHEP Coordinators**

- **Sexual health education:** Delivering age-appropriate education on topics such as puberty, consent, reproductive health, and preventing sexually transmitted infections (STIs).
- **Mental health and well-being:** Addressing mental health concerns like stress, anxiety, depression, and bullying, while implementing programmes to raise awareness, reduce stigma, and provide resources for affected learners.

- **Substance abuse prevention:** Educating learners on the dangers of tobacco, alcohol, drugs, and other substances, and leading initiatives that offer support and counselling for those impacted by substance use.
- **Nutrition and healthy eating:** Promoting healthy eating habits, balanced diets, and the importance of proper nutrition for learners' physical and academic development.
- **Physical activity and fitness:** Encouraging regular physical activities through sports, physical education classes, and recreational play, along with advocating for policies that support physical activity during school hours.

iii. Importance of SHEP Coordinators

SHEP coordinators play a pivotal role in ensuring that schools become not only places of learning but also environments that promote the overall well-being of students. They help empower learners with the knowledge, skills, and behaviours needed to lead healthy lives. This includes:

- Improved health knowledge and behaviours of learners, contributing to better health outcomes and reduced health risks as they grow into adulthood.
- They cater for the mental, emotional, and social well-being of learners and not just physical health because of their interconnectedness of these areas in the overall health of learners.
- SHEP coordinators contribute to creating a safer, more supportive, and productive school environment.

c. Community Health Workers (CHWs)

These are individuals who serve as a bridge between healthcare systems and the communities they serve. They play a crucial role in improving public health by providing culturally appropriate, accessible, and cost-effective care. Community health workers play a vital part in improving community health, especially in under-resourced areas, and they help make healthcare more accessible, equitable, and responsive to local needs.

i. Roles and responsibilities of Community Health Workers (CHWs)

- **Advocacy and support:** They help individuals navigate the healthcare system, assist with understanding medical instructions, and advocate for the needs of underserved populations. This could include helping patients access health insurance or social services.
- **Disease prevention and screening:** CHWs are involved in early detection efforts, including screening for diseases like diabetes, hypertension, and infectious diseases. They may also provide vaccinations or connect people to vaccination programmes.
- **Data collection and reporting:** CHWs collect data on community health trends, which helps public health agencies assess and improve health interventions. This could involve conducting surveys or tracking health metrics.
- **Behavioural support and counselling:** They may provide informal counselling to help people manage chronic conditions, mental health issues, or addictions. They are trained to offer emotional support, reduce stigma, and promote healthy behaviours.

- **Crisis response:** In times of emergencies (e.g., pandemics, natural disasters), CHWs assist in managing and distributing health resources, ensuring that communities are informed and safe.
- **Health education and promotion:** CHWs educate individuals and communities about health issues, including disease prevention, nutrition, mental health, and hygiene. They often work in community settings, conducting outreach programmes and providing information in a culturally sensitive manner.
- **Referral services:** They help community members access medical care by referring them to doctors, clinics, or other healthcare providers. They also ensure that patients follow up on referrals and get the care they need.

ii. Impact of Community Health Workers

- **Cost-effectiveness:** By reducing the need for emergency care and hospitalisations, CHWs contribute to lowering healthcare costs. They also help prevent diseases from progressing to more serious stages by encouraging early intervention and preventive care.
- **Improved health outcomes:** Research has shown that communities with CHWs often experience better health outcomes, such as lower rates of chronic diseases, reduced hospital readmissions, and improved maternal and child health.
- **Expanding healthcare access:** CHWs are particularly vital in rural or underserved areas where there may be a shortage of healthcare professionals. They help bridge gaps in service provision.
- **Trust and cultural relevance:** Since many CHWs come from the same communities they serve; they are trusted and can effectively communicate health messages in a culturally sensitive way.

iii. Education and training of Community Health Workers

Qualifications for community health workers vary but they receive training in areas such as:

- Communication and outreach skills
- Basic healthcare knowledge
- First aid and emergency response
- Cultural competence
- Ethical and legal issues in healthcare

d. Health Educators

Health educators are professionals who specialise in promoting healthy lifestyles, preventing diseases, and improving overall well-being through education and behaviour change. They work with individuals, communities, organisations, and healthcare systems to provide information, raise awareness, and empower people to make informed health decisions. Health educators play an important role in improving public health by empowering individuals and communities with the knowledge and tools they need to make healthier decisions. By promoting disease prevention, encouraging healthier lifestyles, and advocating for policies that support health equity, they help build healthier communities and reduce healthcare burdens in the long term.

i. Roles and responsibilities of Health Educators

- **Behaviour change facilitation:** Health educators use strategies to help individuals adopt healthier behaviours, such as managing chronic conditions or reducing disease risks. They apply behaviour change theories to understand motivation and tailor their approach to encourage healthier choices.
- **Health advocacy:** Health educators advocate for policies that improve public health, such as access to healthcare and clean resources. They work to address health disparities, particularly in underserved communities.
- **Collaboration and partnerships:** Health educators work with healthcare providers, community groups, schools, and governments to promote health. They partner with organisations to implement programmes, train volunteers, and support health initiatives.
- **Resource development:** They create health education materials, such as pamphlets, videos, websites, and social media content, to disseminate information to the public. These materials must be clear, engaging, and tailored to the needs of the target audience.
- **Evaluation and feedback:** Health educators evaluate the success of their programmes by collecting data and feedback. They use this information to make improvements and ensure long-term effectiveness.
- **Health education and promotion:** Health educators design and deliver programmes on topics like nutrition, exercise, mental health, substance abuse, sexual health, and chronic disease management. They create public campaigns to raise awareness about health
- **Needs assessment and programme development:** Health educators assess the health needs of a community and identify risks to create customised education programmes. They collaborate with healthcare professionals and community leaders to develop programmes that are culturally relevant and effective.

ii. Impact of Health Educators

- **Health equity:** Target underserved communities, health educators help bridge gaps in health disparities, ensuring all populations have access to important health information, resources and care.
- **Cost savings:** Effective health education programmes can help reduce healthcare costs by preventing the onset of diseases, minimising emergency care visits, and promoting healthier, more productive communities.
- **Disease prevention:** Health educators play a key role in reducing the incidence of preventable diseases by encouraging healthy lifestyles and risk-reducing behaviours (e.g., promoting vaccination, smoking cessation, healthy eating, and regular exercise).
- **Improved health outcomes:** Educating the public on early detection and management of health issues leads to better health outcomes, such as reduced chronic disease rates and healthier populations.

iii. Workplaces for Health Educators

Health educators work in a variety of settings, including

- **Corporate wellness programmes:** Focus on improving employee health and productivity through wellness initiatives.
- **Government agencies:** Develop public health campaigns and initiatives to address large-scale health issues.
- **Community health centres:** Provide education and support to local communities, particularly underserved populations.
- **Public health departments:** Design and implement health programmes to improve community health and address public health challenges.
- **Hospitals and healthcare institutions:** Educate patients and staff on health management, prevention, and care.
- **Schools:** Teach students about healthy lifestyles, including nutrition, physical activity, and mental health.



Figure 15.5: One One-on-one health education by a health educator

e. Health Promotion Specialists

A Health Promotion Specialist is a professional who focuses on improving the health and well-being of individuals and communities through education, policy development, and various health-related programmes. Their role involves planning, implementing, and evaluating programmes that aim to prevent diseases and promote healthier lifestyles. Health promotion specialists play a vital role in improving public health through preventive measures, educational initiatives, and community-based efforts to reduce health disparities.

i. Roles and responsibilities of Health Promotion Specialists

- **Community outreach:** Engaging with the community to raise awareness about health issues and encourage participation in health promotion initiatives.
- **Data collection and analysis:** Conducting research and surveys to assess the health needs of a population and measure the effectiveness of health programmes.
- **Programme development:** Designing health education programmes aimed at specific populations (e.g., schools, workplaces, or community groups) to encourage healthier behaviours.

- **Health education:** Providing educational resources and guidance on topics such as nutrition, exercise, mental health, substance abuse prevention, and chronic disease management.
- **Policy advocacy:** Promoting policies that support public health initiatives and improve access to healthcare services.
- **Collaboration:** Working with healthcare professionals, community leaders, and policymakers to implement and advocate for public health strategies.

ii. Essential Skills for Health Promotion Specialists

- **Cultural competency:** The ability to understand and respect diverse cultural backgrounds and tailor health messages to various populations.
- **Collaboration and teamwork:** Working effectively with healthcare providers, community leaders, policymakers, and other stakeholders to implement health initiatives.
- **Health promotion knowledge:** A deep understanding of health promotion theories, principles, and strategies to design effective health programmes.
- **Communication skills:** Strong verbal and written communication abilities to educate diverse audiences, create health materials, and present information.
- **Problem-solving abilities:** The capacity to identify public health challenges and develop innovative solutions to address them.
- **Project evaluation:** Skills in monitoring and evaluating the success of health programmes to ensure their effectiveness and make necessary improvements.
- **Motivational skills:** Encouraging and motivating individuals or communities to adopt healthier behaviours and participate in wellness programmes.
- **Policy knowledge and advocacy:** Understanding of health policies and the ability to advocate for programmes and policies that improve public health.
- **Research and analytical skills:** Proficiency in conducting needs assessments, analysing health data, and evaluating the impact of health programmes.
- **Programme management:** Expertise in planning, organising, and managing health promotion initiatives, ensuring they run smoothly and meet their objectives.

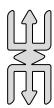
iii. Work Environments for Health Promotion Specialists

- **Educational institutions:** Schools, colleges, and universities where health promotion specialists implement programmes to encourage healthy behaviours among students, faculty, and staff.
- **Government and community health departments:** Local and state agencies dedicated to public health, where specialists focus on community outreach, disease prevention, and health education.
- **Research and policy institutions:** Organisations focused on public health research and policy advocacy, where specialists contribute to the development of strategies and frameworks to improve health outcomes on a larger scale.

- **Nonprofit organisations:** Nonprofit groups that focus on specific health issues, where specialists develop initiatives to support underserved populations and promote health equity.
- **Corporate wellness programmes:** Private companies that employ health promotion specialists to design wellness programmes aimed at improving employee health, reducing healthcare costs, and increasing productivity.
- **Public health agencies:** Governmental organisations focused on improving the health of communities through policy development and public health initiatives.
- **Healthcare facilities:** Hospitals, clinics, and other healthcare settings where specialists design programmes to promote wellness and prevent illness among patients and staff.

Learning Tasks

1. List the common ethics professionals should follow.
2. Explain the role of competence in a professional's behaviour.
3. Define what it means to be a professional and list three (3) qualities that make a person professional.
4. Describe how accountability helps build trust in a professional setting.
5. Explain two (2) reasons why confidentiality is important in a professional's work.
6. Identify three roles of a Physical Activity Instructor and explain their significance.
7. Discuss the importance of School Health Education Programme (SHEP) Coordinators in promoting student well-being.
8. List three responsibilities of a SHEP Coordinator related to mental health in schools.
9. Describe the role of Community Health Workers in improving healthcare access for individuals in a community.



Note

Select from the list provided, the tasks that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** In small groups, give learners pieces of paper to brainstorm and list all the people involved in planning health and fitness events for schools or communities. Each group comes out with a list and the entire class shares ideas and discusses how each person on your list contributes to helping people become healthier and more active.
2. **Introduction:** Ask learners to imagine a world where no one teaches us about healthy habits, how to prevent diseases, or how to take care of our mental health. How would we know what to do to stay healthy and take care of ourselves?" From the answers provide a quick overview of the day's lesson. For example, today we are going to learn about the professionals who make sure we don't have to do that. These are the people who work

behind the scenes to teach us how to live healthier lives. Let's explore who these professionals are and how they help improve our health and well-being.

3. **Building on what others say:** Learners in mixed-ability groups discuss and build on each other's ideas about what it means to be a professional and what health education is. They engage in a collaborative discussion, adding their thoughts to what others share. After the discussion, each learner summarises the group's collective ideas. Each group presents to the whole class. Provide guiding questions and assign specific roles to support shy and struggling learners. Allow time for reflection and encourage both written and oral contributions. Support the highly proficient learners with deeper questions and encourage them to lead the discussion.
4. **Inquiry-based Learning:** Learners visit local health facilities or research using the internet or other available resources, to inquire about the various professionals involved in health education. In groups, learners are tasked with researching relevant sources to gather additional information about these professionals and then summarise their findings alongside the insights gained from the health facility visit (if available). Provide a supportive environment with clear guidance and one-on-one encouragement to shy and quiet learners. Give additional resources or simplified tasks to learners who find the task difficult. Highly proficient learners can be encouraged to take on leadership roles within the groups. Each group presents their findings for a whole class discussion.
5. **Collaborative Learning:** Learners work in mixed-ability and mixed-gender groups to discuss and explore the various functions of health education professionals. Through group discussions, they examine the roles and responsibilities of these professionals in promoting health education in schools, communities, workplaces, etc. Each group presents their findings to the entire class using visual aids or other relevant materials to support their conclusions. After the presentations, support the class to engage in a critique session, providing constructive feedback on the findings presented. Encourage an environment of active listening, respectful communication, and meaningful participation within each group. Regularly monitor the groups to ensure smooth collaboration and address any challenges related to participation, conflict, or teamwork.

Key Assessment

Level 1

1. What is the main goal of health education?
2. Name two examples of professionals who work in health education and describe their roles.

Level 2

1. How is the principle of confidentiality applied in a healthcare setting?
2. Explain the role of integrity in a professional's ethical behaviour.

Level 3

1. Compare the definitions of health education by WHO and JCHEPT. What are the main differences?
2. Design a simple health education programme for your school on the importance of physical activity.

Level 4

1. Discuss the following statement.

“Integrating health education into school curricula can lead to long-term improvements in public health.” Support your answer with reasons.

2. How effective do you think physical activity instructors are in reducing lifestyle-related diseases? Justify your answer.
3. Watch documentaries and simulate the responsibilities of a health promotion specialist

HINT



*The Recommended Mode of Assessment for Week 15 is **Simulation**. Refer to **Appendix H** at the end of the section for a rubric for the simulation. Refer to DoK **level 4** item 3 of the key assessment as an exemplar*

WEEK 16

Learning Indicator: Discuss professional preparation of career pathways in Health Education

FOCAL AREA: PROFESSIONAL PREPARATION OF CAREER PATHWAYS IN HEALTH EDUCATION

PROFESSIONAL PREPARATION

Professional preparation refers to the structured educational and experiential training that equips individuals with the knowledge, skills, and credentials required for a specific profession. Professional preparation is a thorough process that enables individuals to carry out tasks, solve problems, and make well-informed decisions within their professional capacity. Professional preparation aims to provide learners with the knowledge, skills, and competencies required to excel in a specific field.



Figure 16.1: Ghanaian student nurses equip themselves professionally

1. The importance of professional preparation

Professional training is crucial to make sure that people joining a particular field have the necessary skills to succeed in their positions and make a valuable contribution to society. In the fields of health, education, and public service, this training is vital for ensuring safety, delivering high-quality service, and achieving positive results. This encompasses:

- Professionals effectively addressing public health issues and other societal challenges.
- Enhances credibility and professionalism within the workplace.
- Promotes lifelong learning and adaptation to evolving industry standards.



Figure 16.2: Student nurses

2. The Process of Professional Preparation

Professional preparation encompasses a diverse process created to provide individuals with the abilities, knowledge, and experience needed to succeed in their chosen careers.

a. Formal education

Formal education gives individuals essential knowledge, theoretical comprehension, and analytical skills required for their profession. Educational institutions like universities, colleges, and vocational schools deliver these qualifications. The curriculum typically includes general courses and specialised subjects relevant to the profession. For instance, a health educator might pursue a bachelor's degree in health education covering topics such as human biology, community health, and instructional methods.

b. Certifications and licensing

Certifications and licenses confirm that an individual has attained specific skills and competencies essential to the profession. These credentials are often mandatory in fields like healthcare, law, and education, where professionals must adhere to strict ethical, legal, and practical standards. Obtaining these certifications ensures the individual is capable of practicing safely and effectively. For example, a health promotion specialist may need certification from an organisation like the National Commission for Health Education Credentialing (NCHEC).

c. Practical experience and internships

Acquiring practical experience is crucial for bridging the gap between classroom learning and professional practice. Internships and practicums offer students supervised work experience in real-world settings, helping them apply their knowledge, hone their skills, and establish professional connections. These experiences also cultivate problem-solving abilities, adaptability, and a deeper understanding of industry-specific challenges. For instance, an aspiring community health worker might complete a practicum at a public health agency, engaging in community outreach and health education.

d. Continuing education and professional development

In rapidly evolving industries like healthcare, technology, and education, professionals must engage in lifelong learning to stay abreast of the latest research, trends, and technologies. Continuing education is crucial for maintaining certifications, enhancing skills, and adapting to new challenges. Professional development opportunities are often offered through industry associations, educational institutions, and employers. For example, a health promotion specialist might participate in workshops focusing on the latest digital health tools for community engagement.

e. Outcome (Well-rounded professionals)

Professionals who undergo a comprehensive preparation process are better equipped to handle the demands of their careers. They emerge as individuals who are not only knowledgeable in their field but also adept at applying their knowledge in practical situations. Moreover, they are adaptable, continuously growing, and capable of assuming leadership roles in their professions. For instance, a health education specialist who stays current with continuing education courses and industry certifications can effectively implement health campaigns that reflect the latest best practices in public health.

3. Professional Preparation for Health Education Professionals

a. Physical activity instructors

Physical activity instructors create and supervise workout programmes for individuals or groups to improve overall fitness, boost athletic performance, and foster long-term health. They operate in various environments, including gyms, wellness centres, schools, and corporate settings, guiding individuals of all fitness levels. Their primary objective is to develop secure, efficient, and enjoyable exercise regimens tailored to their clients' needs, which may include enhancing cardiovascular health, building muscle, and improving flexibility. Formal education is essential for individuals aspiring to become physical activity instructors. Most employers mandate the possession of a degree or certification in fields related to fitness, such as Physical Education, Kinesiology, Exercise Science, or Fitness Certification. Common pathways to entry include obtaining a bachelor's degree in Exercise Science or securing professional certification from reputable organisations.

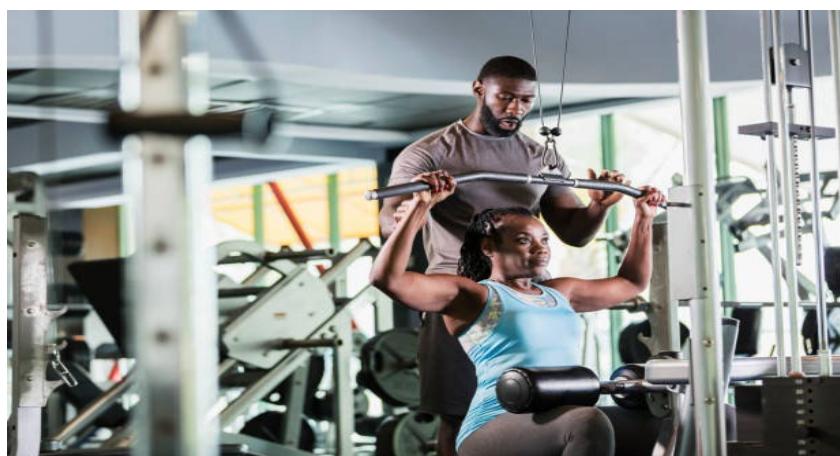


Figure 16.3: Physical activity instructor assisting a client to improve fitness

b. School Health Education Programme (SHEP) Coordinators

The School Health Education Programme (SHEP) has a vital role in ensuring that schools create a healthy learning environment for students. The leaders responsible for managing these initiatives, known as SHEP Coordinators, focus on enhancing the overall health and well-being of students through various health-related programmes and activities. Their main responsibilities include promoting hygiene, nutrition, physical activity, and disease prevention in schools. SHEP Coordinators supervise and execute health programmes in schools, collaborating closely with students, teachers, and community members. They ensure that the school environment is conducive to healthy living and learning by emphasising several key health areas. For example

- i. **Hygiene promotion:** Coordinators assist in teaching learner's proper hygiene practices, such as handwashing, sanitation, and dental care.
- ii. **Nutrition:** They arrange activities and campaigns to advocate for healthy eating habits, such as balanced diets and understanding nutritional labels.
- iii. **Physical activity:** Coordinators support regular exercise, organise physical activities, and ensure students participate in physical education.
- iv. **Disease prevention:** Coordinators conduct awareness programmes on common school-age diseases, vaccinations, and preventive health measures like deworming and mosquito control to prevent diseases such as malaria.

To become a SHEP Coordinator, individuals require formal education and practical training in health-related fields. A degree in Health Education, Public Health, or Child Health and Nutrition is recommended. Specialised courses in health promotion strategies tailored for school-aged children can be advantageous. SHEP Coordinators typically undergo specialised training in organising health initiatives for young people. A career as a SHEP Coordinator opens doors to various professions in the field of health education and promotion. Some potential career paths include School Health Coordinator, Youth Health Promoter, Nutrition Education Specialist, Public Health Officer, Health Promotion Specialist, and more.

c. Community Health Workers (CHWs)

Community Health Workers (CHWs) play a crucial role as a connection between healthcare services and the community. Their main duties involve providing health education, advocating for individuals, and helping people access healthcare services. They often concentrate on enhancing health outcomes by encouraging healthier lifestyles, supporting disease prevention, and ensuring that community members are aware of available resources. CHWs educate individuals on disease prevention, cleanliness, and managing chronic illnesses such as diabetes and hypertension. They champion underserved populations, ensuring that individuals receive suitable healthcare and social services. CHWs assist people in navigating healthcare systems and help them understand how to access medical services and resources, including health insurance, clinics, and specialists. Community Health Workers usually require a certification programme or an associate degree in public health or a related field. Some employers may consider a high school diploma along with relevant experience. Courses often cover topics such as health education, community outreach, healthcare systems, and ethics. CHWs are trained to conduct health outreach in a manner that resonates with diverse cultural groups, ensuring that health messages are relatable and accessible. They learn how to provide basic health services such as measuring vital signs, distributing health materials, and leading group discussions on health-related topics.

d. Health Promotion Specialists

Health Promotion Specialists play a crucial role in the public health sector by creating, implementing, and assessing programmes aimed at enhancing public health and preventing illnesses. They are essential in encouraging healthy behaviours and establishing environments that promote well-being for individuals and communities. Their primary duties involve creating and executing health promotion initiatives and campaigns, conducting community assessments to identify health needs and priorities, collaborating with healthcare providers, government agencies, and community organisations, evaluating the effectiveness of health promotion efforts and adjusting as necessary, and advocating for policies that support health promotion and disease prevention. To pursue a career as a Health Promotion Specialist, it is important to obtain a relevant degree in Public Health, Health Promotion, Health Education, or a related field. Additionally, pursuing advanced degrees (e.g. Masters) can expand career opportunities and enhance expertise. Obtaining certification as a Certified Health Education Specialist (CHES) can improve job prospects and credibility within the field. Other pertinent certifications may include Certified in Public Health (CPH) or similar credentials. Gaining practical experience through internships at public health

organisations or community health initiatives is valuable in understanding the practical application of health promotion strategies. Internships can also provide important networking opportunities and insight into career paths. Training in data collection and analysis, as well as behaviour change strategies, is crucial. Participation in workshops and seminars on current public health issues and health promotion strategies is also beneficial.

Learning Tasks

1. Explain the concept of professional preparation in health education.
2. List three reasons why professional preparation is important for people in health education careers.
3. Identify and briefly explain the four main components of professional preparation.
4. Choose one health-related career and list two subjects they might study during their formal education.
5. Give two reasons why certifications and licenses are required in many health professions.
6. State two (2) duties of physical activity instructors and the education or certification they need.
7. List three main duties of a Health Promotion Specialist and describe one way they might improve public health.
8. Analyse a provided scenario and list the health education professionals involved, along with their contributions.

Pedagogical Exemplars

1. **Starter:** Create a collection of cards, each featuring a different health education occupation (e.g., Physical Activity Instructor, SHEP Coordinator, Community Health Worker, Health Promotion Specialist). Randomly distribute the cards among students. Instruct them to pair up with someone who has a card that matches their occupation based on similar responsibilities or skills.
2. **Introduction:** Start with a brief introduction to health education and its importance in promoting community health. Emphasise the various career pathways available in this field. Use slides to summarise the main occupations and their respective roles and qualifications.
3. **Diamond Nine Approach:** In pairs, learners exchange ideas on their understanding of professional preparation. Each pair then meets with another pair to further refine the ideas generated and arrive at a more precise definition/explanation. Provide learners with a list of health education occupations (Physical Activity Instructor, SHEP Coordinator, Community Health Worker, Health Promotion Specialist). Ask them to select the nine occupations they believe are most important in health education and arrange them in a diamond shape (1 at the top, 2 in the second row, 3 in the third, 2 in the fourth, and 1 at the bottom). The top position represents the most critical occupation, while the bottom position represents the least critical. Once this task is completed, allow learners to share their arrangements in small groups and discuss the reasoning behind their choices. Provide extra time for slower learners.

4. **Exploratory Learning:** In groups, learners research from relevant sources how the various health education professionals are prepared and trained to carry out their roles. They discuss and analyse the mode of preparation and training for the professionals and draw inspiration for their choices. Create a designated quiet space for learners who prefer to work individually with fewer distractions during the initial think-pair phase. Divide learners into small groups and assign each group a specific health education occupation to research (e.g., one group for Physical Activity Instructors, another for SHEP Coordinators, etc.). After the research, groups create a brief role-play scenario illustrating a day in the life of their assigned occupation. Groups then present their role-plays to the class, providing insights into their profession.

Key Assessments

Level 1

1. Explain professional preparation
2. What is the primary role of a Community Health Worker?
3. Physical Activity Instructors focus solely on exercise routines. (True/False)

Level 2

1. Describe how a specific health education professional is trained.
2. In groups, role-play a community health initiative. Each learner must present their professional role and how it contributes to the project.

Level 3

1. Choose a career pathway in health education, research its requirements, and present your findings, including potential challenges faced by professionals in this field.
2. Debate whether community health workers or physical activity instructors have a greater impact on public health outcomes.
3. Analyse the need for training the health education professionals in Ghana.

Level 4

1. Design a comprehensive health education programme for your community, detailing the career pathways involved and how each role will contribute to the programme's success.
2. Identify a current health challenge in your community and propose an innovative health education programme that utilises multiple career pathways. Include a plan for implementation and evaluation.

HINT



*The Recommended Mode of Assessment for Week 16 is an **Essay**. Refer to DoK level 3 item 3 of the key assessment as an example.*

SECTION 8 REVIEW

In Week 15, learners delve into identifying health education professions, examining the roles, skills and contributions of these professionals to community and individual health. Through discussions, visual aids and case studies, learners will analyse how these careers address health challenges and promote wellness in various settings. Hands-on activities, such as role-playing or group research tasks, will help students connect these roles to real-world scenarios, which will foster a practical understanding of health education careers.

In Week 16, the focus shifts to the preparation required for pursuing a career in health education. Learners explore academic pathways, certifications and skills development through interactive activities like creating career roadmaps or analysing the qualifications of notable health educators. Group discussions encourage learners to identify personal goals and align them with relevant career pathways. This week emphasises the importance of planning and continuous learning in building a successful career in health education.

Throughout the section, guide learners with learner-centred strategies and collaborative exercises. By engaging in reflective discussions and practical tasks, learners will gain a comprehensive understanding of health education careers and their preparation. These will equip them to make informed decisions about their future paths in this vital field.



APPENDIX H: RUBRICS FOR SIMULATION

Criterion	Excellent - 4	Very good - 3	Good - 2	Satisfactory - 1
Understanding of scientific discovery	<i>Exhibit any 4 health promotion skills as a specialist, such as cultural competency, collaboration, teamwork, knowledge in health promotion, communication skills, and problem-solving abilities</i>	<i>Exhibit any 3 health promotion skills as a specialist, such as cultural competency, collaboration, teamwork, knowledge in health promotion, communication skills, and problem-solving abilities</i>	<i>Exhibit any 2 health promotion skills as a specialist, such as cultural competency, collaboration, teamwork, knowledge in health promotion, communication skills, and problem-solving abilities</i>	<i>Exhibit any 1 health promotion skills as a specialist, such as cultural competency, collaboration, teamwork, knowledge in health promotion, communication skills, and problem-solving abilities</i>
Accuracy and Creativity in Simulation	<i>Making use any 4 of these: Modelling a system</i> <i>Use simulation software</i> <i>Collect data</i> <i>Analytical reasoning</i>	<i>Making use any 3 of these: Modelling a system</i> <i>Use simulation software</i> <i>Collect data</i> <i>Analytical reasoning</i>	<i>Making use any 2 of these: Modelling a system</i> <i>Use simulation software</i> <i>Collect data</i> <i>Analytical reasoning</i>	<i>Making use any 1 of these: Modelling a system</i> <i>Use simulation software</i> <i>Collect data</i> <i>Analytical reasoning</i>
Collaboration and Engagement	<i>Demonstrate any 4 of these:</i> <i>Contributing to the group, supporting each other, taking responsibility, tolerating each other and respecting others view etc.</i>	<i>Demonstrate any 3 of these:</i> <i>Contributing to the group, supporting each other, taking responsibility, tolerating each other and respecting others view etc.</i>	<i>Demonstrate any 2 of these:</i> <i>Contributing to the group, supporting each other, taking responsibility, tolerating each other and respecting others view etc.</i>	<i>Demonstrate any 1 of these:</i> <i>Contributing to the group, supporting each other, taking responsibility, tolerating each other and respecting others view etc.</i>

Total = 12marks

SECTION 9: BUILDING A PROFESSIONAL PROFILE IN PHYSICAL EDUCATION

STRAND: ACADEMIC AND CAREER PATHWAYS

SUB-STRAND: PHYSICAL EDUCATION PATHWAYS

Learning Outcome: *Identify and discuss career/professional resume (CV) in Physical Education pathways*

Content Standard: *Demonstrate knowledge and understanding of professional pathways in Physical Education*

SUB-STRAND: SPORTS EXCELLENCE PATHWAYS

Learning Outcome: *Identify professional pathways in Sports Excellence*

Content Standard: *Demonstrate knowledge and understanding of professional pathways in Sports Excellence*

HINT



Mid-semester examination will be conducted in Week 18. Refer to Appendix I for a Table of Specifications to guide you in setting the questions. Set questions to cover all the indicators covered for at least weeks 13 to 17.

INTRODUCTION AND SECTION SUMMARY

This section focuses on equipping learners with essential skills for building a professional profile in physical education, emphasising the creation of a compelling Career Resume or Curriculum Vitae (CV). Learners will discuss the key elements of a resume/CV, including how to highlight their strengths, skills and achievements, particularly as they relate to physical education and sports. They will explore the importance of presenting themselves effectively to potential employers or academic institutions, fostering an understanding of how a well-crafted resume projects their professional profile.

Additionally, learners will delve into the role of technology in shaping 21st-century careers in physical education. Through practical exercises, they will explore tools and platforms that enhance career development, such as digital resume builders, online portfolios and professional networking sites. By the end of this section, learners will be equipped to construct a professional resume and leverage technology to pursue advanced opportunities in physical education, preparing them for success in a competitive, technology-driven environment.

The weeks covered by the section are

Week 17: Discuss the concepts of career Resume' (Curriculum Vitae) to project a learner's profile in physical education.

Week 18: Build a career Resume' (Curriculum Vitae) to project a learner's profile in physical education.

Week 19: Explore technology to build a 21st-century career in physical education/sports excellence.

Week 20: Apply technology to develop a 21st-century career in physical education/sports excellence.

SUMMARY OF PEDAGOGICAL EXEMPLARS

As a teacher, endeavour to use a mix of interactive lectures, demonstrations and hands-on activities to guide learners through the principles of crafting a career resume/CV. Engage learners in discussions on the purpose and structure of a resume, providing real-life examples of effective resumes in physical education. Encourage learners to analyse sample resumes critically by identifying elements that make them professional and impactful. Practical exercises, such as drafting and peer-reviewing resumes, will help learners refine their skills collaboratively.

Incorporate technology by introducing learners to digital tools like resume builders and career development platforms. Facilitate group projects where learners can create online portfolios or simulate job applications in physical education roles. Differentiated instruction will ensure that all learners, including those with special educational needs, can participate effectively with additional support provided to those who require it. Gifted learners can be challenged to integrate advanced multimedia elements such as video demonstrations into their digital profiles.

ASSESSMENT SUMMARY

Assessment will focus on the learners' ability to design a professional resume/CV and utilise technology effectively in building their career profiles. Individual assignments may include drafting a detailed resume tailored to a specific role in physical education or creating a digital portfolio showcasing their achievements and skills. Peer assessments and teacher feedback will be essential in helping learners refine their work.

Group projects could involve collaborative research on technological trends in career development or creating a mock professional networking profile. Quizzes on the components of a resume and reflective journals documenting their learning journey can be used to assess comprehension. Ensure that feedback is constructive and aligned with learners' career aspirations, emphasising practical application and professional presentation.

WEEK 17

Learning Indicator: Discuss the concepts of career Resume' (Curriculum Vitae) to project a learner's profile in physical education

FOCAL AREA: CONCEPTS OF CAREER RESUME TO PROJECT A LEARNER'S PROFILE IN PHYSICAL EDUCATION

Introduction to Career Resumes (Curriculum Vitae (CV)) for Physical Education

1. What is a Career Resume?

A career resume is a formal document that outlines an individual's professional qualifications, including their skills, experiences, and educational background. For individuals interested in careers within the field of physical education, a well-crafted resume is crucial for aspiring roles such as physical education teachers, coaches, fitness trainers, sports managers, or exercise physiologists.

2. Key Elements of a Career Resume (CV)

- a. **Contact information:** Provide your full name, a reliable phone number where you can be reached, and your email address for correspondence. Additionally, you may include a link to your LinkedIn profile or a personal website to showcase your professional background and interests.
- b. **Objective statement or summary:** A clear and engaging statement that outlines your professional aspirations and highlights the unique skills, experiences, and qualities you bring to potential employers, demonstrating how you can contribute to their success.
- c. **Academic background:** Provide a comprehensive overview of your academic background, including the institutions where you studied, and any relevant coursework or certifications that enhance your qualifications. Be sure to specify your major fields of study, the dates of attendance, and any honours or distinctions you received during your academic journey.
- d. **Experience:** This section provides a detailed overview of your professional journey, highlighting relevant work experiences such as internships, volunteer positions, and part-time jobs within the field of physical education. Each entry should reflect your responsibilities, skills gained, and contributions made, showcasing your commitment to promoting health and fitness.
- e. **Skills:** A comprehensive list of specialised abilities relevant to the field. For example, effective coaching techniques that enhance athlete performance, a thorough understanding of fitness assessments to evaluate individual fitness levels, and certification in first aid to ensure the safety and well-being of clients during physical activities.
- f. **Achievements:** Refers to the various awards and recognitions that highlights your success across sports, academics, and community service. In sports, this includes awards such as "Most Valuable Player" or "Team Captain," which reflect your leadership and skill on the field or court. In academics, achievements could involve receiving scholarships for outstanding performance or earning high marks in a subject.

Additionally, volunteer recognition awards or leadership roles in local organisations, showcasing your commitment to making a positive impact in your community. Collectively, these achievements paint a picture of your dedication, talent, and influence in multiple areas of your life.

- g. **Professional affiliations:** This section outlines memberships in relevant professional organisations. These affiliations demonstrate a commitment to staying current in your field and networking with other professionals. Memberships do not only enhance knowledge and skills but also allow you to engage with industry trends and practices.

3. Fundamental Reasons for a Career Resume (CV)

The main purpose of a resume is to give potential employers a clear and concise summary of your qualifications, skills and experience. It is a marketing tool that highlights your unique strengths and sets you apart from other candidates.

Key Purposes

- a. **Highlighting skills:** A resume allows you to display hard skills (e.g., knowledge of exercise science) and soft skills (e.g., communication, teamwork, leadership) that are essential in physical education roles.
- b. **Showcasing achievements:** It gives you a platform to present notable accomplishments, such as coaching a successful sports team, leading fitness workshops, or achieving high academic grades. This enhances your credibility and demonstrates your dedication and capability in the field.
- c. **Summarising experiences:** Employers look for relevant experience when hiring. A well-structured resume can summarise your experiences in various roles, whether through internships, part-time jobs, or volunteer positions. This helps illustrate your journey and readiness for the position you are applying for.

4. How a Resume Serves as a Professional Snapshot of One's Profile in Physical Education

A resume acts as a professional snapshot that captures who you are as a candidate in physical education. It provides a quick reference for hiring managers and employers to assess your fit for a position.

Key Aspects of this snapshot

- a. **Conciseness:** A resume is typically one page (two pages at most) in length, requiring you to be concise and selective about the information you present. This brevity helps busy employers quickly identify your strengths.
- b. **Professionalism:** The format and presentation of your resume reflect your professionalism. A well-organised and error-free resume conveys attention to detail, a critical attribute in any job.
- c. **Customisation:** Tailoring your resume for specific roles or organisations enhances its effectiveness. It demonstrates your understanding of the position and shows that you've researched the employer, aligning your qualifications with their needs.
- d. **First impressions matter:** Often, your resume is the first point of contact with a potential employer. A polished resume can create a positive first impression, setting the tone for further interactions.

5. Identifying Key Components of a Physical Education Resume/CV

Creating an effective resume is crucial for students aspiring to careers in physical education. This guide will help you understand the essential sections of a physical education resume and highlight unique elements that can set you apart in the field.

a. **Contact information:** This is the first section of your resume and includes your details.

What to include:

- **Full name:** Use a professional format.
- **Phone number:** Ensure it's a number where you can be reached easily.
- **Email address:** Use a professional email; avoid nicknames or unprofessional addresses.
- **LinkedIn profile (if applicable):** Include a link to your professional networking profile.
- **Address (optional):** You can include your city and state but avoid your full address for privacy.

b. **Objective/Summary:** brief statement that outlines your career goals and what you hope to achieve in your role within physical education.

What to include:

- **Career goals:** Mention what you aim to accomplish in your career (e.g., "Aspiring Physical Education teacher dedicated to promoting healthy lifestyles among students").
- **Skills:** Highlight key skills relevant to the position.
- **Tailoring:** Customise your objective for each job application to reflect the specific role and organisation.

c. **Experience:** this section highlights your relevant work experience.

What to include:

- **Job title:** Your official job title.
- **Organisation:** Name of the school, gym, or organisation where you worked.
- **Dates of employment:** Start and end dates (month/year).
- **Responsibilities and achievements:** Use bullet points to list your duties and any accomplishments, focusing on those relevant to physical education (e.g., "Developed and implemented fitness programmes for middle school students").

d. **Skills:** list of specific abilities and competencies relevant to the field.

What to include:

- **Technical skills:** Proficiency in fitness training, knowledge of sports rules, or familiarity with health and wellness programmes.
- **Soft skills:** Communication, leadership, teamwork, and organisational skills. Highlight skills that are particularly valuable in teaching and coaching scenarios.

e. **Certifications:** Relevant certifications that enhance your qualifications.

What to include

- **First aid/CPR certification:** Often required for physical education roles.
- **Teaching credentials:** Any state-specific certifications for teaching physical education.
- **Specialised training:** Certifications in coaching, personal training, or fitness instruction.

f. **Education:** A comprehensive overview of your educational background.

What to include:

- **Qualifications earned:** List your most recent qualification first (e.g., Bachelor of Science in Kinesiology).
- **Institution name:** The name of the university or college.
- **Graduation date:** Include your expected graduation date if you are still studying.
- **Relevant coursework:** Highlight specific classes that pertain to physical education, such as exercise physiology or sports psychology.

6. Unique Elements for Physical Education

To make your resume stand out in the field of physical education, consider highlighting these unique elements:

a. **Athletic achievements**

- Include personal athletic accomplishments (e.g., team captain, championship titles, or personal records).
- Mention participation in interscholastic or intramural sports, as well as any leadership roles.

b. **Coaching experience**

- Detail any coaching roles, including the level (youth, high school, college), the sport coached, and the impact of your coaching (e.g., leading a team to victory in a tournament).
- Discuss specific coaching strategies or philosophies you applied to foster team development and sportsmanship.

c. **Volunteer work**

- Include any volunteer experience related to physical education, such as assisting with community sports programmes, camps, or school events.
- Highlight how this experience has helped you develop skills and knowledge applicable to your career.

d. **Professional development**

- Mention any workshops, seminars, or conferences you have attended related to physical education or sports.
- List any ongoing education or professional development courses that showcase your commitment to continuous learning in the field.

7. Writing a Personalised Resume/CV Objective for Physical Education Careers

Crafting a compelling resume objective is essential for individuals preparing to pursue a career in physical education. A well-articulated objective can effectively communicate professional aspirations, highlight relevant skills, and convey your passion for health and fitness.

8. Understanding the purpose of a resume/CV objective

- a. A resume objective is a brief statement (typically one to two sentences) that outlines your career goals and what you aim to achieve in your next position. It serves as an introduction to your resume.

- b. It is important as it provides potential employers with a snapshot of who you are, what you are seeking, and how you can contribute to their organisation. It should align with the job you are applying for and reflect your unique qualities.

9. Writing a Clear and Concise Career Objective

When writing your resume objective, consider the following steps:

a. Career goals

- Be specific about the position you are seeking within the field of physical education. For example, you might aim for a role as a physical education teacher, sports coach, athletic trainer, or fitness instructor.
- **Example:** “Aspiring physical education teacher dedicated to fostering a love for fitness and healthy living in students.”

b. Highlight relevant skills and experiences

- Identify the skills and experiences that make you a strong candidate. These could include teaching skills, coaching experience, knowledge of sports science, or fitness training certifications.
- **Example:** “Motivated individual with experience in coaching high school soccer and a background in exercise science.”

c. Keep it concise

- Aim for clarity and brevity. Use straightforward language and avoid jargon or overly complex phrases.
- A strong resume objective should be no longer than two sentences.

d. Tailor to the job description

- Customise your objective for each position you apply for. Review the job description and incorporate keywords and phrases that reflect the employer’s needs.
- **Example:** “Detail-oriented athletic trainer with a passion for enhancing student athletes’ performance through evidence-based training methods.”

e. Express your passion

- Your objective should convey your enthusiasm for health and fitness. Explain why you are drawn to the field of physical education and what motivates you.
- **Example:** “Passionate advocate for youth fitness, committed to inspiring students to lead active, healthy lifestyles through engaging physical education programmes.”

f. Focus on specific areas of interest

- If you have a particular area of interest within physical education, such as coaching, sports science, or health education, make sure to mention it. This can set you apart from other candidates.
- **Example:** “Aspiring sports scientist eager to apply my knowledge of exercise physiology to improve athletic performance and promote health education.”

g. Link your passion to career goals

- Connect your passion for the field to your career objectives. This shows that you are not only qualified but also genuinely invested in making a difference in the lives of others through physical education.

- **Example:** “Enthusiastic fitness instructor dedicated to empowering individuals to achieve their health goals and enhance their overall well-being.”

10. Examples of Effective CV/Resume Objectives

- “Dedicated Physical Education teacher with a strong background in coaching, seeking to inspire students to lead active lifestyles and excel in sports through engaging and inclusive lessons.”
- “Goal-oriented athletic trainer with a passion for sports science, looking to utilise my skills in injury prevention and rehabilitation to enhance the performance of student-athletes.”
- “Motivated fitness professional with experience in group training, aiming to foster a supportive and energetic environment that encourages participants to reach their fitness goals.”

11. Tips for Crafting Your Curriculum Vitae (CV)/Resume Objective

- Embrace authenticity:** Your career objective should be a true representation of your personal interests and aspirations. When you present an authentic self, it not only showcases your unique qualities but also resonates deeply with employers, making a lasting impression.
- Use action words:** Integrating strong verbs like “inspire,” “enhance,” “empower,” and “dedicate” can invigorate your objective and convey a sense of enthusiasm and commitment.
- Revise and edit:** After drafting your objective, review it for clarity and impact. Make sure it aligns with your overall resume and personal brand.

COACHING RESUME

From Resume Genius

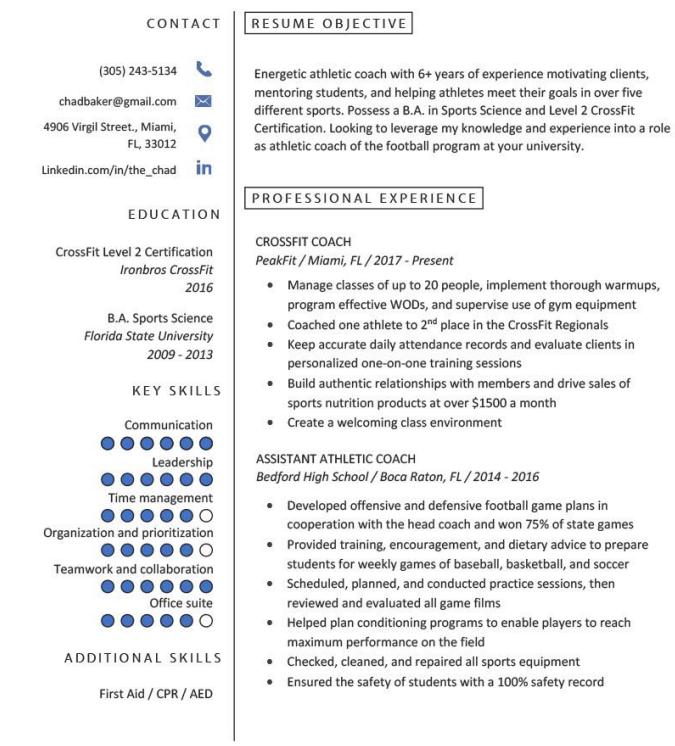


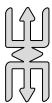
Figure 17.1: A sample of a Coaching Resume

Learning Tasks

1. Define a Career Resume
2. List the main elements of a career resume and explain why each is important for physical education careers.
3. Create a sample section for a resume.
4. Write a resume objective that showcases your passion for physical education, tailored for a youth sports coach or fitness instructor position.

Pedagogical Exemplars

1. **Starter:** Start the lesson by engaging learners in an icebreaker activity that promotes self-reflection. Encourage them to consider the qualities and skills they view as essential for a career in physical education or sports, such as teamwork, discipline, communication, and physical fitness. Have each learner write down one skill they excel at and one they would like to improve.
2. **Introduction:** Introduce the concept of a career resume by emphasising that it serves not only as a tool for job hunting but also as a means of showcasing an individual's skills, achievements, and personal qualities. Draw a parallel between a traditional career resume and a learner's profile in physical education, highlighting how both serve to communicate personal strengths, goals, and areas for improvement. Explain that learners can approach their experience in physical education as a career, crafting a profile that highlights their unique skills, experiences, and aspirations.
3. **Collaborative Learning:** Divide learners into small ability groups and assign each group a distinct section of a physical education resume. Each group will discuss and compile examples relevant to their assigned section. After the brainstorming session, have each group present their findings, creating a comprehensive physical education resume template that the entire class can use as a reference.
4. **Think-Pair-Share:** Learners reflect on their achievements, challenges, and the skills they have developed in physical education. They partner up to discuss how these skills may apply to their future careers or personal growth. Each pair then shares their reflections with the class, showcasing the diverse range of skills and goals within the group, thus reinforcing the concept of a personalised, individual learner profile.
5. **Closure:** Encourage learners to write a brief reflection on how the resume building process can assist them in identifying their strengths and areas for improvement within physical education. Invite them to set one specific goal for enhancement based on their reflections. This exercise helps them view the resume not merely as a record of past accomplishments but as a dynamic document that can evolve alongside their learning journey.



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, shyness, impairments, etc.
- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.)
- Use other appropriate approaches to engage learners as required.

Key Assessments

Level 1

1. What is a resume, and why is it important for a career in physical education?
2. List three key components that should be included in a physical education resume.
3. Define the term 'learner's profile' in the context of physical education.

Level 2

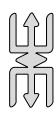
1. Identify and describe one specific skill that should be highlighted in a physical education resume. Why is it important?
2. How can a learner showcase their academic achievements in physical education on their resume? Provide two examples.
3. Create a basic outline for a physical education resume, including sections and headings.

Level 3

1. Compare and contrast the resumes of two individuals in the field of physical education (e.g., a coach vs. a physical therapist). What are the key differences in their profiles?
2. Evaluate the effectiveness of including volunteer work in a physical education resume. How can this experience enhance a learner's profile?
3. How can a learner tailor their resume for different roles within physical education, such as teaching, coaching, or fitness training?

Level 4

1. Critique a sample physical education resume and suggest improvements. What elements would you change or enhance to better project the learner's profile?
2. Design a comprehensive physical education resume for a fictional character, including all sections such as education, skills, experiences, and personal interests. Explain your choices.
3. Assess the impact of digital portfolios versus traditional resumes in the field of physical education. Which do you think is more effective for showcasing a learner's profile, and why?
4. Develop a detailed action plan or proposal on how specific expectations of the Ghanaian youth can be met



Note

Select from the list provided the assessment that can be performed in your school, given the school's/learners' particular situation, and working within the allotted time.

HINT



The recommended mode of assessment for Week 17 is peer assessment. An example of an assessment task is question 2 of the key assessment level 1.

WEEK 18

Learning Indicator: Building a career Resume' (Curriculum Vitae) to project a learner's profile in physical education

FOCAL AREA: DEVELOPING A CAREER RESUME TO PROJECT A LEARNER'S PROFILE IN PHYSICAL EDUCATION

CAREER RESUME

Recap

As covered in week 17, creating a career resume, also known as a Curriculum Vitae (CV), is a crucial step for individuals pursuing a career in physical education. A well-structured resume is an effective tool for showcasing educational background, practical experiences, and unique skill set in this dynamic field. When developing a resume specifically for the physical education sector, it is important to include various key components that clearly communicate qualifications and passion for promoting health and fitness. By carefully compiling this information, you can create a comprehensive and professional resume that highlights qualifications and reflects dedication to inspiring others in physical education. A well-crafted resume is more than just a list of accomplishments; it represents a commitment to advancing health and fitness and making a positive impact in the lives of others.

The Importance of Developing a Career Resume (CV) in Physical Education

- Clarifies career goals:** A resume helps students define their career path and focus on key skills for Physical Education.
- Demonstrates professionalism:** A strong resume shows professionalism and attention to detail.
- Showcases skills and qualifications:** It highlights technical and soft skills, certifications, and training.
- Reflects real-world readiness:** It connects classroom learning to practical experiences.
- Strengthens personal branding:** A resume allows students to highlight their passion and unique profile.
- Supports future opportunities:** It aids in college applications, scholarships, and internships.
- Prepares for interviews:** A resume builds confidence and helps students prepare for interviews.
- Tracks personal growth:** It shows achievements, progress, and areas for improvement.
- Adapts to industry changes:** A resume keeps students aligned with evolving Physical Education trends and opportunities.

■ CURRICULUM VITAE

Jerrold Mensah | Aspiring Communications Specialist

Adenta, Greater Accra Region, Ghana

■ +233 54 123 4567 | ■ jerrold.mensah@gmail.com

■ Profile

Motivated and detail-oriented student with a passion for media, communication, and digital engagement. Eager to contribute strong interpersonal skills, tech-savviness, and a collaborative spirit to dynamic teams. Committed to continuous learning and making a meaningful impact through creative problem-solving and effective communication.

■ Skills

Excellent written and verbal communication

Microsoft Office Suite (Word, Excel, PowerPoint)

Social media management (Instagram, Twitter, LinkedIn)

Teamwork and leadership

Basic graphic design (Canva, Adobe Spark)

Languages: English (Fluent), Twi (Native), French (Basic)

■ Education

University of Ghana, Legon

Bachelor of Arts in Communication Studies

Expected Graduation: July 2025

Relevant Courses: Public Relations, Media Ethics, Digital Communication

Presbyterian Boys' Secondary School (PRESEC), Legon

WASSCE Certificate

Graduated: August 2021

Electives: Literature, Government, Economics

■ Experience

Intern, Citi FM/Citi TV – Accra

June 2023 – August 2023

- Assisted in preparing scripts and show outlines

- Supported social media content creation and scheduling

- Participated in field reporting and interviews

- Helped coordinate live events and studio recordings

Class Representative, University of Ghana

September 2022 – Present

- Liaised between students and faculty

- Organized academic support sessions and group discussions

- Managed class WhatsApp group and announcements

■ References

Dr. Ama Ofori-Atta

Lecturer, Department of Communication Studies, University of Ghana

■ +233 20 987 6543 | ■ ama.oforiatte@ug.edu.gh

Mr. Kwame Boateng

Supervisor, Citi FM

■ +233 24 456 7890 | ■ kwame.boateng@citifmonline.com

Figure 18.1: A sample resume of a student

Components of a Resume (CV)

1. Personal information and contact details

This organised introduction, featuring precise information and a polished image, showcases your dedication to clarity and professionalism. It also allows potential employers, clients, or collaborators to contact you effortlessly and assess your qualifications quickly. To craft an impactful and professional introduction, adhere to these guidelines:

To start, provide your full name, including any middle names or initials. Then, include your phone number with the country code, if needed, to make communication easier. Next, share your email address, ideally from a professional account, as this can enhance your personal brand. If you have a LinkedIn profile, include the full URL so that potential contacts can easily access your professional details and connect with you.

Additionally, if it is typical in your industry or region, think about adding a professional photograph to your application or profile. A high-quality image can boost your visibility and provide a personal touch that leaves a positive first impression. Choose a photo that

demonstrates your professionalism, such as a well-lit headshot where you are dressed suitably for your field. This seemingly small detail can greatly influence how potential employers or clients see you, making your application stand out and fostering a favourable first impression.

Key features

- a. **Full name**
 - i. Make sure your name is clear and easy to read.
 - ii. **Example:** Kwaku Boakye Asante.
- b. **Professional title (optional, but helpful in some fields)**
 - i. A title related to your profession or career goal.
 - ii. **Example:** Sports Coach.
- c. **Phone number**
 - i. Include a mobile number where you are readily available.
 - ii. Format it according to your country's standard, and make sure it's correct.
- d. **Email address**
 - i. Use a professional email address (preferably based on your name).
 - ii. **Example:** kbasante@gmail.com
 - iii. Avoid casual or unprofessional addresses.
- e. **LinkedIn profile (optional, but highly recommended)**
 - i. Add a link to your LinkedIn profile or professional portfolio if relevant.
 - ii. **Example:** linkedin.com/in/ kbasante
- f. **Location (optional, but useful for some job applications)**
 - i. Mention the city or region where you are based.
 - ii. You do not need to specify your full home address.

2. Professional summary or objective

A professional summary or objective is a concise paragraph at the top of your resume that highlights your skills, experience, and career goals. A professional summary is ideal for experienced professionals with a proven track record or a broad range of achievements. An objective statement is suitable for newcomers to the job market, career changers, or those targeting specific positions.

Key features of a professional summary

- a. **Experience highlights:** Summarises extensive experience and significant accomplishments.
- b. **Skills showcase:** Highlights essential skills that are pertinent to the position.
- c. **Industry-specific language:** Tailored to the industry or job you're targeting.
- d. **Concise:** Usually composed of three to four sentences.

Example 1: Experienced Professional

A committed and results-driven physical education teacher with more than five years of experience in encouraging physical fitness, teamwork, and lasting healthy habits among learners. Experienced in developing inclusive and engaging PE programmes, coordinating sports events, and supporting student wellness. Capable of fostering positive learning environments that motivate enthusiasm for physical activity and personal development.

Example 2: Specialised Role

Dynamic and results-driven fitness coach with 5+ years of experience designing personalised training programmes to help clients achieve their health and fitness goals. Proficient in strength training, cardio conditioning, and nutrition planning. Known for creating motivating and inclusive environments.

3. Objective statement

An objective statement communicates your career aspirations and how you align with the employer's goals. It is ideal for those new to the workforce, changing careers, or applying to specific roles.

Key features of an objective statement

- Career goals:** Clearly state what you aim to achieve in the role.
- Alignment:** Highlights how your skills or interests meet the company's needs.
- Forward-looking:** Focuses on growth and contribution.

Example 1: Entry-Level Candidate

Motivated recent graduate with a degree in Physical Education, passionate about fostering athletic growth and teamwork through dynamic coaching strategies. Skilled in developing training programmes, analysing performance, and promoting sportsmanship. Eager to contribute to a competitive and positive team culture while expanding expertise in advanced coaching techniques and athlete development.

Example 2: Career Changer

I am a committed physical education teacher moving into a coaching and sports programme development career. I possess expertise in curriculum design, analysing athlete performance, and building teamwork. I aim to develop engaging and effective training programmes that improve athletic skills and encourage physical fitness in both school and extracurricular environments.

Example 3: Personal Statement or Mission Statement

I am particularly passionate about developing inclusive environments where participants feel empowered to challenge themselves and work towards their personal fitness goals. I believe that everyone, regardless of their starting point, should have access to the

resources and support necessary to succeed in their fitness journey. My experience has taught me that when individuals are encouraged and supported in a positive atmosphere, they are more likely to achieve their goals and develop a lasting commitment to their health.

Example 4: Career Objective or Professional Development Goal Statement

I aim to further refine my expertise in physical education by specialising in key areas such as sports coaching, health promotion, and curriculum development. I am committed to understanding the nuances of these fields, recognising that effective coaching and a well-structured curriculum can significantly impact individuals' physical and emotional development. I believe in the transformative power of physical education to not only enhance physical abilities but also to boost self-esteem, encourage teamwork, and cultivate perseverance in participants.

Example 5: Professional Development or Continuing Education Statement

I believe in the importance of lifelong learning and am committed to my professional growth. I continuously look for ways to expand my knowledge, implement best practices, and adopt innovative strategies in my field. This includes attending workshops, enrolling in relevant courses, and collaborating with other professionals to share insights and ideas.

My passion for physical education goes beyond merely teaching; I have a sincere goal of helping others develop a lasting appreciation for fitness and wellness. I aim to empower individuals to make informed health decisions by equipping them with essential knowledge and tools. I aspire to contribute to a community that values physical activity as a core component of a healthy lifestyle, promoting not only physical health but also mental and emotional well-being.

This message underscores my commitment to the roles I am seeking, whether as a physical education teacher, sports coach, fitness trainer, or wellness coordinator. My primary goal is to create a positive impact on individuals and communities through physical education, nurturing a culture that emphasises and celebrates health and activity.

4. Education Background

The education background section of a CV or resume summarises your academic history and qualifications, providing potential employers or academic institutions with an overview of your formal education.

When outlining your education, it's essential to present a thorough overview of your academic experience in areas such as physical education, sports science, kinesiology, or related fields.

Begin by listing your degrees, specifying their titles (e.g., Bachelor of Science in Kinesiology, Master of Arts in Physical Education) along with the institutions you attended. Include the dates you were enrolled (e.g., September 2015 - May 2019) and highlight any relevant honours or achievements, such as graduating with distinction, being on the Dean's list, or receiving scholarships.

If relevant, mention any significant projects or research you conducted during your studies, as well as noteworthy extracurricular activities that enriched your educational experience, like involvement in varsity sports or leadership positions in student organisations.

Furthermore, emphasise any continuing education courses or professional workshops you've participated in after your formal education. This may involve certifications in areas such as fitness training, coaching, sports nutrition, or first aid. Be sure to include the names of the institutions or organisations that provided these courses, the completion dates, and any skills or competencies you acquired that reflect your dedication to ongoing learning and professional growth.

This comprehensive approach will effectively showcase the extent and richness of your educational background.

Key elements to include in the education background section

a. Degree(s) earned

- The title of the degree or certification (e.g., Bachelor of Science, Master of Arts).
- **Example:** Bachelor of Science in Physical Education or Master of Science in Sports Management.

b. Institution name

- The name of the educational institution where you studied.
- **Example:** University Of Education, Winneba.

c. Graduation date (or expected graduation date)

- The year you graduated or the expected year of graduation.
- **Example: Graduated: November 2024 or Expected graduation: July 2025.**

d. Relevant coursework or specialisation (optional)

- Highlight any courses, specialisations, or projects that are especially relevant to the job you're applying for.
- **Example:** Courses in Sports Psychology, Nutrition for Athletes, and Coaching Strategies.

e. Honours and achievements (optional)

- Any academic honours or special distinctions you received during your education.
- **Example:** Scholarships.

5. Certifications And Special Training

The Certifications and Special Training section of a CV or resume emphasises additional qualifications that go beyond formal education. This part is essential as it showcases your expertise, dedication to professional growth, and capability to meet industry standards.

When detailing your qualifications, be sure to list any pertinent certifications you hold. This can include lifesaving certifications such as CPR (Cardiopulmonary Resuscitation) and First Aid, which are vital in emergency situations. Additionally, you might want to highlight fitness training credentials from respected organisations like the Ghana National Academy of Sports Medicine (GNASM). These qualifications not only reflect your

knowledge of physical fitness but also your ability to lead others on their wellness journeys effectively.

Moreover, if you have specialised training in areas like biomechanics—focused on understanding human body movement—or coaching, which emphasises mentoring and motivating individuals or teams, don't forget to include these. Nutrition training can also be important, as it enhances fitness guidance and allows for a more comprehensive approach to health and wellness.

By showcasing these credentials, you not only boost your professional credibility but also demonstrate your readiness to handle various situations, whether in a classroom, a fitness environment, or during emergencies.

Key elements to include in the certifications and special training section

a. Certification title

- The official title of the certification or training.
- **Example:** Certified Personal Trainer (CPT), First Aid and CPR Certification.

b. Issuing organisation

- The name of the organisation or governing body that issued the certification.
- **Example:** National Academy of Sports Medicine (NASM), Ghana Red Cross.

c. Date of completion or expiration

- The date when you completed the certification, and if applicable, the expiration date (or renewal period).
- **Example: Issued: June 2024, Expires:** June 2026.

d. Certification number (optional)

- Some certifications include a unique number that may be useful to provide.
- **Example:** Certification No. 45689.

e. Relevant skills or specialisations (optional)

- If the certification is specialised, mention specific skills or areas of expertise it covers.
- **Example: Specialisations:** Strength Training, Cardio Fitness, Injury Prevention.

f. Additional training or workshops (optional)

- Include any workshops or specialised training that adds value to your qualifications, especially if they are relevant to the position you're applying for.

6. Professional Experience

The Professional Experience section of your CV or resume is essential as it showcases your relevant work history, skills, and achievements. This part offers employers a glimpse into your qualifications and illustrates how your experience relates to the position you are seeking. **Examples include:**

Professional summary or career achievement statement

In my earlier positions, I was heavily involved in various elements of physical education and fitness, which allowed me to create a dynamic and meaningful learning atmosphere for

students. A key duty of mine was to develop and execute a well-rounded physical education curriculum that met the varied needs and abilities of students.

An achievement-focused statement or a success story

Throughout my time in this position, I effectively coordinated a variety of sports events that encouraged physical activity and strengthened the sense of community among students. A highlight was the annual inter-school track and field competition, which drew over 200 participants. This event not only promoted healthy competition but also enhanced school spirit, leading to a 25% increase in attendance compared to past years.

Impactful results-driven statement

I concentrate on evaluating and enhancing the fitness levels of students. By performing regular fitness assessments and developing tailored improvement plans, I assist students in establishing and attaining their fitness objectives. One notable initiative I implemented involved students monitoring their progress over the course of a semester, resulting in an average increase of 15% in cardiovascular fitness among those who participated. Through these efforts, I have not only improved the physical education experience but also motivated students to make their health and well-being a priority.

Key Elements to Include in The Professional Experience Section

a. Job title

- The official title of the position you held.
- **Example:** Fitness Instructor, Sports Coach, Physical Education Teacher.

b. Company/Organisation name

- The name of the company, school, or organisation where you worked.
- **Example:** Hill Health Club, Jukwa Senior High Technical School, Ridge Gym.

c. Location

- The region and city where you worked.
- **Example:** Central Region, Cape Coast.

d. Dates of employment

- The start and end dates (month and year) of your employment. If you're currently employed, use "Present" for the end date.
- **Example:** January 2020 – Present or May 2017 – October 2023.

e. Job responsibilities

- A summary of your duties and tasks in the role. Use bullet points to make this section easy to read.
- Focus on responsibilities that align with the job you're applying for.

f. Achievements/Accomplishments

- Highlight any key achievements, projects, or contributions that demonstrate the impact you made in the role.
- Quantify accomplishments whenever possible (e.g., improved client satisfaction by 20%, increased class attendance by 30%, etc.).

g. Skills utilised (optional)

- If relevant, you can also briefly mention specific skills you utilised or developed in each role.
- **Example: Skills:** Programme Development, Client Relations, Fitness Assessment.

7. Skills and Competencies

Skills and competencies refer to the abilities, knowledge, and attributes that individuals possess, enabling them to perform tasks, solve problems, and achieve goals effectively in various personal and professional contexts. They are often divided into hard skills and soft skills:

- a. **Hard skills:** technical and job-specific abilities that can be learned, measured, and demonstrated. Examples include:
 - Technical skills (e.g. Sports techniques, fitness assessments, biomechanics analysis).
 - Language proficiency (e.g. Sport-specific terminology, multilingual instruction).
 - Certifications (e.g. Coaching certifications, first aid and CPR, specialised fitness training).
 - Industry-specific knowledge (e.g. Exercise physiology, sports psychology, use of technology).
- b. **Soft skills:** interpersonal and character traits that affect how you interact and work with others. Examples include:
 - Communication (verbal and written).
 - Teamwork and collaboration.
 - Problem-solving.
 - Adaptability and resilience.
 - Leadership and management.
 - Time management.
 - Conflict resolution.
- c. **Core competencies:** combine skills, knowledge, and behaviours needed to perform well in specific roles or situations. These are often broader and more strategic than individual skills. Examples include:
 - Strategic thinking.
 - Emotional intelligence (EQ).
 - Customer-centric approach.
 - Innovation and creativity.
 - Decision-making under uncertainty.
- d. **Developing skills and competencies. To grow in these areas**
 - Assess your current skills (through self-evaluation or feedback).
 - Set clear goals for improvement.
 - Learn and practice via formal training, hands-on experience, and feedback.
 - Measure progress and adjust your strategies.

When highlighting skills relevant to physical education, it's important to emphasise a range of competencies. Classroom management is crucial, as it involves creating a structured and engaging learning environment where students feel safe and motivated to participate.

Effective lesson planning is another key skill, encompassing the ability to develop comprehensive, age-appropriate curricula that cater to diverse learning styles and physical abilities.

Adaptability is essential in a physical education setting, as educators must be prepared to modify lessons on the fly to accommodate varying student needs, weather conditions, or available resources. Additionally, strong interpersonal communication skills are vital for building rapport with students, fostering teamwork, and collaborating with colleagues and parents to enhance the educational experience.

In terms of physical competencies, proficiency in a variety of sports and fitness activities is important. This includes not only skills in specific games but also the ability to teach techniques and strategies effectively. Knowledge of fitness assessment techniques is equally valuable, as it enables educators to evaluate student performance and progress accurately.

Moreover, an understanding of sports psychology can enhance a physical educator's ability to motivate students, help them overcome challenges, and develop a positive attitude towards physical activity and teamwork. By incorporating these detailed skills and knowledge areas, physical educators can create a dynamic and supportive learning environment that encourages students to thrive both physically and socially.

8. Extracurricular involvement and volunteering

When crafting a CV or resume, highlighting your extracurricular activities and volunteer work can greatly boost your profile. Such experiences reflect your proactive nature, dedication, and well-rounded character.

If you have been involved in coaching, participated in sports clubs, contributed to community health initiatives, or volunteered for fitness events, make sure to elaborate on these experiences. Demonstrating your engagement in fitness-related activities and community service showcases your commitment to health and well-being, positioning you as a strong candidate.

Including specific examples of your roles, responsibilities, and the positive effects of your participation will further enhance your profile and emphasise your commitment to these principles.

How to present extracurricular involvement

- Section title:** Label the section something like “Extracurricular Activities,” “Leadership and Activities,” or “Co-Curricular Engagement.”
- Details to Include**
 - Activity name:** What is the club, team, or organisation?
 - Role:** Were you a leader, a member, or a volunteer? If you held a leadership position, mention your responsibilities.
 - Achievements:** Include specific achievements (e.g., “Won 1st place in regional debate competition” or “Organised 5 school events”).
 - Skills gained:** Briefly mention key skills developed through the activity (e.g., leadership, communication, teamwork).

9. Achievements and Awards

Incorporating achievements and awards on your resume (CV) is a great way to illustrate your skills, commitment, and success in various areas. These accomplishments can help distinguish you and emphasise your potential for future opportunities.

Achievements and awards reflect any recognition you have received during your career, such as being honoured as the Best Physical Education Student or receiving the Outstanding Coach of the Year title. Such accolades not only enhance your profile but also highlight your dedication, expertise, and effectiveness in the industry. They act as compelling endorsements of your capabilities, demonstrating your positive influence on students and athletes.

By showcasing these honours, you not only boost your credibility but also convey your commitment to excellence in physical education and coaching throughout your career journey. Incorporating achievements and awards on your CV is a great way to illustrate your skills, commitment, and success in various areas.

How To Present Achievements and Awards on Your Resume

Section title

The section could be titled “Achievements,” “Awards and Honours,” “Key Achievements,” or “Recognitions,” depending on the context and format of your resume.

Details to Include

- **Award name:** Clearly state the name of the award or achievement (e.g., “Employee of the Month,” “Top Scorer in National Science Olympiad”).
- **Issuing organisation:** Mention the organisation, school, or body that granted the award (e.g., “University of Cape Coast, National Science Foundation”).
- **Date:** Include the date or year when you received the award.
- **Description:** Briefly describe why you received the award and what you did to earn it.
- **Relevant achievements:** Focus on accomplishments that align with the position you’re applying for.

10. Research, publications, and presentations (if applicable)

Including research, publications, and presentations in your resume (CV) is important, especially in the field of physical education (PE). These sections demonstrate your academic contributions, expertise, and influence in the discipline.

It is important to compile a comprehensive list of your relevant publications, presentations and research projects. This section is especially important if you are pursuing academic or specialised positions within your field.

Be sure to include details such as the titles of your publications, the names of the journals or conferences where you presented your work and any collaborative projects you were involved in. Additionally, highlighting the significance of your research findings and how they contribute to the existing body of knowledge in physical education or sports science can enhance your candidacy. This organised and thorough presentation of your scholarly contributions will demonstrate your expertise and commitment to the advancement of the discipline.

Tips for writing this section

- **Use clear formatting:** Keep entries concise and easy to scan (e.g., bullet points).
- **Highlight relevance:** Tailor the content to emphasise how these experiences align with your career goals or the role you are pursuing.
- **Include all relevant details:** When listing publications or presentations, add the title, date, and location to ensure credibility and professionalism.
- **Showcase impact:** If possible, describe the outcome or contribution of your research/presentation (e.g., Improved coaching strategies, informed health campaigns).

11. Hobbies and interests

This section provides a chance to highlight your enthusiasm for the field, showcase your personality, and underline transferable skills. It's crucial to tailor this part to the specific role you are seeking, as your hobbies can demonstrate your dedication to physical activity, teamwork, leadership, and personal health.

Incorporating hobbies and interests related to fitness, sports, or wellness can effectively reveal your character and show your commitment to physical education beyond your professional duties in a gym or classroom. Engaging in activities like hiking outdoors, practicing yoga for mindfulness and flexibility, or training in competitive sports can reflect a genuine lifestyle commitment to health and fitness. This not only shows your passion but also signals to potential employers or colleagues that you value well-being and recognise the importance of an active lifestyle qualities that are particularly desirable in the fitness and wellness sector.

By showcasing these personal interests, you also open the door for connections with others who have similar passions, promoting a sense of community and collaboration.

Tips for writing this section

- **Keep it relevant:** Prioritise hobbies that connect to transferable skills like discipline, teamwork, motivation, leadership, and fitness expertise.
- **Be honest:** Ensure you can speak authentically about your interests during interviews.
- **Show your personality:** Give employers insight into how you approach challenges, collaboration, and balance between personal goals and physical activity.
- **Use keywords:** Incorporate industry-related terms or phrases to align with the role's requirements.

12. References

When crafting a resume (CV) for a role in physical education, the “References” section is vital. It gives potential employers the opportunity to confirm your qualifications, skills, and experience. Typical references include past supervisors, professors, coaches, or colleagues who can attest to your knowledge, work ethic, and integrity.

As you compile your reference list, make sure to provide the contact information of individuals who can validate your skills and achievements in physical education. Ideally, these should be supervisors, coaches, or professors who know your work ethic, accomplishments, and abilities well.

Before including these references, it's important to notify them of your intention and obtain their permission to share their contact details. This considerate approach not only prepares

them for any inquiries but also enables them to reflect on any points they may wish to make about your strengths and experiences.

Tips for selecting and including references

- **Ask for permission first:** Always contact your referees beforehand to ensure they're comfortable being listed and are aware of the role you're applying for.
- **Choose relevant references:** Select individuals familiar with your work or study in physical education, sports science, teaching, coaching, or fitness leadership.
- **Include up-to-date contact information:** Ensure their contact details are current.
- **Tailor to the role:** Choose references that align with the specific job responsibilities or requirements if applicable.

Example of a Reference Section for a Resume

References

[Name]

[JobTitle/Position]

[Company/Organisation/School]

Phone: [PhoneNumber]

Email: [Email Address]

Curriculum Vitae – Kwame Mensah

Professional Football Coach | Player Development Specialist | Tactical Strategist
 ■ Accra, Ghana | ■ +233 24 123 4567 | ■ kwame.mensah@email.com

■ Profile Summary
 Dedicated and passionate football coach with over 10 years of experience developing youth and senior teams across West Africa. Proven track record in tactical planning, team motivation, and talent development. Committed to fostering discipline, teamwork, and excellence both on and off the pitch.

■ Coaching Experience
Head Coach – Accra United FC
 Accra, Ghana | Jan 2020 – Present
 - Led team to promotion to Ghana Premier League in 2022
 - Developed training programs focused on speed, ball control, and tactical awareness
 - Mentored 5 players who were later signed by international clubs

Youth Coach – Kumasi Football Academy
 Kumasi, Ghana | Aug 2015 – Dec 2019
 - Coached U-17 and U-20 teams to regional championship titles
 - Implemented video analysis for performance review and improvement
 - Organized community outreach programs to scout and nurture local talent

Assistant Coach – Tamale Stars FC
 Tamale, Ghana | Jun 2012 – Jul 2015
 - Supported head coach in match preparation and player conditioning
 - Managed logistics for away matches and training camps
 - Introduced injury prevention protocols that reduced player downtime by 30%

■ Education & Certifications
 - CAF B License – Confederation of African Football, 2021
 - Diploma in Sports Coaching – University of Ghana, 2014
 - First Aid & CPR Certification – Ghana Red Cross Society, 2020

■ Skills
 - Tactical Analysis & Game Strategy
 - Player Development & Mentorship
 - Team Leadership & Motivation
 - Scouting & Talent Identification
 - Match Preparation & Performance Review

■ Achievements
 - Ghana Premier League Coach of the Month (March 2023)
 - Developed 3 players who joined national U-23 squad
 - Speaker at West African Youth Coaching Summit, 2021

■ Languages
 - English (Fluent)

Figure 18.2: A sample resume for a football coach

Summary

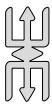
An effective resume (CV) for physical education is well-organised and clearly displays your professional background, allowing potential employers or educational institutions to grasp your unique qualities, skills and qualifications. It should focus on your academic

accomplishments, such as degrees, certifications, and relevant coursework, as well as practical experiences including internships, teaching roles, coaching, and volunteer work. It should emphasise your dedication to promoting physical health through programmes that advocate for healthy lifestyles and foster teamwork within communities. Incorporating specific metrics or outcomes can enhance your application by showcasing your ability to make meaningful contributions.

By providing a clear overview of your skills and passion for physical education, you make a strong case for being an asset to any organisation.

Learning Tasks

1. Learners complete a self-assessment worksheet that asks them to list experiences, skills, awards, certifications, and courses related to physical education, such as team participation, fitness certifications, or volunteering as a coach.
2. Assign learners to research at least three careers in physical education, then summarise the job descriptions, required skills, and typical qualifications.
3. Provide a resume template and guide students in creating their resumes. Students should organise their self-assessment results into appropriate sections.
4. Have learners identify and list three (3) achievements that align most closely with their career goals and write bullet points describing these experiences, focusing on measurable outcomes or specific skills learned.
5. Ask students to draft (or revisit) a career objective that reflects their aspirations and commitment to physical education and fitness, explaining in 1-2 sentences what they hope to achieve.
6. Pair learners to exchange resumes and provide constructive feedback. They should look for areas where the resume could better highlight skills, improve formatting, or clarify achievements.
7. Have students finalise their resumes, making sure all formatting is consistent, language is clear, and the layout is professional. They should also check for any spelling or grammatical errors.



Note

Select from the list provided, the tasks that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** Begin by asking the learners; What do you think makes a strong career in Physical Education? Follow with a quick poll or discussion on the types of careers in Physical Education (e.g., sports coach, fitness trainer, PE teacher, sports psychologist). Then, recap or introduce the idea of creating a career resume to market their skills and experiences in physical education. Ask the learners to write down three skills or achievements they think would be valuable for a career in physical education. Conclude the starter with a brief overview of the importance of a resume in professional life.

2. **Introduction:** Provide a short presentation on the key components of a career resume, specifically for physical education. Discuss how these components can reflect a learner's profile, demonstrating their suitability for a career in physical education. Emphasise how a resume is an essential tool in making a strong first impression in the job market.
3. **Group-Based Learning:** Divide learners into small groups of 4-5. Give each group a sample resume template and ask them to collaboratively create a resume for an imaginary person pursuing a career in physical Education. Assign specific roles within the group (e.g., one person works on qualifications, another on skills, etc.). Encourage the group to discuss what types of skills, experiences, and qualifications would make their candidate stand out in the physical education field. After 20-30 minutes, each group presents their resume to the class. Engage in a brief class discussion to highlight the strengths of each group's resume and how they chose to project their candidate's profile.
4. **Think-Pair-Share:** First allow learners to think individually about their skills, achievements, and experiences in physical education. Support learners to identify which of their personal qualities or experiences would be most valuable in a physical education career. Next, have learners pair up with classmates to share their thoughts and discuss how they could highlight their skills or experiences on their resumes. Finally, invite the pairs to share their reflections with the entire class.
5. **Inquiry-Based Learning:** Learners are assigned to research different career paths such as coaching, sports psychology, PE teaching, fitness training, or athletic training. Encourage learners to use online resources, career websites, and interviews with professionals to gather information on the qualifications, skills, and certifications required for each career. Have learners create a short presentation (either digital or verbal) where they explain what they learned about the qualifications needed for different careers in Physical Education. Allow time for a class discussion after each presentation to reflect on the variety of career paths and their specific requirements.
6. **Closure:** Ask each learner to review the resume they created in their group or their reflections from the Think-Pair-Share activity. Have learners write a brief statement outlining one or two career goals related to physical education that they would like to achieve. Encourage them to identify the steps they need to take to meet these goals (e.g., obtaining certifications, gaining experience through volunteering, joining a sports team). End with a brief discussion on the importance of continuously updating and refining their resumes as they gain more experience and skills. Remind learners that building a strong career profile is a continuous process that reflects both personal and professional growth.

Key Assessments

Level 1

1. What is a resume, and why is it important for your future career in physical education?
2. Identify three key sections that should be included in a physical education resume.
3. What personal qualities or skills should be highlighted on a resume for a career in physical education?

Level 2

1. How can physical fitness and relevant sports experience be demonstrated on a resume?
2. What extracurricular activities related to Physical Education can be included to show passion for the field?

Level 3

1. Create a short resume outline for a career in physical education, highlighting skills, achievements, and goals.
2. How can a resume be tailored to match a specific job, such as a PE teacher or sports coach? Provide an example.
3. What professional development opportunities or certifications in physical education can be listed to enhance a resume?

Level 4

1. Develop a full, detailed resume for a career in physical education that includes your academic achievements, volunteer work, certifications, and any relevant skills or experiences.
2. Discuss how you would present your profile (strengths, areas of improvement, and goals) in a way that appeals to potential employers in the field of physical education

HINT



Mid-semester examination will be conducted in Week 18. Refer to Appendix I for a Table of Specifications to guide you in setting the questions. Set questions to cover all the indicators covered for at least weeks 13 to 17.

WEEK 19

Learning Indicator: Exploring technology to build a 21st-century career in physical education

FOCAL AREA: BUILDING A 21ST-CENTURY CAREER IN PHYSICAL EDUCATION

21st-Century Career in Physical Education

In today's rapidly changing world, technology has become essential to every field, including physical education (PE). Embracing technology in physical education is no longer optional; it is vital for building a successful career that aligns with 21st-century skills and opportunities.

Imagine a physical education class that uses data from fitness trackers, incorporates virtual reality for immersive training simulations, and provides real-time performance analytics.

Modern technology is transforming how we approach physical fitness and skill development. Understanding and integrating these innovations can lead to a wider range of career paths, such as fitness technology development, sports data analysis, and personalised wellness coaching for those pursuing careers in physical education. By incorporating these technologies, PE professionals can create engaging, effective, and inclusive learning experiences that equip participants with the physical skills, health knowledge, and technological proficiency necessary for the 21st century.

Building a career in physical education for the 21st century using technology requires adaptability, innovation, and a willingness to adopt trends that boost engagement, accessibility, and performance results. By fusing traditional physical education methods with modern technological tools, you can establish a contemporary and influential career that equips learners, athletes, and clients for a future dominated by technology.

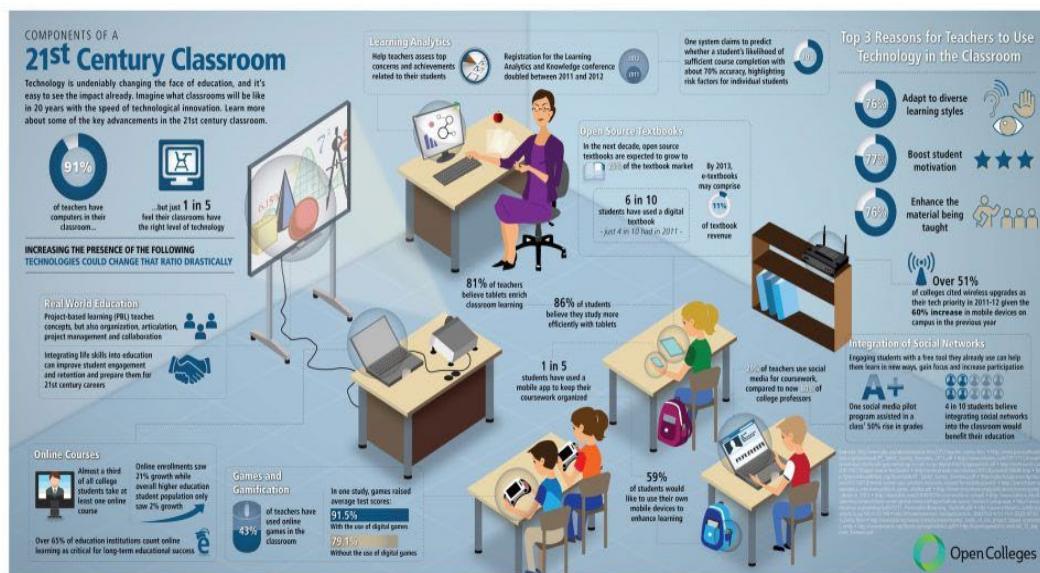


Figure 19.1: 21st Century classroom setting

1. The Importance of Technology in Physical Education

Technology has become an integral part of almost every aspect of modern life, transforming the way we communicate, learn, work, and engage in physical activities. In the field of physical education, technology has played a pivotal role in enhancing both teaching methods and athletic performance. From tracking fitness progress to providing innovative ways to teach movement skills, technology has opened new avenues for learners, educators, and athletes.

Understanding the importance of technology in physical education highlights its ability to improve engagement, increase accessibility, and offer personalised learning experiences. This has proven valuable in motivating individuals and enhancing their overall physical well-being.

Technology is important in physical education because it provides

- a. **Enhanced learning and motivation:** By integrating interactive apps and wearable devices, PE instructors can personalise learner fitness programmes. Tools like heart rate monitors and motion sensors provide instant feedback, making learning more engaging and motivating students to reach their fitness goals.
- b. **Data-driven insights for improvement:** With technology, PE professionals can analyse performance data, identify strengths and weaknesses, and tailor training to each learner. Imagine how much more effective a workout becomes with precise data guiding every move. This data-driven approach can also be applied in personal training, sports coaching, and rehabilitation.
- c. **Widened career opportunities:** Traditional PE roles are expanding. A background in tech-driven PE can lead to exciting opportunities in sports science, kinesiology, sports therapy, and even educational technology development. Tech-savvy PE professionals can work with app developers to create fitness applications, consult on the design of wearable fitness tech, or even pursue roles in professional sports organisations as data analysts and health coaches.
- d. **Future-proofed skills:** As technology continues to advance, it's important to keep pace with trends that enhance physical education, such as virtual and augmented reality, biomechanics, and artificial intelligence. The skills we build now in understanding and applying technology in PE will ensure we remain competitive and relevant in the job market.
- e. **Preparation for a changing world:** The 21st century has brought challenges such as technological distractions, sedentary habits, and changes in education. Physical education careers equip individuals with the tools to adapt, innovate, and meet the needs of different populations in various settings.

2. Key Technological Trends Shaping the World of Physical Education

Here are some areas where technology is transforming the field of physical education:

a. Data tracking and analytics

Wearable devices and fitness trackers have revolutionised the way physical education (PE) and fitness programmes can be managed by providing real-time, objective data on individual physical activity. By tracking metrics like steps taken, heart rate, calories burned, and exercise duration. This data-driven approach ensures more personalised feedback and targeted interventions. Educators can:

- i. **Assess individual progress:** Monitoring personal performance over time to identify strengths and areas for improvement.
- ii. **Personalise programmes:** Adjust fitness plans based on each learner's unique activity levels, fitness goals, and needs.
- iii. **Identify patterns:** Analyse trends in movement and activity during different times of the day, helping educators plan better schedules and interventions.
- iv. **Set realistic goals:** Use concrete data to set achievable and personalised fitness objectives for students.
- v. **Increase motivation:** Sharing progress with students can enhance their sense of accomplishment and encourage continued participation.
- vi. **Barriers to engagement:** Data tracking also allows educators to identify barriers to engagement, such as low activity levels during specific activities, and adapt the learning environment or instructional methods accordingly. This feedback loop fosters a more dynamic, supportive, and evidence-based approach to physical education.

b. Virtual and augmented reality (VR/AR)

Virtual and augmented reality (VR/AR) can significantly enhance physical education by providing engaging and interactive learning opportunities. These technologies help connect theoretical knowledge with practical application, enabling learners to explore complex sports techniques and environments safely. With VR and AR, learners can acquire advanced skills and safety methods while also simulating activities like climbing or swimming that might not be feasible in conventional educational settings.

Here is how they are being applied to develop skills in physical education

- i. **Technique practice:** VR/AR can recreate sports situations, allowing learners to develop skills such as passing and shooting without requiring dedicated facilities or partners.
- ii. **Visual learning:** Learners can better understand the mechanics of movement, which helps boost their spatial awareness and skill proficiency, by engaging in guided simulations.
- iii. **Safety training:** VR and AR can simulate high-risk activities like climbing and swimming, allowing learners to practice techniques safely. For example, AR can display anatomical guides during stretching or sports demonstrations, highlighting proper form and helping to prevent injuries.
- iv. **Environmental accessibility:** Some sports, such as swimming, rock climbing, or sailing, can be costly, risky, or inaccessible for certain learners. VR/AR technology provides access to these experiences in a virtual environment, allowing all learners the opportunity to explore and learn without barriers.
- v. **Anatomical education and movement analysis:** AR tools can visualise anatomical structures in real time, aiding learners in connecting physical movement with body mechanics and biology. This provides an engaging method to learn about muscle function, joint movement, and injury prevention.
- vi. **Motivation and engagement:** The immersive nature of VR and AR keeps students engaged and excited about learning. These tools can transform traditional exercises into game-like experiences that promote cooperation, exploration, and experimentation.

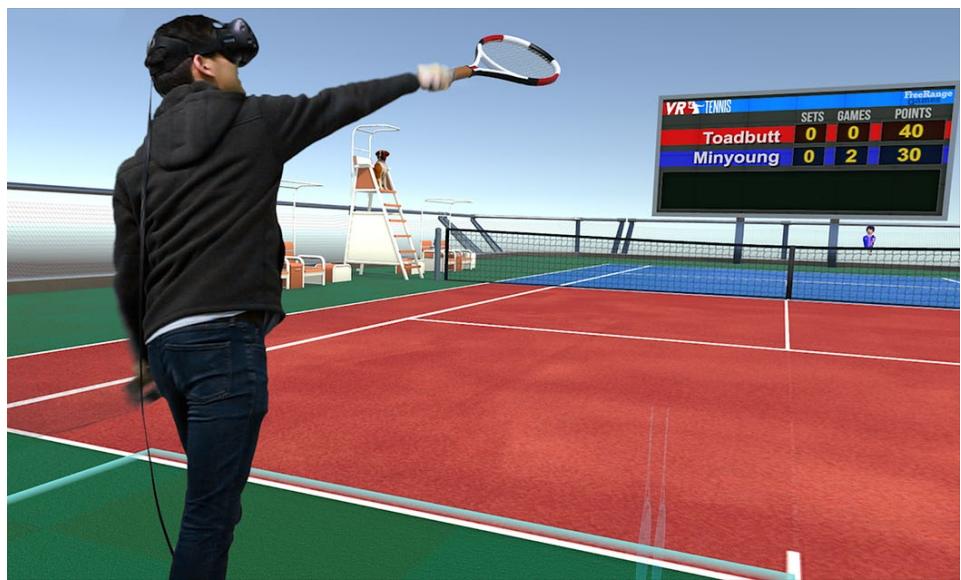


Figure 19.2: Mimicking a tennis game using VR

c. Gamification of physical activity

Platforms and applications such as Fitbit, Strava, and game-based movement activities engage users by offering rewards, challenges, and interactive features, making exercise an enjoyable and competitive endeavour that promotes regular participation. Gamification has demonstrated its effectiveness in increasing motivation, engagement, and commitment to physical activity by integrating aspects of play, competition, and incentives. By utilising these resources, educators can foster an environment where physical movement is fun, interactive, and social.

Here's how gamification is improving physical activity

- i. **Digital fitness platforms:** Fitness applications like Fitbit and Strava help users keep track of their steps, workouts, and fitness objectives. These apps often include features such as leaderboards, badges, and challenges to make exercising more enjoyable. Furthermore, many platforms incorporate reward systems that utilise points, virtual rewards, or progress tracking to acknowledge individual milestones and achievements, thereby boosting motivation and encouraging consistent activity.
- ii. **Game-based movement activities:** Incorporating physical movement into games—such as dance games like *Just Dance* or interactive fitness games like *Zumba Kids*—transforms exercise into entertainment. Activities like virtual fitness competitions, obstacle courses, or step challenges further enhance this experience by making movement fun, collaborative, and accessible for all learners. These interactive games and challenges foster engagement, social connection, and a positive attitude toward physical activity.
- iii. **Social competition and collaboration:** Group challenges and competitions can foster peer interaction, accountability, and a sense of community by creating shared goals and motivation. Examples include team step competitions, virtual fitness challenges, or “step races” inspired by digital platforms. Whether competing on a leaderboard or partnering for movement challenges, social interaction plays a key role in building engagement and connection.
- iv. **Behavioural incentives through rewards:** Gamification introduces rewards (e.g., earning points, badges, or privileges) to incentivise physical activity. These rewards give learners an extra push, helping to turn occasional movement into lifelong habits.

- v. **Customisable and inclusive options:** Games and challenges can be tailored to different fitness levels and abilities, ensuring all learners feel included and can participate successfully. Gamification strategies can focus on personal achievements and self-improvement, rather than solely on comparison and competition, allowing participants to celebrate their progress while fostering motivation and engagement.

d. Online learning platforms and e-learning in physical education

Digital platforms like Google Classroom, Moodle, Edmodo, and specialised fitness education apps enable PE professionals to access a wealth of resources, from instructional videos to virtual workshops, helping them stay current on best practices and emerging trends. Online resources make professional development more accessible and ongoing.

Here's how they contribute to physical education

- i. **Enhanced instructional delivery:** Instructional videos, animations, and online interactive modules provide physical education teachers with dynamic tools to explain complex movement patterns, techniques, and fitness concepts more effectively than traditional methods. Teachers can utilise these multimedia resources and video examples to visually model proper techniques for various activities, allowing learners to learn through clear visual demonstrations. Additionally, these resources support adaptable teaching by enabling educators to tailor lesson plans to accommodate diverse learning levels, preferences, and environments, ensuring all students can engage with the material in a way that suits their needs.
- ii. **Flexible and accessible professional development:** Physical education professionals can engage with courses, workshops, and resources on platforms like Google Classroom, Moodle, and other e-learning tools to stay informed about the latest trends, methodologies, and innovative fitness strategies. These platforms eliminate barriers such as geography and scheduling conflicts, making professional growth and continuous learning accessible to educators regardless of location.
- iii. **Integration of technology in physical education curriculum:** Digital platforms enable physical education educators to incorporate fitness technology, such as wearable devices and fitness apps, into their lessons. These tools introduce students to modern fitness resources like step trackers and heart rate monitors, teaching them how technology can support and enhance the pursuit of personal health and fitness goals.
- iv. **Encouragement of learners' engagement and motivation:** Online fitness apps and digital challenges gamify physical fitness by incorporating goal-setting, progress tracking, and interactive challenges, making PE more engaging and fun. These tools allow learners to monitor their progress, fostering accountability, promoting ownership of their fitness journey, and motivating them to take an active role in their health.
- v. **Support for remote or hybrid learning environments:** During remote learning or school closures, e-learning platforms ensure that PE lessons continue uninterrupted. Teachers can conduct live classes via platforms like Google Meet or Zoom while also assigning asynchronous fitness challenges and instructional tasks, maintaining student engagement and physical activity.
- vi. **Personalised learning opportunities for learners:** E-learning platforms enable teachers to develop personalised learning opportunities for learners. Learners can progress at a level matched to their learning requirements.

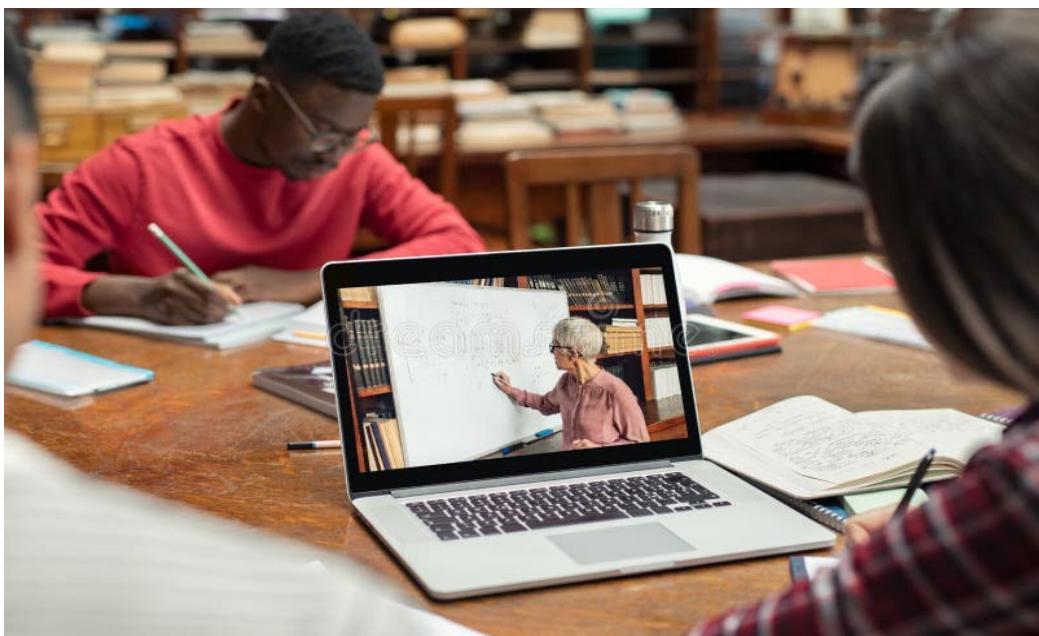


Figure 19.3: A Learner watching an online lesson

e. Adaptive and inclusive technologies

Adaptive devices and programmes, including tools, devices, software, or systems designed to address the diverse needs of individuals, particularly those with disabilities or different challenges, make physical education more inclusive. These technologies ensure equitable access, usability, and opportunities by removing barriers and promoting accessibility, independence, and inclusion. By employing adaptive technology, teachers can offer custom solutions that allow all learners to participate fully, meeting diverse needs within the same class.

Benefits of adaptive and inclusive technologies in physical education include:

- i. **Promotes equity and inclusion:** These technologies help create a learning environment where every learner can succeed and participate on equal footing, fostering a sense of belonging and community.
- ii. **Improved physical literacy:** With the use of adaptive tools, learners with disabilities can still develop fundamental movement skills, coordination, and confidence—core components of physical literacy.
- iii. **Social media and community engagement:** Platforms like YouTube, Instagram, and TikTok are changing how people engage with fitness, offering tutorials, inspiration, and challenges. These platforms open opportunities for physical education professionals to connect with wider audiences, promote health literacy, and foster communities committed to well-being.
- iv. **Facilitates differentiated learning:** Adaptive technologies allow physical education teachers to design activities that can be adjusted for various skill levels and abilities, ensuring a differentiated approach to meet the diverse needs of all learners.
- v. **Promotes health and well-being:** Adaptive tools support learners in engaging in movement and fitness activities that contribute to physical and mental health, regardless of limitations or challenges.

vi. **Improved teacher confidence and planning:** When using adaptive technologies, physical education teachers are better equipped to address diverse learning needs. This allows teachers to confidently plan inclusive, effective, and meaningful lessons.

f. **AI in performance analysis**

AI tools can analyse video footage to provide valuable insights into learners' form, endurance, and technique during physical activities. By offering detailed, data-driven feedback, AI enables targeted adjustments to improve performance, allowing learners to track their progress, set achievable goals, and measure improvement. This technology empowers learners to understand their strengths, identify areas for growth, and push their physical limits safely, fostering motivation, self-awareness, and continuous development.

Key advantages of AI in performance analysis to physical education include:

- i. **Objective performance insights:** AI offers unbiased, data-driven feedback on learner performance, allowing for clear, actionable, and specific guidance. This helps learners track their progress and identify areas for improvement.
- ii. **Increased engagement and motivation:** Interactive AI tools, gamified fitness experiences, and progress tracking make physical activity fun and engaging. They inspire learners to stay active and committed to learning.
- iii. **Inclusive and adaptive programmes:** AI adapts PE activities to accommodate diverse learning needs, health conditions, and skill levels, ensuring all learners can participate, improve, and stay active.
- iv. **Personalised learning and skill development:** AI creates customised fitness plans and exercises tailored to individual student needs, fitness levels, and goals. It uses movement analysis and feedback to improve motor skills, correct technique, and accelerate learning.
- v. **Data-driven decision-making for teachers:** AI streamlines lesson planning by analysing trends across learner performance and health data. Teachers can focus on impactful instruction while reducing administrative tasks.
- vi. **Injury prevention and health monitoring:** AI predicts injury risks by analysing movement patterns and provides insights for proper exercise form and strengthening routines. Real-time monitoring through wearable devices tracks activity levels and prevents overexertion.

g. **Fitness and movement apps**

Fitness and movement apps like Peloton, MyFitnessPal, and customised coaching apps are valuable tools for physical educators, trainers, and sports professionals. These apps help users track and improve their fitness, exercise routines, and overall health while boosting engagement and promoting physical literacy. They support various goals such as weight loss, strength building, yoga, running, and mindfulness by offering features like personalised workout plans, progress tracking, and instructional videos.

Here's how fitness and movement apps are being applied in physical education

- i. **Enhancing learners' engagement:** Apps like Peloton, Nike Training Club, and 7 Minute Workout offer fun, interactive, and accessible fitness options that keep learners motivated during physical education classes. Through gamified challenges and virtual group classes, these apps make fitness engaging, dynamic, and appealing for all learners.

- ii. **Supporting data collection and assessment:** Teachers and coaches can use fitness and activity tracking apps to assess learner progress, monitor movement patterns, and adapt physical education curricula accordingly.
- iii. **Facilitating remote learning:** Fitness and movement apps have become essential for teaching physical education remotely, offering accessible, at-home options for exercise and movement instruction during times when traditional in-person classes aren't possible.
- iv. **Promoting health literacy:** These apps provide learners with insights into the importance of regular movement, balanced nutrition, and goal setting—key components of health literacy and lifelong physical well-being.
- v. **Personalised learning and skill development:** Fitness apps enable teachers to customise workout plans and activities based on each learner's fitness level, goals, and needs. They also offer instructional videos and tutorials to help learners to learn proper techniques and build essential skills.



Figure 19.4: An example of a fitness workout App

h. Sports analytics tools

Tools are technologies and software used to collect and analyse data on sports performance, strategy, and business decisions. They help teams, coaches, and scouts improve performance, plan strategies, and make informed choices. These tools include wearables, GPS, movement analysis software, and injury prevention technology. They track player performance, game strategies, biomechanics, and health trends, providing insights to optimise individual and team success.

Here is how they are being applied in physical education

- **Enhancing motivation and engagement:** Sports analytics can make physical education lessons more engaging by turning fitness data into interactive challenges or goals, such as step tracking or movement-based activities. This approach fosters friendly competition and motivates learners by providing clear, data-driven insights into their progress.
- **Data-informed lesson planning:** Analytics tools provide insights into learner participation, skill levels, and physical activity trends. Teachers can use this information to design physical education lessons that are inclusive, effective, and suited to varying fitness levels and learning abilities.
- **Skill development and technique analysis:** Motion analysis software helps educators evaluate learners' movements during sports or physical activities. This feedback allows teachers to identify and correct incorrect techniques while supporting the development of essential skills like running, jumping, and coordination.

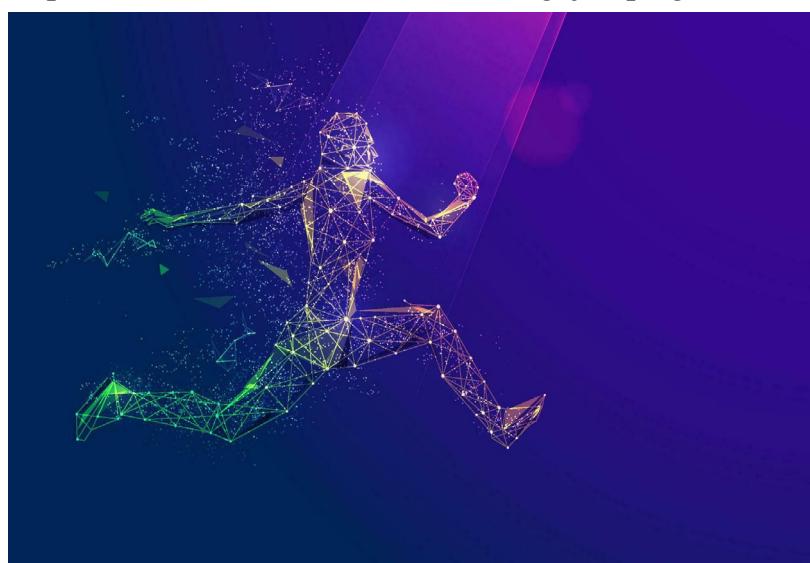


Figure 19.5: The use of AI to analyse a jump

i. Rehabilitation tools (Tech-enabled physical therapy)

Tech-enabled physical therapy uses advanced technologies like virtual reality, wearable exoskeletons, motion capture, and telehealth to improve recovery after injury, illness, or surgery. These tools enhance engagement, support personalised treatment plans, and employ evidence-based methods to restore mobility and strength. Incorporating robotics, AI, and digital solutions, they offer innovative opportunities for professionals to optimise patient recovery as technology continues to evolve.

Here is how they are being applied in physical education

- **Fitness monitoring:** Wearable devices track learners' activity levels, heart rate, and movement to monitor fitness progress and encourage goal setting.
- **Personalised training programmes:** AI and data analysis enable educators to design individualised exercise plans based on a learner's fitness level, progress, and goals
- **Injury prevention and rehabilitation:** Technology-assisted assessments (like motion analysis) identify risk factors for injury, helping educators and coaches implement strategies to reduce the risk of harm.

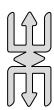
- **Adaptive physical education:** Tech tools such as wearable exoskeletons and telehealth enable physical education to accommodate learners with physical disabilities or mobility challenges.



Figure 19.6: Modern rehabilitation tools

Learning Tasks

1. Investigate and summarise how modern technologies (such as VR/AR, AI, and wearable devices) are currently being integrated into physical education.
2. Explore one online learning platform and explain how it supports physical education teaching and learning.
3. Explore how VR/AR can enhance physical education and skill development.
4. Examine how gamification enhances motivation and engagement in physical activity.
5. Explore how social media platforms can be used to promote physical education and wellness.
6. Investigate how AI tools can be used to analyse a sport or activity performance and describe how it would provide feedback to improve your skills.
7. Identify and analyse potential career opportunities for technology-related professionals in physical education.
8. Discuss the importance of technology in preparing future PE professionals for success.
9. Understand the role of online platforms in continuous professional development.



Note

Select from the list provided, the tasks that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** Start with a brief interactive activity. Have learners share any digital tools or apps they know of that are related to fitness. Examples are fitness trackers, workout apps, virtual coaching platforms, etc. Ask them this question: How do you think these tools could be used in a career in physical education?

2. **Introduction:** Watch a short video (5 minutes) showcasing how technology is revolutionising physical education (e.g., A PE teacher using a fitness tracker to monitor learners' progress or a virtual reality system for athletic training). Explain the growing importance of digital tools in modern physical education, such as wearable fitness trackers, video analysis software, and virtual fitness classes. Introduce the concept of digital literacy as an essential skill in physical education today. Highlight how careers in PE are evolving with advancements in tech (e.g., Sports analytics, online coaching, virtual fitness, and health promotion roles).
3. **Digital-Based Learning:** In small groups, learners select and either research or participate in a hands-on demonstration of one of the technology tools. They analyse how the selected app or technology tool can support physical education by improving instruction, motivating learners, tracking fitness progress, enhancing skill development, or creating interactive learning opportunities. Each group shares their findings, focusing on how these tools can make physical education more engaging, personalised and effective.
4. **Project-Based Learning:** Learners in their mixed ability and mixed gender groups design a digital learning experience for a specific physical education scenario. For example, create a fitness challenge using an app, develop a virtual class using Zoom, or analyse a sports performance using video analysis tools. Each group should select a specific physical education topic, choose the relevant technology tools to create an engaging learning experience and present their plan or prototype (initial version) to the class.
5. **Closure:** Hold a class discussion or a reflection session. Encourage learners to explore additional tech tools independently or suggest a research assignment on emerging trends in technology and physical education.

Key Assessments

Level 1

1. State two (2) roles technology plays in modern physical education?
2. Name one example of a wearable device used in physical education.
3. What is gamification in the context of physical activity?
4. Which technology enables immersive learning experiences for sports skills and safety techniques?
5. How does online learning benefit PE professionals?

Level 2

1. How can data tracking and analytics be used to improve PE programmes?
2. Explain the three (3) benefits of virtual and augmented reality in teaching physical education.
3. How do fitness apps like Fitbit or Strava motivate participants to stay active?
4. What makes adaptive technologies important in inclusive physical education?

Level 3

1. How can wearable devices be integrated into a physical education curriculum to personalise student fitness plans?
2. Provide an example of how an online learning platform would support a physical education professional's professional development.

3. How can a physical education teacher use VR to enhance a lesson on swimming for learners who may not have access to a pool?
4. In a drama, suggest three (3) ways to use social media to promote health literacy and fitness education in a community.

Level 4

1. How can the effectiveness of wearable fitness trackers be used to measure student progress in physical education? Consider data tracking and its implications for tailored fitness programmes.
2. In what three (3) ways can the introduction of AI in performance analysis change the way PE professionals provide feedback to learners? What challenges might arise?
3. Evaluate the potential impact of technology on career opportunities in physical education. How might a physical education professional's role change with the integration of emerging technologies like VR, AI, and adaptive devices?

HINT



*The Recommended Mode of Assessment for Week 19 is **Dramatisation**. [Refer to **Appendix J** for rubrics of dramatisation. DoK **level 3**, item 4 can be used as task example.*

WEEK 20

Learning Indicator: Applying technology to develop a 21st-century career in physical education

FOCAL AREA: DEVELOPING A 21ST-CENTURY CAREER IN PHYSICAL EDUCATION

DEVELOPING A 21ST-CENTURY CAREER IN PHYSICAL EDUCATION

Applying technology to a career in physical education can significantly enhance teaching, training, coaching, and athletic performance while preparing professionals for 21st-century learning and practice demands. The integration of technology into physical education (PE) has transformed the field, making it more dynamic, personalised, and aligned with 21st-century learning demands. Traditionally focused on physical fitness, sports skills, and health, physical education now incorporates innovative, data-driven tools that enhance teaching, coaching, and athletic performance.

Technology allows teachers, coaches, and fitness professionals to design engaging, interactive programmes, provide real-time feedback, and implement improved assessment methods. This technological shift empowers both learners and professionals, redefining instruction and supporting lifelong fitness development. A career in physical education that embraces technology positions professionals as innovative leaders prepared to address the evolving challenges of modern learning and practice.

When developing your career in physical education, it is important to understand how technology can be used to enhance your work activity for the benefit of your clients/athletes/patients/learners and how this can also be used to support you in your role.



Figure 20.1: Essential technology tools

Wearable Technology and Fitness Tracking

Wearable technology has transformed the fitness and health industry by providing real-time data and personalised insights that improve individual and team performance. Fitness trackers, smartwatches, and heart rate monitors are widely used to track physical activity and physiological metrics (vital signs) and enhance user engagement in physical education, sports, and personal fitness.

Popular examples of wearable fitness devices include fitness trackers like Fitbit, Apple Watch, and Garmin, as well as specialised heart rate monitors such as Polar and Wahoo.

These devices utilise advanced sensors, including accelerometers, gyroscopes, and optical heart rate monitors, to measure the steps taken, calories burned, heart rate, and sleep quality. For instance, Fitbit devices track daily movement and provide detailed insights into physical activity. At the same time, the Apple Watch integrates features such as ECG monitoring and GPS tracking for more comprehensive fitness and health management.

1. Applications of wearable technology in physical education

- **Tracking physical activity and heart rate:** Wearables monitor physical activity levels, including steps, distance travelled, and exercise intensity. Heart rate monitors offer real-time feedback on cardiovascular performance, enabling individuals to optimise their workouts. Coaches and physical education teachers can use this data to assess performance and adjust training programmes accordingly.
- **Monitoring individual and team performance:** In team sports, wearables allow coaches to track individual players' performance data, such as movement patterns, speed, and fatigue levels. Devices like Garmin Forerunner watches and WHOOP straps provide performance insights that can help reduce injury risk and improve team efficiency.
- **Goal setting and personalised plans:** The data collected from wearables enables the creation of personalised fitness plans tailored to individual needs. By analysing patterns in physical activity, users can set achievable goals, monitor progress, and identify areas for improvement. For example, a physical education teacher can use wearable data to help learners achieve daily goals or improve their cardiovascular endurance.
- **Behavioural analysis and insights:** Wearables provide insights into user behaviour, such as exercise frequency, intensity, and routine adherence. This information can be used to track patterns, such as periods of inactivity, and implement strategies to encourage regular physical activity.

2. Benefits of wearable technology to physical education

- **Immediate feedback:** Wearables provide real-time data, enabling individuals to adjust their activity levels or exercise intensity immediately. For example, heart rate monitors alert users when they are exceeding or underperforming in their target heart rate zones, promoting efficient and safe workouts.
- **Accountability and motivation:** Wearable technology enhances accountability by quantifying progress and performance. Gamification features, such as step challenges, calorie goals, and achievement badges, motivate users to stay active and meet their targets. This approach is particularly effective in physical education, where learners are encouraged to compete with peers or achieve personal goals.
- **Enhanced engagement through gamification:** Many wearable devices incorporate gamified elements, such as ranking rewards, and progress charts, to make fitness more engaging. By turning physical activity into a game, users are motivated to remain consistent and competitive, fostering long-term adherence to fitness routines.
- **Improved health outcomes:** Wearables contribute to improved overall health by monitoring key health indicators such as heart rate, sleep, and activity levels. For

example, data from wearables can identify signs of overtraining, stress, and inadequate recovery, allowing individuals to adjust their routines to avoid injury or burnout.

- **Data-driven decision-making:** Coaches and teachers can leverage and apply data to make informed decisions regarding training intensity, recovery periods, and individualised fitness plans. This evidence-based approach ensures that training is both effective and aligned with the specific needs of athletes or learners.



Figure 20.2: Workout tracker

Virtual and Augmented Reality (VR/AR)

Virtual Reality (VR) and Augmented Reality (AR) are new technologies that are changing how people train for sports and fitness by combining virtual models with real-world physical activities, these technologies create innovative and interactive experiences that enhance learning, performance, and engagement.

1. Examples

- **VR-based fitness games:** VR fitness games on platforms like Oculus Quest or PlayStation VR provide users with an engaging workout experience. Games like *Beat Saber* and *Supernatural* combine music, rhythm, and physical movements to encourage exercise in an entertaining, game-based format. These experiences allow individuals to perform high-intensity workouts without the dullness of traditional exercise routines.
- **AR sports simulation training:** Augmented Reality (AR) is increasingly being utilised in sports training to superimpose virtual elements onto the real world. For instance, AR applications can create simulations for basketball shooting drills by displaying targets on an actual court to improve shooting precision. In football, AR can project play diagrams onto the field, assisting players in grasping and practicing intricate strategies.

2. Applications of virtual and augmented reality (VR/AR) to physical education

- **VR sports simulations:** Virtual Reality can provide authentic sports environments for athletes to practice and develop their skills in a safe, controlled virtual setting. For instance, soccer training using VR enables players to work on their ball control, passing precision, and tactical decision-making without the need for a real field. Furthermore, VR can replicate competitive situations, such as penalty shootouts or intense game conditions, to enhance mental toughness and focus.

- **AR-enhanced training:** Augmented Reality (AR) applications connect the digital and physical realms by displaying visual guides, strategies, or exercises in real-world contexts. For instance, a tennis player wearing AR glasses could receive visual indications for correct foot positioning and swing techniques while training. In team sports, AR can project tactical diagrams or movements onto the playing field to help athletes grasp and remember strategic formations.

3. Benefits of virtual and augmented reality (VR/AR) to physical education

- **Immersive and interactive learning:** VR and AR provide a highly immersive experience, letting users practice sports or fitness activities in realistic settings. They help athletes and fitness fans improve skills faster by simulating real-world conditions and providing instant feedback, whether it's for a golf swing or a dance routine.
- **Risk-free practice environment:** VR simulations provide a safe space for athletes to practice potentially dangerous or high-risk scenarios without physical consequences. For example, a skier can practice navigating steep slopes or challenging courses in VR without the risk of injury. Similarly, combat sports athletes can simulate sparring sessions to develop techniques and reflexes while avoiding physical fatigue or harm.
- **Enhanced tactical training:** AR applications help athletes visualise and practice sports strategies in real time. By overlaying plays, drills, or cues onto the physical environment, AR facilitates better comprehension of complex tactics and game plans. This enhanced learning tool is particularly valuable in team sports where coordination and strategy are essential.
- **Motivation and engagement:** Both VR and AR enhance the appeal of fitness and sports training by incorporating gamification and interactive components. These technologies create virtual challenges, track performance, and provide immersive visuals, encouraging individuals to remain committed to exercise routines or training programmes. For example, VR fitness games can make ordinary cardio workouts feel like exciting adventures, while AR applications deliver instant rewards and track progress during physical activities.
- **Accessibility and convenience:** VR and AR technologies allow athletes and fitness enthusiasts to train anytime and anywhere. VR-based fitness programmes eliminate the need for specific equipment or facilities, enabling users to engage in workouts from the comfort of their homes. AR apps can also change any environment, such as a living room or backyard, into a personalised training space.

Online Learning Platforms in Physical Education

In recent years, online learning platforms such as Google Classroom, Edmodo, Moodle, and other e-learning tools have transformed education by providing innovative ways to facilitate teaching and learning. While these platforms are often associated with traditional academic subjects, they are increasingly being applied to physical education (PE) as well. By employing technology, educators can ensure that PE remains engaging, effective, and accessible, even in remote or mixed-learning environments.

1. Applications of online learning platforms in physical education

Online learning platforms have transformed physical education by offering creative tools and methods that enhance learning, engagement, and accessibility. This supports 21st century careers in PE through:

- **Remote facilitation of physical education classes:** Online platforms allow physical education classes to be conducted virtually, enabling learners to participate in physical activities from the comfort of their homes. Teachers can upload instructional videos, workout plans, and live-stream sessions to guide learners through fitness routines. For example, a PE teacher can record a demonstration of various physical activities and share the video through Google Classroom for learners to follow along at home.
- **Assigning fitness routines and tracking participation:** Teachers can design and distribute customised fitness routines tailored to learners' needs and abilities using e-learning tools. Platforms like Edmodo and Moodle provide options to upload assignments, such as weekly workout logs or video submissions of learners performing exercises. These tools include features that allow teachers to track participation and monitor progress. Learners log their daily physical activities using an online form or submit fitness challenge results, which teachers can assess.
- **Assessing performance digitally:** Online platforms streamline assessing learners' physical performance and progress. Through video assessments or self-reported data, teachers can use digital tools to evaluate learners' efforts and improvement over time. For example, learners may upload videos of themselves performing a specific exercise, such as push-ups or squats, which the teacher can review and provide feedback on. This method ensures that assessment remains objective and constructive, even in virtual settings.
- **Blended learning models:** Online platforms support blended learning approaches combining face-to-face instruction with online modules. In this model, learners can learn theoretical concepts, such as the benefits of exercise, nutrition, and anatomy, through digital resources before participating in practical sessions during in-person classes. For instance, a PE class might include online quizzes about fitness principles followed by hands-on activities where learners apply what they learned.

2. Benefits of Online Learning Platforms in Physical Education

- **Increased accessibility:** Online platforms make physical education more accessible to learners regardless of their geographical location or personal circumstances. Whether learners are in remote areas, recovering from an injury, or unable to attend in-person classes due to unforeseen circumstances, they can still engage in physical activities and learn about health and fitness. This inclusivity ensures that all learners can develop essential physical skills and knowledge.
- **Enhanced communication:** Digital learning tools improve the way teachers, learners, and parents interact and work together. Teachers can provide updates on schedules, assignments, and progress reports instantly. Platforms such as Google Classroom keep parents informed about their child's involvement and performance in physical education, thereby creating a supportive atmosphere for learning at home. Learners can connect with their teachers and classmates through discussion boards, messaging options, and feedback systems, all of which encourage greater engagement and motivation.
- **Personalised learning experiences:** Online platforms allow teachers to modify learning experiences to meet individual learners' needs. Teachers can provide differentiated instruction by assigning fitness routines or activities that align with each learner's abilities, skills, and goals. For example, a learner who excels in endurance training might be given a running challenge, while another learner focusing on flexibility

will receive a flexibility-based workout plan. A personalised approach helps learners develop confidence and a positive attitude toward physical activity.

- **Data-driven insights:** Utilisation of digital tools enables teachers to gather and analyse data on learners' participation, performance, and progress. Platforms like Moodle offer analytics features that allow teachers to identify trends, strengths, and areas for improvement. For example, if data shows that learners struggle with cardiovascular endurance, teachers can design targeted activities to address this need. These understandings help optimise the teaching process and ensure that learning indicators are met effectively.
- **Encourages lifelong fitness habits:** Incorporating technology into physical education provides learners with resources and tools that extend beyond the classroom. Online platforms enable them to explore fitness applications, participate in virtual workouts, and utilise health-tracking tools, which encourage the development of habits that support lifelong physical activity and wellness. For instance, learners can monitor their daily steps, establish fitness objectives, and engage in online workout routines, giving them the ability to manage their health.

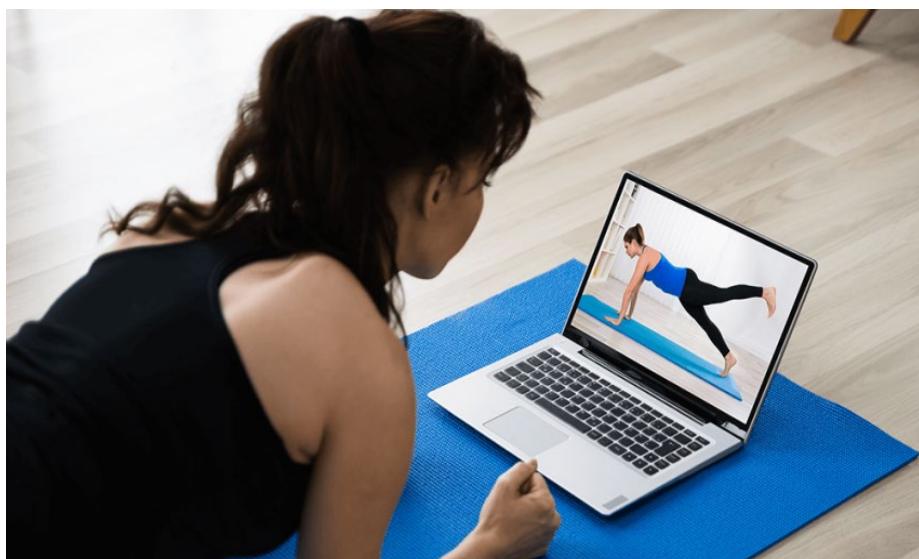


Figure 20.3: A virtual workout

Sports Analytics and Data Visualisation

Sports analytics and data visualisation have become essential tools in modern athletic performance and coaching strategies. Utilising technology to analyse, interpret, and present data allows teams, coaches, and athletes to gain deeper insights into performance metrics, identify areas for improvement, and develop more effective strategies.

1. Examples of performance analysis software

Several advanced software platforms are widely used in the field of sports analytics and video analysis. These include:

- **Dartfish:** A powerful tool for video-based performance analysis, Dartfish enables users to break down footage frame-by-frame, annotate movements, and overlay visual cues to highlight key areas of performance.

- **Hudl:** Popular in team sports, Hudl offers tools for video review, statistical breakdowns, and performance tracking. It is widely used by coaches to share insights with athletes and facilitate team collaboration.
- **SportsCode:** known for its customisable coding features, enables coaches and analysts to tag specific moments during a game. This creates detailed reports and visualisations for analysing tactics, player movements, and game dynamics.
- **Other software:** Platforms such as Catapult, Kinovea, and Nacsport also play a role in analysing biometric data, athlete movement patterns, and performance metrics, further enhancing decision-making processes.

2. Applications of sports analytics and visualisation

Performance analysis software has a broad range of applications across various sports and levels of competition. These tools empower coaches, analysts, and athletes to:

- **Analyse athletes' movement patterns, technique, and performance data:** Coaches can monitor athlete movements, biomechanics, and positional play through video and sensor-based analytics. This information aids in assessing the effectiveness of techniques such as running form, shooting mechanics, or swing dynamics in sports such as track and field, basketball, and golf.
- **Use video analysis to identify areas of improvement in technique or game strategy:** By examining game footage or training sessions, analysts can identify particular instances where an athlete or team has room for improvement. For instance, a soccer coach may review defensive formations during set plays, while a tennis coach might concentrate on refining an athlete's serving technique to decrease mistakes.
- **Track and monitor performance over time:** Data visualisation tools offer charts, heatmaps, and graphs to showcase performance trends over time. This enables objective comparisons across training sessions, matches, or seasons, aiding athletes in tracking their progress and modifying their training programmes as needed.

3. Benefits of sports analytics and data visualisation

- **Enhanced tactical analysis and player development:** Coaches can analyse game recordings to grasp opponents' tactics, pinpoint strategic flaws, and modify their game plans as needed. For instance, in basketball, reviewing defensive rotations can assist a team in refining their reactions to pick-and-roll scenarios. Players can also receive specific feedback on their movements, positioning, and decision-making to boost their skills and overall performance.
- **Measurable insights into performance trends:** Analytics offer measurable data that helps teams and athletes assess their development objectively. Metrics like sprint speed, shot precision, or time on task facilitate evaluations based on data rather than just personal observations. For example, monitoring a soccer player's passing accuracy throughout a season can highlight persistent strengths or identify areas that need improvement.
- **Improved communication and collaboration:** Video and data visualisation tools significantly enhance coaches' ability to convey complex concepts to athletes. By using visual representations of performance insights like heatmaps, slow-motion replays, and statistical dashboards, athletes gain a clearer understanding of their strengths, weaknesses, and opportunities for improvement. This leads to more effective training and performance improvement.

- **Injury prevention and load management:** Performance analysis, and sports analytics tools track workload, biomechanics, and fatigue levels. This data helps coaches and medical staff design personalised training plans to reduce the risk of injury while enhancing physical output.

Gamification and Fitness Apps

The incorporation of gamification into fitness applications has transformed how people engage with physical activities. Apps like Nike Training Club, MyFitnessPal, Strava, and Zwift demonstrate how technology and gamification can make fitness routines more enjoyable and effective. These applications combine virtual incentives, challenges, and community features that motivate users to stay committed to their fitness goals.

Gamification in fitness apps often includes virtual fitness challenges where users can compete against themselves or others, track their progress, and set personal goals. For instance, Nike Training Club provides a variety of workout plans, each featuring milestones and achievements. Users can unlock badges, earn points, and participate in community challenges, which fosters a sense of accomplishment and healthy competition.

Strava and Zwift are popular fitness apps for cyclists and runners, offering features like leaderboards, personal best tracking, and group challenges to boost motivation. Zwift stands out with its engaging, game-like environments for virtual cycling and running, encouraging community interaction and enhancing workout enjoyment.

Fitness apps are now commonly used in educational settings with learners and athletes. Coaches can track progress, set challenges, and create personalised fitness plans, making it easier to adjust goals. Gamified features like rewards and badges keep participants motivated and engaged.

Benefits of gamification in fitness applications

- **Digital tools make physical exercise more appealing:** Fitness apps incorporate gameplay, competition, and rewards to make workouts enjoyable for those who find regular exercise boring.
- **Inspiration through gamification:** Features like earning badges or levelling up motivate users to complete exercises, similar to video games.
- **Immediate feedback:** Apps provide real-time progress tracking, helping users stay on track with their fitness goals.
- **Adjustable workouts:** Real-time feedback allows users to modify their routines as needed to achieve better results.
- **Improved consistency:** Gamified elements like friendly competitions, rewards, and progress tracking make it easier for users to maintain a consistent workout routine.
- **Broader accessibility:** These features make fitness more enjoyable and accessible to a wider range of people.

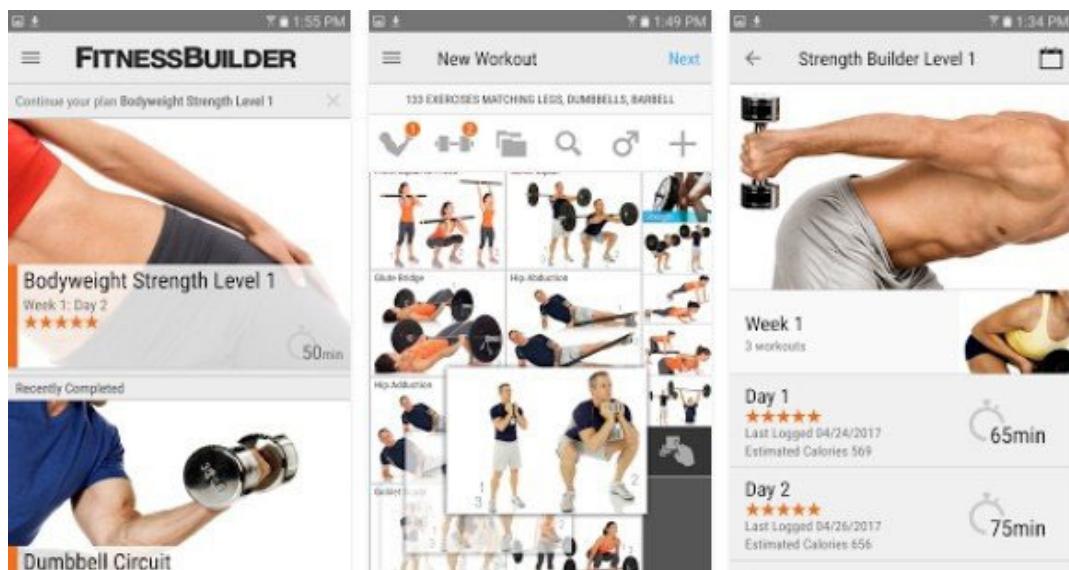


Figure 20.4: Body building fitness app

Digital Assessment Tools

Digital assessment tools such as Google Forms, Socrative, and other online platforms provide a flexible way to evaluate learners' progress in various educational settings. These tools allow for data collection through quizzes, surveys, and feedback forms, which can be used to assess academic knowledge, practical skills, fitness progress, movement concepts, and strategic thinking.

1. Application of digital assessment tools

Teachers can use these tools to create quizzes that evaluate learners' grasp of important concepts and their ability to apply them. For instance, in physical education, quizzes might measure learners' knowledge of movement systems or game strategies. Online feedback systems enable teachers to gather insights into learners' performance in real time, helping them adapt instructions to meet individual learning needs. Tracking progress over time allows for the identification of areas where learners may need extra support or more advanced challenges.

2. Benefits of digital assessment tools

One key advantage of digital assessment tools is their ability to simplify the evaluation process. These platforms automatically organise data, giving teachers a clear overview of individual and group progress. Instant feedback, a core feature of many tools, helps learners quickly identify their strengths and areas for improvement, supporting a more responsive and engaging learning environment. By using data to guide instruction, teachers can adjust their pedagogies to ensure lessons are effective and relevant for all learners.

Sports and Movement Simulation with Gaming

Motion gaming platforms, such as the Nintendo Wii and Xbox Kinect, provide innovative ways to blend physical activity with gaming (the activity of playing video games). These systems use sensors to monitor and respond to users' movements, creating interactive experiences that replicate real-world sports or physical activities.

1. Application of sports and movement simulation with gaming

These gaming technologies engage learners or athletes by offering virtual sports or movement challenges that mirror real-life activities. For example, players can participate in simulated games like tennis, basketball, volleyball, netball, etc., helping them develop physical skills such as coordination, agility, and motor control. The interactive nature of these games encourages a wide range of movements, from quick reactions to precise actions, all within an enjoyable environment.

2. Benefits of sports and movement simulation with gaming

Combining gaming with physical activity makes exercise more enjoyable and accessible, particularly for individuals with varying levels of physical ability. By blending entertainment and fitness, these platforms reduce barriers to participation and encourage consistent involvement. They also provide a safe space for learners or athletes to practice and refine their skills, fostering a positive attitude toward physical activity and improving overall fitness.

Digital Health Education

Digital health education refers to a wide range of online platforms, applications, and digital tools that are specifically designed to enhance personal wellness through engaging and interactive learning experiences. These innovative resources cover crucial health topics such as nutrition, where users can explore balanced diets and meal planning; mental well-being, which includes strategies for managing stress and anxiety; and physical activity, highlighting the importance of exercise and fitness programmes. By providing accessible and informative content, digital health education empowers individuals to take charge of their health journey, fostering informed choices and promoting overall well-being.

1. Application of digital health education

Incorporating digital health education into physical education programmes allows learners to access interactive lessons on various lessons related to physical education and health. Digital tools also enable personalised learning, allowing learners to track progress, access customised content, and receive feedback, reinforcing balanced health habits.

2. Benefits of digital health education

This approach encourages a comprehensive health view beyond traditional physical education. It helps learners to develop a deeper appreciation for the relationship between mental, physical, and emotional well-being. By using digital tools, teachers can provide a modern, engaging learning experience that connects technology-oriented learners and equips them with lifelong skills for managing their health.

Video Analysis for Performance Feedback

Apps like Coach's Eye and Hudl have changed how athletes train and develop their skills. These tools help coaches analyse movements in detail, allowing them to spot the strengths and weaknesses of athletes or learners. Coaches can provide targeted feedback by breaking down intricate movements, like a tennis serve or a basketball layup, into simpler components through these apps. This focus on technique and helps athletes or learners improve and lowers the chance of injury. Using this technology helps create a more effective training environment, helping both coaches and athletes reach their goals.

1. Application of video analysis for performance feedback

This process involves recording learners or athletes during activities and analysing the footage to evaluate techniques, movement patterns, and overall performance. Tools like slow motion, pausing, and zooming highlight areas for improvement. For example, a coach may use slow motion to spot problems in a sprinter's stride or posture. Feedback is then given visually, often with side-by-side comparisons or marked-up videos, to show what needs to be adjusted.

2. Benefits of video analysis for performance feedback

Video analysis allows athletes or learners to view their performance from an external perspective, highlighting details they may not notice. This visual feedback promotes self-awareness and helps individuals take ownership of their development. This also helps to review past performances and supports continuous learning for improvement. The objective nature of video recordings improves communication between coaches and athletes or learners, leading to more targeted and productive training sessions.



Figure 20.5: A coach reviewing a video of the team's match

Artificial Intelligence (AI) and Machine Learning in Fitness (ML)

Artificial Intelligence (AI) and Machine Learning (ML) have changed how people approach fitness and wellness. These technologies offer personalised workout plans based on individual data, such as fitness levels, goals, and past injuries. AI and ML also improve progress tracking by providing real-time feedback and insights to help users make better adjustments. They help prevent injuries by identifying risks and suggesting precautions. Fitness apps like Freeletics and Peloton create custom routines, while devices like Fitbit and Apple Watch track heart rate and sleep patterns, refining fitness plans for better results.

1. Application of artificial intelligence (AI) and machine learning (ML) in fitness
AI and ML enhance fitness by analysing individual needs and adjusting routines accordingly. By processing data from wearables and apps, AI systems suggest exercises optimised for personal preferences, fitness levels, and goals. Predictive analysis also plays a role in injury prevention, detecting patterns in movement to provide corrective feedback and reduce risks.
2. Benefits of artificial intelligence (AI) and machine learning in fitness (ML)
AI and ML offer valuable real-time data, improving the personalisation of fitness programmes. Trainers can use this information to monitor progress, refine plans, and deliver accurate feedback. The ability to provide guidance remotely expands access to fitness support, making it more inclusive. As AI evolves, its role in creating effective, individualised fitness plans will continue to grow.

3. **Adapting to technology and innovation in physical education:** The integration of technology in physical education is transforming the field by enhancing instruction and engagement. To adapt, professionals should blend traditional practices with modern tools.

Strategies for Preparing for a Career in Physical Education in a Modern, Technology-driven Environment

1. **Stay informed:** Engage with journals, conferences, and forums to keep up with trends and research.
2. **Develop technological skills:** Familiarise yourself with fitness trackers, apps, and wearables for monitoring progress and personalising learning.
3. **Embrace interdisciplinary approaches:** Combine knowledge from nutrition, psychology, and biomechanics to enhance teaching.
4. **Promote lifelong fitness:** Use technology to focus on long-term health goals and encourage regular physical activity.
5. **Encourage collaboration:** Utilise digital tools to foster teamwork and interaction among learners and teachers and significantly enhance collaboration, communication, and learning outcomes in physical education.

As technology continues to shape physical education, professionals must embrace innovation and adapt to new tools and methods. Incorporating technology into teaching to create a more dynamic, personalised, and inclusive environment. Staying updated on technological advancements opens new career opportunities in areas such as sports science, coaching, fitness consulting, and digital health.

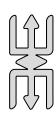
The future of physical education depends on blending traditional methods with new technologies to inspire healthier, more motivated learners. By learning about the latest fitness tools, participating in professional development, and integrating these tools into teaching and coaching, you can build valuable skills and prepare for a successful career in physical education.

Learning Tasks

1. List two ways that VR can help athletes practice without physical risk.
2. Analyse two (2) benefits of Virtual and Augmented Reality (VR/AR) technologies in enhancing teaching and learning of physical education.
3. Record a video of yourself performing a physical skill and use video analysis to improve your technique.
4. List three wearable fitness devices and give one function for each.
5. Design a simple fitness plan using an AI-powered fitness app like Freeletics or Peloton.
6. Identify three challenges of using technology in physical education and propose solutions.
7. Identify physical education careers that can benefit from the use of technology. Name and describe how this technology can be used for three physical education careers.

Pedagogical Exemplars

1. **Starter:** Start the lesson by inviting learners to take part in a short virtual fitness challenge. Use a fitness app or YouTube video to guide them through a 5-minute workout. Ask learners to track their steps, heart rate, or calories burned using any wearable or fitness app they have access to. After the activity, ask them how they felt about using technology to track their physical activity. This helps them connect with the idea of using technology in their physical education.
2. **Introduction:** Begin by explaining the shift in physical education in the 21st century from being just about physical fitness to integrating technology. Present examples such as fitness trackers (e.g., Fitbit, Apple Watch), Virtual Reality (VR) simulations for sports training, and apps for tracking fitness goals. Show videos or images of VR workouts or fitness apps in action.
3. **Collaborative Learning:** Assign learners a specific technology tool related to PE (e.g., fitness trackers, VR, health apps, performance analysis tools). Ask them in their mixed gender and ability groups to research how it is used in PE and prepare a short presentation on its benefits and challenges. Encourage learners to work together to find out how each tool can improve fitness outcomes or teach sports skills. Groups will present their findings to the whole class.
4. **Think-Pair-Share:** Learners identify as many physical education careers as they can that can benefit from the use of technology. With a partner, select three careers. For each career, name and describe the technology that can be used including the benefits this provides for the person in the role. Each pair provides feedback as part of a whole class discussion.
5. **Experiential Learning:** Learners download a fitness or health app, like MyFitnessPal, Strava, or Nike Training Club, with their smartphones or any ICT tool. Guide them to set a weekly fitness goal, such as running 10,000 steps or completing three workout sessions. At the end of the week, learners will reflect on their experiences with the app with the whole class.
6. **Talk-for-Learning:** Learners in their mixed-ability and mixed-gender groups discuss the ethical implications of tracking personal fitness data, they engage in a meaningful conversation that touches on several important aspects of privacy, consent, and the impact of technology on individuals' lives.
7. **Closure:** Encourage a few learners to share their reflections with the class, helping to reinforce the learning experience. Ask learners to write short or brief answers to the following questions:
 - a. How has your understanding of technology in physical education evolved during this lesson?
 - b. What technological tool do you think could help you the most in your fitness journey or future career in PE?
 - c. What challenges do you foresee in using technology in PE, and how could they be addressed?



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, etc. impairments.

- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.).
- Adapt approaches as appropriate to engage learners.

Key Assessments

Level 1

1. How can technology enhance learning experiences in physical education?
2. Mention three career opportunities in physical education that can benefit from technological advancements.
3. List three types of technology tools used in physical education and briefly describe their functions.

Level 2

1. Explain how fitness tracking devices (such as Fitbit or Apple Watch) can monitor learners' progress in physical education.
2. How can mobile apps like MyFitnessPal and Nike Training Club be useful for coaches in managing fitness routines and progress?
3. Discuss two (2) challenges professionals may face when incorporating technology into their roles. How can these challenges be overcome?
4. Explain how proficiency with technology can enhance a physical education professional's career prospect.

Level 3

1. Discuss how the use of Virtual Reality (VR) in physical education can transform traditional training methods and enhance athletes' performance.
2. Analyse three (3) roles of technology in promoting inclusivity in physical education. How can VR and AR be used to support learners with physical disabilities?
3. How can mobile apps like MyFitnessPal and Nike Training Club be useful for learners and teachers in managing fitness routines and progress?

Level 4

1. Evaluate the impact of using wearable fitness trackers, VR, and data analytics in physical education. How can these technologies be integrated to optimise an athlete's performance?
2. Create a proposal for a physical education programme that integrates fitness tracking devices, mobile apps, and virtual reality. Justify the benefits and challenges of each technology about participants' training goals.

HINT



The recommended mode of assessment for week 20 is a Case Study. Refer to Appendix K for the rubric/marking scheme of the case study. Use item 3 of DoK level 3 of Key assessment as a task example.

SECTION 9 REVIEW

In Week 17, learners explore the concept of a resume or CV, which will enable them to understand its purpose and components in projecting a professional profile in physical education. Through class discussions and examples, they analyse the importance of tailoring resumes to highlight relevant skills and achievements. Practical exercises such as drafting resume outlines help learners translate theoretical concepts into tangible outcomes, fostering confidence in their ability to present themselves professionally.

With Week 18, the focus shifts to building a complete resume/CV. Learners participate in workshops where they draft, review and refine their resumes with the guidance of peers and teachers. Emphasis should be placed on organising information clearly, using action verbs and maintaining a professional tone. By the end of this week, learners should have a functional resume that accurately reflects their skills and potential in physical education careers.

In Weeks 19 and 20, learners explore the importance of technology in physical education and how key technological trends are shaping the world of physical education. Learners cover why it is important to identify, embrace, and implement technology into 21st-century careers in physical education and look at how technology benefits professionals, athletes and learners. They explore how modern technology is transforming how we approach physical fitness and how developing their technological skills can enhance their career opportunities.

Throughout the section, create an engaging and inclusive atmosphere where learners feel supported in developing their profiles. By combining practical exercises with technological applications, learners will gain the skills needed to pursue careers in physical education and sports excellence with confidence and professionalism.



APPENDIX I: MID-SEMESTER EXAMINATION

Structure

Multiple choice question

E.g.

1. Which of the following best defines the concept of “recreation”?
 - A. Activities engaged in for enjoyment and relaxation
 - B. Activities engaged in for work purposes
 - C. Activities focused solely on education
 - D. Activities primarily for economic benefit
2. Why is leisure and recreation significant for personal well-being and development?
 - A. It enhances personal growth, physical health, and mental well-being.
 - B. It increases financial income.
 - C. It is not significant for personal well-being.
 - D. It reduces the need for education.

Table of Specification

Week	Focal Area	Type of Question	DoK Level				Total
			1	2	3	4	
13	<i>Biochemical principles in physical activities</i>	Multiple choice	2	2	2	-	6
14	<i>Relevance of leisure and recreation to personal and national development.</i>	Multiple choice	3	4	3	-	10
15	<i>Professionals in health education.</i>	Multiple choice	2	2	1	-	5
16	<i>Professional preparation of career pathways in health education</i>	Multiple choice	2	2	1	-	5
17	<i>Concept of career resume to project learner profile in health education</i>	Multiple choice	3	3	1	-	7
18	<i>Building a career resume to project learner profile in health education</i>	Multiple choice	2	3	2	-	7
	Total		12	16	12		40



APPENDIX J: RUBRIC FOR DRAMATISATION

Criteria	Good (5 Marks)	Satisfactory (4 Marks)	Needs Improvement (2 Mark)
<i>Understanding of content</i>	<i>Interactive health challenges and weekly health education sessions well well-scripted, well-engaging, impactful, with promotions and loops</i>	<i>Interactive health challenges and weekly health education sessions well well-scripted, well-engaging, impactful, without promotions and loops</i>	<i>Interactive health challenges and weekly health education sessions were well-scripted, but not well-engaging, impactful, with promotions and loops</i>
<i>Communication skills</i>	<i>Character demonstrates any 3 communication skills such illustrative gestures, keeps eye contact with audience, stay on content, interacting with audience</i>	<i>Character demonstrates any 2 communication skills such illustrative gestures, keeps eye contact with audience, stay on content, interacting with audience</i>	<i>Character demonstrates any 1 communication skills such illustrative gestures, keeps eye contact with audience, stay on content, interacting with audience</i>

Total- 12 marks



APPENDIX K: RUBRICS FOR CASE STUDY

Criteria	Excellent (3 points)	Satisfactory (2 points)	Needs Improvement (1 point)
Understanding of the Case	Show how <i>MyFitnessPal</i> and <i>Nike Training Club</i> enhance fitness management for both learners and teachers, providing specific examples of features and benefits.	Demonstrates an understanding of how the apps are useful for fitness management, but lacks specific examples or insights into their functions.	Shows understanding of the apps and their relevance to fitness management, but lacks practical examples.
Critical Thinking	Demonstrates critical thinking by analysing at least three aspects, such as tracking, motivation, and community support, linking them to educational outcomes.	Analyses two aspects of the apps, such as tracking and motivation, but fails to connect them with educational objectives.	Provides analysis with only one aspect discussed, lacking depth and connections to learning outcomes.
Communication Skills	Character demonstrates any 3 communication skills, such as illustrative gestures, keeps eye contact with the audience, stays on topic, and interacts with the audience	Character demonstrates any 2 communication skills, such as illustrative gestures, keeps eye contact with the audience, stays on topic, and interacts with the audience	Character demonstrates any 1 communication skill, such as illustrative gestures, keeps eye contact with the audience, stays on content, and interacts with the audience
Use of Evidence	Incorporates any 3 relevant evidences from the case and external sources, including statistics, testimonials, and policy impacts to support the analysis.	Incorporates any 3 relevant evidences from the case and external sources, including statistics, testimonials, and policy impacts to support the analysis	Incorporates any 3 relevant evidences from the case and external sources, including statistics, testimonials, and policy impacts to support the analysis
Organisation and Structure	Presents an introduction, relevant content, show of evidence, conclusion.	Presents an introduction, relevant content, show of evidence but no conclusion	Presents an introduction, relevant content but no show of evidence and conclusion.

Total Score: 15 marks

SECTION 10: INVASION SPORTS

STRAND: ACADEMIC AND CAREER PATHWAYS

Sub-Strand: Coaching and Officiating of Games

Learning Outcome: *Apply concepts and principles of coaching and officiating to improve performance and management of invasion games*

Content Standard: *Demonstrate understanding in the application of the concepts and principles of coaching and officiating of invasion games (e.g. Football, field hockey, basketball, handball, netball etc)*

INTRODUCTION AND SECTION SUMMARY

This section introduces learners to the fundamental concepts and principles of coaching and officiating in invasion games. Learners will explore the roles and responsibilities of coaches and officials, including game management, rule enforcement and player development. Emphasis will be placed on understanding tactical strategies, effective communication and decision-making in game scenarios. Through discussions and practical activities, learners will develop an appreciation for the importance of structured coaching and fair officiating in ensuring smooth and competitive gameplay.

Learners will progress from theoretical knowledge to hands-on application, where they will take on coaching and officiating roles in actual game settings. They will practise organising training drills, implementing game rules and making officiating decisions under real-time conditions. By the end of this section, learners will be equipped with foundational skills in coaching and officiating, preparing them for leadership roles in physical education and sports. This knowledge enhances their ability to contribute positively to sports development in school and beyond.

The weeks covered by the section are:

Week 21: Examine the concepts and principles of coaching and officiating invasion games.

Week 22: Apply the concepts and principles of coaching and officiating in the performance of invasion games.

SUMMARY OF PEDAGOGICAL EXEMPLARS

Use a combination of interactive lectures, practical demonstrations and peer-led activities to help learners understand coaching and officiating principles. Video analysis of professional coaches and referees in ball games will be an effective tool for illustrating key concepts. Encourage learners to engage in discussions on game rules, coaching strategies and officiating challenges, allowing them to critically analyse different scenarios.

Role-playing activities will be essential in reinforcing learning as learners take turns acting as coaches and officials in simulated game situations. Small group coaching sessions will provide

opportunities for hands-on practice in designing training drills and managing team dynamics. Differentiated instruction should be used to ensure inclusivity with additional guidance provided to learners who require support in understanding complex officiating rules. Advanced learners can be challenged to design game strategies or analyse officiating calls using video playback tools.

ASSESSMENT SUMMARY

Assessments will involve both theoretical and practical components, ensuring that learners demonstrate a comprehensive understanding of coaching and officiating principles. Written assessments may include quizzes on game rules, short essays on coaching philosophies or reflections on the role of officiating in sports integrity. Practical assessments will focus on learners' ability to apply coaching techniques and officiating principles in real-game scenarios.

Learners will be evaluated based on their ability to organise and conduct training sessions, apply rules accurately during officiating exercises and demonstrate leadership in managing a game environment. Peer and teacher feedback will be useful to refine their skills with emphasis placed on decision-making, communication and ethical considerations in sports. Group assessments such as analysing professional coaching or officiating footage will further reinforce learning.

WEEK 21

Learning Indicator: Examine the concepts and principles of coaching and officiating invasion Game

FOCAL AREA: CONCEPTS AND PRINCIPLES OF COACHING AND OFFICIATING INVASION GAMES

THE CONCEPTS AND PRINCIPLES OF COACHING INVASION GAMES

Invasion games are team sports whose primary objective is to score points by advancing into the opposing team's territory. Invasion games involve two teams or groups trying to invade or control an opponent's territory or goal area. Examples include soccer, handball, basketball, netball, rugby and many more. In these sports, players must collaborate to move the ball into the opponent's area while preventing the opposing team from doing the same. Coaching invasion games enhances players' strategic, tactical and technical skills to navigate dynamic gameplay, where teams strive to invade their opponents' territory to score. Effective coaching in invasion games involves integrating strategies, tactics and principles to help players comprehend their roles in individual actions and team dynamics. Through training, coaches can foster players' decision-making, adaptability and skill application under various in-game pressures.



Figure 21.1: A football academy

1. The Concept of Coaching Invasion Games

Coaching in invasion games emphasises teaching players how to effectively compete in sports where the primary objective is to dominate the opponent's territory or goal area while defending their own. Sports such as soccer, basketball, rugby and handball demand specific strategies, skills and teamwork.

The following are the concepts of coaching invasion sports

a. **Game strategy:** A strategy is a planned approach or a master game plan that guides how a team will compete. It informs their method of attacking, defending and managing transitions throughout the match. It is the duty of coaches to assist players in developing a flexible strategy, allowing for adjustments based on the game's pace, the opponent's strengths and the time left on the clock. Effective game strategy involves creating a framework that directs team play to enhance the likelihood of success. This entails understanding the team's strengths, recognising the opponents' weaknesses and establishing objectives to execute plays efficiently. For example, in soccer, a coach might implement a defensive strategy that emphasises compact positioning to thwart the opponent's scoring opportunities or an attacking strategy that focuses on exploiting spaces through rapid counterattacks.



Figure 21.2: Football players applying strategy in a training game

b. **Tactical understanding:** Tactics refer to the specific actions or strategies players employ during a game to gain an advantage. In invasion games, examples of these tactics include pressing (applying pressure to opponents), screening (blocking defenders) and utilising man marking or zone marking in defence. Coaches work on developing players' awareness of when to implement particular tactics, taking into account their position on the field, their specific roles and the movements of their opponents. Tactical understanding involves recognising when and how to make real-time decisions, which consists of concepts such as positioning, spacing, timing of movements and the ability to assess game situations. For instance, players in soccer, basketball and similar sports must grasp the importance of spacing to create scoring opportunities effectively and anticipate defensive responses for quick, advantageous decisions.



Figure 21.3: Netball players applying their tactical knowledge

c. **Technical skills development:** Skills include the physical and technical abilities essential for excelling in a game. Key skills include dribbling, passing, shooting and tackling. Coaches highlight technical acquisition and development as an essential tool needed to enable players to implement tactics effectively. Training should prioritise the innovative practice of these skills to simulate their application in game situations. This will aid players in enhancing both their skill level and consistency. Technical skills form the foundational movements that allow players to control the ball and execute game strategies. For example, in handball, having strong technical proficiency in passing and shooting is vital for maintaining possession and converting scoring opportunities. Coaches focus on refining these skills to elevate performance during games.



Figure 21.4: Applying shooting and defence technical skills

iv. **Physical and Mental Conditioning:** Physical endurance, agility and strength are key attributes for performing at a high level in invasion games. Additionally, mental resilience and focus are essential for adapting to conditions on the field or court. Training programmes strive to cultivate these traits, allowing players to perform at their best during competitions. Building confidence, resilience and sustaining motivation are critical aspects of player development. Confidence grows through positive feedback and skill refinement, while resilience is strengthened by teaching players to recover from setbacks and stay focused under pressure. Setting clear goals and fostering a sense of unity within the team inspire players to remain dedicated and driven.



Figure 21.5: Players applying physical and mental conditioning

v. **Team culture:** Creating a strong team culture is critical for achieving success in invasion games. It builds unity, mutual respect and a shared sense of purpose among players. Respect for opponents, officials and teammates forms the foundation of good sportsmanship. Players are encouraged to compete fairly, accept decisions without dispute and recognise the efforts of everyone involved in the game. Leadership is another key element in shaping team dynamics. Coaches can inspire players to take active roles by motivating their peers, making sound decisions during play and demonstrating exemplary behavior both on and off the field. Strong leadership supports individual growth and enhances overall team performance. Building cohesion within the group is equally important as it fosters trust, open communication and collaboration. A group that works together effectively can adapt to challenges, withstand pressure and achieve shared goals. By emphasising respect, initiative and teamwork, coaches can establish a culture that drives success in competition and helps players develop valuable life skills.



Figure 21.6: Teams working together

2. The Principles of Coaching Invasion Games

Coaching invasion games such as soccer, basketball, hockey, etc., demands a strategic approach to developing players' skills, understanding and decision-making abilities. These games are characterised by their dynamic nature, with teams striving to penetrate their opponent's territory to score while at the same time defending their own. Effective coaching in this context goes beyond teaching technical skills; it involves fostering teamwork, spatial awareness and tactical intelligence. By understanding and applying key principles, coaches can create an environment that enhances players' performance and enjoyment of the game.

The principles of coaching invasion sports are as follows

a. Principle of attack

The primary objective in an attack is to retain possession of the ball, advance it into the opponent's territory, and generate scoring opportunities. Coaches can develop drills focusing on passing, movement without the ball, and decision-making in attacking scenarios. A recommended practice activity to reinforce this principle is engaging in small-sided games, such as 3v3 or 4v4, emphasising spreading out, providing support, and creating space for attacking plays.

The key attacking principles are

- **Penetration:** The primary goal of attacking is to break through the opponent's defence to create scoring chances. This involves dribbling, passing or running to progress towards the goal or basket.
- **Width and depth:** Maintaining width stretches the opponent's defence laterally, creating movement space. In creating depth, players position both forward and backward to provide options for gaining ground in the attack.
- **Mobility:** Players must continuously move to create passing lanes, avoid defenders and find space. In invasion games, strategic off-the-ball movements help create gaps and build attacking momentum.
- **Support:** Attacking players should help the ball carrier by staying nearby for passes, keeping possession and pushing the play toward the opponent's goal.



Figure 21.7: Ghanaian rugby players applying the principles of attack

b. Principle of defence

The primary goal of defence is to prevent the opposing team from scoring by limiting their options and taking back possession of the ball. Coaches focus on drills that enhance defensive positioning, tackling and anticipation skills to strengthen the team's defensive capabilities. A recommended practice activity for this principle involves drills in which players closely mark their opponents and work to intercept passes.

The key defensive principles

- **Pressure:** Defensive players apply pressure to limit the time and space of the opponent in possession, which leads to forced errors and rushed decisions.
- **Cover:** Supporting the player applying pressure, other defenders must position themselves to prevent penetration and set up for the next defence line in case the attacker bypasses the initial line of defence.
- **Balance:** Maintaining balance means organising the defence to cover all potential attacking threats and spreading players appropriately across the field.
- **Compactness:** Defenders should stay compact and reduce the space between lines to make it harder for attackers to exploit gaps and advance.



Figure 21.8: A great attack being met by a powerful defence

c. Principle of transition

Transitioning effectively involves swiftly shifting from offense to defence (or the reverse) when possession changes hands. Coaches should prioritise exercises that enhance quick decision-making and movement during these shifts. A recommended practice activity for this principle is engaging in, 1v1, 3v2 or 4v3 scenarios, where a team transitions from defence to offense and must make rapid decisions to advance the ball.

Key transition principles

- **Fast break (Defensive to offensive transition):** Fast break refers to the rapid movement of the ball up the field when a team regains possession. Immediately after gaining possession, the team must transition quickly from defence to offense. This involves making swift decisions to take advantage of any imbalances in the opponent's defensive setup. Fast breaks are commonly seen in basketball and handball and counterattacks in soccer.
- **Recovery (Offensive to defensive transition):** Recovery involves swiftly returning to defensive positions once possession is lost. Upon losing possession, players must promptly transition to defence, either by applying pressure to disrupt the opponent's attack or retreating to regroup. An effective transition helps minimise the opponent's opportunities to exploit any defensive gaps.



Figure 21.9: Fighting for the ball into transition

d. Communication and teamwork

Effective communication, both verbal and non-verbal, is vital in invasion games. This helps teammates predict movements and make quick decisions. Verbal cues, like calling for a pass ensure clarity while non-verbal signals such as hand gestures communicate strategic intentions. Trust and cooperation are essential for seamless teamwork, as players must understand their roles to adapt to the game's dynamic flow effectively.

3. The Concept and Principles of Officiating Invasion Games

Officiating invasion games like soccer, handball, netball and basketball involves managing the game flow, enforcing rules and making decisions to ensure fair play and safety. Effective officiating in invasion games combines concepts and principles to create an environment that supports fair play, safety and competitive integrity.

a. The concept of officiating

Officiating in sports involves supervising and enforcing the rules of a game to ensure fair play and player safety. In invasion games (where teams try to enter the opponent's territory to score), officials are responsible for maintaining order, making judgment calls, and managing the game to prevent conflicts and ensure smooth gameplay.



Figure 21.10: Ghanaian FIFA referee Daniel Nii Laryea officiating a football match

b. Aspects of officiating

The key aspects of officiating

- **Rules enforcement:** The primary role of an official is to enforce the rules of the game. This includes stopping play when necessary, issuing penalising infractions and ensuring that both teams play within the defined rules. Consistent rule enforcement ensures the game remains fair and all players are treated equally regardless of the situation. Officials ensure that the rules of the game are consistently applied. This includes penalising fouls, monitoring play boundaries and managing player conduct. Rule enforcement helps create a structured environment where players understand expectations and consequences.

- **Game management:** Officials manage the game's flow by controlling the pace and ensuring that the gameplay is smooth and efficient. Good game management includes preventing situations from escalating and recognising when and how to intervene without disrupting the flow unnecessarily. Officials maintain control over the game by keeping it safe, fair and enjoyable. Game management includes managing time, handling disputes, calming aggressive players and stopping play when necessary to address injuries or conflicts.
- **Positioning and movement:** Effective officiating relies on being in the right position to view the action. This helps officials make accurate calls. In invasion games, the official's movement should be dynamic to cover the field or court properly, especially during fast breaks or transitions. Officiating requires good positioning to maintain sightlines, anticipate play and make accurate decisions. Officials constantly adjust their positions based on the movement of the ball and players ensuring they have a clear view of crucial actions.
- **Communication:** Communication is the ability to convey decisions clearly and confidently to players, coaches and other officials. Using hand signals to indicate a foul and issuing verbal directions are great ways to communicate and maintain control. It is important for officials to make use of clear, respectful communication in difficult situations. Signals and hand gestures indicate decisions to players, coaches and spectators while brief explanations can clarify rulings and maintain a respectful atmosphere.

c. The principles of officiating

The Principles of Officiating refer to the fundamental guidelines and best practices that sports officials follow to ensure fairness, consistency, and integrity in officiating games. These principles apply to referees, umpires, and other officials across different sports.

Here are some key principles

- **Objectivity:** Objectivity is remaining impartial and unbiased when making decisions to ensure that all players and teams are treated fairly. An official should remain unbiased and make calls impartially, regardless of teams, players, or circumstances. This maintains fairness and upholds the integrity of the sport.
- **Courage:** Courage is the ability to make tough calls, even in the face of pressure from players, coaches and fans. Officials must stand by decisions, especially in challenging situations such as a penalty call in the final minutes. Officials must be confident in making calls even if the decisions may be unpopular with players, coaches or fans. This includes the courage to penalise players or teams when rules are broken and to manage tense situations confidently.
- **Decisiveness:** Decisiveness is making prompt and clear decisions to aid in game flow and maintain player and spectator confidence in the official. Quick, clear choices help keep the game flowing smoothly. Officials should make calls without hesitation, providing players with clear expectations and minimising confusion or delay.
- **Consistency:** Consistency is applying the same rules and standards throughout the game for all players and teams to build trust and maintain fairness preventing accusations of bias. For example, if a foul is called on one team, the same foul should be called if a similar scenario occurs with the opposing team. Applying rules

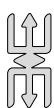
consistently throughout the game ensures that all players understand the boundaries and expectations. Consistency builds trust and reduces conflicts as players feel they are treated fairly.

- **Professionalism and integrity:** Integrity in officiating means maintaining honesty and strong moral principles to earn respect and trust in decision-making. Officials should avoid unethical behaviour such as accepting bribes or showing favouritism and promote sportsmanship. To uphold high ethical standards, they must remain neutral and avoid conflicts of interest. Professionalism also includes being punctual, appropriately dressed and respectful all of which enhance credibility and effectiveness.
- **Composure:** **Composure** is staying calm and collected, especially under pressure to keep the game under control and set a positive example for players. All officials must remain calm in high-tension moments such as player disputes or intense gameplay to reduce the risk of escalation. Maintaining calm under pressure especially during intense or controversial moments allows officials to make thoughtful decisions and manage the game effectively without escalating tension.
- **Clear communication:** Officials should utilise appropriate signals, gestures, and verbal explanations to clearly and effectively convey their decisions. Maintaining a calm and professional approach when interacting with players, coaches, and other officials helps ensure respect, control, and smooth communication throughout the game.
- **Use of technology (if applicable):** All modern invasion sports utilise technology such as VAR (Video Assistant Referee) or instant replay to aid in decision-making. Officials should be thoroughly trained to use these tools while also being capable of making confident, immediate decisions to ensure fairness and accuracy in the game.
- **Physical and mental fitness:** Officiating requires endurance, agility and sharp focus to keep up with the fast pace of the game. Regular fitness training and mental preparation are essential for maintaining both physical and mental sharpness. This allows officials to make accurate decisions and perform effectively throughout the game.

Learning Tasks

1. Learners watch a recorded match of an invasion game (e.g., soccer, basketball). They identify and explain different strategies used by both teams. Discuss how these strategies contributed to their success or failure.
2. Learners design and complete a fitness circuit that enhances endurance, agility, and strength. Include mental resilience exercises, such as focus drills or pressure decision-making activities.
3. Set up defensive drills where players practise pressing, covering and maintaining compactness. Analyse which techniques were most effective in preventing the opposing team from scoring.
4. Assign learners different invasion games (e.g., netball, soccer, handball, basketball). Have them research and present key rules, penalties and fouls for their assigned sport.

5. Learners act as referees in a small-sided game, enforcing the rules and making real-time decisions. Discuss the challenges of making quick and fair calls.



Note

Select from the tasks provided above the ones to be performed in your school, considering the school's and learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** Begin with a quick warm-up game relevant to invasion sports (e.g., a small-sided soccer game or basketball passing drill). Encourage learners to observe and think critically about strategies and actions taken by players and any coaching or officiating decisions made during the activity. After the activity, ask learners the following questions.
 - a. What tactics did you use to keep possession or advance in the game?
 - b. What were some challenges in making decisions on the spot?
2. **Introduction:** Introduce basic coaching principles and emphasise the coach's role in facilitating skill development and tactical awareness. Assist learners in describing the roles and responsibilities of officials in invasion games.
3. **Collaborative learning:** Learners in groups (each group assigned one concept or principle of coaching or officiating), research from relevant sources and gather information on the concept and principles of coaching invasion games. Learners discuss their findings and prepare concept mapping on the concepts and principles of coaching. Learners are engaged to do the same for the concept and principles of officiating. As a whole class, discuss how these concepts could apply to different invasion games.
4. **Group-based learning:** Learners in groups discuss and draw coaching and officiating plans for coaching and officiating invasion games. Put learners into teams and assign roles such as players, coaches, and officials. Set up a mini-game scenario (e.g., 3v3 soccer or basketball) where learners can practise coaching, officiating, and playing. Allow them to play while coaches give guidance on positioning, tactics, and decision-making. Officials will practise enforcing rules and communicating calls. After each round, bring learners together to discuss what went well and areas to improve. Encourage feedback on coaching effectiveness, officiating consistency, and tactical execution.
5. **Closure:** Ask learners to reflect on their experiences in each role. Reiterate the importance of effective coaching and officiating in maintaining fairness, promoting skill development, and enhancing the enjoyment of the game. As a quick exit activity, ask each learner to write down one new concept or strategy they learned about coaching or officiating.



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, etc. impairments.
- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.)
- Other appropriate approaches to engage learners can be used.

Key Assessments

Level 1

1. Define invasion games and provide two examples.
2. List three essential technical skills needed for invasion games.
3. Identify one key tactical principle used in invasion games.
4. List two key aspects of officiating in invasion games.

Level 2

1. Outline the key principles of attack in invasion games.
2. Explain the importance of game strategy in coaching invasion games.
3. Explain the principle of defensive stability in invasion games and give two reasons why this principle is important.
4. Describe how physical and mental conditioning contribute to player performance.

Level 3

1. Describe the principle of objectivity in officiating invasion sports and why it is crucial.
2. Explain how technology can assist officials in making fair decisions.
3. What is the transition principle in invasion games, and how is it applied?
 - A. Quick switch from offense to defense.
 - B. Focusing solely on offensive strategies.
 - C. Maintaining player positions regardless of possession.
 - D. Continuously pressing the opponent without regard for defence.

HINT



The recommended mode of assessment for week 21 is Multiple-Choice. Use items of level 3 of the key assessment as a task example.

WEEK 22

Learning Indicator: Employ the concepts, and principles of coaching and officiating in the performance of invasion games

FOCAL AREA: APPLYING THE CONCEPTS AND PRINCIPLES OF COACHING AND OFFICIATING INVASION GAMES

APPLYING CONCEPTS AND PRINCIPLES OF COACHING INVASION GAMES

Introduction

Invasion games are an exciting category of team sports that focus on one team's objective of penetrating the opposing team's territory to score points or goals. This dynamic gameplay often involves advancing into the opponent's area, typically with a ball or other object, while simultaneously fortifying one's defences against potential attacks.

To be successful in these games, teams must employ a thoughtful blend of strategy, tactical positioning and technical skills. Each player plays a crucial role in this intricate performance, collaborating effectively to create scoring opportunities while thwarting the other team's efforts to gain control. The combination of teamwork, skill and strategic foresight makes invasion sports challenging and thrilling for players and spectators alike.



Figure 22.1: 17-Year-old Christiana Ashiaku applying the dribble in football

Key Characteristics of Invasion Games

A balanced combination of these techniques, paired with smart decision-making, increases a player's overall effectiveness on both sides of the game.

- Territorial objective:** Success in many sports depends on controlling space effectively. Teams move strategically into key areas to gain an advantage whether by advancing into the opponent's half or maintaining a strong defensive setup. This approach helps create scoring chances while limiting the other team's ability to counterattack. In games such as football, basketball and hockey, positioning plays a major role in dictating the flow of play as players must occupy spaces that force the opposition into difficult situations.

2. **Scoring by goal or point:** The aim is to send the ball into a designated scoring area, whether that be a net, hoop or goal. Different sports assign varying point values based on difficulty and execution. For example, basketball differentiates between two-point field goals and three-pointers, depending on the player's location. Teams focus on setting up high probability scoring opportunities by reading the game and adjusting their approach accordingly.
3. **Continuous attack and defence:** One of the defining traits of invasion sports is the quick shift between offense and defence. A turnover can happen within seconds, requiring immediate adjustments. Losing possession means players must react by regrouping and stopping the opponent's advance while winning it back demands an immediate offensive push. The speed of these transitions tests decision-making, communication and individual skill as each team fights to control momentum.
4. **Spatial awareness:** A strong sense of positioning allows players to move effectively, whether supporting teammates or anticipating an opponent's next move. Good spacing creates passing lanes, opens up scoring chances and strengthens defensive structures. In basketball, for instance, maintaining the right distance between players can lead to an open shot, while in football, well-timed movements can break through defensive lines. Reading the game in real time and adjusting positioning accordingly is a critical aspect of high-level play.
5. **Use of different skills:** Every sport requires a mix of techniques that vary depending on the situation. These include:
 - **Passing:** A fundamental skill for keeping possession and setting up attacks. Whether it is a short, quick pass in football or a precise feed in basketball, accuracy and timing matter.
 - **Shooting:** Directing the ball toward the goal, hoop, net or target with power and precision. Different sports demand different techniques, from a wrist shot in hockey to a free kick in football.
 - **Dribbling:** Moving with the ball while keeping control, whether through footwork in soccer or hand control in handball.
 - **Tackling/Interception:** Defensive efforts to regain possession, whether by a well-timed slide tackle in soccer or a block in netball.
 - **Dodging/Evasion:** The ability to escape defenders through feints, quick turns or sudden bursts of speed.



Figure 22.2: A player exhibiting the characteristics of invasion sports in handball

Coaching Invasion Games with the Concepts of Strategy, Tactics and Technical Skills

Coaching invasion games involves developing players in multiple areas, combining strategy, tactics and technical skills. Each aspect plays a crucial role in shaping well-rounded athletes who can adapt to various game situations.

Here is how each concept can be implemented

1. **Game strategy development:** Strategy serves as the overarching plan for the game, outlining the team's objectives and methodologies for success. It encompasses various tactical decisions and considerations, guiding the players in their approach to the game and how they will work together to achieve their goals. This strategic framework helps the team navigate challenges, exploit opportunities and ultimately determine their pathway to victory.
 - **Application:** A strong game plan considers the abilities of the team, its quick movement, precise passing, or defensive organisation while identifying where the opposition is most exposed. If the other side struggles under pressure, applying aggressive defence early can force mistakes. If they leave gaps when attacking, a fast counterattack can be a useful weapon. Coaches shape tactics by adjusting formations, giving players specific instructions and setting up plays that maximise their squad's potential. Success depends on players understanding their roles, working together and being ready to adjust based on how the match unfolds. Clear communication and smart decision-making on the field help turn strategy into results.
 - **Examples:** For a team with strong defensive abilities, the strategy might focus on keeping a tight formation, limiting the opponent's space to attack and quickly transitioning into a counterattack once the ball is won. This allows the team to absorb pressure and strike when the opponent is most vulnerable. If a team is particularly skilled at maintaining possession, the strategy could involve controlling the ball for longer periods, dictating the pace of the game and wearing down the opponent through consistent passing. By keeping the ball, the team can control the tempo and limit the opponent's chances to get into the game.
2. **Game tactical awareness:** Tactics are the immediate, in-the-moment choices and moves that help to execute the overall game strategy. They are the adjustments players make to respond to the current situation on the field. For example, a team might shift to a more defensive stance if they're leading or apply more pressure when they need to score. Tactics involve decisions like when to press high or drop back, when to switch the play or how to mark a key player on the opposing team. These decisions depend on factors such as the score, player positions, time remaining and how the opponent is playing. A coach or player might decide to tweak a formation, like switching from a 4-3-3 to a 4-4-2 in football, depending on the flow of the game. Effective tactics allow a team to stay flexible, adapt to different scenarios and exploit opportunities as they arise.
 - **Application:** Tactics in invasion games focus on positioning, movement and quick decision-making. Players adjust based on the game's flow, recognising patterns in the opponent's play. Coaches help players identify these patterns and react quickly to take advantage of openings such as pressing when the opponent is weak or exploiting gaps for counterattacks. Fast decisions can create opportunities and shift the momentum of the game.
 - **Examples:** In soccer, an attacking tactic like "overloading" one side can draw defenders to one area, opening up space on the opposite side. This allows for a quick switch of play,

creating opportunities for a cross or shot. In basketball, using screens and picks helps free up shooters by blocking defenders or it can set up mismatches where a slower defender has to guard a faster player, creating easier scoring chances. Both strategies rely on quick movement and smart positioning to outmanoeuvre the opposition.

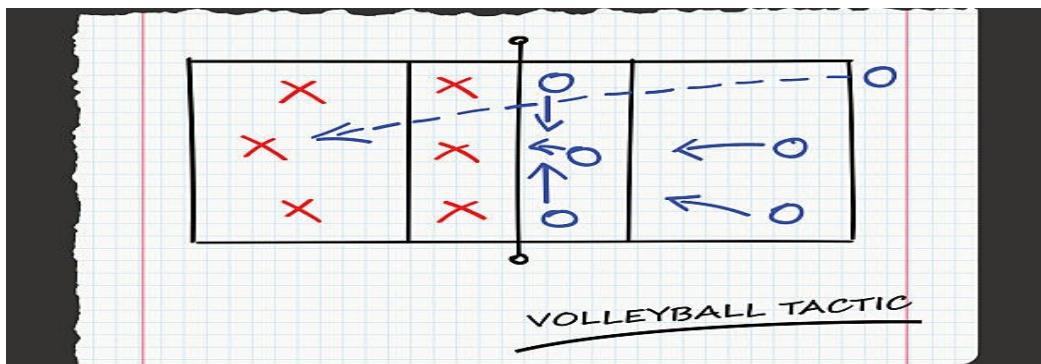


Figure 22.3: Volleyball service tactics

3. **Technical skill development:** These foundational physical skills include agility, speed, strength and endurance. All of these are necessary to execute tactics and strategies effectively. For instance, agility allows players to quickly change direction while speed helps them move into position or respond to opportunities. Strength aids in maintaining balance and holding off opponents while endurance ensures players sustain their efforts throughout the game making tactical decisions possible even in the later stages. Developing these physical abilities allows players to carry out the decisions made in the heat of the moment and adapt to the flow of the game.
 - **Application:** Technical skills are fundamental to effective play in invasion games and coaches should focus on drills that improve key areas such as passing, shooting, dribbling, and defensive manoeuvres. These drills should be varied to match the specific demands of the sport, whether it is precise passing in football to break through a defence in hockey or quick dribbling in handball to avoid pressure. Shooting techniques should be practised under different conditions, while defensive manoeuvres must be sharp to block or intercept attacks. Improving these technical skills allows players to execute strategies more effectively, giving them the tools needed to respond to any situation on the field.
 - **Examples:** In handball, players must develop precise passing accuracy to set up attacks and reliable catching skills to maintain possession under pressure. Movement without the ball is equally important, allowing players to create space, support teammates, and find openings in the opposition's defence. In hockey, technical skill training involves perfecting stick handling for better control of the puck, passing with precision to move the play forward, and shooting under pressure, whether a quick release or a powerful strike in high-stress situations. Both sports require constant improvement in these technical areas to respond effectively to game situations and gain an advantage.
4. **Integrating strategy, tactics, and technical skills:** Integrating strategy, tactics, and technical skills in sports means aligning a team's game plan with on-field actions and player abilities. In soccer for example, a strategy to maintain possession may involve tactics like using wide players with players relying on technical skills such as passing and dribbling to execute them. This integration helps teams remain adaptable, efficient and effective in dynamic situations, ensuring they can consistently follow their game plan.

- **Practise:** Use game-like drills that replicate real scenarios to help players understand the connection between strategy, tactics and technical skills. For example, set up small-sided games where players need to apply defensive tactics or practise quick transitions.
- **Feedback:** Give players constructive feedback during training sessions, helping them to recognise and correct tactical errors, refine technical skills and see the impact of strategic decisions on game outcomes.
- **Game awareness:** Encourage players to develop a “game sense” to make better decisions based on their positioning, the opponent’s actions and the team’s strategy.

Coaching Invasion Games with the Principles of Attack, Defence and Transition

Invasion games such as football, basketball, hockey and netball are defined by the continuous transition between attacking and defending phases. Effective coaching teaches players to adapt their actions based on the game situation, emphasising the importance of attack, defence and transition.

Below is a breakdown of how these principles can be applied

1. Attack principles

Attacking play aims to advance toward the opponent’s goal while creating and capitalising on scoring opportunities. Successful attacking relies on movement, teamwork and quick decision-making.

The following principles help players develop a structured and effective attack:

- Creating space:** To break down a defence, players must spread out and use the full width and depth of the playing area. By positioning themselves strategically, they can stretch defenders, opening up passing lanes and gaps to exploit. Movement off the ball is essential, helping players make diagonal runs, drop deep to draw defenders out or shift wide to create room for teammates. Intelligent positioning forces defenders to make tough choices and disrupts their organisation. Encourage players to think ahead and anticipate where space will open up.
- Support play:** A strong attack requires constant movement and communication. Players without the ball must actively support the ball carrier by positioning themselves in spaces where they can receive the ball safely while maintaining forward momentum, offering quick and safe options to retain possession or progress forward. Support play can involve overlapping runs, providing a backward option for recycling possession, or making decoy movements to create space for others.
- Timing and decision-making:** Good decision-making in attack depends on a player’s ability to assess the situation quickly and execute the right action at the right time. Players must learn when to pass, dribble or shoot based on defensive positioning and space available. Delayed decisions or hesitation can lead to lost opportunities, so drills should focus on developing players’ confidence in making quick, effective choices under pressure.
- Overloads:** Attacking play is often most dangerous when players create numerical advantages. Teaching players how to exploit 2v1, 3v2, or 4v3 situations can lead to higher-quality goal-scoring chances. Players should be encouraged to make quick, decisive passes and movements to capitalise before defenders recover. Proper spacing,

communication and composure in these moments lead to higher-quality scoring chances.

e. **Example drill: 3v2 small-sided games**

- Set up a small-sided game with three attackers and two defenders.
- Attackers should focus on creating space, making quick passes and taking goal-scoring opportunities.
- Defenders should aim to delay and block attacks instead of trying to win possession immediately.
- Encourage attackers to utilise their numerical advantage by drawing defenders, switching play and taking advantage of overloads.
- Regularly rotate players to ensure everyone experiences both attacking and defending roles.



Figure 22.4: Applying the principles of attack in a game



Figure 22.5: Attacking principles at play in soccer, Cristiano Ronaldo.

2. Defence principles

The primary objective of defence is to regain possession of the ball or prevent the opponent from scoring. Effective defending requires discipline, communication, possession and teamwork.

Below are key principles that all defenders should focus on

- a. **Delay:** The first defender who is closest to the ball, should slow the attack to allow teammates time to recover and organise. This can be done by jockeying, which means staying on their feet and forcing the attacker to move sideways or backward rather than committing to a tackle too early. Keeping a safe distance prevents the opponent from easily dribbling past while guiding them toward the sideline to limit their options.

Key coaching points for delay

- i. Apply controlled pressure rather than rushing into a tackle.
- ii. Maintain proper distance to avoid being easily beaten.
- iii. Force attackers into wide or less dangerous areas.

- b. **Marking and tracking:** Marking involves staying close to an opponent to reduce their passing and movement options. There are two main approaches; man-marking, where a defender follows a specific player and zonal marking where defenders cover areas rather than individuals. Tracking refers to following an attacker's movements, particularly runs behind the defensive line.

Key coaching points for marking and tracking

- i. Stay on the goal-side of the opponent.
- ii. Use body positioning to block passing lanes.
- iii. Be aware of attackers making runs behind the defence.
- c. **Tackling and interceptions:** Defenders should time their tackles carefully and anticipate passes to intercept the ball before it reaches its target. Standing tackles work best when a defender is in control while slide tackles (in football) or squat tackles (hand games) should only be used as a last option.

Key coaching points for tackling and interceptions

- i. Avoid diving into tackles too early.
- ii. Stay balanced and patient when engaging an opponent.
- iii. Read the game to intercept passes before they reach the attacker.
- d. **Compactness:** Defenders should remain close together to minimise gaps for attackers to exploit. Compactness makes it harder for opponents to pass through or dribble into dangerous areas. The backline should stay connected, avoiding large gaps between defenders while midfielders should support the defence to prevent numerical disadvantage. Additionally, defenders should shift together as a unit when the ball moves across the pitch.

Key coaching points for compactness

- i. Maintain a defensive shape to force the opponent wide.
- ii. Stay disciplined and avoid unnecessary chasing.

- iii. Communicate effectively to organise the defensive line.
- e. **Example drill: 2v3 defensive scenarios:** This drill helps players learn to delay attacks, track opponents and maintain compact positioning. Two defenders face three attackers in a small playing area with a goal. The defenders must work together to stop the attack by slowing play, marking effectively and cutting off passing options. The first defender applies pressure while the second provides cover. Clear communication ensures they remain organised.

Key coaching points for defensive drills

- i. The first defender One defender presses while the other supports.
- ii. Constant communication between defenders is important to help close gaps.
- iii. Encourage patience rather than reckless challenges.
- iv. Reduce the number of touches for attackers to increase the difficulty.
- v. Introduce an extra defender to create a 3v3 scenario.

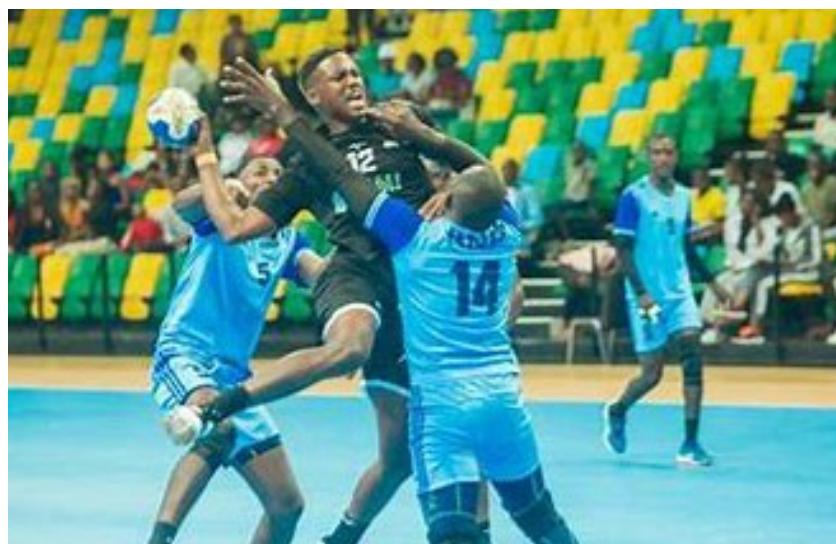


Figure 22.6: Handball players applying defensive principles during a game

6. Transition principles

Transition refers to the moment possession changes, requiring an immediate shift between attack and defence. A well-organised team reacts quickly during these moments to either create chances or prevent the opponent from gaining an advantage.

- a. **Transition to attack:** When possession is won, players must shift their focus to breaking forward before the opposition can recover their defensive shape. Quick, accurate passes and immediate movement can exploit gaps left by opponents caught out of position. The first action should be decisive, whether it's a direct pass forward, a dribble into space or switching play to a teammate in a better position. Wide players should look to stretch the pitch/court and central players should offer options for combinations or penetrating runs.

Key coaching points for transitioning to attack

- i. React quickly to take advantage of gaps in opponents' defence.
- ii. Look for forward passes or space to progress immediately.
- iii. Support runs from teammates to help sustain momentum.



Figure 22.7: A player with a great ability to transition into attack, Lionel Messi.

b. **Transition to defence:** When possession is lost, the immediate priority is to prevent the opponent from counter-attacking. Players should react instantly by either pressing the ball carrier, blocking passing options or retreating into a compact shape. The nearest player should engage the ball to slow the opponent while others position themselves to cut off dangerous spaces. Defenders must be alert to tracking runners and regain control before the opponent can launch an attack.

Key coaching points for transitioning to defence

- Press quickly or drop back to prevent counter-attacks.
- Cut off passing lanes to limit the opponent's options.
- Communicate and reorganise to regain defensive shape.

c. **Example drill: 5-second transition drill:** This exercise trains players to react quickly when changing game situations. In a small-sided game, as soon as a team wins the ball, they have five seconds to attempt a goal. If they lose possession, they must press immediately to win it back. The time limit forces quick decision-making and encourages fast attacking and defensive reactions.

Key coaching points for transitioning to defence

- Attackers must act immediately, either passing forward or driving into space.
- Defenders must react instantly, applying pressure or recovering into position.
- Encourages urgency in both attack and defence.

d. Integrating the principles into coaching

Training sessions should be structured to enhance players' skills in defence, attack and transitions, starting with isolated exercises before progressing to small-sided games and full-scale matches. Providing consistent feedback and reviewing match footage helps players recognise their strengths and weaknesses. Drills that mimic real match conditions along with challenges like defending with a numerical disadvantage, are vital for developing decision-making and adaptability. This approach fosters a better understanding of roles, improving individual performance and team cohesion.

Applying Concepts and Principles of Officiating Invasion Games

Officiating invasion games such as football (soccer), handball, and basketball requires a clear understanding of rules, effective game management and proper positioning. A well-prepared official ensures fair play, maintains order and contributes to the smooth flow of the game.

Below is an explanation of how these key concepts can be applied

1. Rules enforcement

Referees play a vital role in ensuring that the game is conducted fairly and within the established rules. Consistent enforcement upholds the integrity of the match and allows players to compete under the same standards.

- a. **Knowledge of rules:** A referee must have a strong grasp of the rules and stay updated on any changes. This includes understanding technical details such as handball interpretations in football, dribbling violations in basketball and defensive restrictions in handball. Continuous learning and reviewing match situations help improve decision-making on the field.
- b. **Consistency:** Decisions must be fair and applied equally to both teams in every situation. Inconsistency can frustrate players and lead to disputes. A referee should judge each incident based on the established rules, rather than external factors such as crowd pressure or player reputation.
- c. **Effective communication:** Clear signals and verbal instructions help maintain control and avoid confusion. Whether awarding a free kick, indicating a foul or signalling an offside decision, referees must be confident and decisive. Proper communication extends to assistant referees and officials, ensuring smooth coordination during the match.
- d. **Conflict resolution:** Tensions can rise during competitive matches and referees must handle disputes with a calm and authoritative approach. Diffusing situations early prevents unnecessary confrontations. Addressing concerns briefly but firmly while keeping the game moving is key to effective officiating.

- **Example: Enforcing the offside rule in football**

A referee must closely monitor player positions in relation to the last defender when an attacking pass is played. Assistant referees play a crucial role in identifying offside positions and effective communication between officials ensures accurate calls. A quick, clear decision prevents confusion and maintains game flow.

By applying these principles, referees ensure a fair and well-managed game where rules are followed and players compete under clear guidelines.

2. Game management

Referees are responsible for overseeing more than just the enforcement of rules; they also manage the tempo and safety of the game, ensuring that it runs smoothly and fairly for all participants.

Some of the game management concepts

- a. **Control of tempo:** Referees must keep the game moving by addressing time-wasting, managing substitutions and dealing with delays. They should step in when necessary to maintain the pace of the match, ensuring the game flows without unnecessary interruptions.

- b. **Safety assurance:** Player safety should always be the priority. Referees need to penalise dangerous tackles, check compliance with safety equipment regulations, and take action when players engage in risky behaviour that could cause harm.
- c. **Dealing with unsporting behaviour:** When players engage in unsporting conduct, such as dissent or aggressive actions, referees must address it decisively. Warnings, yellow cards, suspensions or even ejections may be necessary to keep the match fair and respectful.
- d. **Adaptability:** Referees should be able to adjust their approach based on the context of the game. For example, in high-stakes matches, they may need to be stricter, whereas in training or friendlies, a lighter touch might be more appropriate.

- **Example: Managing heated moments in basketball**

In basketball, when tensions rise and players begin to argue or display aggression, referees must intervene quickly. By calmly addressing the situation and issuing technical fouls if needed, they help prevent the conflict from escalating and maintain order on the court.

Through effective game management, referees not only enforce the rules but also create an environment where the players can focus on the match itself.

5. Positioning and movement

Referees must position themselves effectively to keep a clear view of the game and make accurate decisions. Good positioning is essential to staying on top of play while ensuring minimal interference with players.

Some of the pointers to positioning and movement are

- a. **Proximity to play:** Being close to the action allows referees to see key moments clearly but they must also ensure they don't obstruct the players. Staying in the right spot means being able to make decisions quickly and with confidence.
- b. **Dynamic movement:** Referees need to anticipate the flow of the game and adjust their positioning as the play progresses. Maintaining the right angles ensures that referees can make the best possible calls, whether it's a foul, an offside or a potential penalty.
- c. **Collaboration:** Working with assistant referees or umpires is key in covering all areas of the field. By positioning themselves to their fellow officials, they can ensure that all actions are observed and properly ruled upon.
- d. **Fitness:** Staying in top physical condition is vital for referees to keep up with the pace of the game. A fit referee can move quickly to maintain the best view of play no matter how fast the game is.

- **Example: Positioning in netball**

In netball, referees must carefully position themselves along the sideline to observe players' footwork, particularly near the edge of the shooting circle. This allows them to spot violations such as stepping or breaking.

By focusing on these key elements, referees can ensure they are always in the best position to make accurate and fair calls throughout the game.

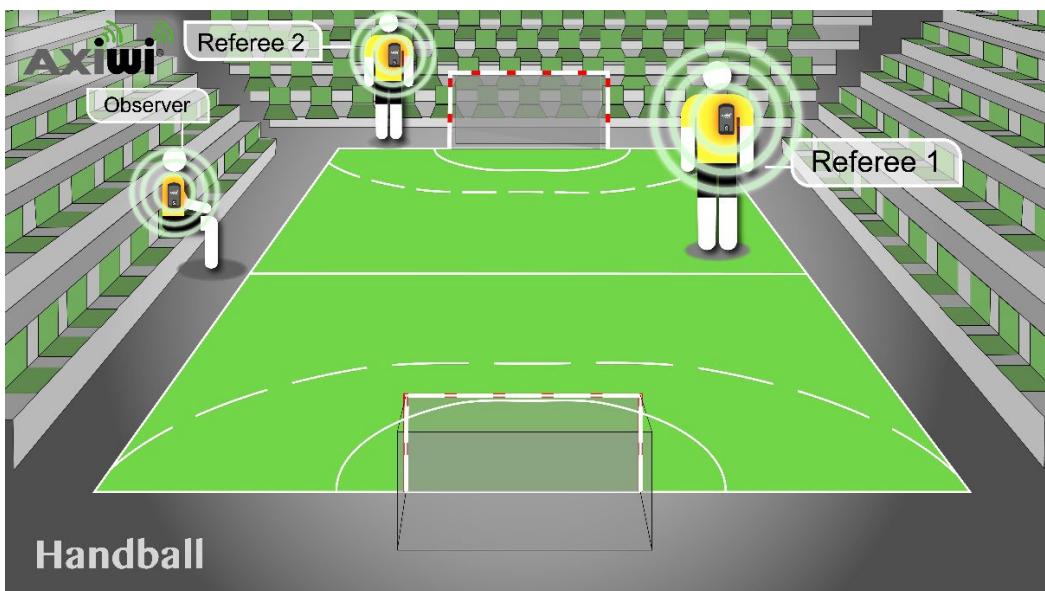


Figure 22.8: Referee positioning in handball

Officiating Invasion Games: Applying Key Principles

Officiating invasion games such as football, basketball, netball or hockey requires a deep understanding of the principles that ensure fairness and respect within the game. There are three key principles essential for maintaining control and ensuring that the game is enjoyable for all participants. required in officiating. They are objectivity, courage and decisiveness.

1. **Objectivity:** Objectivity is crucial in making fair and impartial decisions that are rooted in the rules of the game, not personal feelings or biases. Officiating demands that referees treat all players equally, regardless of who they are or their status within the game.
 - a. **Key objectivity actions**
 - Know the game rules thoroughly and apply them consistently.
 - Avoid any form of favouritism, whether from players, coaches or spectators.
 - Focus decisions on what is observed, not on assumptions or biases.
 - b. **Practical example:** In basketball, a foul should only be called if the referee witnesses physical contact, regardless of how the crowd reacts to a missed shot.
3. **Courage:** Courage involves standing firm in decisions, especially when they may be unpopular or when the pressure from players or fans is intense. A good referee demonstrates the confidence to make calls that might upset people but are necessary to ensure the integrity of the game.
 - a. **Key courageous actions**
 - Stand firm on decisions regardless of opposition from players or coaches.
 - Stay calm and composed in the face of protests.
 - Trust in your judgment and training.
 - b. **Practical example:** In football, issuing a red card for a reckless tackle even if committed by a star player requires courage to maintain fair play and uphold the safety of the players.

4. **Decisiveness:** Referees must make quick, clear decisions to maintain the flow of the game. Hesitation can disrupt the game and confuse players and spectators.

a. **Key decisive actions**

- Communicate decisions promptly and use verbal instructions and hand signals.
- Make calls without hesitation to avoid disrupting the pace of play.
- Be confident in your actions, even when consulting with other officials or using video technology.

b. **Practical example:** In netball, if a player commits a stepping violation, immediately signal the infringement to maintain the game's momentum.

3. **The importance of officiating principles**

Maintaining objectivity is crucial for fairness and builds trust between players and officials, which makes the game more enjoyable. Courage is vital for upholding the integrity of the game and ensuring that all rules are adhered to, no matter the situation. Being decisive helps the game progress without interruptions, avoiding unnecessary delays or confusion. By embracing these principles, referees can manage the game effectively, ensuring that the competition is fair, safe and enjoyable for all participants.

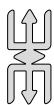
Learning Tasks

1. Learners organise a group of their colleagues and coach them on a selected invasion sports in passing, shooting, dribbling, tackling/interception and dodging/evasion.
2. Learners organise a sports competition in invasion sports, they should assign officiating roles to their colleagues and take turns or switch roles to officiate, while applying the principles of officiating that sport.
3. Learners watch videos of selected games in invasion sports and identify and analyse the rules/laws applied in those games.
4. Learners organise a school-level sports awareness seminar and discuss the innovations, reforms, misconceptions and misinterpretation of rules in a selected invasion sport.
5. Learners watch a video and analyse the coaching strategies and player techniques applied in a selected invasion sport. In the same video, analyse the performances of the officiators in relation to conduct and application of rules.

Pedagogical Exemplars

1. **Starter:** Show a short video illustrating an invasion game scenario, highlighting the different roles, including playing, coaching, and officiating. After watching the video, engage the learners in a brief discussion to allow them to share their thoughts. This will provide learners with a clear understanding of their responsibilities in the lesson.
2. **Introduction:** Invasion games require more than just skilled players; they depend on effective coaching, fair officiating, and strategic teamwork. Learners take on various roles playing, coaching, and officiating to understand the game from different perspectives. Learners apply key concepts, make real-time decisions, and develop a deeper appreciation for game management. Explain to learners they will work in groups to plan and organise specified invasion games, taking full responsibility for coaching and officiating.

3. **Activity-based learning:** Design a mini-invasion game with the roles of (coaching, officiating, and playing). Engage learners in small groups such that, some groups are playing, another coaching, and the other officiating. Learners apply the concepts and principles in executing the roles. Groups change roles after a given time frame for all to perform the coaching and officiating.
4. **Project-based learning:** Learners in groups plan and organise invasion games beyond the classroom either within the school or with community clubs and assume the roles of coaching and officiating. Learners keep a record of their engagement or experiences and submit it for assessment.



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, etc. impairments.
- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.)
- Other appropriate approaches to engage learners can be used.

Key Assessments

Level 1

1. What are invasion games?
2. What are the basic responsibilities of an official in an invasion game?
3. Identify two signals' officials use to indicate a foul in an invasion game.

Level 2

1. How does effective communication between a coach and players influence team performance in an invasion game?
2. Why is it important for officials to enforce rules consistently in an invasion game? Provide an example.
3. Analyse how strategic substitutions by a coach can affect the outcome of an invasion game.
4. Participate in a group discussion to share their research findings and evaluate how consumer responsibilities, particularly in choosing sustainable and eco-friendly products, as well as recycling, impact the nation.

Level 3

1. During a high-stakes invasion game, describe how to handle a situation where players repeatedly question the decisions of the officials.
2. Design a short training session focusing on improving decision-making skills for invasion game officials.
3. Compare and contrast two different coaching styles in invasion games. Which one do you think is more effective, and why?

HINT



The recommended mode of assessment for week 22 is a Checklist. Refer to Appendix L for the rubrics/marking scheme for the checklist. Use items of DoK level 2 of the key assessment as a task example.

SECTION 10 REVIEW

In Week 21, learners examined the core principles of coaching and officiating in invasion games, focusing on essential skills such as game strategy, rule enforcement and player motivation. Through guided discussions and case studies, they analysed the roles of coaches and officials in maintaining game integrity and enhancing team performance. Practical demonstrations and scenario-based problem-solving activities helped learners understand the real-world application of coaching and officiating principles.

In Week 22, learners transitioned from theoretical understanding to active participation, applying coaching and officiating techniques in actual gameplay. They took turns managing drills, implementing tactical plays and officiating matches under teacher supervision. Engaging in peer and self-assessment activities allowed them to reflect on their performance, identify areas for improvement and refine their skills. By the end of this week, learners demonstrated confidence in coaching and officiating, applying their knowledge to facilitate fair and competitive sports experiences.

Throughout the section, teachers should foster an engaging and inclusive learning environment where all learners feel encouraged to take on leadership roles in sports. By integrating hands-on experiences with theoretical insights, learners will develop a well-rounded understanding of coaching and officiating, preparing them for future roles in sports leadership and management



APPENDIX L: MARKING SCHEME FOR CHECKLIST

Check where appropriate, the performance of learners on the discussion task

Statements	Response	
	Yes	No
<i>If a referee penalises one team for physical tackles but allows the other team to engage in similar behaviour without repercussions</i>		
<i>If fouls are ignored in certain situations, players may engage in riskier behaviour, increasing the chance of injury</i>		
<i>if the officials consistently enforce offside rules, players learn to adhere to the structure of the game</i>		
<i>if the referees consistently call holding penalties, offensive and defensive players will know the importance of maintaining proper positioning</i>		

SECTION 11: RUNNING SPORTS

STRAND: ACADEMIC AND CAREER PATHWAYS

Sub-Strand: Coaching and Officiating of Athletics

Learning Outcome: *Apply concepts and principles of coaching and officiating to improve performance and management of Track events/marathons.*

Content Standard: *Demonstrate understanding in the application of the concepts and principles of coaching and officiating of Track events/marathons (e.g., Sprints, middle distance, long distance, hurdles, relay, marathon)*

HINT



End of End-of-Semester Examination is in week 24. Refer to Appendix M for a Table of Specifications to guide you in setting the questions. Set questions to cover all the indicators covered for weeks 13 to 24.

INTRODUCTION AND SECTION SUMMARY

This section introduces learners to the essential concepts and principles of coaching and officiating in track events and marathons. Learners will explore the roles and responsibilities of coaches and officials in preparing athletes for competitive running events, ensuring fair play and maintaining race regulations. Key topics include race strategies, officiating duties and the ethical considerations in coaching and officiating. Through discussions and practical demonstrations, learners will gain insights into how structured training and officiating contribute to successful track performances.

The focus then shifts to the practical application of these concepts, allowing learners to assume coaching and officiating roles in real or simulated track events. They will design training plans, implement officiating rules and analyse performance factors such as speed, endurance and technique. By the end of this section, learners will develop foundational skills in track coaching and officiating, equipping them with knowledge applicable to school sports, community events and potential careers in athletics.

The weeks covered by the section are:

Week 23: Examine the concepts and principles of coaching and officiating of track events / marathons.

Week 24: Use the concepts and principles of coaching and officiating in the performance of run events.

SUMMARY OF PEDAGOGICAL EXEMPLARS

Teachers should employ interactive teaching strategies, combining theoretical instruction with practical engagement. Video analysis of professional track events will help illustrate key coaching and officiating concepts, while discussions will allow learners to reflect on race strategies and rule enforcement. Hands-on activities such as officiating practise and race simulations will deepen their understanding of officiating roles and enforcing race regulations.

Learners will work in teams to take on different roles - coaches, athletes and officials, during practice sessions. Encouraging peer feedback and self-assessment will enhance their critical thinking and problem-solving abilities. Differentiated instruction should be used to accommodate all learners with additional guidance for those struggling with complex rules and techniques. Advanced learners can be challenged to develop race plans, analyse biomechanical efficiency in running, or explore advanced officiating technologies like electronic timing on their digital devices.

ASSESSMENT SUMMARY

Assessments will involve both theoretical and practical evaluations to ensure learners comprehend and apply coaching and officiating principles. Written assessments may include quizzes on track event rules, essays on effective coaching strategies or reflections on the role of officiating in race fairness. Learners may also analyse case studies on officiating controversies and propose solutions.

Practical assessments will require learners to design and implement race training sessions, take on officiating roles in a controlled event and demonstrate an understanding of fair play and race management. Group assessments such as reviewing video footage of track events and identifying coaching or officiating strategies will further reinforce learning outcomes.

WEEK 23

Learning Indicator: Examine the concepts and principles of coaching and officiating of track events /marathons

FOCAL AREA: CONCEPTS AND PRINCIPLES OF COACHING AND OFFICIATING OF TRACK EVENTS/MARATHONS

CONCEPTS AND PRINCIPLES OF COACHING RACES



Figure 23.1: Athletes start running in a sprint

1. Concept of Coaching Track Events

Coaching in track events and marathons involves training athletes to improve their performance through structured workouts, technique refinement, race strategies and physical conditioning. Coaching track events consists of preparing athletes to improve their speed, endurance, technique and mental readiness across various race categories, including sprints, middle-distance, long-distance, hurdles and relays. A coach develops structured training plans based on an athlete's skill level, event requirements and competition goals. The focus is on refining movement, increasing stamina and ensuring proper recovery for peak performance. A successful athletics coach blends scientific knowledge, motivational skills and personalised coaching strategies to help athletes perform best in competitions.

Important Aspects of Coaching

- Technique development:** Teaching proper running mechanics, starts, stride length, cadence and posture to maximise speed and reduce injury risks.
- Physical conditioning:** Incorporating strength exercises, endurance workouts and flexibility routines to support overall fitness and performance.
- Speed and agility training:** Improving acceleration, reaction time and agility through drills, plyometrics, and sprint-based exercises.

- d. **Endurance and stamina building:** Using interval training, tempo runs, and long-distance workouts to develop aerobic and anaerobic capacity.
- e. **Tactical preparation:** Teaching athletes race strategy, pacing, and event-specific techniques such as baton exchanges in relays and hurdle clearance.
- f. **Mental preparation:** Developing focus, confidence, and resilience through goal-setting, visualisation, and stress management techniques.
- g. **Injury prevention and recovery:** Educating athletes on proper warm-ups, cool-downs, stretching routines, and rehabilitation methods.
- h. **Performance analysis:** Using video reviews, biomechanics (movement) assessments, and data tracking to identify strengths and areas that need improvement.



Figure 23.2: An athlete in crouch start position without a starting block

Track event categories

Track events are classified into different categories based on distance and type of race. These include:

- a. **Sprints:** Sprints are short-distance races where athletes run at their fastest speed over a limited distance. The most common sprint events include 100 metres, 200 metres, and 400 metres. These races require a quick reaction at the start, strong acceleration, and an efficient running style. Runners must develop excellent reaction time, explosive power and proper running mechanics. Training focuses on practising explosive starts, improving sprinting technique, and building muscle strength. Runners also work on correct arm movement, proper stride length, and foot placement to increase speed and reduce running effort.



Figure 23.3: Athletes in a starting position

b. **Middle-distance:** Middle-distance races require a balance between speed and endurance. The most common events in this category are 800 metres and 1500 metres. Runners must maintain a steady pace while conserving energy for a strong finish. Success in these races depends on controlled breathing, efficient running technique, and strategic pacing. Training focuses on developing pacing strategies, aerobic capacity and sprint endurance through endurance runs, interval workouts, and sprint drills. Athletes also work on race strategies, such as when to increase speed and how to position themselves in a competitive field, while mastering efficient breathing techniques to maintain energy levels throughout the race.



Figure 23.4: Middle-distance runners at the Olympic games

c. **Long-distance:** Long-distance races challenge an athlete's endurance and ability to maintain a steady pace. Common events include the 3000 metres, 5000 metres and 10,000 metres. These races require stamina, mental strength and smart pacing to prevent early fatigue. Training focuses on long-distance running, endurance workouts, and mental preparation to keep athletes strong throughout the race. Runners build stamina through high-mileage runs, interval training and tempo workouts while improving breathing techniques and running efficiency. Proper nutrition, hydration and recovery are key to maintaining energy, preventing injuries and performing at a high level.



Figure 23.5: Ghanaian long-distance runner, William Ampomah

d. **Relay track events:** Relay races involve a team of four athletes passing a baton while completing the race. The most common events are the 4x100 metres and 4x400 metres. Success depends on speed, precise baton exchanges, and teamwork. A well-timed handover can make a big difference in the race, so athletes must practise their timing and positioning. Training focuses on baton passing techniques, sprint speed, and coordination among team members. The blind(non-visual) pass is used in the 4x100 metres, where the outgoing runner relies on trust and timing, while the visual pass in the 4x400 metres allows the receiving runner to see the baton coming. Coaches work on strategic positioning and strategy, ensuring each runner knows their role and contributes to the team's best performance.



Figure 23.6: Handing over a baton in a relay team

e. **Marathon:** Marathon is a long-distance race covering 42.2 kilometres (26.2 miles). The marathon tests an athlete's endurance, discipline and mental strength. Training for a marathon involves long-distance running, stamina-building workouts, mental resilience and pacing strategies to help runners maintain a steady speed throughout the race. Training includes gradual mileage increases; interval sessions and recovery runs to build endurance without overstraining the body. Hydration and nutrition management before, during, and after the race is key to sustaining energy levels and preventing fatigue. Coaches focus on injury prevention, recovery strategies and race-day planning to help athletes perform at their best. Mental preparation is just as important, as runners must stay focused and push through physical and mental challenges during the race.



Figure 23.7: Accra International Marathon

2. Principles of Coaching Track Events

Coaching track events, including sprints, middle-distance, and long-distance races, requires a thorough understanding of training methodologies, biomechanics (body movement) and psychological (mental) preparation.

Important aspects of the principles of coaching track events include

- a. **Training plans for each athlete:** Every runner has different abilities, so training must match their strengths and areas that need work. Plans should focus on improving speed, endurance and technique based on the athlete's event.
- b. **Gradual progress:** Workouts should increase step-by-step to help athletes improve without getting injured. A good balance of sprinting, endurance drills and rest is important.
- c. **Proper running form:** Good technique makes running smoother and helps prevent injury. Athletes should work on posture, arm movement, breathing and foot placement to move efficiently.
- d. **Building speed and stamina:** Short races need quick bursts of energy while longer races require steady pacing. Training should include exercises that build both speed and endurance, depending on the event.
- e. **Race plans and mental strength:** Winning a race is about more than just being fast. Runners need a strategy, knowing when to speed up and how to handle competition. Confidence, focus and staying calm under pressure are as important as physical training.
- f. **Preventing injuries and recovering well:** Warm-ups, stretching, and cooling down help keep runners safe from injuries. Eating well, resting and following recovery exercises keep the body in top shape.
- g. **Tracking progress:** Regular practice runs, timing results and watching race footage help coaches and athletes see what needs work. Adjustments to training keep runners improving over time.

The following principles guide effective coaching in track events and marathons

a. Mechanics of running

Proper running mechanics help athletes move efficiently, improve speed and reduce the risk of injury. Paying attention to technique allows runners to conserve energy and maintain endurance throughout a race.

Key aspects

- **Posture:** Keeping the body upright with a slight forward lean helps maintain balance and increase stride efficiency. Good posture reduces unnecessary strain on muscles and joints.
- **Arm movement:** Swinging the arms in coordination with the legs helps maintain rhythm, balance and forward momentum. Relaxed shoulders and controlled arm swings prevent wasted energy.
- **Foot striking:** Landing correctly, either midfoot (middle of the foot) or forefoot (ball of the foot) helps absorb impact and reduces stress on the joints. Proper foot placement lowers the risk of injuries like shin splints and knee pain.

- **Cadence and stride length:** Taking steps at a steady rate with the right stride length keeps movement smooth. Overstriding can slow a runner down, while short, quick steps help maintain control and conserve energy.



Figure 23.8: Principles and mechanism of running

b. Principle of quality of training over quantity

Focusing on the effectiveness of each training session is more beneficial than simply increasing the number of workouts or total distance covered. Training should be purposeful, ensuring that every session contributes to improvement without causing unnecessary fatigue or injury. A structured approach that balances effort, recovery and targeted training leads to consistent progress without unnecessary strain.

Key aspects

- **Specificity:** Each workout should target the skills needed for a particular event. Sprinters focus on explosive power and speed, while long-distance runners work on endurance and pacing.
- **Intensity vs. volume:** Running long distances without proper technique can lead to fatigue and poor form. Shorter, high-quality sessions with the right effort level produce better results.
- **Rest and recovery:** Muscles need time to repair and grow stronger. Training too frequently without rest can lead to injuries and a drop in performance.
- **Periodisation:** Training should be planned in cycles, gradually building fitness before tapering to peak at the right time for competition.
- **Skill development:** Practicing proper form and movement through drills improves efficiency and reduces strain on the body, lowering the risk of injury.



Figure 23.9: Quality over quantity in training

c. Principle of endurance

Endurance plays a key role in both sprint and long-distance events, affecting an athlete's ability to sustain effort without a sharp decline in performance. Developing endurance involves structured training that targets both physical capacity and mental strength. A combination of endurance workouts, strength training and mental preparation allows athletes to sustain performance across different race distances.

This principle involves

- **Aerobic base training:** Long, steady runs improve heart and lung efficiency, allowing athletes to maintain their pace for longer durations. A well-developed aerobic system aids in quicker recovery between intense efforts.
- **Anaerobic training:** High-intensity interval training (HIIT) builds the ability to sustain speed and effort over repeated bursts. This is particularly important for events requiring strong finishes or multiple sprints.
- **Progressive overload:** Increasing training intensity or duration over time strengthens muscles and improves stamina. A gradual approach reduces the risk of injuries and prevents overtraining.
- **Strength and conditioning:** Core and lower-body strength provide stability and efficiency, reducing fatigue and lowering injury risks. Exercises such as squats, lunges and plyometrics help reinforce proper running mechanics.
- **Pacing strategies:** Effective distribution of effort during training and competition prevents early exhaustion and allows for a controlled finish.
- **Mental resilience/strength:** Staying focused and pushing through fatigue can make a significant difference, particularly in longer races. Training in challenging conditions helps build confidence and concentration.
- **Recovery and adaptation:** Proper nutrition, hydration and rest allow the body to adjust to training demands. Stretching, active recovery sessions and adequate sleep help maintain long-term endurance.

d. Principle of progressive overload

The principle of progressive overload focuses on gradually increasing training demands to improve strength, speed and endurance. Athletes improve when training progressively challenges their current fitness level.

This principle highlights

- **Gradual increase:** Intensity, duration and frequency should progress in a measured way to promote steady improvement without overwhelming the body.
- **Incremental increases:** Each session should build on the previous one by gradually incorporating longer distances, greater intensity or added resistance to develop strength and endurance.
- **Adaptation:** As the body adjusts to increased demands, muscles strengthen, cardiovascular efficiency improves and overall athletic performance reaches higher levels.
- **Avoiding overtraining:** Recognising early signs of exhaustion such as persistent soreness or a drop in performance, helps prevent injuries and setbacks.

- **Recovery balance:** Scheduled rest days and lighter sessions allow muscles to repair and grow stronger, ensuring sustained progress.
- **Variation:** Rotating different workouts such as interval training, endurance runs and strength exercises helps maintain motivation, prevents stagnation and reduces strain on specific muscle groups.

e. Principle of individualisation

Every athlete responds differently to training based on factors such as fitness level, genetics, experience and recovery rate. By adjusting training methods to fit each athlete, progress becomes more sustainable and overall performance improves without unnecessary physical stress. This principle ensures that training plans are adjusted to suit each runner's unique needs.

Effective coaching must:

- **Assess individual needs:** Training intensity, duration, and recovery should match an athlete's physical condition and progression. Strengths should be developed further, while weaknesses should be addressed through targeted drills and exercises.
- **Personalised recovery strategies:** Recovery methods should vary depending on how an athlete's body responds to training. Some may require more rest, while others benefit from active recovery techniques such as low-impact movement or mobility exercises.
- **Psychological considerations:** Motivation and mental resilience differ from person to person. Coaching approaches should align with an athlete's personality and competitive mindset, whether they thrive on encouragement, structured feedback or self-driven goals.
- **Performance goals:** Whether focusing on speed, endurance, or race strategy, training should be structured to meet each athlete's specific objectives. Sprint specialists, endurance runners and middle-distance athletes require different training approaches. Aligning workouts with their event demands leads to better results while reducing unnecessary physical strain.
- **Strengths and weaknesses:** Recognising an athlete's capabilities and limitations helps create a focused training plan. Areas requiring improvement can be addressed through specific drills and exercises that refine technique, improve efficiency and build endurance. Strengthening weaker aspects while reinforcing existing skills ensures balanced development, reducing the risk of injuries and enhancing overall performance.
- **Injury prevention:** Each athlete has unique movement patterns and a history of previous injuries. Identifying risk factors helps modify workouts to prevent stress-related issues and long-term setbacks. Sprint specialists, endurance runners and middle-distance athletes require different training approaches. Aligning workouts with their event demands leads to better results while reducing unnecessary physical strain.

f. Principle of Competition Preparation

Success in track events depends on structured preparation. Effective preparation involves more than just physical conditioning. Athletes must develop race strategies, fine-tune techniques and build mental toughness to handle the pressures of competition.

Key factors

- **Race pacing strategies:** Training should include event-specific pacing to help athletes distribute their effort efficiently.
- **Event-specific training:** Workouts should match race conditions, including pacing, terrain and environmental factors, to build familiarity and confidence.
- **Tactical planning:** Understanding race dynamics, such as pacing strategies, opponent analysis and energy distribution, helps athletes execute their plans effectively on race day.
- **Mental readiness:** Techniques like visualisation, controlled breathing, goal setting and confidence-building exercises help athletes stay focused and reduce anxiety.
- **Tapering:** Adjusting training intensity days before competition allows the body to recover while maintaining peak form.
- **Nutritional guidance:** Proper hydration and balanced nutrition before, during and after the race support endurance, energy levels, and support recovery.
- **Equipment and gear check:** Ensuring that footwear, clothing, and other essentials are competition-ready helps avoid last-minute issues that could impact performance.

3. Concept and Principles of Officiating Track Events

Concept of officiating track events

Officiating track events and marathons involves overseeing competitions to ensure they follow established rules and regulations. Officiating track events is a crucial aspect of competitive athletics. It ensures fairness, adherence to rules and smooth execution of races. Officials play key roles in enforcing regulations, maintaining order and recording accurate results. Officiating requires a thorough understanding of track event rules, strong decision-making skills and impartial judgment. Well-trained officials contribute to the integrity of track events, ensuring that competitions are conducted smoothly and fairly. The officials overseeing track events can be categorised into three main groups: management, competition and additional officials.

Key aspects of officiating track events

- a. **Start procedures:** Starters and recall officials ensure fair and consistent race starts, enforcing proper stance and reaction times.
- b. **Lane discipline:** Officials monitor lane violations including stepping outside assigned lanes or impeding other runners.
- c. **Finish line judging:** Timers and judges determine race placements using photo-finish technology or manual timing methods.
- d. **False starts and disqualifications:** Any athlete who commits a false start or breaks competition rules is subject to disqualification.
- e. **Relay exchanges:** Officials ensure baton exchanges occur within designated zones to maintain fairness.
- f. **Lap counting/scorer:** In long-distance events, lap counters track the number of laps completed by each athlete.
- g. **Protests and appeals:** A structured process allows athletes or coaches to challenge decisions through the event's officiating panel.

The officials overseeing track events can be categorised into three main groups: Management, competition and additional officials.

a. Management officials

Management officials oversee a track event's overall organisation and administration. They ensure that the competition runs smoothly, safely and per the rules and regulations set by governing bodies such as World Athletics. These officials work together to manage events effectively, ensuring that competitions run smoothly and fairly.

Key management officials include

- **Meeting Director:** Responsible for the overall coordination of the event, including scheduling, logistics, and communication with officials, athletes, and organisers. Their role ensures that everything runs according to plan.
- **Technical Delegate:** Verifies that the venue, track, and equipment meet competition standards. They conduct inspections before the event and address any concerns that may affect performance or fairness.
- **Referee:** Has the final authority on rule enforcement, ensuring that races follow regulations. They handle protests, resolve disputes and disqualify athletes if necessary.
- **Clerk of the Course:** Manages athlete check-ins and ensures that competitors are prepared before their races. This includes assigning race numbers, verifying proper attire and directing athletes to the start line on time.
- **Starter and Recall Starter:** Responsible for starting races fairly. The starter gives the official signal to begin, while the recall starter stops a race in case of a false start or other irregularities.
- **Chief Timekeeper:** Ensures precise timing of races using manual or electronic timing systems. Their role is critical in recording accurate results especially in close finishes.
- **Chief Judge (Track Events):** Confirms finishing positions, checks for rule violations and validates official race results before they are announced.
- **Announcer:** Keeps athletes and spectators informed by providing real-time race updates, introducing competitors, and announcing official results. Their role helps maintain engagement and clarity throughout the event.
- **Marshal:** Ensures the orderly movement of athletes, preventing unauthorised access to competition areas. They help maintain discipline and ensure that races proceed without unnecessary interruptions.

b. Competition officials

Competition officials are responsible for enforcing rules, maintaining fairness and ensuring accurate results during track events. They work directly on the field to oversee fair play, monitor races and verify timing. Each official has specific responsibilities that contribute to the smooth operation of competitions.

The main competition officials include:

- **Starter:** Gives the starting commands and ensures all athletes begin the race fairly.
- **Recall Starter:** Assists the starter by monitoring for false starts and calling back athletes if necessary to ensure a fair start.

- **Timekeepers:** Use stopwatches or electronic timing systems to record race times accurately ensuring precision in results.
- **Chief Judge (Finish Line Judge):** Oversees the placement of athletes at the finish line, confirming rankings and final race results.
- **Track Judges:** Monitor races to ensure athletes stay within their assigned lanes and do not commit rule violations such as lane infringements or obstruction.
- **Lap Scorer:** Keeps track of the number of laps completed by each athlete in long-distance races to ensure accuracy in results.
- **Finish Line Judges:** Observe the race's conclusion and assist in determining athlete placements, acting as additional verification alongside photo-finish technology.

c. **Additional Officials**

Additional officials support the main competition staff by handling specific tasks that contribute to the smooth operation of track events. Their responsibilities help maintain order, accuracy, and fairness throughout the competition. Additional officials support the competition by ensuring all aspects of the event run efficiently.

They include:

- **Marshal:** Guides athletes to the competition area, ensures order is maintained and regulates movement within the venue.
- **Wind Gauge Operator:** Measures wind speed during sprint and jumping events to determine if performances are valid for record purposes.
- **Photo Finish Operator:** Uses high-speed cameras to capture precise images of athletes crossing the finish line, ensuring accurate placements and times.
- **Umpires:** Positioned along the track to observe races and report any rule infractions, such as lane violations or interference. Their reports assist referees in making final decisions.
- **Field Event Judges:** Oversee field events, enforce rules, measure performances and verify correct techniques.
- **Recorder:** Documents official results, including times, placements and records, ensuring accuracy in reporting.
- **Stewards:** Assist with athlete movement, directing them to the correct locations and ensuring events proceed as scheduled.
- **Photo Finish Judges:** Analyse images from the finish line camera to determine exact placements in tightly contested races, ensuring accuracy when manual judgment is insufficient.
- **Medical and First Aid Personnel:** Provide immediate assistance in case of injuries or medical emergencies, ensuring athlete well-being.



Figure 23.10: Some officials at the All-African Games in 2024, Accra Ghana.

4. Principles of Officiating Track Events

Officiating in-track events requires accuracy, fairness, and consistency. Officials must have a thorough knowledge of the rules and the ability to make quick, precise decisions while maintaining control over the competition environment. They are essential in ensuring that events run smoothly and follow established guidelines.

The key principles of officiating track events

By following these principles, officials contribute to the fairness and success of track competitions, ensuring that results reflect true athletic performance.

- **Impartiality:** Officials must remain neutral and apply the rules without bias, ensuring that all athletes compete under the same conditions.
- **Consistency:** Decisions must be applied uniformly across all events and competitors, preventing disputes or unfair advantages.
- **Accuracy:** Precise timekeeping, correct placements, and judgment of rule violations are crucial to maintaining competition integrity.
- **Clear communication:** Instructions to athletes, coordination with fellow officials and relaying results must be concise and well-understood to avoid confusion.
- **Preparedness:** Officials should be familiar with event regulations, venue layouts and the necessary equipment to handle any situation effectively.
- **Safety awareness:** Ensuring the competition area is free of hazards and responding swiftly to medical situations helps protect athletes, officials and spectators.
- **Adaptability:** Track conditions, weather, and unforeseen issues may require quick decision-making while keeping events on schedule.
- **Collaboration:** Officiating is a team effort, requiring seamless coordination between different roles to manage events smoothly.

a. Knowledge of the laws, rules and regulations

Officials must have a thorough grasp of competition rules and regulations to apply them correctly during events. This includes understanding eligibility criteria, race procedures,

equipment standards and protocols for protests or disqualifications. These rules are established by international bodies such as World Athletics (formerly IAAF) and may be adapted by national federations for local competitions. A clear knowledge of these guidelines ensures fairness and consistency in decision-making.

Key aspects of rule knowledge

- **Race procedures:** Enforcing starting commands, lane assignments, relay baton exchanges and finishing protocols to maintain fairness and order.
- **Event-specific rules:** Different races have distinct guidelines regarding lane usage, relay transitions and finishing regulations that must be correctly applied.
- **Competitor eligibility and conduct:** Officials must verify age groups and qualification criteria and ensure athletes uphold ethical standards.
- **Equipment and facility standards:** Compliance with regulations for track dimensions, lane markings, timing systems, and starting blocks is necessary for a fair contest.
- **Protests and appeals:** Handling disputes by reviewing evidence, interpreting rulebook guidelines and issuing decisions in line with competition policies.
- **Disqualifications and infractions:** Detecting and addressing rule violations such as false starts, lane encroachments, and obstruction to uphold fairness.
- **Timing and measurement:** Using approved systems to record accurate race times, wind speeds and distances in field events.

b. Application of the laws, rules, and regulations

Applying rules and regulations correctly ensures that all athletes compete under the same conditions. Officials must not only know the rules but also enforce them accurately and without bias. Fair application of these guidelines maintains order, prevents disputes and upholds the integrity of sport. Decisions should be made objectively while considering the specific circumstances of each event.

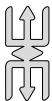
Key aspects of rule application

- **Consistent rule enforcement:** Rules must be applied evenly across all competitors to maintain fairness.
- **Immediate and clear rulings:** Infractions such as false starts, lane violation and relay baton exchange errors must be addressed without delay to prevent unfair advantages.
- **Judgment in complex situations:** Some scenarios require officials to assess intent, external factors or specific circumstances before making a ruling.
- **Clear communication:** Athletes, coaches, and other officials must receive direct and precise explanations of decisions, including disqualifications and appeal outcomes.
- **Decision-making under pressure:** Officials must make quick and accurate rulings, particularly in high-stakes competitions where precision is critical.
- **Use of technology:** Electronic timing systems, photo finish cameras and video replays assist in ensuring accuracy in race results and rule enforcement.

- **Collaboration with other officials:** Working closely with referees, timekeepers, starters and judges allows competitions to be managed smoothly.
- **Handling protests and appeals:** Procedures for reviewing disputes, assessing evidence and applying rulebook guidelines must be followed carefully.
- **Compliance with governing body standards:** Decisions must align with the regulations set by organisations such as World Athletics to ensure consistency across competitions.
- **Consistency and fairness:** Officials must apply rules uniformly to all athletes, ensuring no favouritism or bias.

Learning Tasks

1. Learners design a one month, three days per week training programme for a middle-distance runner.
2. Learners attend the training sessions of the school's athletics running team, observe the performances of two athletes and suggest areas for improvement.
3. Learners watch a video of a track event and analyse the techniques used by three selected athletes in that competition.
4. Learners participate in officiating a school-organised track event or practice session.
 - a. Record and analyse race times, athlete performances and any rule infractions observed.
 - b. Reflect on the experience and suggest improvements for better officiating.
5. Learners design a one-day inter-class athletic programme in a selected race sport, assign officiating roles to colleagues and ensure that they play their roles toward a successful tournament.



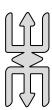
Note

Select from the list provided, the tasks that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** Begin the lesson with a brainstorming session where learners list the qualities of effective coaches and officials on the board. Encourage them to think about key traits. Coaches should be motivating, have strong leadership skills, understand training techniques, be patient, provide encouragement, think strategically, and adjust training to suit each athlete. Officials need to be fair, pay close attention to details, make firm decisions, know the competition rules, communicate clearly and confidently enforce regulations.
2. **Introduction:** Coaches train athletes to improve their skills and develop race strategies, while officials maintain fairness and enforce rules in competitions. Both play a major role in track events and marathons. This lesson will explore their responsibilities, key qualities and guiding principles.

3. **Collaborative learning:** In mixed ability and mixed gender groups, learners research from reliable sources to gather information on coaching track events, focusing on key principles and the differences between coaching sprints and marathons. They discuss their findings and present their ideas. The same process is followed for understanding the principles of officiating track events.
4. **Activity-based learning:** Learners in groups participate in a staged track event, taking on roles as coaches and officials. Coaches oversee warm-ups, provide encouragement and give performance feedback. Officials ensure rules are followed, record times, observe athletes and make fair decisions. Each learner is assigned an officiating role, such as starter, timekeeper, umpire, or referee and practises making officiating calls in a controlled environment.
5. **Closure:** Wrap the lesson with a quick summary to reinforce key points. Conclude with an inspiring quote from a well-known coach or official, encouraging learners to value their important roles in track events and marathons.



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, etc. impairments.
- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.)
- Other appropriate approaches to engage learners can be used.

Key Assessments

Level 1

1. Explain the term coaching in the context of track events and marathons.
2. List four key responsibilities of an official in a track event.
3. Identify two major track events and two major marathon competitions worldwide.
4. What does the term false start mean in sprinting events?

Level 2

1. Explain the difference between a starter and a timekeeper in track event officiating.
2. Describe two essential coaching principles that apply to marathon training.
3. Why is aerobic endurance crucial for long-distance runners?
4. Explain the role of sportsmanship in officiating track events and marathons.

Level 3

1. A coach is preparing an athlete for a 10,000m race. Suggest a weekly training plan that includes endurance, speed, and recovery.
2. If you were officiating a 400m race, outline the steps you would take to ensure a fair and accurate competition.
3. Analyse how weather conditions can affect marathon performance and officiating.
4. Create a simple warm-up routine suitable for a 100m sprinter before a race.

Level 4

1. Evaluate the impact of technology (e.g., electronic timing, VAR) on officiating track events and marathons.
2. Compare and contrast the coaching strategies used for sprinters versus marathon runners.
3. A runner disputes a false start call during a 200m race. As an official, how would you handle the situation professionally?
4. Discuss the ethical challenges that coaches and officials may face in elite-level track and marathon events, providing examples.

HINT

The recommended mode of assessment for week 23 is Critiquing. Use item 4 of level 3 as a task example.

WEEK 24

Learning Indicator: Use the concepts and principles of coaching and officiating in the performance of run events

FOCAL AREA: APPLICATION OF THE CONCEPTS AND PRINCIPLES OF COACHING AND OFFICIATING RUNNING EVENTS

APPLYING CONCEPTS AND PRINCIPLES OF COACHING RACES

Coaching track events requires a clear understanding of the unique demands of each event category, from sprints to long-distance races and the application of effective training principles to enhance athlete performance.

These coaching principles ensure track athletes develop their physical and mental skills for optimal performance. A structured approach that balances technique, conditioning, strategy, and psychology will lead to success.

1. Coaching Concepts in Running Events

Coaching track events involves a comprehensive understanding of fundamental coaching principles and how to apply them in practice. By embracing and integrating these concepts, athletes can significantly enhance their physical abilities, sharpen their technical skills and nurture a competitive mindset, all of which contribute to achieving their peak performance.

a. Sprints

Sprinting is a thrilling and dynamic track event that emphasises speed, power and technical accuracy. To excel in sprinting, it's important to engage in effective training that enhances acceleration, maximises velocity and improves reaction times. By focusing on these key areas, athletes can refine their skills and boost their overall performance time to achieve peak performance. By integrating these elements into training, sprinters can improve their explosive power, efficiency and overall race performance.

The coaching concepts to apply in sprints are:

- i. **Focus:** Sprint training focuses on building explosive starts and refining acceleration mechanics, allowing athletes to generate maximum force from the beginning of a race. Improving maximum speed and stride efficiency helps maintain momentum while minimising energy loss. Quick reaction times and well-coordinated muscle responses are necessary for responding to starting cues with precision. Strength development, specific to sprinting plays a key role in supporting speed and endurance, ensuring athletes perform at their highest capability.
- ii. **Techniques:** Effective sprinting relies on refining key techniques that contribute to speed and efficiency, which are:
 - **Starts:** Require proper foot placement, a powerful push-off and an aggressive drive phase to generate momentum from the beginning.
 - **Acceleration mechanics:** Involves maintaining a low body angle during the initial strides before transitioning smoothly into an upright posture to sustain forward posture.

- **Top-speed running:** Depends on maximising stride frequency and length while maintaining proper sprint form to reduce inefficiencies.
- **Sprint-specific strength training:** Includes exercises like jumping drills (plyometrics), sprints with added resistance and lifting weights. These exercises help sprinters build strength and speed, allowing them to run faster and more powerfully during races.

iii. **Drills:** Sprint training includes various drills to improve speed, strength and reaction time.

- **Block start drills:** Should emphasise explosive starts, enabling athletes to react quickly and accelerate efficiently.
- **Resistance sprints:** Build strength and improve sprinting force by using training sleds, hills or resistance bands.
- **Short-distance repeats:** Short sprints of 30 to 60 metres help sprinters maintain their speed and endurance during brief bursts of activity.
- **Overspeed training:** Activities such as assisted sprints with bungee/resistance cords or slight downhill running can increase stride turnover and improve neuromuscular coordination.
- **Reaction drills:** Enhance an athlete's ability to respond quickly to the starting signal, resulting in faster starts during competition.



Figure 24.1: An athlete on a starting block



Figure 24.2: Young athletes performing sprints

iv. Practising sprint techniques (100m, 200m, 400m, 4x100m)

1. **Reaction phase (start):** This is the phase when the sprinter reacts/responds to the starting signal (gunshot, whistle or visual cue) and pushes off the starting blocks.

Key focus

- a. Explosiveness from the blocks.
- b. Quick reaction time.
- c. Proper body positioning to generate maximum force.

Biomechanics

- a. **Body position:** Lean torso forward (about 45 degrees angle).
- b. **Leg drive:** Push rapidly and forcefully from both legs.
- c. **Arm action:** Drive arms aggressively and co-ordinate with legs.
- d. **Ground contact:** Explosively contact the ground with the balls of feet to generate forward propulsion.

Training drills for block starts or crouch starts

The goal is to achieve the fastest possible reaction time.

- a. Train for reaction using auditory or visual cues like hand claps, whistle, clappers or hand signals.
- b. Train for explosive strength through long sitting and standing, lying and standing, power pulls, deadlifts and squat jumps.
2. **Drive phase (acceleration phase):** The drive phase occurs immediately after the reaction phase and lasts for about 10-30 metres (depending on the sprint distance).

This is where the athlete focuses on maximum force production to accelerate from a stationary position.

Key Focus

- a. Generate maximum horizontal force.
- b. Maintain a forward lean (approximately 45 degrees).
- c. Rapid increase in stride length and frequency.

Biomechanics

- a. **Stride length:** Gradually increase stride length.
- b. **Stride frequency:** Rapidly increase step counts but controlled.
- c. **Body position:** Lean forward to optimise force production.
- d. **Arm drive:** Swing arms aggressively and powerfully to generate force.

Training drills for the drive phase

The goal is to Maintain an efficient acceleration posture and reach maximum velocity as fast as possible.

- a. Sprint on hills.

- b. Sprint against resistance (with sleds or parachutes).
- c. Train for acceleration using 20m or 30m short dashes continuously while checking efficient cadence.

3. **Transition phase (maximum velocity phase):** The transition phase, also called the upright running phase occurs between 30m to 60m in a 100m sprint. It is when the sprinter transitions from a forward lean to a fully upright running position while reaching maximum speed.

Key focus

- a. Achieve maximum speed (top-end velocity).
- b. Maintain a tall and relaxed running posture.
- c. Reduce ground contact time (less time on the ground).

Biomechanics

- a. **Body position:** Keep torso upright (90-degree torso angle to the ground).
- b. **Stride length:** Fully extended strides.
- c. **Ground contact time:** Very brief, allowing rapid turnover.
- d. **Arm action:** Relaxed but powerful arm drive.

Training drills for the transition phase

Maximise stride frequency and stride length without compromising running form. Reach peak speed within 50-60 metres.

- a. Practise flying sprints (30m - 50m) on a gentle uphill continuously.
- b. Practise sprint-float-sprint drills continuously on a level ground.
- c. Speed overspeed training (using slight downhill surfaces).

4. **Maintenance phase (speed maintenance):** This phase occurs after reaching maximum speed (around 60m - 80m) and is about sustaining that speed without deceleration.

Key focus

- a. Maintain top-end speed.
- b. Avoid tightening muscles (relax shoulders, hands and jaw).
- c. Control breathing.

Biomechanics

- a. **Body position:** Keep upright, tall posture.
- b. **Arm drive:** Maintain a smooth, relaxed but swift sweeping arm movement.
- c. **Ground contact:** Quick and light contact with the ground.
- d. **Breathing:** Control breathing to reduce tension.

Training drills for the maintenance phase

The goal is to control deceleration by minimising tension and maintaining efficient biomechanics. It is also intended to reduce energy wastage through smooth and relaxed movements.

- Keep sprint in a flying mode (50m -70m).
- Practise technical running drills (high-knee runs, butt kicks).

Click on this link for more information on sprint start without blocks
<https://azideperformance.com/sprinting-techniques-without-blocks/>

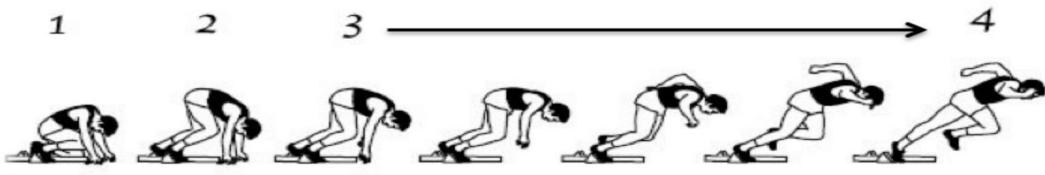


Figure 24.3: The various phases in a sprint start

The Sprint Start

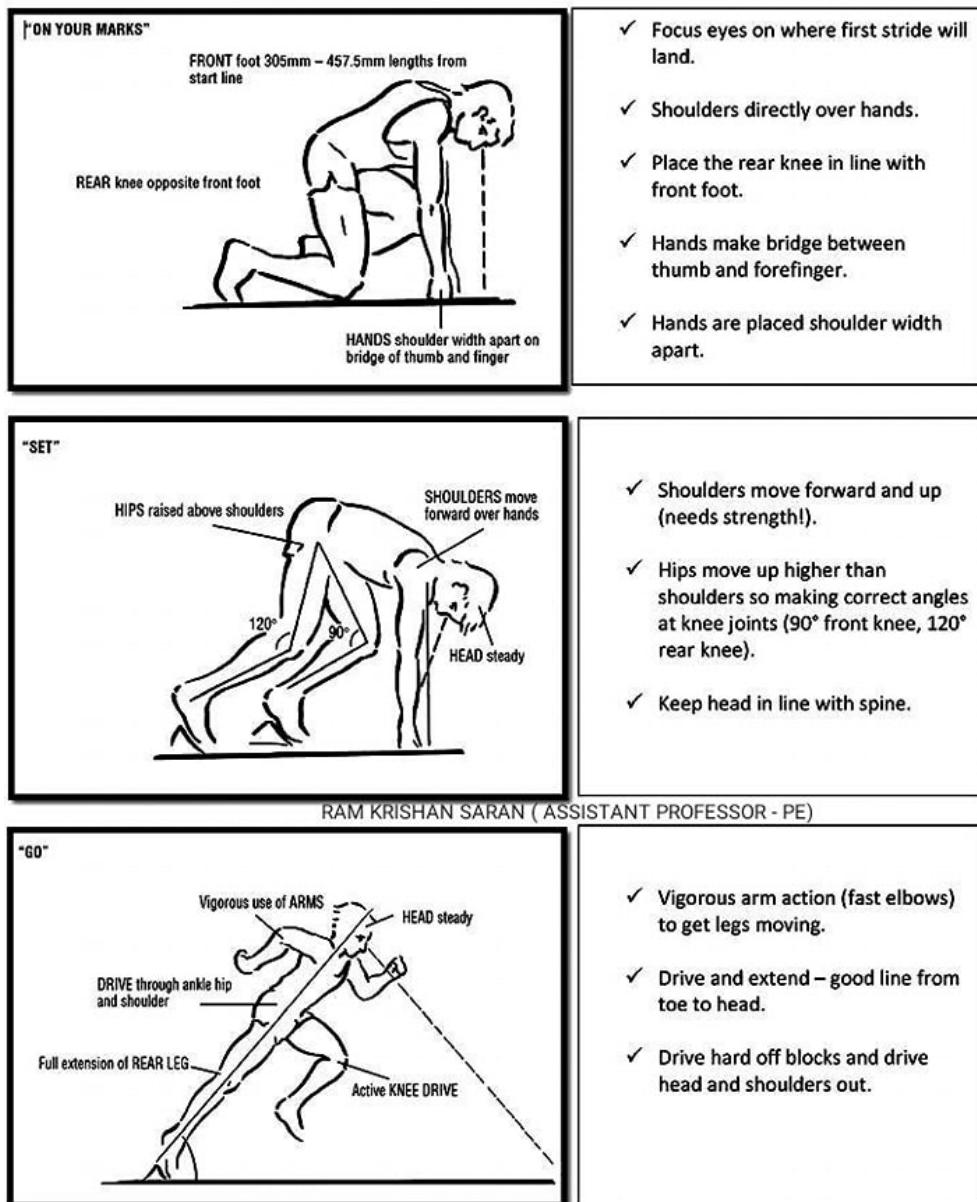


Figure 24.4: Sprint start mechanics



Figure 24.5: Exhibiting the techniques in sprints, Usain Bolt

b. Middle-distance

Middle-distance running requires a balance of speed, endurance and race strategy. Events such as 800m and 1500m demand efficient energy distribution, strong aerobic and anaerobic conditioning and tactical awareness. Runners must develop both sprinting ability for fast finishes and endurance to maintain a competitive pace throughout the race.

Middle-distance runners must train their bodies and minds to handle the unique demands of their events by applying the following:

- i. **Focus:** Middle-distance running requires a combination of endurance, speed and strategy. Runners must improve both aerobic and anaerobic fitness to sustain speed throughout the race. Efficient pacing strategies help maintain an optimal race tempo without early fatigue. Proper running mechanics are key in reducing energy waste, allowing athletes to run smoothly and efficiently. Mental resilience is just as important, as tactical awareness and the ability to push through fatigue is essential for strong finishes and competitive racing.
- ii. **Techniques:** Techniques to develop a blend of endurance, speed and strategy are key in middle-distance racing. This includes developing both aerobic and anaerobic fitness, effective pacing strategies and developing proper running mechanics and mental resilience.
- iii. **Drills:** Middle-distance runners benefit from specific drills that enhance speed, endurance and race execution. Some of the drills are as follows:
 - **Interval training:** Involves alternating between fast and slow running, helping to improve both speed and endurance.
 - **Threshold runs:** Focus on maintaining a challenging but sustainable pace, building stamina for longer races.
 - **Hill repeats:** Develop strength and power by requiring athletes to sprint uphill, which translates to stronger finishes on flat terrain.
 - **Strides:** Short bursts of fast running that improve leg turnover and finishing speed, ensuring runners can accelerate when needed in competition.
 - **Tempo runs:** Interval training and pacing runs of 400 to 800 metres help build stamina allowing runners to keep up their effort for longer. It's important to maintain good posture, keep shoulders relaxed and practise-controlled breathing to use energy efficiently during the race.



Figure 24.6: Ghana's mid-distance runner, Martha Bissah

Practising middle-distance techniques (800m, 1500m, 3000m)

1. **Acceleration phase (start to 100m/150m):** The start of a middle-distance race (especially 800m and 1500m) is crucial. Unlike sprints, the goal is not to attain a maximum speed but a controlled acceleration that positions the runner in a favourable place in the pack of athletes.

Key focus

- a. To get a fast but controlled start.
- b. Avoid wasting energy through unnecessary sprinting.
- c. Secure a favourable lane or pack position.

Biomechanics

- a. **Stride length:** Slightly shorten stride length than in sprints but still powerful.
- b. **Stride frequency:** Ensure a quick turnover without excessive speed.
- c. **Body position:** Slightly lean torso forward initially and then gradually upright.
- d. **Arm movement:** Strong arm drive but relaxed shoulders.

Training drills for the acceleration phase

The goal is to accelerate quickly but efficiently, secure a favourable racing position and avoid burning too much energy early.

- a. Roll start by gradually accelerating over 50-100m.
- b. Control sprint not to maximum but about 80-90% effort.
- c. Conduct reaction time drills (using a clapper, hand signals, starting gun or whistle) through long sitting, push-up position, squats and quickly standing to run.
- d. Long and sustained runs uphill.

2. **Positioning phase (100m to 400m):** This phase is important for athletes to find their positions in the pack and settle into their race pace. The goal is to avoid being boxed in while conserving energy.

Key focus

- a. Establish efficient running form.
- b. Find a sustainable pace.
- c. Avoid unnecessary energy consumption (relax shoulders, control breathing).

Biomechanics

- a. **Stride length:** Slightly extend stride length but keep body relaxed.
- b. **Stride frequency:** Steady stride frequency in a consistent and controlled form.
- c. **Body position:** Keep torso upright and relaxed.
- d. **Arm action:** Maintain a smooth and rhythmic arm action.

Training drills for the positioning phase: The goal is to avoid burning energy by fighting for unnecessary positions, stay comfortable in a favourable spot and control breathing and rhythm.

- a. **Pace judgement drills:** Run over 400m intervals maintaining same pace, high knee runs, ladder runs within a determined number of spaces.
- b. **Pack running drills:** Run in a group to simulate competition.

- c. **Rhythm runs:** Running with a relaxed and controlled tempo while keeping a regular breath to conserve energy.
- 3. **Sustained pace phase (400m to 1200m or midway):** This is the critical part of a middle-distance race, where an athlete must sustain maximum possible speed without fatiguing too early. They must prevent slowing down while still conserving energy for the final kick.

Key focus

- a. Maintain a consistent, sustainable pace.
- b. Avoid unnecessary physical contact (in pack races).
- c. Control mental fatigue.

Biomechanics

- a. **Stride length:** Keep stride length comfortable but not overstretched.
- b. **Stride frequency:** Keep step count efficient without excessive force.
- c. **Body position:** Relax shoulders and maintain a smooth upper body.
- d. **Breathing:** Maintain a breathing rhythm and control breathing within every 3rd or 4th stride.

Training drills for the sustained pace phase: The goal is to prevent mid-race slowdown, stay mentally focused and control energy consumption.

- a. Practise tempo runs in a sustained effort at race pace.
- b. Practise 400m-600m repeats with limited rest (1-minute rest).
- c. Practise threshold runs challenging yourself beyond your limits to build aerobic capacity.
- 4. **Kick preparation phase (1200m to 1400m):** This is where middle-distance runners start preparing for their finishing kick. It is intended to increase stride frequency slightly, prepare mentally for the final surge and avoid fading due to fatigue.

Key focus

- a. Increase cadence without increasing stride length.
- b. Stay mentally sharp and avoid dropping pace.
- c. Shift body posture slightly forward.

Biomechanics

- a. **Stride length:** Slight increase in length.
- b. **Stride frequency:** Faster turnover.
- c. **Arm drive:** More forceful and aggressive.
- d. **Breathing:** Deep, powerful but sustained breaths.

Training drills for the kick preparation phase: The goal is to mentally prepare to unleash the final sprint, avoid unnecessary lactic acid buildup and stay focused on finishing.

- a. Practise sustained semi-sprint surges uphill.

- b. Practise progression runs to increase pace every 200m).
- c. Use training ladders to increase stride frequency.

5. **Finishing kick phase (last 200m):** The final 200m is where the race is won or lost. The athlete must now sprint at the maximum possible speed despite fatigue, shorten ground contact time (fast foot turnover) and mentally ignore fatigue and focus on the finish line.

Key focus

- a. Shift from mid-distance pace to near sprinting.
- b. Swing arms aggressively.
- c. Shorten stride length but increase stride frequency.

Biomechanics

- a. **Body position:** Slight forward lean.
- b. **Stride frequency:** Maximum turnover.
- c. **Arm movement:** Powerful and coordinated.
- d. **Ground contact:** Quick and explosive.

Training drills for the finishing kick phase: The goal is to cross the line with maximum possible speed, mentally override fatigue and finish in a good time.

- a. Practise sprint-finish training in the 200m run.
- b. Practise flying 150m by accelerating to full sprint in the last 150m run.
- c. Practise over-distance training by running longer than race/competition distance to build strength.



Figure 24.7: Middle distance running technique



Figure 24.8: World record holder in a middle-distance race.

c. Long distance

Long-distance running is an excellent way to build endurance, practise efficient pacing and cultivate mental toughness. Events like the 3000m, 5000m and 10,000m provide fantastic opportunities to enhance your aerobic capacity, allowing you to sustain your efforts over longer distances. Focused training can greatly improve stamina, help maintain an efficient running style and develop effective race strategies that balance energy conservation with speed. By prioritising these elements, you can become a more successful and resilient long-distance runner, which are:

- **Focus:** Long-distance running requires endurance, pacing and mental focus. Runners need aerobic stamina to sustain effort, maintain a steady pace and conserve energy for a strong finish. Muscular and cardiovascular endurance help delay fatigue, ensuring efficiency and speed. Pacing control prevents burnout, stride efficiency reduces wasted energy and rhythmic breathing improves oxygen intake. Strong mental discipline helps runners manage discomfort and execute race strategies for better performance. Mental resilience is key to staying focused and pushing through challenges.
- **Techniques:** Pacing control helps runners maintain a steady rhythm, conserving energy for a strong finish. Stride efficiency minimises wasted movement while breathing techniques improve oxygen intake for endurance. Mental strength keeps athletes focused and resilient against fatigue. Training should emphasise steady

pacing, efficient breathing and proper form, with steady-state runs, tempo runs and endurance sessions to build stamina. Recovery days are essential to prevent burnout and support long-term progress.

- **Drills:** Long runs at a comfortable pace help build endurance, while tempo runs enhance stamina and race pacing. Fartlek training (speed play training) which alternates between fast and slow running, develops speed and endurance. Hill training strengthens the legs and improves running efficiency, while short strides and controlled sprints refine running form and finishing speed.

Incorporating long, steady runs, hill training and aerobic interval sessions (workouts that mix moderate-to-high-intensity exercise with periods of lower-intensity recovery) improves cardiovascular endurance and mental resilience. Emphasising proper form reduces energy waste over long distances, helping athletes to maintain a relaxed posture and smooth rhythm throughout a race.



Figure 24.9: Ghana's long-distance runner, William Amponsah



Figure 24.10: Male long-distance runners

d. Marathon

The marathon is a long-distance foot race with 42.2 kilometres (26.2 miles). It is usually run as a road race but can also be completed on trail routes. The marathon commemorates the legendary feat of a Greek soldier who ran from Marathon to Athens, about 40km (25 miles), to bring news of the Athenian victory over the Persians.

Training focuses on long runs for stamina; tempo runs for pacing and intervals for speed. Proper breathing, relaxed posture and steady pacing help conserve energy. Mental strength is key to overcoming fatigue and recovery days prevent injury for long-term progress. The training elements to a successful marathon are:

- i. **Endurance and pacing:** Marathon running requires strong aerobic capacity to sustain effort over 42.2km. Maintaining a steady pace is crucial to avoid early fatigue and ensure a strong finish.
- ii. **Strength and efficiency:** Building muscular and cardiovascular endurance helps delay exhaustion, allowing runners to stay efficient throughout the race. Proper pacing, controlled breathing and relaxed posture conserve energy over long distances.
- iii. **Mental resilience:** A strong mindset is essential for staying focused and pushing through physical challenges, especially in the later stages of the race.
- iv. **Training approach:** Refers to structured methods and strategies that enhance an athlete's performance in a specific sport. It includes various workouts, drills and recovery plans to improve endurance, speed, strength, technique and mental resilience. Training for the marathon includes:
 - **Long runs:** Build endurance and prepare the body for prolonged physical activity.
 - **Tempo runs:** Enhance race pacing and overall endurance by building a personal rhythm over time.
 - **Interval training:** Enhances speed endurance and improves running efficiency.
 - **Hill training:** Strengthens leg muscles for better performance.
 - **Stride training:** Improves running width and pace techniques and increases finishing speed.
 - **Recovery and injury prevention:** Increasing mileage slowly and including scheduled recovery days can assist in preventing injuries and promoting long-term progress.



Figure 24.11: The greatest long-distance athletes of all time to date: Haile Gebrselassie and Eliud Kipchoge



Figure 24.12: Some of the greatest of all time in female long-distance runners: Tirunesh Dibaba, Paula Radcliffe and Sifan Hassan

e. Relay track events

Relay races require speed, teamwork and precise baton exchanges. Successful teams focus on smooth transitions to avoid time loss and disqualifications. Athletes must master baton passing techniques such as the non-visual (blind) exchange in sprints and the visual exchange in longer relays.

- Focus:** Relay races emphasise teamwork, coordination and precise baton exchanges to maintain speed and efficiency. Understanding running order and exchange zones is crucial for seamless transitions. Key training areas include

 - Baton exchanges:** Practising quick and efficient handovers is essential to maintaining momentum.
 - Acceleration and speed:** Sprinting at maximum effort while timing exchanges perfectly.
 - Team coordination:** Ensuring smooth transitions by fostering synchronised (coordinated) exchanges and building trust among teammates.
 - Pacing strategies:** Adjusting speed based on leg distance/length and individual strengths.

- ii. **Techniques:** Athletes must master baton-passing techniques including visual and non-visual (blind) exchanges with precise timing and synchronisation. Efficient handoff methods such as push or down-sweep, help maintain momentum. Regular team training improves trust and coordination making exchanges more seamless.
- iii. **Drills:** Frequent exchange-zone practice, sprint relay drills and baton-handling techniques enhance passing speed and teamwork. Acceleration from the exchange zone and smooth transitions prevent momentum loss ensuring faster race times.



Figure 24.13: Ghana's 4x100m men's relay qualifying team to Paris 2024: Isaac Botsio, Joseph Paul Amoah, Ibrahim Fuseini and Benjamin Azamati.



Figure 24.14: Ghana's women's 4x100m relay team at Doha World Athletics Championships, 2019: Gemma Acheampong, Persis William-Mensah, Flings Owusu-Agyapong and Halutie Hor

2. Applying Coaching Principles in Running Events

Coaching track events effectively involves applying fundamental principles that cater to the diverse needs of athletes across various disciplines. A well-rounded coaching approach not only enhances athletic performance but also fosters a positive and sustainable training environment. By integrating these principles, coaches can develop comprehensive training programmes that enhance athletic performance and support the overall development and well-being of their athletes. The principles to observe during coaching are:

a. Mechanics of running

Running efficiently depends on proper posture, foot strike, stride length and drills that reinforce correct mechanics. A well-balanced form improves speed, reduces wasted energy and lowers the risk of injury.

- i. **Body posture:** Maintaining the right posture keeps movement smooth and controlled. The head, torso and feet should stay aligned with a slight forward lean from the ankles. Arms should swing naturally, with elbows bent at approximately 90 degrees. Avoid crossing the midline of the body to prevent unnecessary rotation. A relaxed upper body reduces tension and improves endurance.
- ii. **Foot strike and stride length:** Foot placement influences running economy and force absorption. Distance runners benefit from a midfoot strike, distributing impact forces efficiently. Sprinters generate power with a forefoot strike, allowing for rapid acceleration. Overstriding increases braking forces and energy waste, so stride length should remain natural, driven by hip extension rather than excessive reaching.
- iii. **Drills for form and efficiency:** Consistent practise of drills strengthens movement patterns and improves coordination among the muscles and nervous system.
 - **High knees:** Improve leg drive and running rhythm.
 - **Bounding:** Develops powerful strength and stride efficiency. Bounding is a training drill that involves exaggerated running or jumping strides to improve power, coordination and stride length
 - **Ladder drills:** Enhance speed and agility of the feet. Ladder drills are agility exercises that use a flat ladder laid on the ground to improve foot speed, coordination and overall athletic performance.
 - **Butt-kicks:** Promote the effective recovery of the trailing leg (rear leg).
 - **Arm drive drills:** Improve the movement of the arms to improve rhythm and balance.

Event-specific mechanics require adjustments. Sprinting demands a greater knee lift, a more aggressive arm swing and a pronounced forward lean. Distance running focuses on relaxed efficiency, conserving energy over time. Training should match the demands of the event to improve performance.

b. **Quality of training over quantity**

Effective training focuses on how well each session is executed rather than the total workload. High-quality sessions that match the athlete's needs lead to better progress than simply increasing volume. Quality training is explained in the following terms:

- i. **Principle:** Training should prioritise sessions that improve performance through intensity, technique and recovery. More work does not always mean better results structured workouts that target specific areas lead to greater efficiency and reduced injury risk.
- ii. **Approach:** A well-structured approach to training focuses on high-intensity sessions with clear objectives, preventing unnecessary fatigue while maximising gains. Each workout should be planned with a specific goal, whether improving speed, building endurance or promoting recovery to avoid the risks of overtraining. Incorporating recovery days is essential allowing the body to adapt and support long-term development. Event-specific training plays a crucial role in performance with sprinters benefiting from high-intensity interval training (HIIT) to enhance explosiveness while distance runners improve efficiency through tempo runs and sustained efforts.

iii. **Examples:** Speed development involves sprint drills that enhance acceleration, reaction time and stride efficiency, allowing athletes to generate maximum force in minimal time. Endurance work focuses on controlled pacing to build aerobic capacity and improve race execution ensuring sustained performance over longer distances. Technique sessions refine running mechanics by optimising foot strike, arm movement and overall form, reducing inefficiencies that could hinder progress. Feedback-driven adjustments such as analysing split times, posture and energy expenditure, provide valuable insights that help fine-tune the performance for greater efficiency and effectiveness.

c. **Endurance**

Endurance is an athlete's ability to sustain physical effort over time without excessive fatigue. Middle- and long-distance runners need to maintain a steady pace while sprinters depend on endurance to maintain speed in multiple heats. Building endurance requires consistent training to improve both aerobic and muscular stamina. Endurance training is explained in the following terms:

- i. **Principle:** Endurance supports sustained effort requiring both physical and mental resilience. Middle- and long-distance runners need to maintain pace and efficiency over extended periods. Sprinters also benefit from endurance as it helps them preserve speed and strength throughout a race, particularly when competing in multiple rounds. Developing this capability requires a structured and gradual approach to training to ensure that performance remains steady without excessive fatigue.
- ii. **Approach:** To build endurance effectively, athletes should use the principle of progressive overload, which helps them adapt to increasing workloads over time. Long-distance runners should focus on developing aerobic capacity through steady state runs and long runs that challenge their endurance. Middle distance runners benefit from interval training alternating high-intensity bursts with recovery along with tempo runs for speed and stamina. Sprinters maintain explosive power by performing repeated sprints over shorter distances, balancing endurance and speed without compromising fast-twitch muscle fibres (muscle fibres that generate quick and powerful bursts of movement). As training volume increases, it is important to monitor for signs of fatigue or overtraining to enhance endurance while minimising burnout and maintaining overall health.

iii. **Examples of endurance workouts**

- **Long intervals (800m-1600m repeats):** Improve aerobic capacity and race-specific stamina.
- **Hill runs:** Build strength, efficiency and endurance by increasing muscular resistance.
- **Tempo runs (20-40 minutes at 80-90% effort):** Increase lactate (i.e. lactic acid without oxygen injection) threshold, allowing athletes to sustain higher speeds for longer durations.
- **Steady-state runs:** Develop a base level of endurance and aerobic function.
- **Fartlek training (speed variation):** Alternates between different paces to develop both aerobic and anaerobic endurance.

- **Sprint repeats (for sprinters):** 150m-300m sprints with controlled recovery to enhance sprint endurance while retaining power.

Using these strategies within a structured training plan, athletes can develop the stamina needed to perform consistently while minimising fatigue-related performance drops.



Figure 24.15: Ghanaian athletics coaches

3. Officiating Running Events

Officiating running events requires a solid understanding of both management and competition officials' roles, as well as adherence to the laws, rules and regulations governing the sport. Effective officiating in track events relies on a comprehensive understanding of management and competition roles alongside a thorough knowledge and application of rules and regulations. By adhering to these principles, officials can ensure fair competition and maintain the integrity of the sport.

a. Management officials in track events

Management officials play a key role in the organisation and execution of track events. They oversee logistics, coordinate resources and ensure that competitions run smoothly while following regulations. Their responsibilities include planning, communication,

problem-solving, and decision-making to maintain fairness and efficiency. Their ability to organise, share information and address challenges effectively contributes to the success of the event and the overall experience of athletes and spectators.

- i. **Roles and responsibilities:** Management officials are responsible for planning and organisation, which includes structuring event schedules such as heats and finals, ensuring that all necessary equipment and personnel are available and overseeing venue preparations and safety measures. Their role is essential in maintaining order and efficiency throughout the competition.
- ii. **Communication and coordination:** Management officials act as the primary link between officials, athletes, coaches and spectators, ensuring clear and effective communication. They provide updates on event schedules, rule changes and any necessary adjustments to keep all parties informed. They work closely with the media and other organisers to maintain smooth operations throughout the competition.
- iii. **Problem-solving/Handling challenges:** Management officials must be prepared to handle unexpected disruptions such as weather delays, equipment malfunctions or disputes. They are responsible for enforcing rules fairly, resolving conflicts efficiently and making quick decisions to ensure the event stays on schedule.
- iv. **Application in events:** Management officials must carefully structure event schedules, assign duties and prepare backup plans to address unforeseen issues. A well-organised approach ensures fairness and efficiency throughout the competition.

b. Competition officials in track events

Competition officials play a key role in ensuring that track events are conducted fairly, safely, and by established rules. They oversee various aspects of the competition, from enforcing regulations to recording results accurately. Their presence ensures that athletes compete under standardised conditions, maintaining the integrity of the sport.

- i. **Competition Director:** The Competition Director is responsible for the overall organisation of the event. Their duties include overseeing logistics such as scheduling and facility arrangements, coordinating with other officials to ensure all roles are covered, and handling administrative tasks like athlete registration and compliance with competition rules.
- ii. **Referee:** Referees have authority over all track and field events, ensuring that competitions adhere to official regulations. Their responsibilities include overseeing the conduct of athletes, coaches, and officials, addressing protests and disputes related to rule violations, and making final decisions on rule interpretations to maintain fair competition.
- iii. **Event-specific officials:** Event-specific officials oversee individual events within a track meet, ensuring accuracy and fair competition. Their roles include starters and recall starters, who position athletes correctly, signal the start, and call back races if there is a false start. Timers and timekeepers measure race times using stopwatches or electronic systems, verify results, and assist with official records. Judges determine placements at the finish line, monitor field events for rule compliance, and measure performances. Lap counters track completed laps in distance races to prevent errors. Each official has a clearly defined role that must be carried out with accuracy to uphold the competition's standards.

- iv. **Consistency and decision-making:** Competition officials enforce rules consistently to ensure fair conditions for all athletes. Their responsibilities include overseeing starting procedures, ensuring compliance with event regulations, accurately recording performances, and applying penalties or disqualifications when required. They must also make quick, informed decisions on infractions or appeals based on their training and expertise.

Learners can develop officiating skills through practical exercises such as practicing race starts and using starting blocks, making decisions on false starts, and enforcing starting procedures. They can observe finishes to determine placements and ensure athletes follow competition rules. Additionally, they can learn to operate timing systems and score sheets to record, and report results accurately.

c. Additional officials

In track and field events, additional officials play crucial roles in ensuring fair competition and smooth event execution. These officials serve in support roles to maintain order and assist with the smooth execution of events.

- i. **Support roles:** These officials help maintain order and assist with event operations. Marshals guide athletes to their events and make sure they arrive on time. Medical personnel are available to assist in case of injuries. Clerks handle administrative tasks related to athlete check-ins and event coordination.
- ii. **Field event officials:** Officials overseeing field events such as long jump, high jump and shot put must enforce specific rules, ensure fair play and take accurate measurements. Their role is important in maintaining the integrity of these events.

Learners can be trained to operate timing systems, use score sheets, record times accurately and report results. These skills help develop their ability to officiate competitions properly.

4. Principles of Officiating Races

Officiating in track events requires a structured approach to ensure fair competition and accurate results. Officials play a key role in enforcing regulations, making quick decisions and maintaining order during events. Their responsibilities range from overseeing race starts and monitoring finishes to applying penalties and resolving disputes. A strong knowledge of rules, effective communication and technical proficiency are essential for maintaining the integrity of the competition. The principles of officiating track events are:

a. Knowledge of rules and regulations

Officials must be familiar with the rules governing track events including starting procedures, race conduct and disqualification criteria. Regulations set by organisations such as World Athletics outline the standards for starts, finishes, timing and field event procedures. Keeping up with rule updates through training sessions or seminars helps maintain accuracy in officiating. Knowledge of rules and regulations include:

- i. **Fair and consistent application of rules:** All athletes must compete under the same conditions. Officials are responsible for enforcing rules without bias ensuring fair competition and applying penalties or disqualifications when required. Consistency in decision-making maintains the integrity of the event.

- ii. **Quick and accurate decision-making:** Situations such as false starts, lane infringements or protests require immediate attention. Officials must rely on their training and judgment to assess incidents quickly and apply the appropriate ruling. Delays or incorrect calls can affect competition results.
- iii. **Clear communication:** Officials must provide direct instructions to athletes, coaches and event staff. Whether announcing rule infractions, start commands or result confirmations, messages must be precise to prevent confusion.
- iv. **Use of proper officiating techniques:** Officials should be skilled in using timing systems, measuring equipment and scoring methods. Accurate recording of performances and correct application of officiating techniques contribute to the smooth execution of events.

b. Application of the laws, rules and regulations

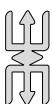
Officials play a significant role in maintaining fairness and order by applying rules and legal standards correctly. By applying these principles, officials contribute to an environment where rules are followed, and competition remains fair. Their responsibilities include enforcement, interpretation and communication.

- i. **Enforcement:** Rules must be applied fairly and consistently throughout a competition. This involves identifying violations such as false starts or lane infractions and issuing appropriate penalties as outlined in the rulebook. Consistency in decision-making upholds fairness for all participants.
- ii. **Decision-making and interpretation:** Some situations require officials to assess circumstances that are not explicitly addressed in the rulebook. This may involve reviewing the guidelines, consulting with colleagues or referring to precedent to determine the correct course of action.
- iii. **Communication of decisions:** Clear explanations enable athletes, coaches and other stakeholders to understand rulings better. Providing reasons for decisions reduces disputes and fosters trust in the process.

Learning Tasks

1. Learners design a simple training plan for a 100-meter sprinter, including at least three specific drills.
2. Learners create a checklist for officials to use during a track event to ensure fair competition.
3. Learners demonstrate how to properly start a race using starting blocks, outlining the steps involved.
4. Learners watch a video on the posture and execution technique in a starting block and analyse your observation.
5. Learners analyse a video of the momentum phase of a race and discuss your conclusions with the class.
6. Learners select a discipline/sport of a race, watch a video on it, analyse the coaching strategies and officiating effectiveness and discuss your conclusions with the class.

7. Learners organise a race tournament and take up a role as either an athlete, official or coach. Learners should play their role effectively by applying the lessons learned in relation to that role to ensure a successful competition. At the end of the competition, learners assess their performances in the roles taken.



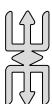
Note

Select from the list provided, the tasks that can be performed in your school, given the school's/learners' particular situation and working within the allotted time.

Pedagogical Exemplars

1. **Starter:** Show a short, engaging video of a track meet (competition), focusing on the role of coaches and officials. Ask the learners these questions after watching the video.
 - a. What roles do you observe in a track event?
 - b. Why do you think these roles are important for a fair and safe competition?
2. **Introduction:** Briefly introduce essential terminology; starter, lap counter, umpire, coaching, officiating, and basic rules. Discuss the role of the *starter* in track events, emphasising safety, precision, and communication. Use a whistle or starting gun to demonstrate the start of a race and explain the significance of timing and signals in officiating.
3. **Activity-based learning:** Design a specific track event, e.g., sprint with the roles of (coaching, officiating, and athletes sprinting). Engage learners in small groups such that, some groups are sprinting, another coaching, and the other officiating. Learners apply the concepts and principles in executing the roles. Groups change roles after a given time frame for all to coach and officiate. Put learners into groups and assign roles (e.g. starter, athlete, coach, umpire, etc.), and have each group simulate the start of a race. Allow learners to practise giving the commands (on your marks, set, go) and observe the timing and stance of the starter. Allow learners to switch roles, giving each a chance to experience the responsibilities of a coach and an official. Emphasise how coaches observe form, technique, and performance, while officials ensure rules are followed.
4. **Project-based learning:** Learners will work in small groups to plan, organise, and host track events such as sprints, relays, and hurdles. Each group will act as both coach and official, ensuring fair rule enforcement while guiding their team. They will manage the competition and keep a record of their engagement for assessment. Evaluation should focus on their planning, execution, teamwork, and adherence to the rules.

Closure: Guide a discussion on what has been learned from the project and simulations. Discuss challenges, such as handling false starts, motivating athletes, or enforcing rules. Summarise key principles; fairness, precision, communication and safety in track events. Let learners write down one new thing they learned and one question they still have about officiating or coaching track events.



Note

- Be conscious of learners who need assistance and provide support e.g. learners with mobility, vision, hearing, speech, etc. impairments.

- Encourage learners to respect individual differences (i.e. beliefs, religions, abilities, temperaments, cultures, etc.)
- Other appropriate approaches to engage learners can be used.

Key Assessments

Level 1

1. Define the term coaching in the context of track and field.
2. List three (3) roles of an official during a track event.
3. Identify three (3) principles of training that are important for track athletes.

Level 2

1. Explain four (4) reasons why a warm-up routine is important before a track event.
2. Discuss how the role of a coach differs from that of an official during a track meet.
3. Describe three (3) factors that influence an athlete's sprint performance.

Level 3

1. How does hill training improve an athlete's performance in middle- and long-distance events?
2. Describe two drills that help improve sprint acceleration and reaction time.
3. How do proper running mechanics help conserve energy in long-distance races?
4. Why is the quality of training more important than the quantity of training?
5. Describe the role of a referee in ensuring fair competition in track events.
6. Examine why clear communication is essential for officiating track events.
7. How do management officials contribute to the smooth execution of a track event?

Level 4

1. Analyse the impact of psychological factors on an athlete's performance in a track event.
2. Assess the impact of various coaching styles in track and field. Which coaching style do you think best supports sprinters and what makes it effective?
3. Compare and contrast the four (4) officiating protocols for track events at the local level versus international competitions. What are the major differences, and why do they exist?
4. Analyse the phases of proper technique for executing a block start in sprinting.

HINT



The Recommended Mode of Assessment for Week 24 is the End of Semester Examination. Refer to Appendix M for a Table of Specifications. Set questions to cover all the indicators covered for weeks 13 to 24.

SECTION 11 REVIEW

In Week 23, learners explored the fundamental principles of coaching and officiating in track events and marathons, examining essential skills such as pacing, body posture, coordination, momentum and race regulation enforcement/observation. Through interactive discussions and demonstrations, they analysed the role of coaches in athlete preparation and the responsibilities of officials in ensuring a fair and structured race environment. Video analysis and practical officiating drills helped learners understand the dynamics of competitive running.

In Week 24, learners transitioned to practical applications, where they take on coaching and officiating roles in an organised running event. They designed warm-up routines, provided race strategies and enforced officiating rules, ensuring fair competition. Engaging in peer and self-assessment exercises helped learners identify strengths and areas for improvement in their coaching and officiating abilities. By the end of this section, learners confidently applied their knowledge in running events, demonstrating competence in both coaching and officiating roles.

Throughout the section, create an inclusive and engaging learning environment, encouraging learners to apply their skills in real-world scenarios. By blending theoretical concepts with hands-on experiences, learners will develop a well-rounded understanding of track event coaching and officiating, preparing them for potential roles in athletics and sports management.

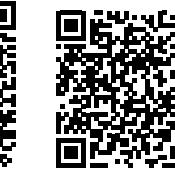
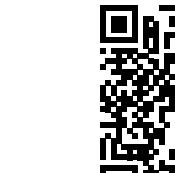
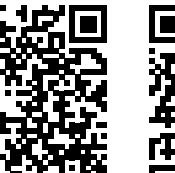


APPENDIX M: END OF SECOND SEMESTER TABLE OF SPECIFICATIONS

Week	Focal Area(s)	Type of Question	DoK Levels				Total
			1	2	3	4	
13	<i>Biochemical Principles in Physical Activities</i>	Multiple Choice	1	3	2	-	6
14	<i>Biochemical Principles in Physical Activities</i>	Multiple Choice	2	2	2	-	6
		Essay			1		1
15	<i>Professional Preparation of Career Pathways in Health Education</i>	Multiple Choice	1	1	1	1	4
16	<i>Concept Career Resume to Project the Learner Profile in Health Education</i>	Multiple Choice	2	1	1	-	4
17	<i>Building a Career Resume to Project the Learner Profile in Health Education</i>	Multiple Choice	1	2	1	-	4
18	<i>Explore Technology to Build a 21st Century Career in Physical Education and Sports</i>	Multiple Choice	1	3	1	-	5
		Essay				1	1
19	<i>Apply Technology to Develop a 21st Century Career in Physical Education</i>	Multiple Choice	2	1	1	-	4
20	<i>Concepts and principles of coaching and officiating invasion games.</i>	Multiple Choice	1	3	-	-	4
		Essay	-	-	1	-	1
21	<i>Applying the concepts and principles of coaching and officiating invasion games.</i>	Multiple Choice	1	2	-	-	3
		Easy			1		1
22	<i>Concepts and principles of coaching and officiating of track events/marathons.</i>	Multiple Choice	-	2	-	-	2
		Essay	-	-	-	1	1
23	<i>Application of the concepts and principles of coaching and officiating running events.</i>	Multiple Choice	1	1	-	-	2
24	<i>Application of the concepts and principles of coaching and officiating running events.</i>	Multiple Choice	1	2	1	1	5
	Total		15	23	13	4	55

BIBLIOGRAPHY

<p>Page 3: Facts and Figures on Sexual and Reproductive Health in Ghana – Publications. (Guttmacher Institute, 2004: https://www.guttmacher.org/report/adolescents-ghana-sexual-and-reproductive-health;</p> <p>BioMed Central, 2023: https://bmchealthserves.biomedcentral.com/articles/10.1186/s12913-023-10447-1).</p>	 
<p>Page 6 (National Coalition for Sexual Health, 2024: https://nationalcoalitionforsexualhealth.org/sexual-health/what-is-sexual-health).</p>	
<p>Page 13: WHO Publications on Contraception and its Impact on Childbearing, Child-Spacing, Health and Overall Quality of Life.</p>	 
<p>Page 14: Family planning (NIH 2023: https://www.ncbi.nlm.nih.gov/books/NBK536949/#:~:text=Definition%2FIntroduction,participant%20in%20her%20family%20planning).</p>	
<p>Page 14</p> <p>A Publication on Barrier Birth Control Methods</p> <p>A Publication on Hormonal Birth Control Methods</p>	 
<p>Page 17: A Publication on Contraception and Birth Control Methods</p>	
<p>Page 32: Figure 3.5: Handling Ghanaian foods skilfully and beautifully</p>	
<p>page 52: Follow the link https://youtu.be/bowUbkANVY to watch a short video on factors that influence food choices</p>	

<p>Page 64: Ghana News Agency Publication on Mental Healthcare in Ghana: https://gna.org.gh/2022/08/mental-healthcare-in-ghana-a-time-bomb/</p> <p>A YouTube Video on the Basics of Mental Health</p>	 
<p>Page 65: Citi Newsroom Publication on Mental Health in Ghana</p>	
<p>Page 70: WHO https://www.afro.who.int/countries/ghana/news/improving-access-mental-health-services-ghana BioMedCentral: https://bmcpsyiatry.biomedcentral.com/articles/10.1186/s12888-023-04775-z</p>	 
<p>Page 72: WHO and Ghana New Agency Publications on Mental Health in Ghana</p>	 
<p>Page 168: Open this link to allow learners to watch a video of health education specialists: https://m.youtube.com/watch?v=4eldUadZX-s&pp=ygUhUHJvZmVzc2lvbmFscyBpbIBIZWFsdGggRWR1Y2F0aW9u</p>	
<p>Page 254 Volleyball Officials Manual https://playcyc.org/wp-content/uploads/sites/3/2021/07/2021-CYC-Volleyball-Officials-Manual.pdf</p> <p>Watch volleyball refereeing signals</p>	
<p>Page 254: Handball Officials Manual https://www.ihf.info/sites/default/files/2024-07/09A%20-%20Rules%20of%20the%20Game_Indoor%20Handball_E_0.pdf</p> <p>Watch handball refereeing signals</p>	

<p>Page 254: Netball Officials Manual https://netball.com.au/sites/default/files/2020-01/INF_NETBALL%20RULE%20BOOK%20MANUAL%202020.pdf</p> <p>Watch netball refereeing signals</p>	
<p>Page 254: Basketball Officials Manual https://cdn1.sportngin.com/attachments/document/8d91-2841430/P.L.A.Y._Basketball_Officiating_Handbook__1_.pdf</p> <p>Watch basketball fouls and violations</p>	
<p>Page 270: Officiating Resources</p> <p>Volleyball Officials Manual https://playcyc.org/wp-content/uploads/sites/3/2021/07/2021-CYC-Volleyball-Officials-Manual.pdf</p> <p>Watch volleyball refereeing signals</p>	
<p>Handball Officials Manual https://www.ihf.info/sites/default/files/2024-07/09A%20-%20Rules%20of%20the%20Game_Indoor%20Handball_E_0.pdf</p> <p>Watch handball refereeing signals</p>	
<p>Netball Officials Manual https://netball.com.au/sites/default/files/2020-01/INF_NETBALL%20RULE%20BOOK%20MANUAL%202020.pdf</p> <p>Watch netball refereeing signals</p>	
<p>Basketball Officials Manual: Watch basketball fouls and violations:</p>	
<p>Page 289: Scan the QR code or click the link for the World Athletics rule book for Officials: https://athsvic.org.au/wp-content/uploads/2020/08/WA-new-rules-2020-31-July-20.pdf</p>	

<p>page 312: Scan the QR code or the link for the World Athletics handbook for coaches:</p> <p>https://athleticsfiji.com/wp-content/uploads/2017/07/iaaf-introduction-to-coaching.pdf</p>	
--	--

- Art Pictures: <https://artpictures.club/autumn-2023.html>
- Articles and Journals: Mascarenhas, D. R., Collins, D., & Mortimer, P. (2005). “The art of refereeing: Perspectives from experienced referees.”
- Aryal, K. K., Mehata, S., Neupane, S., Vaidya, A., Dhimal, M., et al. (2015). The burden and determinants of non-communicable diseases risk factors in Nepal: Findings from a nationwide STEPS survey.
- Australian Institute of Food Safety (2019): What is Food Safety: <https://blog.foodsafety.com.au/what-is-food-safety>
- Axiwi:<https://www.axiwi.com/wp-content/uploads/2016/04/axiwi-communication-system-referee-handball.jpg>
- Azide Performance. (2023). Introduction to Force-Velocity Curves.
- Bahr, R. (2022) The Science of Sports Injuries: Prevention and Recovery, Norway, Springer'
- Basketball Referee Development Program: Guidelines on positioning, communication, and game management (fibabasketball).
- Baumgartner, T. A., Jackson, A. S., Mahar, M. T., & Rowe, D. A. (2021). Measurement for evaluation in kinesiology and exercise science (10th ed.). McGraw-Hill.
- Becker, H., & Pomerantz, J. (2024). Career Pathways in Health Education: Strategies for Success. United Kingdom: Routledge.
- Berg, K. (2021). The Future of Physical Education: Trends, Innovations, and Opportunities. United States: Routledge.
- BioMed Central, 2023; Adolescent perception of sexual and reproductive health rights and access to reproductive health information and services in Adaklu district of the Volta Region, Ghana; <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-023-10447-1>
- Blasé, K., & Blasé, J. (2022). Professional Ethics in Physical Education and Sport: Perspectives for Teachers and Coaches. United States: Charles C. Thomas Publisher.
- Bompa, T. O., & Buzzichelli, C. (2019). Periodization: Theory and methodology of training (6th ed.). Human Kinetics.
- Breed, R. (2021). Developing game sense in PE: Exploring invasion games. United States: Human Kinetics.
- Breed, R., & Spittle, M. (2021). Developing game sense in physical education and sport. United States: Human Kinetics.
- Brewster, P., & Sullivan, R. (2016). Coaching Track & Field: A Complete Guide for Coaches. United States: Human Kinetics.

- Brown, M. (2021). Fitness Tracking Devices and Their Impact on Physical Education. *Fitness ScienceReview*,18(4),201-215.
- Bunker, D., & Thorpe, R. (1982). A Model for the Teaching of Games in Secondary Schools. *Bulletin of Physical Education*, 18(1), 5-8.
- Carter, N. (2018). The Role of the Referee in Sports Games. Routledge.
- Catteeuw, P., Helsen, W., Gilis, B., & Wagemans, J. (2009). "Decision-making skills, role specificity, and deliberate practice in association football refereeing." *Journal of Sports Sciences*.
- CBC (2021); The Pandemic, Combined with a Racial Reckoning Weighs Heavily on Black Men's Mental Health; <https://www.cbc.ca/news/canada/montreal/black-men-mental-health-pandemic-police-brutality-1.5893763>
- Center for Integrated Care (2024); Mental Health and Wellness Tips for Black Students; <https://cic.charlotte.edu/blackstudentwellbeing>
- Citnewsroom.com (2023); 3.1 million Ghanaians suffering from mental health issues – Health Minister; <https://citnewsroom.com/2021/07/3-1-million-ghanaians-suffering-from-mental-health-issues-health-minister/>
- Citnewsroom.com (2023); Mental Cases Increasing in Ghana – Dat Reveals; <https://citnewsroom.com/2023/05/mental-cases-increasing-in-ghana-data-reveals/>
- CNN Health (2021); 4 Ways to Support Black Mental Health Amid Images of Racial Violence; <https://edition.cnn.com/2021/04/20/health/black-mental-health-resources-evergreen-iyw-wellness/index.html>
- Coker, C. A. (2022). Motor learning and control for practitioners (6th ed.). Routledge.
- davidsbeenhere.com (2021): <https://davidsbeenhere.com/2021/04/03/video-trying-ghanaian-street-food-for-the-first-time-traveling-to-ghana-miami-to-accra/>
- Davis, L. E., & Brown, P. R. (2024). Health Education Careers: Navigating the Path to Success. United States: Bartlett Learning.
- Dishman, R. K., Heath, G. W., & Lee, I. M. (2013). Physical activity epidemiology. Human Kinetics.
- Emery, C. A. (2021). Injury Prevention in Sport: An Evidence-Based Approach, USA, Human Kinetics.
- Faculty of Sports Studies, Masaryk University. Static equilibrium in martial arts.
- Fahey, J. W., & Kensler, T. W. (2013). Health span extension through green chemoprevention. *Virtual Mentor*, 15(4), 311-318.
- Finch, C. F. (2020). Sports Injury Prevention: From Research to Practice, Australia, CRC Press.
- Freepik. (n.d.). Applied force in baseball. <https://www.freepik.com>
- Freepik.com: <https://www.freepik.com/free-photos-vectors/african-family>
- Freepik.https://www.freepik.com/free-photo/young-adult-enjoying-yoga-nature_30117220.htm
- Gambetta, V. (2021). Coaching athletic performance: Effective strategies and methodologies for sports training. Human Kinetics.

- Gap Africa Project (2020): <https://gapafricaprojects.com/project/netball-coaching-ghana/>
- Ghana News Agency (2022); Mental Healthcare in Ghana: a Time Bomb; <https://gna.org.gh/2022/08/mental-healthcare-in-ghana-a-time-bomb/>
- Ghana Soccernet (2024): <https://ghanasoccernet.com/ghanas-christiana-ashiaku-shines-as-2024-wafu-b-u17-girls-cup-top-scorer#>
- Ghanajom.com (2024): <https://ghanajom.com/products/volta-tilapia>
- Gibson, T. (2020). Introduction to Technology in Physical Education. National Physical Education Journal.
- Gill, A. (Ed.). (2021). Foundations of Sports Coaching: Applying Theory to Practice (3rd ed.). New York: Routledge.
- Glanz, K., & Bishop, D. B. (2010). The role of behavioural science theory in the development and implementation of public health interventions. *Annual Review of Public Health*, 31, 399-418.
- Green, L. W., & Kreuter, M. W. (2005). Health program planning: An educational and ecological approach. McGraw-Hill.
- Guttmacher (2004); Adolescents in Ghana: Sexual and Reproductive Health; https://www.guttmacher.org/sites/default/files/report_pdf/rib1-04.pdf
- Hall, S. J. (2018). Basic Biomechanics (8th Ed.). United States: McGraw-Hill Education.
- Handball Association of Ghana (2024): <https://www.facebook.com/100088533373318/photos/385800861047690/>
- Harrison, P., & Brooks, J. (2015). The Official Track and Field Rules: A Guide for Coaches and Officiating. United States: U.S. Track & Field and Cross-Country Coaches Association.
- Haugen, T., Seiler, S., Sandbakk, Ø. et al. The Training and Development of Elite Sprint Performance: an Integration of Scientific and Best Practice Literature. *Sports Med - Open* 5, 44 (2019). <https://doi.org/10.1186/s40798-019-0221-0>
- HealthCentral.com (2022); 10 Biggest Barriers to Black Mental Health Today; <https://www.healthcentral.com/mental-health/black-mental-health-barriers>
- Healthdirect Australia Limited (2024): Mental Illness: <https://www.healthdirect.gov.au/mental-illness#:~:text=Examples%20of%20negative%20childhood%20experiences,can%20impact%20on%20mental%20health>.
- Higgs, C. T., Way, R., & Nason, G. (2020). Coach education and development in sport: Integrated approaches to learning and performance. Routledge.
- Hoffman, M. D., & Nahikian-Nelms, M. (2023). Physical Education: An Academic and Professional Approach. United States: Human Kinetics.
- Hopper, T. (2022). Introduction to Physical Education: Embracing Technology. McGraw-Hill Education.
- <https://basicneedsghana.org/2020/02/07/shep-coordinators-undergo-facilitators-training>
- <https://learn.EnglandFootball.com/articles-and-resources/coaching/resources/2022/What-are-the-principles-of-football>
- <https://passport.world.rugby/injury-prevention-and-risk-management/rugby-ready/principles-of-play/>

- <https://safetyculture.com/topics/food/handling/>
- <https://sportnz.org.nz/media/3886/movewell-booklet-1-invasion-games.pdf>
- <https://www.bennionkearny.com/principles-of-invasion-games/>
- <https://www.channelstv.com/2023/10/11/nigeria-handball-premier-league-gets-november-date/handball-premier-league-2/>
- <https://www.istockphoto.com/photos/african-american-male-personal-trainer>
- <https://www.shutterstock.com/search/health-care-ghana>
- <https://www.twinkl.com/teaching-wiki/invasion-games>
- <https://www.un.org/africarenewal/magazine/january-2021/unsung-heroes-africa>
- Hughes, M. T. (2013). Effects of lifestyle on health status. *Virtual Mentor*, 15(4), 286-292.
- Ideal Milk Ghana, Facebook (2024): https://web.facebook.com/IdealMilkGhana/?_rdc=1&_rdr
- International Association of Athletics Federations (2019). IAAF competition rules 2019-2020. World Athletics.
- International Handball Federation (IHF) Officiating Guidelines: Emphasises rule enforcement and positioning in dynamic games (ihf.info).
- International Netball Federation (2021). Rules of Netball. (worldnetball.sport)
- International Organisation for Migration (2024); IOM Ghana Marks World Mental Health Day; <https://ghana.iom.int/news/iom-ghana-marks-world-mental-health-day>
- ISSA; <https://www.issaonline.com/blog/post/exercises-to-improve-speed-training-that-benefits-everyone>
- Johnson, A., & Lee, M. (2024). Innovations in Health Education: Career Pathways and Professional Development. The Netherlands: Elsevier.
- Johnson, P. & Turner, K. (2023). Data Analytics in Sports Education: Improving Performance with Technology. Routledge.
- Joint Committee on National Health Education Standards. (2015). National Health Education Standards: Achieving Excellence. (3rd ed.).
- Juniper Publishers. (2017, March). Resisted and assisted training for Sprint Speed: Brief review. *Journal of Physical Fitness, Medicine & Treatment in Sports*. Retrieved February 2, 2023, from <https://juniperpublishers.com/jpfmts/pdf/JPFMTS.MS.ID.555554.pdf>
- Karon, I. (2024). How I use technology to keep PE relevant in the 21st century. eSchool News. <https://www.eschoolnews.com>
- Kim, D. Y., & Smith, R. (2024). Preparing for Health Education Careers: A Guide for Educators. Germany: Springer.
- Knudson, D. (2023). Fundamentals of Biomechanics (4th Ed.). Germany: Springer.
- Korkiakangas, E., & Heikkilä, J. (2023) Injury Prevention and Rehabilitation in Youth Sport, Finland, Elsevier
- Launder, A. G., & Piltz, W. (2006). Play Practice: The Games Approach to Teaching and Coaching Sports (2nd ed.).

- Lehmann, M. (2019). *Officiating Track and Field: A Practical Guide*. United States: Coaches Choice.
- Light, R. L., & Evans, J. R. (2010). The Impact of Game Sense Pedagogy on Australian Rugby Coaches' Practice: A Question of Pedagogy. *Physical Education and Sport Pedagogy*, 15(2), 103-115.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705-717.
- Lumpkin, A. (2024). *Introduction to Physical Education, Exercise Science, and Sport*. United States: McGraw-Hill Education.
- Mama Hono (2022): <https://mamahono.com/2022/02/02/6-reasons-you-should-switch-to-an-organic-diet/>
- Marín-Suelves, D., Ramón-Llin, J., & Gabarda, V. (2023). The role of technology in physical education teaching in the wake of the pandemic. *Sustainability*, 15(11), 8503. <https://doi.org/10.3390/su15118503>
- Martens, R. (2012). *Successful Coaching* (4th ed.). Champaign: Human Kinetics.
- Martens, R. (2012). *Successful Coaching* (4th ed.). Human Kinetics.
- Martens, R. (2019). *Successful coaching* (4th ed.). Human Kinetics.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2022). *Exercise physiology: Nutrition, energy, and human performance* (9th ed.). Wolters Kluwer.
- McCracken, R. (2024). *The Biology of Kindness*. Cambridge, MA, USA: MIT Press
- McGinnis, P. (2020). *Biomechanics of Sport and Exercise* (4th Ed.). United States: Human Kinetics.
- McGregor, D., & Morrison, A. (2022). *Sports Injury Prevention: A Guide for Coaches and Teachers*, UK, Routledge.
- McKenzie, J. F., Pinger, R. R., & Kotecki, J. E. (2021). *An Introduction to Community & Public Health*. Jones & Bartlett Learning.
- Mechikoff, R. (2024). *A History and Philosophy of Sport and Physical Education: From Ancient Civilizations to the Modern World*. United States: McGraw-Hill Education.
- Mental Health Hub Ghana; https://web.facebook.com/MentalHealthHubGhana/?_rdc=1&_rdr
- Mindler. (2024). Changing trends and careers in physical education. Mindler. <https://www.mindler.com>
- Mitchell, S., Oslin, J., & Griffin, L. (2020). *Teaching Sport Concepts and Skills: A Tactical Games Approach* (4th ed.). Human Kinetics.
- Modern Ghana (2016); Mental Health: Ghana is Sitting on a Time Bomb – Akwasi Osei; <https://www.modernghana.com/news/723661/mental-health-ghana-is-sitting-on-a-time-bomb-akwasi-osei.html>
- Morrison, S., & Ratel, S. (2021). *Science of track and field athletics: Theory and practice*. Routledge.
- Murray, T. (2020). *Invasion Games: The Principles of Play*. London: Routledge.

- myjoyonline.com (2022): <https://www.myjoyonline.com/hoop-dreams-ghanas-search-for-a-global-basketball-icon/?myjo>
- National Center for Biotechnology Information; Contraception and Reproduction: Health Consequences for Women and Children in the DevelopingWorld; <https://www.ncbi.nlm.nih.gov/books/NBK235069/>
- National Coalition for Sexual Health (2024); Sexual Health; <https://nationalcoalitionforsexualhealth.org/sexual-health/what-is-sexual-health>
- National Education Association. (2023). Technology's Influence on Physical Education: Benefits and Challenges. NEA Research Digest, 23(1), 8-12.
- National Institute of Child Health and Human Development (2017): <https://www.nichd.nih.gov/health/topics/contraception/conditioninfo>
- National Institute of Health: <https://www.nichd.nih.gov/health/topics/contraception/conditioninfo>
- Naylor, S., & Naylor, M. (2018). Track and Field Coaching Essentials. United States: Human Kinetics.
- NCHEC. (2023). Role Delineation and Professional Responsibilities of Health Educators.
- Nihat, O., Nordin, M., Goldsheyder, D., & Leger, D. (2017). Fundamentals of Biomechanics: Equilibrium, Motion, and Deformation (3rd Ed.). United States: Springer.
- Physiovisuals; <https://physiovisuals.com/squat/>
- Pill, S. (2016). Implementing Game Sense Coaching in Australian Football Through Action Research. Sports Coaching Review, 5(1), 57-73.
- Reilly, T., & Williams, A. M. (2020). Science and soccer: Developing elite performers (4th ed.). Routledge.
- Sallis, J. F., Floyd, M. F., Rodríguez, D. A., & Saelens, B. E. (2006). Role of built environments in physical activity, obesity, and cardiovascular disease. Circulation, 125(5), 729-737.
- Sands, W. A., McNeal, J. R., & Stone, M. H. (2019). Principles and practice of resistance training for sports performance. Human Kinetics.
- World Athletics. (2021). World Athletics officiating handbook. World Athletics.
- Sharma, M., & Majumdar, P. K. (2009). Occupational lifestyle diseases: An emerging issue. Indian Journal of Occupational and Environmental Medicine, 13(3), 109–112.
- Shrier, I. (2023). Physical Injuries in Sport: Prevention and Management, Canada, Wiley-Blackwell.
- Smith, A., & Jones, K. (2022). The Role of Technology in Physical Education. Journal of Health and Physical Education, 34(2), 45-49.
- Smith, J., & Brown, L. (2023). Innovations in PE and Sport: Leading with Technology in Education. Wiley.
- SOPHE. (n.d.). Code of Ethics for the Health Education Profession. www.sophe.org
- Sporting Opportunities (2025): <https://sportingopportunities.com/trip/netball-coaching-playing-project-ghana/>
- Springer Nature. (2023). Estimation of body segment inertial parameters.

- Starkes, J. L., & Deakin, J. M. (2014). Sport Psychology: A Canadian Perspective. Canada: Pearson Canada.
- Stock.adobe.com(2024):https://stock.adobe.com/search?k=mussel&asset_id=5105401
- Synnefa: <https://help.synnefa.io/articles/genetically-modified-organisms-and-their-effects-gmos>
- Tabish, S. A. (2017). Lifestyle diseases: Consequences, characteristics, causes, and control. *Journal of Cardiology Current Research*, 9(3), 1-6.
- Teach PE. (2019). Angular velocity and angular acceleration.
- Teague, L. M., & Mackenzie, S. L. C. (2024). Your Health Today: Choices in a Changing Society. New York, USA: McGraw-Hill.
- The Pharmaceutical Journal (2021); Long-acting Reversible Contraception; <https://pharmaceutical-journal.com/article/ld/long-acting-reversible-contraception>
- Thompson, S., & Reynolds, K. (2024). Foundations of Health Education: Career Paths and Opportunities. United States: Wiley.
- Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults' participation in physical activity: Review and update. *Medicine and Science in Sports and Exercise*, 34(12), 1996-2001.
- Turner, S. & Lopez, M. (2024). Advanced Digital Tools in Physical Education: Shaping Future Leaders in Sport. SAGE Publications.
- Uchida, T. K., & Delp, S. L. (2021). Biomechanics of Movement: The Science of Human Motion. United States: The MIT Press.
- United Through Sport (2014): <https://www.unitedthroughsport.org/uts-ghana-academy-defeats-right-to-dream/>
- Warburton, D. E. R., Nicol, C. W., & Bredin, S. S. D. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, 174(6), 801-809.
- Websites and Online Resources: FIFA Laws of the Game: Comprehensive guide on soccer rules and officiating principles (fifa.com).
- Williams, C. & Anderson, R. (2021). The Role of Technology in Sports and Fitness Education. Pearson Education.
- Women on Top (2025): <https://www.womenontop.co.za/csi/the-time-for-netball-is-now/>
- World Health Organisation (2024): Mental Health: <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
- World Health Organization (2024); Ghana: WHO Special Initiative for Mental Health;<https://www.who.int/initiatives/who-special-initiative-for-mental-health/ghana>
- World Health Organization; Sexual Health; https://www.who.int/health-topics/sexual-health#tab=tab_2
- World Netball Umpiring Manual: Focuses on rules, game management, and umpire movement (worldnetball.sport).
- www.who.int/activities/promoting-safe-food-handling
- www.who.int/news-room/fact-sheet/detail/food-safety

