

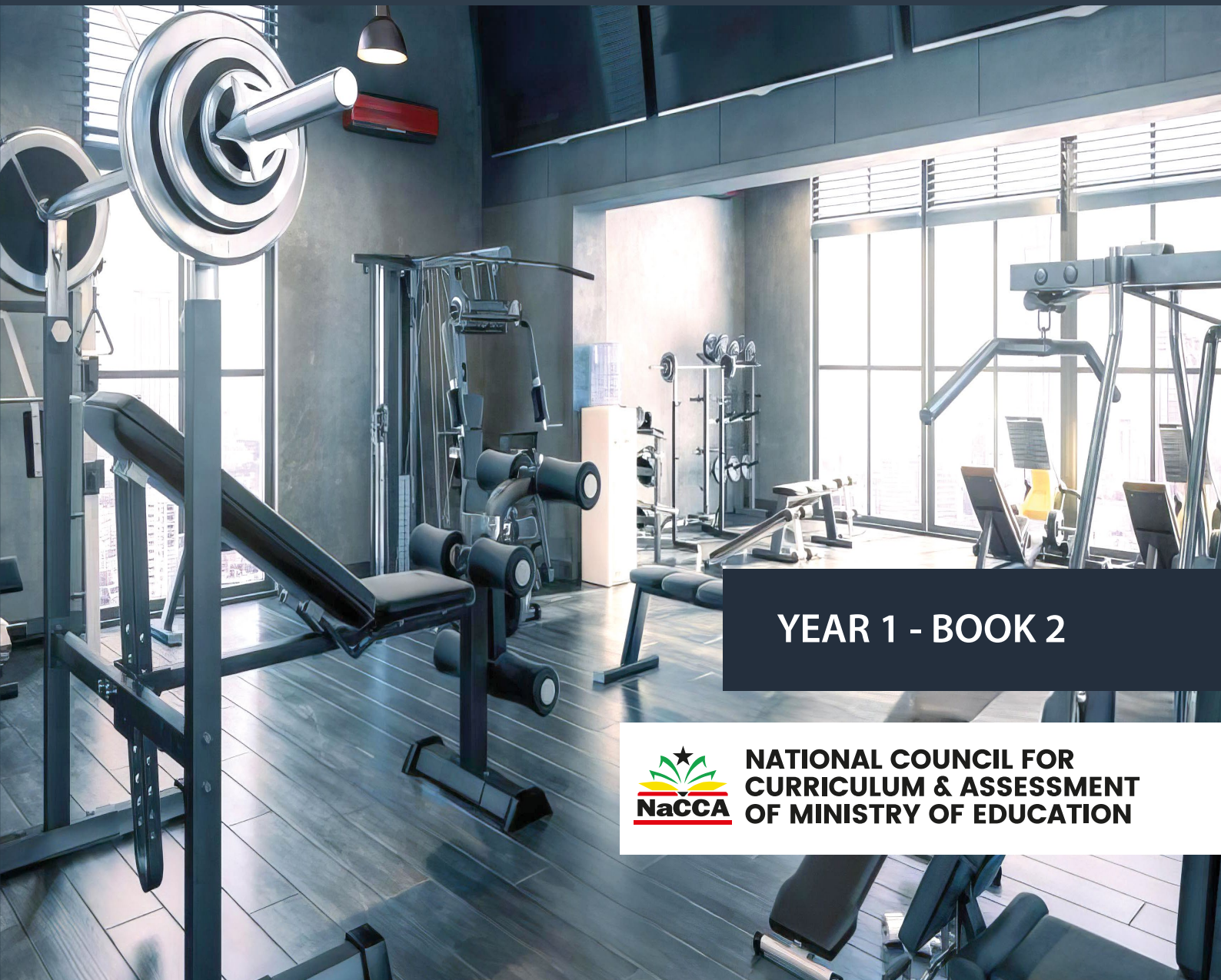


MINISTRY OF EDUCATION

# Physical Education and Health (Elective)

## For Senior High Schools

### TEACHER MANUAL



YEAR 1 - BOOK 2



**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 One - Book Two



**NATIONAL COUNCIL FOR  
CURRICULUM & ASSESSMENT  
OF MINISTRY OF EDUCATION**

## PHYSICAL EDUCATION AND HEALTH (ELECTIVE) TEACHER MANUAL

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# INTRODUCTION

The National Council for Curriculum and Assessment (NaCCA) has developed a new Senior High School (SHS), Senior High Technical School (SHTS) and Science, Technology, Engineering and Mathematics (STEM) Curriculum. It aims to ensure that all learners achieve their potential by equipping them with 21<sup>st</sup> 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 Book Two of the Teacher Manual for Physical Education and Health (Elective) covers all aspects of the content, pedagogy, teaching and learning resources and assessment required to effectively teach Year One of the new curriculum. It contains information for the second 12 weeks of Year One. Teachers are therefore to use this Teacher Manual to develop their weekly Learning Plans as required by Ghana Education Service.

Some of the key features of the new curriculum are set out below.

## Learner-Centred Curriculum

The SHS, SHTS, and STEM curriculum places the learner at the center of teaching and learning by building on their existing life experiences, knowledge and understanding. Learners are actively involved in the knowledge-creation process, with the teacher acting as a facilitator. This involves using interactive and practical teaching and learning methods, as well as the learner's environment to make learning exciting and relatable. As an example, the new curriculum focuses on Ghanaian culture, Ghanaian history, and Ghanaian geography so that learners first understand their home and surroundings before extending their knowledge globally.

## Promoting Ghanaian Values

Shared Ghanaian values have been integrated into the curriculum to ensure that all young people understand what it means to be a responsible Ghanaian citizen. These values include truth, integrity, diversity, equity, self-directed learning, self-confidence, adaptability and resourcefulness, leadership and responsible citizenship.

## Integrating 21<sup>st</sup> Century Skills and Competencies

The SHS, SHTS, and STEM curriculum integrates 21<sup>st</sup> Century skills and competencies. These are:

- **Foundational Knowledge:** Literacy, Numeracy, Scientific Literacy, Information Communication and Digital Literacy, Financial Literacy and Entrepreneurship, Cultural Identity, Civic Literacy and Global Citizenship
- **Competencies:** Critical Thinking and Problem Solving, Innovation and Creativity, Collaboration and Communication
- **Character Qualities:** Discipline and Integrity, Self-Directed Learning, Self-Confidence, Adaptability and Resourcefulness, Leadership and Responsible Citizenship

## Balanced Approach to Assessment - not just Final External Examinations

The SHS, SHTS, and STEM curriculum promotes a balanced approach to assessment. It encourages varied and differentiated assessments such as project work, practical demonstration, performance assessment, skills-based assessment, class exercises, portfolios as well as end-of-term examinations and final external assessment examinations. Two levels of assessment are used. These are:

- **Internal Assessment (30%)** – Comprises formative (portfolios, performance and project work) and summative (end-of-term examinations) which will be recorded in a school-based transcript.
- **External Assessment (70%)** – Comprehensive summative assessment will be conducted by the West African Examinations Council (WAEC) through the WASSCE. The questions posed by WAEC will test critical thinking, communication and problem solving as well as knowledge, understanding and factual recall.

The split of external and internal assessment will remain at 70/30 as is currently the case. However, there will be far greater transparency and quality assurance of the 30% of marks which are school-based. This will be achieved through the introduction of a school-based transcript, setting out all marks which learners achieve from SHS 1 to SHS 3. This transcript will be presented to universities alongside the WASSCE certificate for tertiary admissions.

### **An Inclusive and Responsive Curriculum**

The SHS, SHTS, and STEM curriculum ensures no learner is left behind, and this is achieved through the following:

- Addressing the needs of all learners, including those requiring additional support or with special needs. The SHS, SHTS, and STEM curriculum includes learners with disabilities by adapting teaching and learning materials into accessible formats through technology and other measures to meet the needs of learners with disabilities.
- Incorporating strategies and measures, such as differentiation and adaptative pedagogies ensuring equitable access to resources and opportunities for all learners.
- Challenging traditional gender, cultural, or social stereotypes and encouraging all learners to achieve their true potential.
- Making provision for the needs of gifted and talented learners in schools.

### **Social and Emotional Learning**

Social and emotional learning skills have also been integrated into the curriculum to help learners to develop and acquire skills, attitudes, and knowledge essential for understanding and managing their emotions, building healthy relationships and making responsible decisions.

### **Philosophy and vision for each subject**

Each subject now has its own philosophy and vision, which sets out why the subject is being taught and how it will contribute to national development. The Philosophy and Vision for Physical Education and Health (Elective) is:

**Philosophy:** The Philosophy underpinning the secondary school physical education and health curriculum is to provide opportunities for every learner to develop their potential to the fullest within a conducive environment supported by skilled teachers. Every learner needs to be equipped with skills and competencies for lifelong healthy living and to be able to further their education or proceed to the world of work.

**Vision:** The vision of the SHS physical education and health curriculum is to prepare learners equipped with relevant skills and competencies to progress and succeed in further studies, the world of work and adult life. It is aimed at equipping all learners with the 21st Century skills and competencies required to be responsible citizens and life-long learners. Young people will therefore be prepared to become effective, engaging, and responsible citizens. This will enable them to contribute to the ongoing national physical activity and sport for health development to support the nation's economy and well-being.

## SUMMARY SCOPE AND SEQUENCING

| S/N          | STRAND                       | SUB-STRAND                                 | YEAR 1    |           |           | YEAR 2    |           |           | YEAR 3    |           |           |
|--------------|------------------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|              |                              |  | CS        | LO        | LI        | CS        | LO        | LI        | CS        | LO        | LI        |
| 1.           | Health Education             | Health and Wellness                        | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 3         |
|              |                              | Nutrition and Diet in Health               | 1         | 1         | 3         | 1         | 1         | 3         | 1         | 1         | 3         |
|              |                              | Common Human Diseases                      | 1         | 1         | 3         | 1         | 1         | 3         | 1         | 1         | 3         |
| 2.           | Physical Education           | Physical Activity for Healthy Living       | 1         | 1         | 3         | 1         | 1         | 2         | 1         | 1         | 3         |
|              |                              | Training Principles for Sports Performance | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
|              |                              | Scientific Bases of Physical Activity      | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
| 3.           | Academic and Career Pathways | Health Education Pathways                  | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
|              |                              | Physical Education Pathways                | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
|              |                              | Sports Excellence Pathways                 | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
|              |                              | Coaching and Officiating of games          | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
|              |                              | Coaching and Officiating of athletics      | 1         | 1         | 2         | 1         | 1         | 2         | 1         | 1         | 2         |
| <b>Total</b> |                              |  | <b>11</b> | <b>11</b> | <b>25</b> | <b>11</b> | <b>11</b> | <b>24</b> | <b>11</b> | <b>11</b> | <b>26</b> |

### Overall Totals (SHS 1 – 3)

|                     |           |
|---------------------|-----------|
| Content Standards   | <b>33</b> |
| Learning Outcomes   | <b>33</b> |
| Learning Indicators | <b>75</b> |



## SECTION 4: TRAINING PRINCIPLE FOR SPORTS PERFORMANCE

Strand: **Physical Education**

**Sub-Strand:** Training Principles for Sports Performance

**Learning Outcome:** *Discuss the training principles of sports performance*

**Content Standard:** Demonstrate knowledge and understanding of the principles in sports performance

### INTRODUCTION AND SECTION SUMMARY

In this section we will enhance psychomotor, cognitive, and affective learning through physical activity and movement exploration to promote health, physical fitness and sports excellence. This enables learners to enjoy and succeed in many kinds of physical activity including the development of a wide range of skills and the ability to use tactics, strategies, principles and compositional ideas to perform successfully. The section covers interrelated areas including training principles and the application of the training principles for sports performance. These focus on improving learners understanding and application of the training principles for conditioning towards participation in organised sports performance.

The weeks covered by this section include the following:

**Week 12:** Explain the training principles for sports performance

**Week 13:** Apply the training principles for sports performance

### SUMMARY OF PEDAGOGICAL EXEMPLARS

Teachers are expected to use appropriate teaching approaches to enhance the attainment of the content by learners. The following approaches are proposed for adaptation. The use of think-pair-share, group work, collaborative learning, etc. to engage learners in the various learning tasks of the lesson. The use of ability, mixed-ability, mixed-gender and gender groupings where necessary in both theory and practical sessions should be appropriately applied taking into consideration, the nature of the activity involved. Special attention should also be given to learners with additional needs such as social emotional needs (SEN), hearing impairment, speech impairment, etc. for them to benefit from the lesson. Encourage learners to respect individual differences, (beliefs, religions, abilities, temperaments, cultures, etc.).

### ASSESSMENT SUMMARY:

Learners' achievement in a lesson delivery is essential, this is measured through assessment. Teachers are expected to employ appropriate assessment modes to achieve this. The following are suggested modes for adaption. They include:

Assessment based on Recall in which learners reproduce key concepts/information such as what the type of training and training principles are. It can be presented be orally or in writing for differing categories of learners.

Assessment based on Skills of Conceptual Understanding in which learners describe or explain and provide examples of training principles as their response. This can also be presented orally or writing for differing categories of learners.

In addition, assessment based on Strategic Reasoning should be employed. This involves learners thinking strategically, synthesising and creating new ideas, activities, plans etc. out of what they have learned. For example, using any or some of the training principles to design a training programme,

**WEEK 12**

**Learning Indicator:** *Explain the training principles for sports performance*

**Theme or Focal Area:** **Identify and analyse the concept of sports training principles for sports performance**

### Training Principles For Sports Performance

#### a. Concept of sports training principles

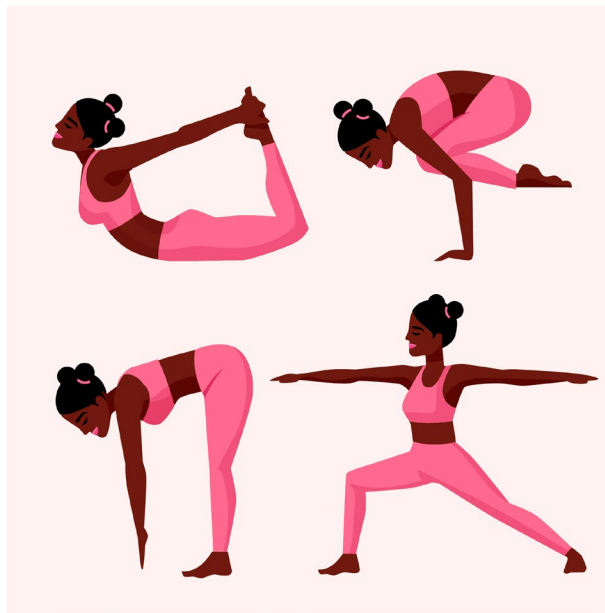
The process of preparing athletes based on scientific principles that are aimed at improving and maintaining higher performance capacity in different sports activities.

#### b. Types of sports training

- i. **Aerobic training:** Training that strengthens the heart and lungs and improves muscle function. This includes endurance type exercises that increases heart and breathing rate over a sustained period e.g. jogging, cycling, swimming, etc.
- ii. **Anaerobic training:** A short, intense burst of high-intensity physical activity, which is fueled by energy stored within the muscles. e.g. jumping, sprinting, heavy weightlifting etc.
- iii. **Strength training:** Training that is performed to improve an athlete's strength e.g. push-ups, sit-ups, weightlifting etc.
- iv. **Flexibility training:** Training that aims to increase a joint's range of motion (ROM) e.g. stretching such as the figure of four stretch, sit and reach, etc.

**Note:** There are four general methods of stretching used to develop flexibility:

- Static
- Ballistic
- Proprioceptive neuromuscular facilitation (PNF)
- Dynamic



**Fig. 12.1:** *Dynamic stretching*

### c. Methods of Sports Training

- i. **Continuous training:** Training that is designed to increase endurance. It involves completing a set number of repetitions at a low intensity, with very little or no rest between repetitions.
- ii. **Circuit training:** A form of body conditioning that involves endurance training, resistance training, high-intensity aerobics, and exercises performed in a circuit.
- iii. **Interval training:** A type of training that involves alternating between high and low-intensity exercises.
- iv. **Plyometric training:** A high-intensity training used to improve an athlete's explosiveness. It involves a series of rapid and repetitive movements that help to increase the power and speed of the athlete.
- v. **Flexibility training:** A planned set of exercises that can gradually help expand the range of motions of a joint or set of joints.
- vi. **Weight training:** The use of weights to strengthen and tone the muscle's mass and improve strength.

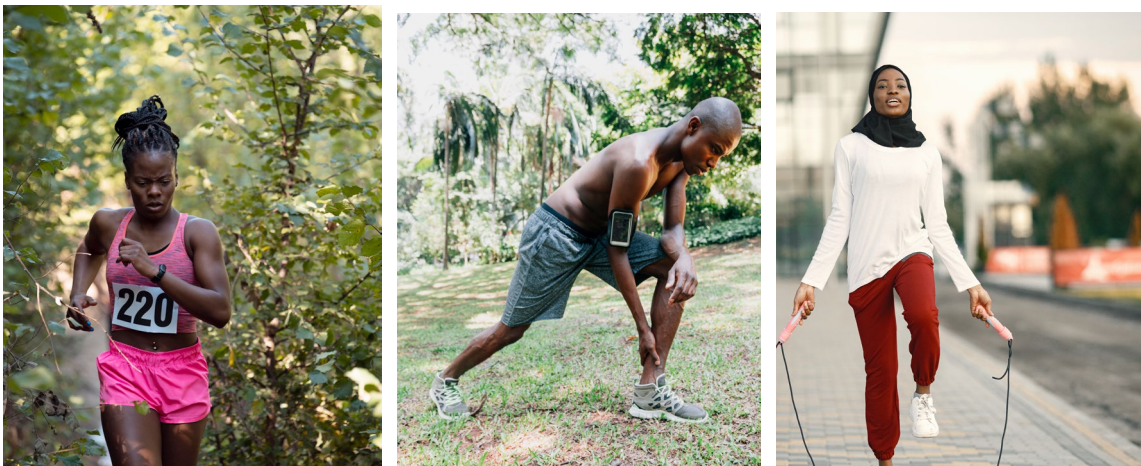
### d. Sports training principles

To get the best out of training the trainee must apply the basic principles of training. These include overload, reversibility, progression, individualisation, periodisation and specificity.

- i. **Overload:** To progress and improve *fitness*, the trainee must put their body under additional stress. Applying this training principle will cause long-term adaptations, enabling the body to work more efficiently to cope with the higher level of performance.

**Note:** Overloading can be achieved by following the acronym **FITT – Frequency, Intensity, Time and Type as a guide.**

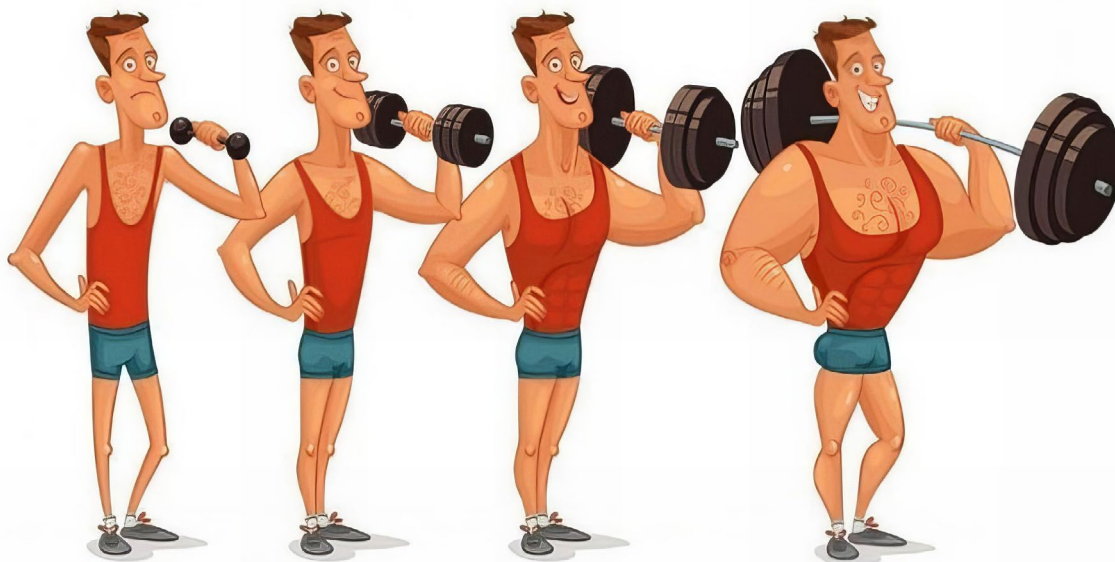
- ii. **Specificity:** Relates to the type of training that is specific to the individual and their chosen sport. The athlete predominantly trains the energy system which they use. e.g. A long distance runner would not train on weightlifting but extensive running, skipping, stairs climbing etc. which will improve the cardiorespiratory endurance.



**Fig. 12.2:** *The principle of specificity (for long distance running)*

- iii. **Reversibility:** If training is not maintained the trainees can lose what they have gained. If they stop training, then the improvements made will be reversed. So, if they do not train for a period, or reduce the amount they train, they may not be able to resume training to the same level as before.

- iv. **Individualisation:** All individuals are unique in their exercise programming needs. Personal, environmental and behavioral factors should be considered and assessed when planning to engage in a physical sports training regimen (American College of Sports Medicine, 2013).
- v. **Progression:** With this principle, a greater than normal stress or load on the body is required for training adaptation to take place. The body will adapt to this stimulus. Once the body has adapted then a higher stimulus is required to continue the change. For a muscle to increase strength, it must be gradually stressed by working against a load greater than it is used to.



**Fig. 12.3:** *The principle of progression*

- vi. **Adaptation:** How the body ‘programmes’ muscles to remember particular activities, movements, or skills. By repeating that skill or exercise, the body adapts to the stress and the skill becomes easier to perform.

### Learning Tasks

1. Identify the types of sports training.
2. Describe the methods of training.
3. Discuss and prepare a presentation on the training principles for sports performance and present in class.

### Pedagogical Exemplars

1. **Think-Pair-Share:** Engage learners to think-pair-share their ideas on types of sports training and note down a summary. Each pair should then share their summary with the whole class. The levels and needs of all learners should be taken into consideration such that they are paired in mixed-ability groups where:
  - a. Learners who can think and provide substantial ideas are motivated to do so.
  - b. Learners who can provide a limited number of ideas are encouraged to do so
  - c. Learners who will need some additional assistance are support by the teacher or their classmates to contribute their ideas.

2. **Group Work:** Engage learners in mixed-ability and gender groups to research from the internet, books, and other available sources. Learners should gather information about methods of sports training and write them in to their jotters. The levels and needs of all learners should be taken into consideration such that:
  - a. Learners who can use multiple search engines and other sources to find the information and compare the outcomes for authentic results are encouraged to do so.
  - b. Learners who can use only one source of their choice to search for the information are also encouraged in that effort.
  - c. Learners who need assistance with adaptive platforms, website links and/or materials that take them directly to the information source are given such support by the teacher or by their colleagues.
  
3. **Collaborative Learning:** Place learners in mixed groupings to discuss and prepare a presentation on the training principles for sports performance. Groups present for whole class discussion. Again, the various levels and needs of the learners should be taking into consideration such that:
  - a. Learners who can prepare and present orally with written evidence adding pictures, diagrams, videos, practical demonstrations etc. and, use PowerPoint (or similar) where available in their presentations for better understanding are encouraged to do so.
  - b. Learners who can prepare and present orally with written evidence but without pictures, diagrams, videos, practical demonstrations etc. are motivated to do so.
  - c. Learners who require assistance to prepare and present either orally or written with guided outlines, templates, images, charts or diagrams to help them understand and organise their thoughts or the content for the presentation are supported in that regard by the teacher or their colleagues.

## Key Assessment

### Level 1:

1. State at least two types of sports training.
2. Identify at least two methods used to develop flexibility.

### Level 2:

3. Describe at least three principles of training for sports performance.
4. Explain at least two training elements an athlete can follow to achieve the training principle of overload.

### Level 3:

5. Using at least two principles of training for sports performance, describe with examples how an athlete can improve their muscle strength through strength training.
6. Design a concept map with the FITT acronym of the principle of overload in sports training using practical examples.

**WEEK 13**

**Learning Indicator(s):** *Apply the training principles for sports performance*

**Theme or Focal Area:** **Application of training principles**

### Application of Training Principles

#### Overload

The principle of overload is necessary to make gains in fitness and athletic performance. It increases muscle hypertrophy and boosts the growth of lean muscle mass, which helps athletes obtain results from their workout.

The following FITT (Frequency, Intensity, Time and Type) approach is applied to address the overload principle:



**Fig. 13.1:** *Principle of Overload*

- i. **Frequency (how often):** Increasing the number of times you train per week (3 – 5 days a week) or the number of repetitions you perform.
- ii. **Intensity (how hard):** Increasing the difficulty or intensity of the exercise you do by varying between light, moderate and vigorous intensity activities. For example, running a kilometre in 5 minutes instead of 10 or 15 minutes or increasing the load of an object you are working with.
- iii. **Time (duration or how long):** Increasing the length of time that you are training, for example, cycling for 60 minutes instead of 30.
- iv. **Type (what activity):** Increase the difficulty of the training you are doing. For example, with activities for cardiorespiratory endurance, progress from walking to jogging and to running. For muscular strength, progress from push-ups to free weights etc.

#### Variables of training overload

- i. **External load:** External load refers to increasing the intensity or difficulty of training by using factors or devices that are not from the body. External load is achieved through various methods that involve additional equipment or environmental changes.  
This is determined by the organisation, quality and quantity of exercise. For instance, external load in resistance training is the amount of weight lifted. Total work done, distance covered or the achieved velocity are other examples.
- ii. **Internal load:** This refers to responses within the body resulting from physical activity, exercise or stress. It determines how the body reacts to external stressors or loads and can provide insights into the intensity and impact of training sessions. In simple terms, it refers to how your body reacts to an exercise from within.

Specific external load creates a specific internal load in the body (termed as psychophysiological response). Heart rate, skin colour, sweating, genetics, nutrition, lactate threshold, hydration, and sleep are some examples of internal load.

### Applications of training overload

- i. **Overload through weight increases:** This refers to gradually increasing the stress placed on muscles by adding more weight or resistance to exercises.

If an athlete is doing triceps extensions with a weight of 60 pounds. To help them progress, increase the weight to 65 pounds for a few weeks. Once that feels easy to them, increase the weight to 70 pounds. Continue increasing the weight in 5-pound increments, making these increases every 3-4 weeks.

- ii. **Overload through increase in repetition:** This is a training method where the number of times (reps) an athlete performs a given exercise is progressively increased.

If an athlete is doing squats, have him/her do 8 to 10 squats. Increase their repetition range from 10 to 12. Next, increase it from 12 to 15. Once they are doing the desired number of repetitions, you could start increasing their sets

- iii. **Progression through training session increases:** This refers to gradually increasing the overall volume, intensity or duration of individual training sessions over time to promote fitness improvements.

If athletes hit their plateau, increase the duration of the training session. Instead of working out for 45 minutes, have them exercise for 50 minutes. Then increase this amount to 55 minutes, followed by an hour, etc.

### Benefits of overload in training for fitness/sports performance

- i. Improves aerobic and anaerobic fitness
- ii. Enhances motor coordination and balance
- iii. Increases strength in the knee extensors, plantar flexors, and ankle dorsi-flexors
- iv. Gives greater functional strength in the lower extremities
- v. Enhances manual dexterity

#### Learning Tasks

1. Discuss how the FITT approach is used in the preparation of athletes for a competition.
2. Design a training programme on the principle of overload using the FITT approach for fitness/sports performance and follow it, monitoring progress.
3. Analyse the benefits of applying the principles of overload in training for fitness/sports performance.

### Pedagogical Exemplars

- a. **Collaborative Learning Approach:** Learners in appropriate groupings discuss the FITT approach and how it can be used to achieve the principle of overload. Learners summarise their final points in their jotters. The learning levels and needs of all learners should be taken into consideration as they work in their various groups.
  - i. Give learners the opportunity to lead in aspects or play various roles during the discussion.
  - ii. Learners should be encouraged to explore multiple search tools to gather ample information.



- iii. Learners who can generate more information and contribute effectively should be encouraged to assist their colleagues who will need support.
  - iv. Teachers should pay attention to learners' individual differences.
- b. Activity-Based Learning:** Learners in appropriate groupings design a training programme on the principle of overload using the FITT approach for fitness/sports performance and follow it, monitoring progress. The programme should accommodate both group/class practical sessions and the school's sports team training regime.
- i. Learners who can use multiple search engines and other sources to find appropriate additional guidelines as well as suitable information to design the training programme should be encouraged to do so.
  - ii. Learners who can contribute ideas within their means should be motivated to do so. They should also be encouraged to contribute more by lifting their efforts.
  - iii. Learners who need assistance should be supported to contribute and be active in the group.
  - iv. Encourages learners who can source and share adequate information to support their colleagues who need assistance.
- c. Project-Based Learning:** In this approach, learners in appropriate groups or as a class follow the designed training programme by performing the planned activities based on the principle of overload using the FITT approach. Learners keep records/evidence of their activities and submit them for evaluation in class.
- i. Place learners in mixed-ability and mixed-gender groups.
  - ii. Encourage individual learners to lead the training activities by applying training principles. All learners should have roles to play in the activities.
  - iii. Learners' individual abilities (physical, fitness, health, skills, etc.) should be taken into consideration when leading in the activities.
  - iv. For learners who need assistance with adaptive equipment, a modified mode of participation among other needs should be attended to.
- d. Group-Based Learning:** Learners in appropriate groupings discuss and analyse the benefits of applying the principles of overload in training for fitness/sports performance. The various levels and needs of the learners should be taken into consideration such that:
- i. Learners who can analyse the benefits and present orally as well as written evidence by adding pictures, diagrams, video etc. for better understanding are motivated to do so.
  - ii. Learners who can only mention the benefits and present orally with or without written evidence are also motivated to do so.
  - iii. Learners who require assistance to analyse or mention and present either orally or written with guided support are also supported in that regard by the teacher or their colleagues.

*Note: Be conscious and ensure:*

1. The safety of learners when performing the activities.
2. The special needs of learners are identified (e.g. physically challenged, hearing impaired, speech impaired, etc.) and appropriate support is provided.
3. Learners' Socio-Emotional Learning (SEL) needs are taken care of, by encouraging learners to respect individual differences, beliefs, religions, abilities, temperaments, cultures, etc.
4. The use of other appropriate approaches to engage learners.
5. That learners research and add to the few examples given.

## Key Assessment

### Level 1:

- a. What does the FITT acronym stand for?
- b. Define each of the letters of the FITT acronym.

### Level 2:

- a. Describe the principle of overload in sports training.
- b. Give the differences with examples between the two Ts in the FITT acronym.

### Level 3:

- a. Describe three ways to motivate an adolescent to apply the training principle of overload.
- b. Explain how the FITT approach can be used in a specific training activity to achieve the principle of overload.

### Level 4:

- a. Prepare a training plan to be used by an individual or a group, applying the FITT approach to achieve the principle of overload.
- b. Perform the activities in the plan whether individually or as a group. Monitor progress, take pictures and videos of the performance and submit them for scoring.

## Additional Learning Areas

The following topics should be explored to provide further explanations of the topic:

1. Application of the Principles of Specificity, Individualisation, Progression, Reversibility and Adaptation.
2. Phases in Periodisation Training Cycle.

## Teaching/Learning Resources (From The Curriculum)

Charts/Pictures of Professionals, Course Books, Videos, ICT Tools e.g., Laptops, phones, projectors.

## Reflection And Review

**Sports training:** A process of preparing athletes based on scientific principles.

The principles of sports performance include:

- a. Overload
- b. Reversibility
- c. Progression
- d. Individualisation
- e. Periodisation
- f. Specificity

## References

1. American College of Sports Medicine, (2013). ACSM's guidelines for exercise testing and prescription. Lippincott Williams & Wilkins.
2. Elective SHS / SHTS / STEM Curriculum

3. Hill, J. C. (2010). Aerobic training. In: Madden CC, Putukian M, Young CC, McCarty EC, editors. **Netter's Sports Medicine**. Philadelphia (PA): Saunders/Elsevier; 2010. p. 125–6.
4. <https://pdhpe.net/factors-affecting-performance/how-does-training-affect-performance/types-of-training-and-training-methods/> <https://www.dreamstime.com/photos-images/african-woman-skipping-rope.html>
5. <https://www.leadershipandsport.com/types-of-training-methods-of-training/>
6. <https://www.risephysicaltherapy.com/blog/static-vs-dynamic-stretching/>
7. <https://www.tumblr.com/jiren-87/189356435468/the-milo-of-croton-strength-workout>
8. Verkhoshanky, Y. Verkhoshanky, N. (2011). *Special Strength Training Manual for Coaches*. Rome, Italy: Verkhoshansky SSTM; 2011:274.
9. Current Sports Medicine Reports, (2021). Journals.lww.com. <https://journals.lww.com/acsm-csmr/pages/default.aspx>
10. Hill, J. C. (2010). Aerobic training. In: Madden CC, Putukian M, Young CC, McCarty EC, editors. **Netter's Sports Medicine**. Philadelphia (PA): Saunders/Elsevier
11. <https://castore.com/blogs/journal/the-principles-of-training>
12. <https://www.healthline.com/health/fitness/explosive-workouts#for-power>
13. <https://www.healthline.com/health/principle-of-specificity>
14. Impellizzeri, F. Marcora, S. & Coutts, A. (2019). Internal and External Training Load: 15 Years On. *International Journal of Sports Physiology and Performance*
15. Mala, J., Szivak, T. K. & Kraemer, W. J. (2015). “Improving Performance of Heavy Load Carriage During High-Intensity Combat-Related Tasks”. *Strength & Conditioning Journal*. 37 (4): 43–52. doi:10.1519/SSC.0000000000000136. S2CID 79728541.
16. Murach, K. & Bagley, J. (2015). Less is more: the physiological basis for tapering in endurance, strength, and power athletes. *Sports*. doi:10.3390/sports3030209
17. Rowbottom, D. J. (2000). “References”. In Garrett, William E.; Kirkendall, Donald T. (eds.). *Periodization of Training*. Philadelphia: Lippincott Williams & Wilkins. p. 499. ISBN 9780683034219.
18. Stephen, P. B., Kyle, M. T. & Frank, E. M. (2005). *Designing Resistance Training Programmes to Enhance Muscular Fitness*. Sports Med
19. Verkhoshanky, Y. Verkhoshanky, N. (2011). *Special Strength Training Manual for Coaches*. Rome, Italy: Verkhoshansky SSTM
20. Zatsiorsky, V. M. & Kraemer, W. J. (2004). *Science and Practice of Strength Training*. Champaign, IL: Human Kinetics

## Section Review

In Week 13, the goal is to introduce the fundamental training principles for sports performance, ensuring students understand the key concepts that drive effective training. Focus on principles like specificity, overload, progression, recovery, individualisation, variety and reversibility. Use real-world examples from popular sports to make these principles relatable and engaging. Encourage class discussions where students can share their understanding of these concepts and explore how they are applied in various sports and physical activities. This approach helps students grasp the basics of training principles and lays a solid foundation for future learning.

To accommodate different learning styles and abilities, use a variety of teaching methods such as visual aids, videos and infographics to illustrate key concepts. Group activities can also be useful, allowing students to work together and learn from one another. For students with special needs or different learning levels, offer differentiated instruction to ensure everyone understands the material. By the end of Week 12, students should have a clear understanding of the basic training principles and how they contribute to sports performance, setting the stage for further exploration and application in subsequent lessons.

In Week 13, focus on helping students apply training principles for sports performance through classroom-based activities and discussions. Begin by presenting case studies or real-world scenarios where students can identify how principles like specificity, overload and recovery are used in athletes' training programmes. Encourage group discussions and projects where students design a simple training plan for a chosen sport, integrating these principles. This approach fosters collaboration and allows students to explore the theoretical applications of the concepts in a structured way.

Use a variety of teaching methods to accommodate different learning styles and abilities. Consider showing videos or inviting guest speakers, such as coaches or trainers, to discuss how they apply training principles in practice. Worksheets and classroom discussions can help reinforce understanding and encourage critical thinking.

Ensure the content is accessible to all students, including those with additional needs, by providing additional support or alternative formats where necessary. The goal is to ensure that students can apply the training principles in sports performance through thoughtful analysis and discussion, preparing them for more practical applications in future lessons.

# SECTION 5: HUMAN ANATOMY AND PHYSIOLOGY

Strand: **Physical Education**

**Sub-Strand:** Scientific Bases of Physical Activity

**Learning Outcome:** *Discuss and apply the concepts of human anatomy and physiology in physical activity*

**Content Standard:** Demonstrate knowledge, understanding and application of anatomy and physiology in physical activity

## INTRODUCTION AND SECTION SUMMARY

Human anatomy and physiology play crucial roles in the performance and adaptation to physical activity. A comprehensive understanding of this aspect is essential for optimising performance, preventing injuries and promoting overall health and well-being. By recognising the intricate interplay between the body systems, individuals can tailor their training programmes to effectively achieve their fitness goals. As such, it is important to explore five key aspects such as:

### 1. The anatomy of movement

This deals with the skeletal system that provides structural support and serves as attachment points for muscles during movement. The anatomy of movement also deals with the muscular system which consists of skeletal muscles responsible for generating force and movement. It also includes the joint structure which allows for flexibility and range of motion necessary for various physical activities.

### 2. The physiology of exercise

This deals with the cardiovascular system which facilitates oxygen delivery to working muscles and removes metabolic waste products during exercise. It also comprises the respiratory system which increases oxygen intake and expels carbon dioxide to meet the increased demand for oxygen during physical activity. Finally, it also takes care of energy systems which utilise different energy pathways (anaerobic and aerobic) to produce ATP, the energy currency of the body, during exercise.

### 3. The adaptations to training

This deals with muscular responses that bring about hypertrophy and increased strength in response to resistance training. This also includes cardiovascular adaptation which improves the workings of the heart through increased stroke volume and enhanced blood flow to muscles with aerobic training. Finally, the body's adaptation to training ensures good respiration which enhances lung capacity and efficiency in oxygen uptake with aerobic conditioning.

### 4. The factors that influence performance

One such factor is genetics which influence muscle fibre composition, aerobic capacity and the ability to perform certain types of physical activities. Genetic factors also influence adaptation to exercise leading to optimised performance.

### 5. The aspect of injury prevention and rehabilitation

It focuses on how understanding biomechanics and movement patterns can help prevent injuries during physical activity. This knowledge also helps in developing rehabilitation strategies that focus on restoring function, strength and mobility following injury through targeted exercises.

The weeks covered by this section include the following:

**Week 14:** Discuss the concepts of anatomy and physiology in physical activity

**Week 15:** Apply the concepts of anatomy and physiology in physical activity

### **SUMMARY OF PEDAGOGICAL EXEMPLARS**

In this section, you are expected to use appropriate teaching approaches to promote learners' achievement of the content. This can be facilitated by exploring and applying approaches such as the use of Talk for Learning (TFL), Collaborative Learning, Building on what others say, etc. to engage learners in the various learning tasks of the session. Pedagogical exemplars such as mixed-ability, mixed-gender and gender-based groupings where applicable in both theory and practical sessions should be appropriately applied taking into consideration the nature of the activity involved. Special attention should also be given to learners with additional needs such as social-emotional needs, hearing impairment, speech impairment, etc. to ensure they benefit from the lesson. Encourage learners to respect individual differences (beliefs, religions, abilities, temperaments, cultures, etc.).

### **ASSESSMENT SUMMARY**

Learners' achievement in a lesson delivery is essential, this is measured through assessment. It is expected that teachers employ appropriate assessment modes to achieve this. The following are examples of appropriate modes for adaption in this section. They include:

Assessment based on (Recall) where learners reproduce key concepts/information such as the definition of human anatomy and physiology, the categories of human anatomy etc orally or written for some categories of learners.

Assessment based on Skills of Conceptual Understanding where learners describe or explain and provide examples such as how the skeletal system supports movement, must also be employed. Responses can be delivered orally in writing or a combination of both with presentations for some categories of learners.

In addition to these, assessments based on Strategic Reasoning should be rolled out. This involves exposing learners to think strategically, synthesising and creating new ideas, activities and plans out of what they have learnt. For example, applying the concept of the five aspects (anatomy of movement, physiology of exercise, adaptations to training, factors that influence performance and injury prevention and rehabilitation) in their training regimes to optimise performance.

**WEEK 14**

**Learning Indicator:** *Discuss the concepts of anatomy and physiology in physical activity*

**Theme or Focal Area: Concepts of Anatomy and Physiology in Physical Activity**

**Anatomy and Physiology in Physical Activity**

**Introduction**

The human body is made up of various parts specialised for specific functions. Studying how these various parts are organised and how they function is essential for participation in physical activities and sports.

**a. Concept of anatomy**

Anatomy is the study of structures that make up the body and how those structures relate to each other. It is a branch of natural science and biology, which includes human anatomy, animal anatomy, and plant anatomy.

**b. Branches of human anatomy**

Branches of human anatomy include:

**i. Macroscopic or gross anatomy:**

This anatomy mainly deals with the study of large body parts, those that can be seen with the naked eye e.g. anatomy of the kidney, heart, lungs etc.

Macroscopic or gross anatomy is further classified into:

- *Regional anatomy:* A study of different structures in a particular area.
- *Systemic anatomy:* A study of the body's structures and organisation of the systems.
- *Surface anatomy:* A study of external structures of the human body.

**ii. Microscopic anatomy:**

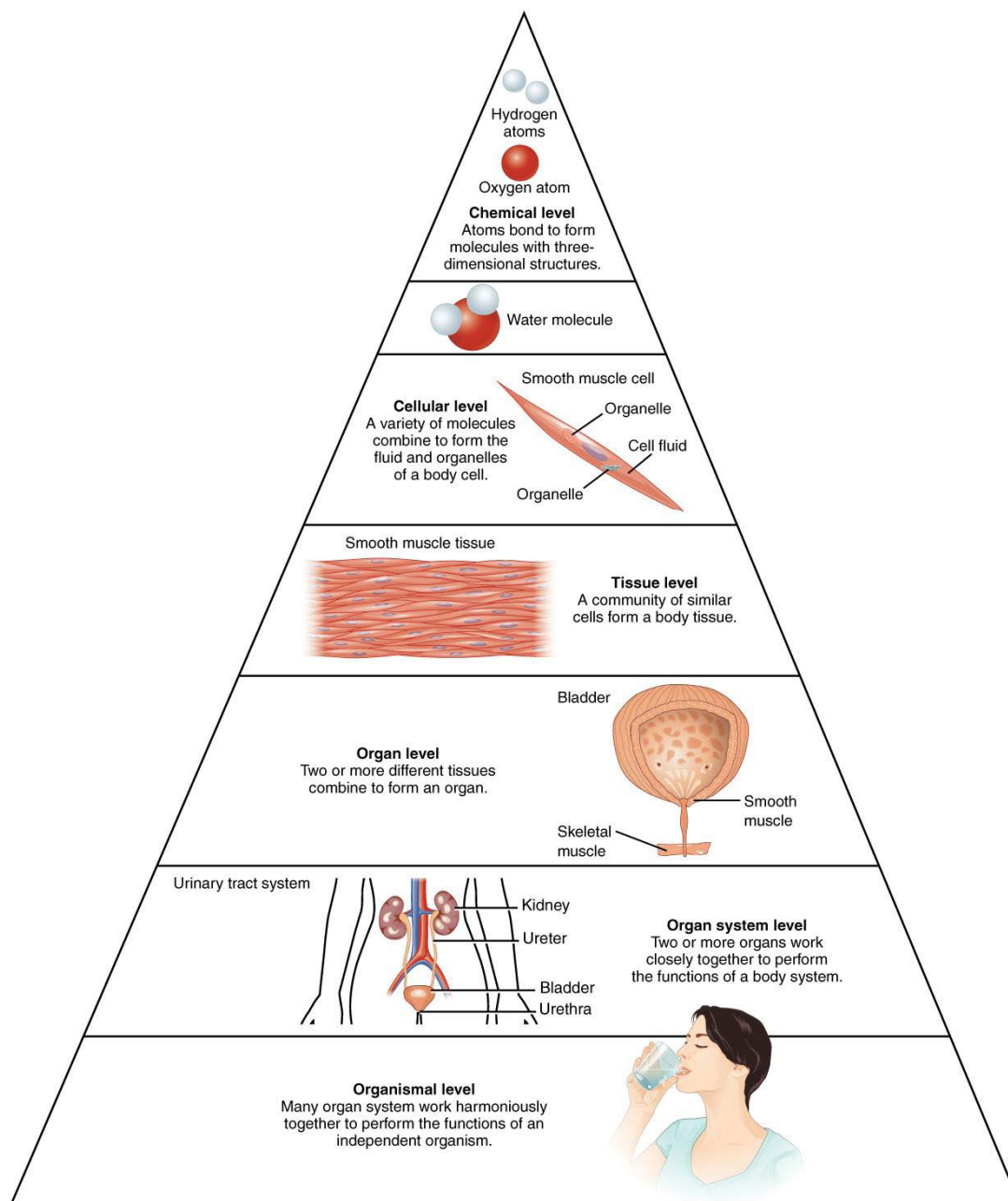
This anatomy mainly deals with the study of very small and minute structures, those that can only be examined through the microscope. An example is the different types of cells.

Microscopic anatomy is further classified into:

- *Cytology:* Which deals with the study of human blood cells.
- *Histology:* Which deals with the study of different tissues in the human body.

**c. Structural organisation of the human body**

Before delving into the different structures and functions of the human body, it is helpful to consider its basic architecture, that is, how its smallest parts are assembled into larger structures. It is convenient to consider the structures of the body in terms of fundamental levels of organisation that increase in complexity, such as subatomic particles, atoms, molecules, organelles, cells, tissues, organs, organ systems and organisms.



**Fig. 14.1:** *The Organisation of the Body Structure*

The four main structures of the human body are:

- i. **Cells:** Cells are the simplest units of living matter that can maintain life and reproduce themselves. The human body, which is made up of numerous cells, begins as a single, newly fertilised cell.
- ii. **Tissues:** Tissues are more complex units than cells. They are an organisation of a great many similar cells with varying amounts and kinds of non-living, intercellular substances between them.
- iii. **Organs:** Organs are more complex units than tissues. Organs are an organisation of several different kinds of tissues so arranged that together, they can perform a special function. For example, the stomach is an organisation of muscle, connective, epithelial and nervous tissues.
- iv. **Systems:** Systems are the most complex of the component units of the human body. A system is an organisation of varying numbers and kinds of organs so arranged that together, they can perform complex functions for the body.



**d. Concept of physiology**

Physiology is the study of how the various systems and organs within the human body function and interact to maintain life and health. It is a branch of natural science and biology which is further classified into:

- i. **Cell physiology:** The study of the functions of cells.
- ii. **System physiology:** The study of the complete functioning of body systems.
- iii. **Comparative physiology:** The study of various characteristics of living organisms
- iv. **Pathophysiology:** The study of dysfunctions and other diseases related to the functioning of the human body systems.
- v. **Exercise physiology:** This is the study of the effects of physical exercise or physical activity on the body's function. This includes research into bioenergetics, biochemistry, cardiopulmonary function, biomechanics, haematology, skeletal muscle physiology, neuroendocrine function, and nervous system function.

**Learning Tasks**

1. Discuss the differences between macroscopic and microscopic anatomy.
2. Examine the structural organisation of the human body.
3. Analyse the differences between anatomy and physiology.

**Pedagogical Exemplars**

- a. **Talk for Learning (TFL):** Learners in mixed-ability and gender groupings use talk for learning to discuss the concept of human anatomy by looking at its definition and the differences between macroscopic and microscopic anatomy. In their discussion, the levels and needs of all learners should be taken into consideration such that:
  - i. Learners are encouraged to provide accurate and adequate information/facts from reliable sources to the discussion.
  - ii. Learners who can contribute to the discussion with a limited amount of ideas/information are also encouraged to do so.
  - iii. Learners who need additional assistance are supported by the teacher or their colleagues to contribute their ideas to the discussion.
- b. **Collaborative Learning:** Engage learners in mixed-ability, gender, etc. groupings to search from relevant sources of information to examine the structural organisation of the human body.
  - i. Learners should be encouraged to use multiple search engines to search from diverse sources for the right information on the structural organisation of the human body. Learners compare the information, discuss and agree on the result which best addresses that aspect of the indicator.
  - ii. Motivate all learners to put in their best by contributing actively to the discussion in whichever capacity they can. Learners who can lead their groups in the discussion should be encouraged to do so. Various roles can be assigned to learners in their various groups to enhance their communication and leadership skills.
  - iii. Learners who need some assistance should be helped by the teacher or their colleagues to participate actively.

- c. Building on What Others Say:** Engage learners to build on what others say and their earlier and previous discussions to analyse the differences/relationship between anatomy and physiology. Ensure that:
- i. Learners explore adequate information from relevant sources such as experts' presentations, journals, magazines, books, the internet, previous discussions etc., and analyse them. Assist learners in summarising the differences/relationship between anatomy and physiology.
  - ii. Learners summarise the concept of human anatomy and physiology in their various groups and present their work for whole class critique to refine and settle on the result.
  - iii. Engage as many learners as possible with various roles to perform in their groups and encourage everyone to participate actively.
  - iv. Encourage learners with higher capabilities to exhibit them by exploring and providing adequate information in their various groups, but not to hijack the group task. Motivate all learners to put in their best in their group work and be willing to perform various roles. Assist learners who require additional support.

*Note: Be conscious and consider:*

1. Learners' individual differences
2. The special needs of learners (e.g. physically challenged, hearing impaired, speech impaired, etc.) and provide appropriate support.
3. Learners' Socio-Emotional Learning (SEL) needs, by encouraging learners to respect individual differences, beliefs, religions, abilities, temperaments, cultures, etc.
4. The use of other appropriate approaches to engage learners.
5. Researching and adding to the few examples given.

## Key Assessment

### Level 1:

- a. Define the following:
  - i. Human anatomy
  - ii. Physiology
- b. Give two examples each for human anatomy and physiology.

### Level 2:

- a. Give two reasons why the study of macroscopic and microscopic anatomy is important in PEH.
- b. Give two examples of each of the following:
  - i. Macroscopic anatomy
  - ii. Microscopic anatomy

### Level 3:

- a. Describe the four main structures of the human body.
- b. Give three reasons why exercise physiology is important in sports training.

**Level 4:** Analyse the importance of the study of human anatomy and physiology to exercise and sports training.

## Additional Learning Areas

Conduct further research in the following areas for more information:

1. The muscular system (skeletal muscle, cardiac or heart muscle and smooth/non-striated muscle).
2. The skeletal system (Bones and connective tissues including cartilage, tendons and ligaments).

3. Basic anatomy and terminology.
4. The anatomical regions of the body.
5. Vital and non–vital organs of the human anatomy,
6. The body cavity.

### **Teaching/Learning Resources (From The Curriculum):**

Charts/pictures of professionals, course books, videos, ICT tools (e.g., laptops, phones, projectors), portfolios, task sheets/assessment reports.

### **References**

1. <https://www.medicalnewstoday.com/articles/320289>
2. Mescher, A. L. & Junqueira, L. C. (2013). Junqueira’s basic histology : text and atlas (Thirteenth ed.). New York. ISBN 9780071807203. OCLC 854567882
3. NaCCA, (2022). Elective SHS / SHTS / STEM Curriculum.
4. Ross, M. H. Wojciech, P. (2011). Histology: a text and atlas: with correlated cell and molecular biology (6th ed.). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins Health. ISBN 9780781772006. OCLC 548651322

**WEEK 15**

**Learning Indicator:** *Apply the concepts of anatomy and physiology in physical activity*

**Theme or Focal Area:** **Application of the concept of anatomy and physiology in physical activity**

### Application of Anatomy and Physiology in Physical Activity

#### Introduction

Human anatomy and physiology are two important areas of study when it comes to physical activities and sports performance. They are sources of knowledge about human body structure and function, which are vital to understanding the effects of exercises on the individual for safety and optimum performance in sports.

#### a. The musculoskeletal system and physical activity

Exercise is about movement and the muscular and skeletal (musculoskeletal) systems are primarily responsible for creating movement. Therefore, the responses and adaptations of the muscular system to exercise are important parts of exercise physiology.

**i. Actions of the skeletal muscles during physical activities:** There are several types of skeletal muscle actions produced during physical activities.

- *Isometric (static) muscle action/contraction:* Isometric muscle action refers to the contraction of a muscle without a change in its length or joint angle. This occurs when tension is developed in the muscle without movement, therefore the muscle origin and insertion do not move and there are no changes in muscle length e.g. holding the body at a plank position, pushing against an immovable object like a wall, squeezing a fully inflated ball without causing a depression on it.
- *Isotonic (Dynamic) muscle actions/contraction:* This refers to muscle contractions where there is a change in muscle length and joint angle, resulting in movement. The two types of isotonic muscles are:
  - *Concentric contraction:* The muscle shortens as it contracts and there is movement at the joint. The muscle produces enough force to overcome the external resistance e.g. when lifting an item toward the shoulder, the bicep muscles contract and shorten.
  - *Eccentric:* The muscle lengthens while performing an action. This happens because the external resistance moves in the direction opposite to the standard concentric (shortening) action e.g. In lifting an item with the hand toward the shoulder (as described in the concentric), the tricep muscles lengthen (extend).
- *Isokinetic (Dynamic) muscle actions:* The muscle actions are either concentric, eccentric or both. It is an action that focuses on controlling the speed of movement so that the muscle contracts at a constant velocity throughout the range of motion. These types of actions can help athletes perform exercises that simulate the speed and sport-specific activities e.g. the use of a resistance band designed for isokinetic training would make a person experience consistent resistance regardless of the speed at which they push the band. Also, a leg press machine with isokinetic capabilities would ensure that the legs move at a constant velocity against the resistance provided by the machine.

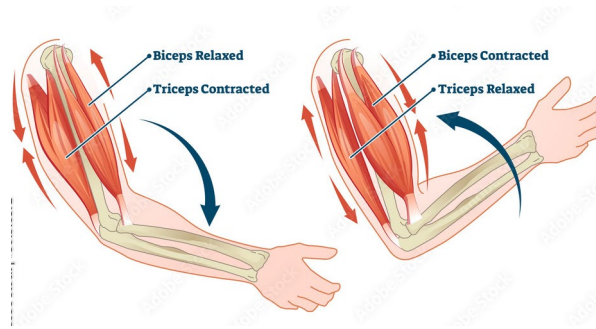


Fig. 15.1: Muscle Contraction

**b. Energy systems in physical activity**

With respect to exercise, metabolism involves how the body generates energy for muscular work. The energy for exercise, in the form of adenosine triphosphate (ATP), is derived from the breakdown of food from the diet. Originally in the form of protein, fat, and carbohydrate, the energy is made available by different enzymatic pathways that break down food and ultimately lead to ATP formation.

**c. Anatomical position**

Anatomical position or standard anatomical position refers to a specific body shape used when describing an individual's anatomy. The standard anatomical position of the human body consists of the body standing upright and facing forward with the legs parallel to each other. The upper limbs or arms, hang at either side and the palms face forward.

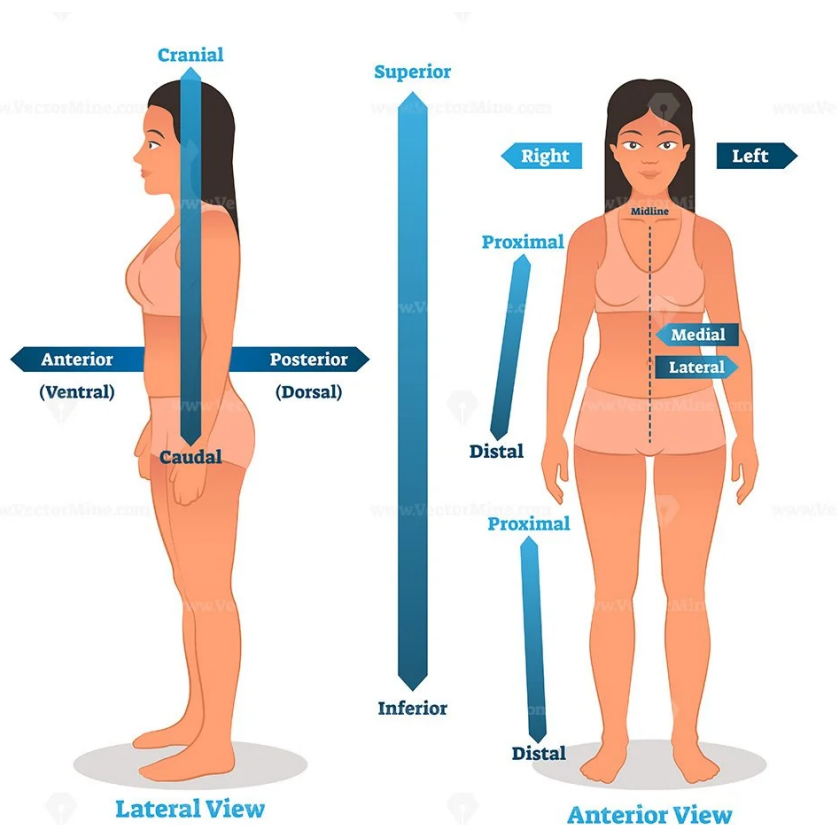


Fig. 15.2: Anatomical position

**d. Anatomical terminologies for describing body structure**

There are three terms used to describe the body structure, namely: Directional Terms, Planes of the Body and Homeostasis.

### i. Directional terms

Directional terms describe the position of the body in relation to other structures or parts of the body.

**Table 15:**

| Anatomical term     | Direction/location  | Example   |
|---------------------|---|---|
| Superior/cranial    | Toward the head end of the body. (Upper)                              | The hand is part of the superior extremity                        |
| Inferior/caudal     | Away from the head (Lower)  | The foot is part of the inferior extremity                        |
| Anterior/ventral    | Front   | The kneecap is located on the anterior side of the leg            |
| Posterior or dorsal | Back  | The shoulder blades are located on the posterior side of the body |
| Medial              | Toward the midline of the body  | The middle toe is located at the medial side of the foot          |
| Lateral             | Away from the midline of the body                                     | The little toe is located at the lateral side of the foot         |
| Proximal            | Toward or nearest the trunk or the point of origin of a part          | The proximal end of the femur joins with the pelvic bone          |
| Distal              | Away from or farthest from the trunk or the point or origin of a part | The hand is located at the distal end of the forearm              |

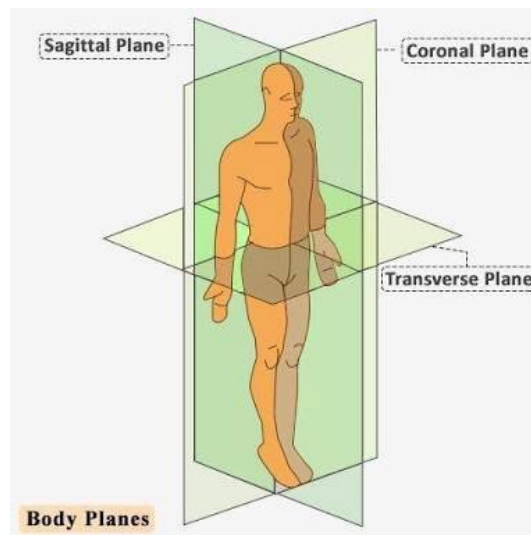
#### **Importance of anatomical position/direction in physical activity and sports**

- It helps us to understand human movement.
- Knowledge of anatomical positions supports procedural training.
- It is useful in general fitness and exercise programmes.
- Understanding anatomical position helps to describe where parts of the body are and the tasks they are performing.
- It helps health workers to understand and explain health problems. This helps them give the right treatment quickly e.g. if an athlete has an inflamed joint, the doctor will be able to describe exactly which joint is affected and what treatment should be given.

### ii. Planes of the body

Anatomical body planes describe how the body moves when engaged in an exercise or other activities. Understanding how the body works can help develop a well-balanced strength. The three anatomical planes are:

- *Coronal Plane (Frontal Plane)*: A vertical plane running from side to side. It divides the body or any of its parts into anterior and posterior portions.
- *Sagittal Plane (Lateral Plane)*: A vertical plane running from front to back. It divides the body or any of its parts into right and left sides.
- *Axial Plane (Transverse Plane)*: A horizontal plane that divides the body or any of its parts into upper and lower parts.



**Fig. 15.3:** *Planes of the human body*

***Movements that happen in the coronal (frontal) plane:*** Movements that occur in the coronal (frontal) plane are lateral or side-to-side. These include:

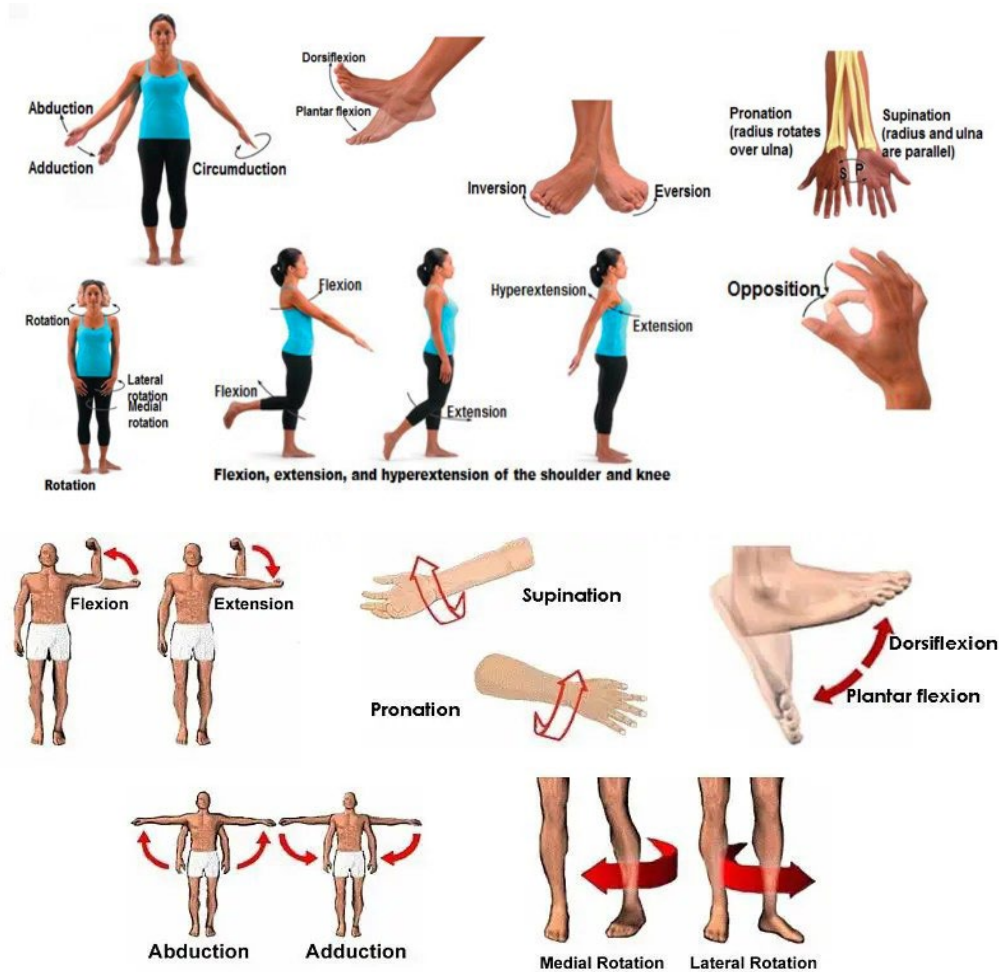
- *Abduction:* Moving your limbs laterally, away from the midline of the body (e.g., lifting your leg to the side).
- *Adduction:* Moving your limbs medially, toward the midline of the body (e.g., lowering your arm down to the side of your body).
- *Elevation:* Raising your scapula (shoulder blade) upward.
- *Depression:* Lowering your scapula (shoulder blade) downward.
- *Inversion of the ankle:* The sole of the foot turns inward toward the midline of the body (a component of supination).
- *Eversion of the ankle:* The sole of the foot turns outward away from the body’s midline (a component of pronation).

***Movements that happen in the sagittal (longitudinal) plane:*** The movements of the sagittal (longitudinal) plane include:

- *Flexion:* Bending a limb to decrease the angle at a joint (e.g. lifting a dumb-bell during a bicep curl flexes the elbow).
- *Extension:* Movement that increases the angle at a joint (e.g. lifting your leg behind you when standing extends the hip joint).
- *Dorsiflexion:* Bending the ankle so the top of the foot and your toes move toward your shin.
- *Plantar flexion:* Bending the ankle so the foot pushes down and your toes point away.

***Movements that happen in the transverse (axial) plane:*** Movements that occur in this plane involve rotation or horizontal movement, which include:

- *Rotation:* Rotating the torso or a limb around its vertical axis (e.g., turning your head to the left or right).
- *Horizontal abduction:* Moving the arm away from the midline of the body when it’s at a 90-degree angle in front of the body.
- *Horizontal adduction:* Moving the arm toward the midline of the body when it’s at a 90-degree angle to the side of the body.



**Fig. 15.5:** *Various movements in the body planes*

*Importance of anatomical planes in physical activity and sports:* The anatomical planes help athletes to understand the movements associated with the various sports disciplines and tailor training accordingly. Examples include:

- Sagittal plane dominant sports are running, rowing, weightlifting, etc. Dominant movements in the sagittal plane are flexion, extension, dorsiflexion and plantar flexion.
- Frontal plane dominant sports are tennis, baseball, cartwheels, star jumps, etc. Movements in these disciplines are dominantly from right to left or side to side. And these are associated with abductions and adductions which are movements in the frontal plane.
- Transverse plane dominant sports include golf, discus throw, netball, etc. Movements in this plane are rotational in nature such as internal and external rotation, pronation and supination. Movement in the transverse plane is important for the above disciplines because it allows the body to rotate and generate more power.

### iii. Homeostasis

Homeostasis is the ability of the body to maintain a stable internal environment for cells by closely regulating various critical variables such as pH or acid-base balance, oxygen tension, blood glucose concentration and body temperature.

- *Homeostasis and Exercise:* Exercise affects homeostasis in a variety of ways, such as raising the body temperature, increasing the need for more oxygen and changes in blood sugar and fluid balance.



- *How the systems maintain homeostasis during exercise:*
  - Breaking down glucose for fuel
  - Increasing heart rate and blood flow
  - Cooling down body temperature
- *How to maintain homeostasis during a workout:*
  - Stay hydrated
  - Breathe during exercise
  - Fuel up with pre-workout snack
  - Warm up and cool down

### a. Exercise physiology

This is the scientific study of how the body responds and adapts to physical activity and exercise. Through a properly executed exercise programme, the body adapts and becomes more efficient at performing various tasks. These adaptations are acute and chronic and impact cardiovascular, respiratory, musculoskeletal, metabolic, etc functions.

#### i. Acute adaptations to exercise

This refers to the immediate responses that occur during or shortly after a single and quick physical activity. These responses are temporary and last a matter of minutes. Some of the adaptations are:

- *Cardiovascular responses:*  
The body experiences increased heart rate during a quick intensive exercise. The heart rate rises to meet the increased demand for oxygen and nutrients by the working muscles.
- *Pulmonary system adaptations:*  
This refers to changes that occur within the respiratory system in response to regular exercise training. The changes are essential for improving breathing and enhancing overall respiratory function during physical activity. It improves respiratory muscle strength, lung capacity, gas exchange and lung diffusion capacity.

### b. Chronic adaptations of exercise

Chronic adaptations to exercise refer to the long-term changes that occur in response to regular exercise and training over weeks, months and years.

These changes represent the body's ability to adapt and improve in response to the demands placed on it through exercise. Chronic adaptations to exercise include:

- *Skeletal muscle adaptations:* This refers to changes in skeletal muscle tissues that respond to regular exercise or training. It is essential for improving muscle function, strength, endurance and overall performance. It happens through endurance training and resistance/strength training.
- *Ligament and tendon adaptations:* There is an increase in the cross-sectional area of ligaments and tendons in response to prolonged training as the insertion sites between ligaments, bones and tendons become stronger.
- *Metabolic adaptations of prolonged exercise:* This refers to the changes that occur in the body in response to sustained periods of physical activity. Some metabolic adaptations to

prolonged exercise include increased aerobic activity, improved fat oxidation or breakdown and enhanced glycogen storage.

- *Long-term cardiac adaptations:* This refers to changes that occur within the heart in response to regular exercise training over an extended period. They are essential for optimising cardiovascular functions, enhancing exercise capacity and promoting overall health.

Some long-term benefits are increased volume of blood pumped at each heartbeat, reduced heartbeats per minute at rest and enhanced ability to pump blood with each heartbeat.

### Learning Tasks

1. Provide an overview of how the knowledge of anatomy and physiology can enhance physical activity performance.
2. How can the study of body planes influence physical activity and sports performance?
3. Analyse the role of skeletal muscles in walking.
4. Explore how understanding the human body systems can improve performance, prevent injuries and enhance recovery.
5. Develop a personalised exercise routine that applies the principles of anatomy and physiology to your own physical activities to optimise performance and reduce the risk of injury.

### Pedagogical Exemplars

- a. Talk for Learning:** Learners are engaged in small groups to watch videos and pictures of things concerning anatomy and physiology. Support learners to give detailed descriptions of the importance of anatomy and physiology from the video. Moderate class and group discussions while encouraging learners' participation and respect for each other. Provide an overview of how the knowledge of anatomy and physiology can enhance physical activity performance. Provide cues and prompts to guide group discussions. Assist learners in writing the salient points into their jotters.
- b. Project-Based Learning:** Learners in mixed-ability and mixed-gender groups develop portfolios to showcase the application of anatomy and physiology in everyday life. Guide learners to pay attention to the design and layout of their portfolios. Provide individual positive feedback to encourage their creativity and confidence. Encourage learners to support each other in their groups. Guide the direction of learning and collection of items into the portfolios through the various group leaders.
- c. Collaborative Learning:** In mixed-gender and ability groups, guide learners to discuss the various movements in the body planes and their application in physical activity and sports performance. Support the various groups to collaborate, explore and understand the various anatomical planes. Support shy and struggling learners to take active roles in their various groups. Give further explanation on the keywords for clarity.
- d. Activity-based learning:** Learners demonstrate the various movements associated with each of the body planes. Assist learners in identifying and classifying the various planes in the human body. Encourage and support learners to identify and demonstrate any bodily movement as shown in the picture, video or chat provided. Provide learners with additional assistance as required. Guide learners by giving further explanations and clues to identify the planes that support high to moderate joint movement.

## Key Assessments

**Level 2:** State two differences between anatomical position and anatomical planes.

**Level 3:**

- a. Describe how knowledge and understanding of skeletal and muscular systems influence the choice of physical activity for training.
- b. Describe three reasons why the application of static and dynamic activity in a training schedule is relevant.
- c. Analyse the role of planes in the human body in relation to performance.

**Level 4:** Develop a portfolio to showcase the application of anatomy and physiology in everyday life.

## References

1. Adobe Stock (2024): [https://stock.adobe.com/search?k=muscle+contraction&asset\\_id=361318372](https://stock.adobe.com/search?k=muscle+contraction&asset_id=361318372)
2. Cameron MH, Monroe LG. 2008. *Physical Rehabilitation: Evidence-Based Examination, Evaluation, and Intervention*. Elsevier
3. Tim Huffines. Anatomical Position and Cardinal Planes. Available from: <http://www.youtube.com/watch?v=aDxfe5Ny6zM> [last accessed 22/02/13]
4. Planes & Axes of Motion. Published 2012. Available from: <https://www.youtube.com/watch?v=iP7fpHuVaiA>. (last accessed 28 November 2019)
5. Rivera-Brown AM, Frontera MD. Principles of exercise physiology: Responses to acute exercise and long-term adaptations to training. *PM&R*. 2012; 4: 797-804.
6. Clarkson HM. *Musculoskeletal Assessment: Joint Range of Motion and Manual Muscle Strength*. Lippincott Williams & Wilkins; 2000. p 455
7. Franchi MV, Reeves ND, Narici MV. Skeletal muscle remodeling in response to eccentric vs. concentric loading: morphological, molecular, and metabolic adaptations. *Frontiers in physiology*. 2017 Jul 4;8:447.
8. Joseph T. Wearn. The extent of the capillary bed of the heart. *J Exp Med*. 1928 Jan 31; 47(2): 273–290.
9. Pescatello LS, Franklin BA, Fagard R, Farquhar WB, Kelley GA, Ray CA; American College of Sports Medicine position stand.
10. Exercise and hypertension. *Med Sci Sports Exerc*. 2004 Mar;36(3):533-53.
11. Lavie CJ, Arena R, Swift DL, Johannsen NM, Sui X, Lee DC, Earnest CP, Church TS, O’keefe JH, Milani RV, Blair SN. Exercise and the cardiovascular system: clinical science and cardiovascular outcomes. *Circulation research*. 2015 Jul 3;117(2):207-19

## Section Review

In Week 14, the focus was on understanding the fundamental aspects of anatomy and physiology as they relate to physical activity. Learners studied the basic structures and functions of the major systems involved in physical activity, including the skeletal, muscular, respiratory and cardiovascular systems. The class discussed how bones provide structure and protection, muscles create movement and joints enable flexibility and range of motion. The respiratory and cardiovascular systems were examined in terms of oxygen delivery to muscles and waste product removal during exercise. These discussions laid the groundwork for appreciating how the body operates during physical activity, emphasising the interconnectedness of these systems.

In Week 15, the lessons built on the foundation from the previous week, focusing on the practical application of anatomy and physiology in physical activity. Learners explored how understanding these systems can improve performance, prevent injuries and enhance recovery. Areas of concentration included the importance of warm-ups and cool-downs, proper stretching techniques and recognising signs of overuse injuries. The class also discussed different types of muscle contractions and how they relate to various sports and exercises, as well as how the cardiovascular system responds to aerobic and anaerobic activities. By the end of the week, learners were able to identify specific ways to apply this knowledge to their own physical activities, developing personalised exercise routines that consider anatomy and physiology principles to optimise performance and reduce the risk of injury.

## SECTION 6: CAREER PATHWAYS

Strand: **Academic and Career Pathways Education**

### Sub-Strands:

1. Health Education Pathways
2. Physical Education Pathways
3. Sports Excellence Pathways

### Learning Outcomes:

1. *Identify and discuss career pathways in Health Education*
2. *Identify and discuss career pathways in Physical Education*
3. *Identify and discuss pathways in Sports Excellence*

### Content Standards:

1. Demonstrate knowledge and understanding of career pathways in Health Education
2. Demonstrate knowledge and understanding of career pathways in Physical Education
3. Demonstrate knowledge and understanding of pathways in Sports Excellence

### INTRODUCTION AND SECTION SUMMARY

This section explores the concepts of Career and Profession, emphasising their importance in guiding learners' subject choices. Understanding potential career paths is essential for helping learners decide on their academic focus. As a Physical Education and Health (PEH) teacher, it is crucial to provide comprehensive information about the various career options available to those interested in PEH.

Begin by discussing careers in health education, such as health educators, community health workers, public health professionals, etc. These roles focus on promoting health and wellness within communities. To deepen your understanding and offer learners a broader perspective, engage with other health professionals and conduct additional research. This will help you present a wide array of opportunities to your learners.

Next, cover careers in physical education, including physical education teachers, coaches, fitness trainers, etc. Encourage learners to explore these roles further by using digital devices to research additional options within the field. To make this topic engaging, create classroom activities that allow learners to discuss and brainstorm career pathways in physical education.

Also, introduce learners to career opportunities in sports excellence, like sports coaches, sports psychologists, sports agents, etc. These careers offer exciting prospects for those interested in sports at a professional level.

Finally, incorporating diverse activities and encouraging learner interaction will foster interest and help learners visualise potential career paths in PEH. The goal is to empower learners with the knowledge they need to make informed choices about their future careers.

The weeks covered by this section are:

**Week 16:** Introduction to Career Pathways

**Week 17:** Identify and Discuss Career Pathways in Health Education

**Week 18:** Identify Career Pathways in Physical Education

**Week 19:** Discuss Career Pathways in Physical Education

**Week 20:** Identify and Discuss Career Pathways in Sports Excellence

## SUMMARY OF PEDAGOGICAL EXEMPLARS

Use visuals like infographics to illustrate these roles. Encourage discussion about the skills needed and possible career paths. For learners approaching proficiency, offer simple examples and basic information. Proficient learners can research specific careers, while highly proficient learners can explore broader public health and physical education trends that impact these careers.

Organise group discussions or bring in guest speakers to talk about their careers in health education. This interactive approach helps learners understand the daily work and broader impact of these roles.

Use multimedia resources like videos to showcase what these roles involve. Simplify explanations to take care of the diverse learning needs and abilities.

Role-playing exercises or group discussions can help learners visualise these roles.

Gender expectations can influence learners' career aspirations and interests. To promote inclusivity, use examples that challenge stereotypes. Highlight male and female professionals in each career pathway to show that anyone can succeed in these roles. Ensure that class discussions and activities do not reinforce gender stereotypes. Encourage all learners to explore careers without bias. Invite guest speakers of different genders to share their experiences. This helps learners see that career pathways are open to everyone, regardless of gender.

Socio-cultural backgrounds can impact learners' perception of career opportunities. Recognise and respect the diverse backgrounds of your learners. This could mean discussing how different cultures view health education, physical education or sports excellence careers. Include culturally relevant examples. Use examples and case studies that reflect a variety of cultural perspectives. This helps learners from different backgrounds feel represented. Facilitate group activities that promote intercultural understanding and teamwork.

Use emotional intelligence strategies. Incorporate activities and expressions that foster empathy and understanding among learners. This can help those who may struggle with emotional expression or who are sensitive to criticism.

Identify the different proficiency levels of learners. Design activities that cater to different skill levels. For example, simpler tasks for those needing more guidance and more complex projects for advanced learners. Mix learners of different proficiency levels in group activities. This encourages peer learning and allows learners to learn from each other.

## ASSESSMENT SUMMARY

To assess learners' understanding of career pathways in health education, physical education, and sports excellence, consider a combination of formative and summative assessments that cater to different learning styles and abilities. Formative assessments will include in-class discussions, reflective journals and collaborative group studies where learners explore various career options and present their findings. These assessments will allow you to gauge ongoing understanding and adjust instruction as needed, offering additional support for learners with additional needs or providing more challenging tasks for those who are more advanced.

Include individual projects or presentations where learners demonstrate their understanding of a specific career pathway. This could involve researching a health education career, creating a physical education programme, or analysing a sports excellence career's trajectory. Encourage creativity by allowing learners to choose their presentation format, whether it's a written report, a visual poster, or a multimedia presentation. To ensure fairness and inclusivity, use clear rubrics that consider content quality, creativity and understanding of key concepts. This approach provides a comprehensive overview of learners' learning while accommodating diverse learners and recognising their unique contributions.

## WEEK 16

**Learning Indicator:** *Identify career pathways in health education*

**Theme or Focal Area:** **Introduction to the concept of career pathways**

### Introduction to Career Pathways

#### What is a career?

A career refers to the sequence of employment, education or other professional activities that an individual engages in to pursue their long-term goals and aspirations and are driven by personal interests, skills and ambitions.

Careers can include a broad range of occupations, training or industries.

In summary, a career refers to the overall list of jobs and occupations a person pursues at certain points or throughout their life.

#### What is a profession?

A profession is a specific type of career that requires specialised knowledge, training and expertise and is regulated by professional organisations or governing bodies that establish standards, codes of conduct and educational requirements for individuals to practice in that field.

A profession is associated with a specific field, such as medicine, law, engineering, teaching or accounting. A profession is a specific type of career that requires specialised knowledge, training and professional standards.

All professionals have a career but not all careers are considered professions.

#### Differences between a career and a profession:

##### i. Scope and specialisation:

- *Career:* A career is the name for any occupation and covers many different jobs and industries. It allows you to explore different fields throughout your working life.
- *Profession:* A profession is a more focused and specialised area within a career. It is like choosing a specific field, such as medicine, law, engineering, teaching or accounting and becoming an expert in that area.

##### ii. Education and qualifications:

- *Career:* In many careers, formal education or specific qualifications may not be required. You can enter the field with different levels of education or training.
- *Profession:* Professions usually require higher education, advanced degrees and specialised certifications. To practice legally, professionals must meet strict educational and licensing requirements.

##### iii. Ethical standards and regulation:

- *Career:* In a career, you have your own personal values and ethics, but there may not be a formal code of conduct or rules that govern your actions.
- *Profession:* Professions have professional organisations or regulatory bodies that establish rules, ethical codes and guidelines. Professionals must follow these standards to ensure that is highly respected.



**iv. Public service and responsibility:**

- *Career:* Some careers involve serving the public, while others may focus more on individual success, personal growth or making money.
- *Profession:* Professions involve serving the public or society in some way. Professionals have a higher level of responsibility because they are entrusted with the well-being, health, safety, progress or legal matters of others.

**v. Career progression and advancement:**

- *Career:* Careers provide flexibility in terms of growth, transitions and changing job roles or industries. You can explore different paths and make changes along the way.
- *Profession:* Professions often have well-defined career paths with clear steps for advancement. There are structured hierarchies, levels of expertise and opportunities to specialise within the profession.

**Importance of choosing a career that aligns with a person's interests**

- Job satisfaction:** When you pursue a career that aligns with your interests, skills and passions, you are more likely to enjoy your work. This leads to higher job satisfaction and overall happiness in your professional life.
- Motivation and drive:** Having a career that connects with your interests, skills and passions gives you the motivation and drive to excel in your field. You will be more interested in learning and improving your abilities.
- Increased productivity:** When you are engaged in a work which you genuinely enjoy, you are more likely to be productive. Your passion and energy will help you go the extra mile and achieve better results.
- Personal fulfilment:** Choosing a career that aligns with your interests, skills and passion allows you to pursue something meaningful to you. This leads to a feeling of personal fulfilment and a greater sense of purpose in your professional life.
- Better performance:** When you work in a field that matches your skills and passion, you are more likely to perform at your best. Your natural abilities will be put to good use, enabling you to excel and achieve success.
- Continuous learning:** When you choose a career based on your interests, skills and passion, you are more likely to enjoy the learning process. You'll have a natural curiosity and drive to expand your knowledge and skills in your chosen field.
- Long-term commitment:** A career that aligns with your interests, skills, and passions is more likely to keep you engaged and committed in the long run. You'll be motivated to invest time and effort into developing your career path.
- Resilience and perseverance:** Pursuing a career that you are passionate about helps you develop resilience and perseverance. When faced with challenges or setbacks, your passion will drive you to overcome the obstacles and continue moving forward.
- Greater job opportunities:** Choosing a career aligned with your interests, skills and passions opens a world of job opportunities. You will have a better chance to excel in your field and stand out among others, increasing your chances of finding a rewarding employment.
- Work-life balance:** When your career aligns with your interests, skills, and passions, you'll find it easier to find a balance between work and personal life. Enjoying your work makes it less likely to feel overburdened or burnt out.

- xi. Positive impact:** Working in a field that aligns with your interests and passions allows you to make a positive impact on the world. You will have a sense of satisfaction and purpose for contributing to a cause or industry that matters to you.
- xii. Creativity and innovation:** Pursuing a career that aligns with your interests and passions encourages creativity and innovation. Your interests will drive you to think outside the box, bringing fresh ideas and solutions to your work.
- xiii. Networking opportunities:** When you are passionate about your field, you will naturally seek opportunities to connect with others who share your interests. This can lead to valuable professional networks and collaborations.
- xiv. Personal growth:** Choosing a career that aligns with your interests, skills and passions provides ample opportunities for personal growth. You will continuously learn, develop new skills and grow as a professional.

*Note: It is essential for learners to carefully reflect on their interests and passions and seek guidance from mentors and counsellors together with their parents to make informed career decisions.*

### Learning Tasks

1. Differentiate between a Career and a Profession. Provide two examples each.
2. Explain five factors that might influence your decision to acquire a career in PEH.
3. Examine the importance of identifying career pathways early in life.

### Pedagogical Exemplars

- a. Group Work/Collaborative Learning/Digital Learning:** In groups and with the help of their digital devices, learners search for the meaning of a Career and a Profession while giving opportunities to all, irrespective of age, gender, disability or culture. Learners present their findings to the whole class for feedback and clarification. The entire class put their groups' findings together and create one simple definition of a career and a profession. Ensure all learners collaborate and contribute to the group work. Give further explanation and guidance to less able learners. Encourage reserved and shy learners in the various groups to lead the discussion while emphasising the need for patience and respect for each other.
- b. Structuring Talk for Learning:** In gender-neutral groups, learners discuss the differences between a career and a profession. Learners identify their potential careers/professions and explain why they choose them. Encourage learners to contribute orally or in writing. Support and encourage the quiet and shy learners to lead the discussions.
- c. Communication and Collaboration/Digital Learning:** Support learners in groups to use their digital devices to search for the importance of choosing a career that aligns with their interests, skills and passion. Learners write down their findings and share their understanding with others. Provide options for both written and oral feedback from learners' research. Encourage learners to respect others' opinions. Support individual learners having challenges with the use of digital devices by providing keywords to guide their search. Encourage peer-to-peer and teacher assistance. Ensure learners maintain ethics in the digital world.

### Key Assessment

**Level 2:** Describe four differences between Career and Profession.

**Level 4:** Prepare a speech to be delivered in your school on careers and professions in PEH. Educate your school community on the contributions of those professions to the development of society.

## References

1. Alton Larry: Career vs. Profession: What's the Difference?: <https://www.monster.com/career-advice/article/career-vs-profession>
2. American College of Sports Medicine: Career Opportunities in Sports Medicine: [https://www.acsm.org/read-research/resource-library/resource\\_detail?id=b4dfe3da-162f-4a27-87e6-09ff8f196f8b](https://www.acsm.org/read-research/resource-library/resource_detail?id=b4dfe3da-162f-4a27-87e6-09ff8f196f8b)
3. Fryer, Tim: The Institute of Leadership & Management: What is a Profession?: <https://www.institutelm.com/resourceLibrary/what-is-a-profession.html>
4. Reardon, Robert C. et al.: National Career Development Association: Career Development: A Pathway to Professional Success: <https://www.amazon.com/Career-Development-Pathway-Professional-Success/dp/1138894162>

**WEEK 17**

**Learning Indicator:** *Discuss career pathways in health education*

**Theme or Focal Area: Introduction to the concept of career pathways in health education**

**Theme or Focal Area: Career pathways in health education**

### **Career In Health Education**

#### **What is a career in health education?**

A career in health education refers to a training path or profession that is centred around promoting, maintaining and improving the health and well-being of individuals and communities.

This type of career typically involves working in various areas of the healthcare sector or related fields where individuals can apply their knowledge of health, fitness and wellness to positively impact other people's lives.

#### **Careers in health education**

The following are some examples of careers/professions in PEH that students can pursue:

- i. **Nutritionist/Dietitian:** A nutritionist/dietitian is a health professional who specialises in food and nutrition. They advise and guide on healthy eating habits, develop meal plans and help manage medical conditions through nutrition.



**Fig. 17.1:** *A Nutritionist/Dietitian*

- ii. **Health Educator:** A health educator is responsible for promoting and educating individuals and communities about health-related issues. They develop programmes and materials to provide information on topics such as disease prevention, healthy lifestyle choices and healthcare resources.

- iii. **Physical Therapist:** A physical therapist helps individuals recover from injuries or disabilities through physical rehabilitation. They assess patients' conditions, develop personalised treatment plans and guide them through exercises and therapies to improve mobility, reduce pain and restore function.



*Fig. 17.2: A Physical Therapist Helping Her Patient to Recover*

- iv. **Sports Medicine Physician:** A sports medicine physician is a doctor who specialises in the diagnosis and treatment of injuries and medical conditions related to sports and exercise. They provide medical care to athletes, develop training and injury prevention programmes and may perform surgical procedures if necessary.



*Fig. 17.3: A Sports Medicine Physician Treating an Injured Footballer (Thomas Partey)*

- v. **Sports Psychologist:** A sports psychologist focuses on the psyche and mental strength of athletes for a successful performance. They work with athletes to enhance their mental skills, develop strategies for performance improvement, manage stress and anxiety and promote overall well-being in sports.



**Fig. 17.4:** *A Sports Psychologist Having a Talk with His Athlete*

- vi. **Corporate Wellness Coordinator:** A corporate wellness coordinator develops and implements health and wellness programmes in organisations and workplaces. They educate employees on healthy lifestyle choices, organise fitness activities, conduct health screening and promote a culture of well-being in the workplace.
- vii. **Public Health Officer:** A public health officer is responsible for protecting and improving the health of a community or population. They develop and implement public health policies, conduct disease surveillance, coordinate health promotion and prevention programmes and respond to public health emergencies.



**Fig. 17.5:** *A Public Health Officer Attending to a Client*

- viii. Researcher in Exercise Science:** Researchers in exercise science conduct scientific studies and experiments to expand the understanding of human movements, exercise physiology and their effects on health and performance. They contribute to advancements in exercise-related knowledge and may work in academia or research institutions.

### Benefits of a career in health education

Careers in health education promote personal health and well-being. They also contribute to the health of communities and society as a whole. They address various aspects of physical, mental and emotional health and play a vital role in creating healthier and more vibrant societies.

Examples of specific benefits from careers in health education:

- i. Learners develop lifelong fitness habits, learn teamwork and sportsmanship. Their knowledge of this helps prevent health issues associated with a sedentary lifestyle.
- ii. It contributes to disease prevention, weight management and overall well-being by educating individuals about balanced diets and the impact of nutrition on health.
- iii. People improve their physical fitness, reduce the risk of chronic diseases and enhance their quality of life by engaging in regular exercise.
- iv. It assists in sharing accurate health information, which empowers people to make informed decisions that positively impact their well-being and prevent health issues.
- v. It assists people to regain functional independence and mobility. It also helps in enhancing their overall quality of life after injuries or surgeries.
- vi. It contributes to the prevention of epidemics, promotes healthy lifestyles and ensures overall improvement of community well-being.
- vii. At workplaces, the services of health staff help reduce health-related dangers and improve employee morale and productivity through regular physical exercises.

### Learning Tasks

1. Learners in groups go to health centres in their communities and interview health workers on their roles in their community.
2. Groups make presentations on the roles of selected careers in health education in class.
3. Learners describe three benefits of choosing a career in health.

### Pedagogical Exemplars

- a. **Group/Collaboration Learning:** In small groups, learners use their digital devices to research the explanation of Careers in Health Education. Motivate learners to have respect for each other irrespective of status, gender, tribe or disability. Support learners to equally search and share their ideas on the roles of identified careers in health education. Ensure learners are guided with the use of digital devices by observing online safety protocols. Allow peer-to-peer and teacher support for struggling learners with the use of digital devices. Ensure each member of the group is given the opportunity to share his/her ideas. Give further explanation of the keywords and any other questions from the learners for clarity of concept. Provide a template for learners to categorise the health-based careers, where necessary.
- b. **Problem-Based Learning:**
  - i. Learners explore the benefits derived from health education in PEH for themselves, their community and their country. Task learners in their groups to identify a specific health-

- based career in their community. Support learners to outline the benefits of the identified career to an individual, their school, their community and the country at large.
- ii. Generate a discussion between the groups on how their school sports team can benefit directly or indirectly from the selected career. Learners design a picture frame of their answers to be displayed in their class and cross-section of the school. Moderate the discussions by ensuring learners respect each other's opinions and participation in the various groups.
- c. **Experiential Learning:** Grouped in the careers of their interests, learners are assigned to interview health-sector workers operating in those fields in their communities about the nature of the profession. Learners ask questions about the roles and responsibilities of each career. Groups later make presentations in class. Provide rubrics to guide groups to adequately design their interview questions and presentations.
  - d. **Project-Based Learning:** Learners in small groups research and examine individual careers in health education and their functions. Support learners in groups to ballot and pick a listed career in health education. Task each group to develop a roleplay in class on the functions of the health careers they chose. Guide groups through this process and ensure learners with disabilities assume roles such as group secretaries, lead presenters etc. Sign a scoring system that allows mark allocations for attendance during practice and actual performance.

## Key Assessments

**Level 1:** Explain career pathways in health education.

**Level 2:** Identify four benefits that can be derived from health education for an individual, the school and the community.

**Level 3:** Research and present a report which identifies educational requirements, job responsibilities, job settings and career progression in a selected career pathway.

**Level 4:** Create a diagram that outlines a specific career pathway in health education illustrating the steps from education to job entry and advancement. It should also show the required certifications and potential career progression.

## References

1. American Public Health Association: <https://www.apha.org/>
2. American Association of Colleges of Nursing (AACN): <https://www.aacnursing.org/>
3. American Council on Exercise: <https://www.acefitness.org/>
4. American Psychological Association: <https://www.apa.org/>
5. Commission on Dietetic Registration: <https://www.cdrnet.org/>
6. Ebony (2022): <https://www.ebony.com/5-black-male-fitness-trainers-showing-us-how-to-reach-our-goals-one-workout-at-a-time/>
7. Evening Standard (2021): <https://www.standard.co.uk/sport/football/thomas-partey-scan-arsenal-chelsea-b948686.html>
8. Freepik.com: [https://www.freepik.com/premium-photo/african-american-female-nutritionist-sits-her-desk-happy-bright-smiling-relaxed-friendly\\_29672928.htm#query=cameroon%20nutritionist&position=9&from\\_view=keyword&track=ais](https://www.freepik.com/premium-photo/african-american-female-nutritionist-sits-her-desk-happy-bright-smiling-relaxed-friendly_29672928.htm#query=cameroon%20nutritionist&position=9&from_view=keyword&track=ais)
9. Freepik.com: <https://movementortho.com/2020/06/05/how-can-physical-therapy-help-after-your-orthopedic-surgery/>
10. National Institutes of Health: <https://www.nih.gov/>



11. Presbyterian University, Ghana (2016): <https://www.presbyuniversity.edu.gh/site/pucg-undertakes-health-screening-at-afrisere/>
12. Training Peaks (2022): <https://www.trainingpeaks.com/coach-blog/racing-success-through-sports-psychology/>
13. U.S. Bureau of Labor Statistics: Occupational Outlook Handbook: <https://www.bls.gov/ooh/>
14. World Health Organization (WHO): <https://www.who.int/>

**WEEK 18**

**Learning Indicator:** *Discuss career pathways in physical education*

**Theme or Focal Area:** **Career pathways in physical education**

### Careers/Professions In PE

Career pathways in physical education refer to the various routes that individuals can take to pursue different roles, positions and specialisations in physical education. Career pathways in physical education involve a range of professions and opportunities related to promoting physical activity, sports and movement.

These various career pathways contribute to the growth of sports, the development of an individual's skills and character and the promotion of an active lifestyle. Each pathway offers unique opportunities for professionals to make a positive impact in their respective roles.

The following are examples of career pathways in physical education:

**a. Fitness Centre Manager**

Fitness centre managers oversee the operations and staff of a fitness facility. They are responsible for managing the facility, ensuring equipment are well-maintained, organising fitness programmes and creating a welcoming environment for members.



**Fig. 18.1:** *A Fitness Centre Manager Assisting His Client*

**b. Recreation Director**

Recreation directors plan and coordinate recreational activities and programmes for individuals or groups. They work in settings such as community centres or resorts. They also organise events like sports tournaments, arts and crafts workshops and other leisure activities.

**c. Sports Journalist**

Sports journalists report on sporting events, athletes and related news. They gather information, conduct interviews and write articles or produce broadcast materials for various media outlets such as newspapers, magazines, websites, radio or television.



**Fig. 18.2:** *A Celebrated Ghanaian Sports Journalist – Kwabena Yeboah*

**d. Sports Marketing Specialist**

Sports marketing specialists promote and advertise sports teams, events or products. They develop marketing strategies, create campaigns and utilise various channels to engage with target audiences and drive interest in sports-related activities.

**e. Sports Events Planner**

Sports events planners coordinate and manage sporting events such as tournaments, races or competitions. They handle logistics, budgeting and marketing, ensuring smooth execution and an enjoyable experience for participants and spectators.

**f. Strength and Conditioning Specialist**

Strength and conditioning specialists design and implement exercise programmes to enhance athletic performance. They work closely with athletes to improve their strength, endurance, flexibility and overall physical fitness through tailored training plans.



**Fig. 18.3:** *A Strength and Conditioning Trainer*

### g. Exercise Equipment Designer

Exercise equipment designers create and develop fitness equipment and tools used in exercise and training. They combine knowledge of biomechanics, ergonomics and user needs to design safe, effective and innovative exercise equipment.



**Fig. 18.4:** *Physical Exercise Equipment*

### h. Physical Education Teacher

A physical education teacher instructs students in physical fitness, sports and healthy living. They develop lesson plans, lead activities and educate students on the importance of exercise and overall well-being.



**Fig. 18.5:** *A PEH Teacher with His Class of Learners*

**i. Sports Coach**

Sports coaches provide instruction and guidance to athletes or sports teams to improve their skills, strategy and performance. They design training programmes, organise practice sessions and motivate athletes to achieve their full potential.



**Fig.18.6:** *A Volleyball Coach with His Team in the Northern Region of Ghana*



**Fig. 18.7:** *Ghana National Athletics Team Coach – Dr. Christian Nsiah*

**j. Personal Trainer**

Personal trainers work one-on-one with individuals and groups to develop customised exercise programmes and provide guidance in achieving fitness goals. They assess clients’ needs, provide instruction on proper techniques and offer continuous support and motivation.

**k. Exercise Physiologist**

Exercise physiologists study how the body responds and adapts to exercise. They assess individuals’ fitness levels and prescribe exercise programmes. They also provide guidance on optimising performance, managing health conditions and preventing injuries.



**Fig. 18.8:** *An Exercise Physiologist and His Client*

### l. Physical Trainer

Physical trainers specialise in preventing, diagnosing and treating sports-related injuries. They work with athletes to provide immediate care, develop rehabilitation plans and promote overall wellness and injury prevention strategies.

### m. Professional Athlete

This is a career that individuals with special sports talents and who are highly skilled take up to compete in various fields of sports both locally and internationally. Professional athletes compete in sports such as athletics, cycling, water sports, gymnastics, weightlifting, combat sports, football, skating, etc.



**Fig. 18.9:** Ghana's Heptathlete – Margaret Simpson, Throwing Javelin

#### Learning Tasks

- a. Identify a career in PE and describe what you can do to attain it.
- b. Evaluate three careers in physical education that are not common in Ghana, their relevance to total sports development in Ghana and what must be done to get them on board.
- c. Participate in a mock job interview for a position related to physical education, showcasing your knowledge and enthusiasm for the field.
- d. Create a portfolio showcasing your projects and experiences related to physical education, along with reflections on your career goals.

**Note:** The teacher should determine how long this project should take and provide support.

- e. Reflect on your own interests, skills and values and outline potential career pathways within physical education that align with them

## Pedagogical Exemplars

- a. **Critical Thinking:** Show a short video or pictures of sports professionals engaging in various activities in relation to their careers and ask learners to identify the specific careers and describe their duties. Accommodate different learning styles and abilities of learners by offering multiple ways for learners to engage with the content. Ensure the videos and pictures are clear so visual learners can identify the careers clearly, the volume of the videos should be loud enough for all to hear and to aid auditory learners. Role-play some selected careers to benefit kinaesthetic learners where they will act out the duties of those careers. Provide scaffolding for learners who might need extra support such as prompting questions to guide their analysis. For advanced learners, challenge them to explain not just the role but also the impact of that career on the sports industry or society at large.
- b. **Group-Based Learning/Digital Literacy:** In groups, learners use their digital devices to research the roles of at least five careers in PE and how they can assume them in the future. Group learners based on their digital proficiency. For those less comfortable with technology, pair them with more digitally literate peers to enable them to learn collaboratively. Provide a structured worksheet or template for learners who may struggle with open-ended research tasks. Give learners clear guidelines on the information to find. Take care of the various backgrounds and abilities of learners by allowing them to choose careers that resonate with their interests, fostering engagement and inclusivity.
- c. **Collaborative Learning:** Through Think-Pair-Share, learners identify three talent-developing careers in PE and their contributions to sports development in Ghana. Individuals then share their ideas with their partners. Assist learners who will find the task challenging with guiding questions or a list of examples of talent-developing careers. For learners with language barriers or special needs, offer visual aids, such as images or diagrams, to help them understand the concepts. To engage all learners, encourage creativity and diverse viewpoints. Allow learners to express their findings in various formats (written, verbal or visual) to accommodate different learning styles. For advanced learners, encourage them to explore how these careers impact sports development in Ghana, considering broader socio-economic factors.
- d. **Strategic Thinking:** Learners in groups examine four qualities required to be successful in a career of their choice. Support learners who might need additional assistance by offering a list of qualities to consider or examples of successful professionals in the field. Challenge learners with higher abilities to explore how these qualities can be developed and what obstacles might need to be overcome in a specific career path. Allow learners to present their findings in diverse ways such as presentations, posters or written reports to suit their different strengths and preferences. Ensure inclusivity by fostering an environment where all group members have an equal opportunity to contribute and diverse opinions are valued.

## Key Assessment

**Level 1:** List five careers in physical education.

**Level 2:** Identify three careers in physical education and describe the key roles and responsibilities associated with each.

**Level 3:** What skills and qualifications are typically required for a career in physical education? Choose one specific career and outline the educational background, certifications and personal qualities necessary for success in that role.

**Level 4:** What are some common challenges faced by professionals in physical education careers? Discuss ways to overcome these challenges and identify potential opportunities for career growth and development within the field.

## References

1. A1 Radio (2022): <https://www.a1radioonline.com/54895/ghana-volleyball-association-invites-yendi-based-player-for-africa-cup-of-nations/index.html>
2. Freepik.com: [https://www.freepik.com/free-photo/woman-working-with-personal-trainer\\_11380104.htm#query=exercise%20physiology&position=42&from\\_view=keyword&track=ais](https://www.freepik.com/free-photo/woman-working-with-personal-trainer_11380104.htm#query=exercise%20physiology&position=42&from_view=keyword&track=ais)
3. GhanaWeb: <https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Flashback-Why-Kwabena-Yeboah-declined-a-deputy-ministerial-job-under-Kufuor-and-Atta-Mills-1615415?gallery=1>
4. Graphic Online (2021): <https://www.graphic.com.gh/sports/sports-news/ghana-athletics-coach-demands-early-pre-olympics-camping.html>
5. PeopleImages.com (2023): <https://peopleimages.com/image/zoomgate/2549695>
6. TribeLocuse.com: <https://www.tribelocus.com/find/videos/education/design/health-club/gym-design/>
7. Yen.com (2018): <https://yen.com.gh/sports/117928-ghanas-finest-heptathlete-margaret-simpson-sells-cooking-oil-a-living/>



## WEEK 19

**Learning Indicator:** *Identify career pathways in physical education*

**Theme or Focal Area:** **Career pathways in physical education**

### Career Benefits In Physical Education

#### Benefits of career pathways in physical education

Some of the benefits of career pathways in physical education are:

- i. **Development of skills and attitudes:** Physical education plays a pivotal role in shaping learners' attitudes towards physical activity and sports. They teach fundamental movement skills, teamwork and sportsmanship, contributing to the holistic development of learners.
- ii. **Training and mentorship:** Physical education enables coaches to provide specialised training, guidance and mentorship to athletes. With this training, they become role models and help athletes reach their full potential. They also enhance their skills and excel in their chosen sports.
- iii. **Safety and well-being of athletes:** Through physical education, athletic trainers prevent, diagnose and treat injuries related to physical activity and sports. Their expertise ensures the safety and well-being of athletes, enabling them to perform at their best.
- iv. **Event administration and management:** Physical education trains sports administrators to manage sports programmes, events and facilities. They handle logistics, budgets, scheduling and coordination, ensuring smooth operations within the sports industry.
- v. **Specialised education and curriculum development:** Curriculum developers are trained to design educational programmes that align with the latest teaching strategies and educational standards. This contributes to the improvement of the physical education curriculum and enhances the learning experience for learners.
- vi. **Sports events coordination:** Sports events coordinators organise and manage sports competitions, tournaments and events. They create engaging and memorable experiences for participants and spectators alike.



**Fig. 19.1:** *A Well-Organised Sports Programme*

- viii. Sports marketing:** Professionals in this field are equipped with the knowledge and skills to promote sports events, teams and athletes to the public and to keep them financially sustained. This contributes to the growth and popularity of sports by creating effective business and marketing campaigns through positive public engagements.
- ix. Promotion of sports to the public:** Physical education trains media professionals to cover sports events through various mediums, including television, radio and online platforms. This plays a crucial role in bringing sports to everybody in every part of the world.



**Fig. 19.2:** *A Journalist with a Former Ghana Black Stars Goalkeeper (Richard Kingson)*

- x. Meeting the psychological needs of athletes:** With the aid of physical education, sports psychologists are trained to work with athletes to enhance mental strength, focus and performance. Their guidance contributes to athletes' psychological well-being and competitive spirit.
- xi. Studying the science of sports:** Researchers and analysts are educated to study sports performance, trends and data. These insights help coaches, athletes and sports organisations make informed decisions to improve strategies and training programmes.
- xii. Making sports accessible for all:** In order to open up sports to all, physical education trains specialists in adaptive physical education to cater to individuals with disabilities. This provides tailored physical activity programmes that promote inclusion, independence and overall well-being.



**Fig. 19.3:** *Sports for All, All for Sports (A Paralympic Athlete)*

- xiii. Providing entertainment:** Physical education trains recreational programme coordinators who design and manage recreational programmes. These professionals help to entertain and encourage people of all ages and all walks of life to engage in physical activities for leisure and enjoyment.



**Fig.19. 4:** Ghanaian Musician (Stonebwoy) Performing at the FIFA Fan Festival in the Qatar 2022 World Cup.

### Learning Tasks

1. Explain how an identified career in physical education can help improve the health of children, the youth and the elderly.
2. Organise a field trip to a stadium, sports centre or the National Sports Authority near you and enquire about the importance of careers in physical education to you as a PEH student.
3. Write a proposal to the Minister for Youth and Sports on how careers in physical education should be given critical attention to help reduce youth unemployment in Ghana.

### Pedagogical Exemplars

- a. **Digital Learning:** With the help of their digital devices, learners research the meaning of career pathways in physical education, discuss it with their group members and present their reports in class through leaders comprising both females and males. Encourage learners to tolerate views from other members. Assist learners to narrow their search for information on the internet on career pathways in physical education. Guide learners to visit the original sites for information regarding the concept.
- b. **Group-Based Learning:** In small groups, learners are supported to examine the various roles of coordinators in organising successful sports festivals. Encourage learners to respect the opinions of other members. Give room for shy and struggling learners to share their views. Support learners to outline the interdependence and inter-relatedness of sports coordinators' roles with those of others to have a successful sports festival. Give further explanations of the concept and summarise the key points for learners to write into their books for take-home.

- c. **Collaborative Learning:** Learners in their various groups are guided to identify gaps in the promotion of sports in our schools and communities. Assist learners individually and in groups to design an advocacy plan to highlight modern ways by which sports can effectively be promoted in schools and communities. Ensure each member of the group contributes and plays a supportive role respecting the views of other group members.
- d. **Talk-for-Learning:** In mixed-gender and mixed-ability groups, guide learners to identify key skills in sports management and administration. Support learners to identify key areas in sports that require the application of such skills. Task learners to analyse how skills in management and administration can support them in acquiring a career in physical education. Encourage shy and struggling learners to come out with their opinions by giving individual feedback. Moderate class and group activities by ensuring learners respect diversity in ideas.

*Note: Be creative and design similar pedagogical exemplars of other benefits so learners can have a broader and better understanding of the concept.*

### Key Assessment

**Level 1:** List four benefits of careers in physical education.

**Level 2:** List at least three careers in PE and describe how they contribute to unity, peace and harmony in the society.

**Level 3:** Describe how physical education professionals can play a role in organising events and activities that will encourage lifelong fitness habits.

**Level 4:** Analyse how career pathways in physical education can be used as a tool to reduce social vices among the youth in our communities. Give examples of those careers.

### References

1. International Paralympic Committee (2016): <https://www.paralympic.org/ntando-mahlangu>
2. Myjoyonline.com (2020): <https://myjoyonline.com/my-four-big-lessons-from-the-richard-kingson-interview-nathaniel-attoh/?myjo-----https://www.myjoyonline.com/my-four-big-lessons-from-the-richard-kingson-interview-nathaniel-attoh/-----https://www.myjoyonline.com/my-four-big-lessons-from-the-richard-kingson-interview-nathaniel-attoh/-----https://www.myjoyonline.com/my-four-big-lessons-from-the-richard-kingson-interview-nathaniel-attoh/>
3. Sports Brief (2022): <https://sportsbrief.com/football/30544-ghanaian-music-superstar-stonebwoy-thrills-fans-world-cup-qatar/>
4. Wikipedia.org (2023): [https://en.wikipedia.org/wiki/Olympic\\_Games\\_Tokyo\\_2020\\_-\\_The\\_Official\\_Video\\_Game#/media/File:Tokyo\\_2020\\_game\\_cover.png](https://en.wikipedia.org/wiki/Olympic_Games_Tokyo_2020_-_The_Official_Video_Game#/media/File:Tokyo_2020_game_cover.png)

**WEEK 20**

**Learning Indicator:** *Identify and Discuss career pathways in sports excellence*

## Theme or Focal Area: **Identification and Discussion of Career Pathways in Sports Excellence**

### Career Pathways in Sports Excellence

Career Pathways in Sports Excellence refers to the structured and progressive routes that individuals can follow to achieve high performance and professional success in sports.

#### a. Stages to attaining sports excellence

Athletes who attain sporting excellence go through a series of stages or milestones over years of practice and dedication before getting to this level.

The typical stages are as follows:

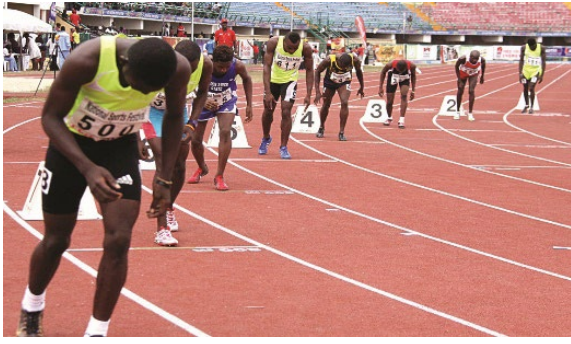
- i. **Talent identification:** This is the process of recognising and nurturing young athletes with the potential for high performance.
- ii. **Skill development:** This involves structured training and coaching programmes designed to improve athletes' technical, tactical and physical skills.
- iii. **Competitive experience:** This refers to opportunities given to young athletes to compete at various levels, enabling them to gain experience and exposure.
- iv. **Professional development:** This is the stage of final preparation for careers in sports which include sports competition, sports management, coaching, sports science, media etc.
- v. **Transition to professional careers:** This is the stage where support and guidance are given to athletes as they progress and begin professional sports or related careers.

#### b. Careers in sports excellence

Achieving excellence in sports can lead to a variety of rewarding career pathways both within and beyond the realm of competitive sports. Here are some potential career pathways for individuals who have achieved sports excellence:

- i. **Professional athlete:** The most direct path is to pursue a career as a professional athlete. This involves competing at the highest levels of your chosen sport and earning income through contracts, sponsorships, endorsements and prize money.





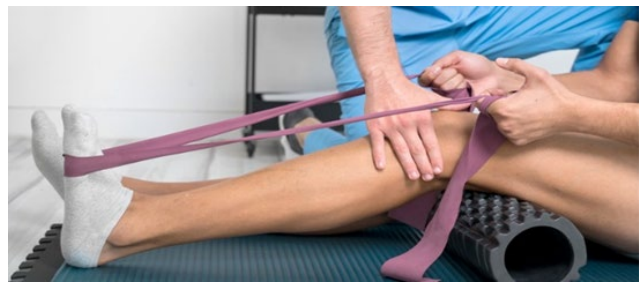
**Fig. 20.1:** *Professional Athletes*

- ii. **Coach or trainer:** Coaches use their expertise to guide and mentor aspiring athletes, helping them improve their skills and achieve their potential.



**Fig. 20.2:** *Sports Coaching*

- iii. **Sports manager or agent:** Sports managers and agents represent athletes in contract negotiations, endorsements and other business deals. They help athletes manage the business side of their careers and ensure they receive fair compensation.
- iv. **Sports administrator:** Working in sports administration involves roles in sports organisations, governing bodies and sports management companies. This could include positions in event planning, marketing, public relations and more.
- v. **Sports psychologist:** Sports psychologists work with athletes to enhance their mental resilience, focus and performance. They help athletes cope with stress, pressure and anxiety, improving their overall mental well-being.
- vi. **Physical therapist or sports medicine professional:** With a background in sports, a learner can pursue a career in physical therapy, sports medicine or orthopaedics. These professionals help athletes recover from injuries and optimise their physical condition.



**Fig. 20.3:** *Sports Therapist*

- vii. **Sports journalist or broadcaster:** A person with a passion for both sports and communication, can become a sports journalist, commentator or broadcaster. These roles involve covering sports events, analysing games and conducting interviews.
- viii. **Sports nutritionist or dietitian:** Nutrition plays a crucial role in an athlete's performance and recovery. Sports nutritionists or dietitians design specialised meal plans to optimise athletes' energy, endurance and overall health.
- ix. **Fitness and personal trainer:** A learner can become a personal trainer or fitness instructor, helping individuals improve their overall health and well-being through exercise and physical activity.



**Fig. 20.4:** *Fitness Trainers*

- x. **Sports marketing and sponsorship officer:** Sports marketing professionals work on promoting sports events, teams and athletes. They handle branding, advertising and sponsorships to enhance the visibility and popularity of sports-related ventures.
- xi. **Sports analyst:** Sports analysts use data and statistics to analyse player performance, team strategies and game outcomes. This field is becoming increasingly important for making informed decisions in sports.
- xii. **Event manager:** Event managers plan, organise and execute sports events, from small local competitions to large-scale international tournaments.
- xiii. **Sports technology and innovation officer:** This field involves working with technology to develop new equipment, wearables, training tools and software that can enhance athletes' performance and training methods.
- xiv. **Sports researcher and academic:** A person with a strong interest in sports science can pursue a career in research or academia to advance the understanding of human performance, training techniques and injury prevention.
- xv. **Officiating official:** Officiating officials are the watchdogs of every sport where they learn the rules, regulations and codes of ethics that govern every sporting discipline. They ensure that athletes and every other person conducts herself/herself according to laid down rules.

Source: Department of Local Government, Sport and Cultural Industries, Government of Western Australia (2019). Further and extensive reading can be done at their website (See Reference).



**Fig 20.5:** *Officiating Officials*

### Learning Tasks

1. Research two careers within sports excellence. Identify key skills and qualifications required to attain it.
2. Interview a sports professional from the local community or a visiting speaker to understand their career journey. Focus on benefits, challenges faced, skills developed and advice for aspiring learners.
3. Research talent development programme in Ghana. Identify how young athletes are scouted, trained and supported to achieve excellence in sports. Evaluate the effectiveness of this programme and discuss its impact on sports careers.
4. Create a personal sports career plan based on your interests and goals. This task should involve setting short and long-term objectives, identifying required skills and qualifications and outlining steps to achieve this desired career.

### Pedagogical Exemplars

- a. **Guest Speaker Session/Career Conference:** Invite a sports professional, such as a coach, athlete, sports psychologist or sports manager to speak to the class about career pathways. Provide questions in advance for learners who might be shy or hesitant to ask questions in a public setting. Encourage small group discussions after the session. In groups, allow learners to discuss what they learnt and reflect on how it aligns with their interests. For learners with hearing impairments, ensure there is adequate amplification or place them closer to the speaker.
- b. **Career Pathways Research Project:** Learners explore different career pathways in sports excellence. Guide them to research specific careers, the skills and qualifications required and the progression within that career. Allow learners to work individually or in groups based on their preference and provide a range of resources, including videos, articles and websites, to cater to different learning needs. Assist visual learners to create infographics while others can use written reports or presentations. Guide those with learning difficulties to help structure their research. Ensure each learner's differences and abilities are respected.
- c. **Sports Career Exploration Stations (Circuit Learning):** Learners set up different stations in the classroom, each focused on a different career within sports excellence. Learners move from one station to another. At each station, they explore tasks, skills and roles associated with that career. Offer interactive elements such as hands-on activities, videos, or demonstrations, to engage kinaesthetic learners. Include a variety of careers, ensuring representation across



different sports and roles to accommodate learners with diverse interests. For those with mobility challenges, ensure stations are accessible and provide additional support if needed.

- d. Sports Career Role-Playing:** Learner's role-play various sports professionals such as coaches, athletes or sports journalists and create scenarios related to those careers. Assign roles based on learners' strengths and interests. Provide simpler roles to learners who may need additional support while challenging advanced learners with more complex roles or scenarios. For learners with language barriers or social anxiety, offer scripts or role prompts to ease participation. Encourage learners to respect the individual differences of their mates.
- e. Collaborative Career Pathway Learning:** Learners work in small groups to create a career pathway for a specific sports role. They identify the stages, skills, qualifications and potential challenges. Form groups with mixed abilities to promote peer learning. Offer flexible group structures for those who work better individually or need more guidance. Provide visual aids like charts or diagrams to help learners organise their thoughts. Allow learners with different identities and backgrounds to bring their unique perspectives to the discussion to foster inclusivity.

## Key Assessment

**Level 1:** Identify three career pathways in sports excellence.

**Level 2:**

- a. Explain career pathways in sports excellence.
- b. Write a brief reflection on which sports career you find most interesting and why. Describe the skills and qualities needed for that career.

**Level 3:**

- a. Answer a short quiz with multiple-choice or true/false questions that cover key concepts about sports excellence career pathways such as roles, stages, necessary skills and benefits.

Note: These quick questions are to be provided by the teacher.

- b. Create a 2–3 minute presentation on a specific sports career, describing the pathway to success, key skills and challenges.

**Level 4:** Design a career pathway map, diagram or flowchart for a specific role in sports excellence. It should include stages of progression, required qualifications, skill development milestones, potential challenges and career opportunities.

## Reference

1. Department of Local Government, Sport and Cultural Industries, Government of Western Australia (2019): Careers in Sport and Recreation: <https://www.dlgsc.wa.gov.au/department/publications/publication/careers-in-sport-and-recreation>.

## Section Review

In week 16, the focus was on introducing career pathways in physical education and sports. Use a variety of teaching methods including videos, discussions and guest speakers, to accommodate different learning styles. Differentiation can include providing scaffolding for learners who need more support such as outlines or images in sequence, while encouraging advanced learners to explore additional resources. Ensure all learners, regardless of background or ability, are able to access the content and feel included in the discussions.

Week 17, led the class to examine career pathways in health education. Use case studies and group activities to engage learners with diverse needs. Differentiation should be applied by allowing learners to choose which careers to explore ensuring cultural relevance and personal interest. You can also use different formats for learners to express their understanding such as written reports, presentations or creative projects. By encouraging peer collaboration, assist learners from different backgrounds to feel valued and foster a supportive learning environment.

During week 18, learners focused on identifying career pathways in physical education. Use hands-on activities and group work to engage learners with varying abilities. Differentiation might include adapting tasks for those who need additional support, such as providing step-by-step instructions or additional examples. To address different backgrounds, you can highlight a wide range of career options including those that reflect the diversity of the class. The goal is to ensure every learner feels they can connect with the topic.

In week 19, the emphasis was on discussing career pathways in physical education. You can employ the Think-Pair-Share method to promote discussion among learners, with differentiation by adjusting the complexity of questions based on the learners' abilities. Encourage open dialogue and ensure all voices are heard creating an inclusive classroom environment. By providing multiple ways for learners to express their ideas such as group discussions or individual reflections, you will be accommodating various learning preferences and ensuring an equitable learning experience.

In the final week – week 20, the focus was on identifying and discussing career pathways in sports excellence. Use role-playing and interactive activities to engage learners and accommodate different learning styles. Differentiation can involve allowing learners to explore careers that align with their interests and cultural backgrounds, ensuring a diverse range of examples. Also, consider learners' needs by providing additional support where needed and encouraging advanced learners to delve deeper into specific pathways. This approach fosters a collaborative and inclusive classroom environment.

# SECTION 7: COACHING AND OFFICIATING OF NET GAMES

**Strand: Academic and Career Pathways**

**Sub-Strand:** Coaching and Officiating of Games

**Learning Outcome:** *Apply concepts and principles of coaching and officiating in the performance and management of net games.*

**Content Standard:** Demonstrate understanding and application of the concepts and principles of coaching and officiating of net games (e.g. badminton, tennis, table tennis and volleyball)

## INTRODUCTION AND SECTION SUMMARY

In Section 7, learners will explore the concepts and principles of coaching and officiating net games such as volleyball, badminton or tennis. By the end of this section, learners should understand the key roles and responsibilities involved in coaching and officiating including setting rules, managing gameplay and promoting sportsmanship. They will also practice these principles in real game scenarios. This section links to teamwork, communication and leadership, making it valuable across various disciplines.

The weeks covered by the section are:

**Week 21:** Discuss the concepts and principles of coaching and officiating net games.

**Week 22:** Apply the concepts and principles of coaching and officiating in the performance of net games

## SUMMARY OF PEDAGOGICAL EXEMPLARS

Use a combination of direct instruction, demonstrations and practical exercises to convey the principles of coaching and officiating. Lessons should include discussions on sports ethics, decision-making and effective communication. Differentiation can be achieved by assigning leadership roles to advanced learners and providing additional guidance to those needing support. Encourage teamwork by having students practice in groups, allowing them to experience different roles in net games.

## ASSESSMENT SUMMARY

Assessment for this section involves both theoretical and practical components. Teachers should conduct quizzes to test learners' understanding of coaching and officiating principles. For practical assessment, observe learners in simulated game scenarios to evaluate their ability to apply concepts and principles effectively. Record observations focusing on leadership, rule enforcement and teamwork.

**WEEK 21**

**Learning Indicator:** *Discuss the concepts and principles of coaching and officiating net games*

**Theme or Focal Area:** **Concepts and principles of coaching and officiating of net games**

## Sports Coaching

### Coaching

Coaching is the process of motivating, guiding and training an individual or a team in preparation for any sporting hobby, career or event. This is to improve the individual athlete's or team's overall performance.



**Fig. 21.1:** *Coaching in Volleyball*

### Key skills required in coaching

- Knowledge and experience of the sport.
- Knowledge of the human body to maximise results and reduce injury risks.
- Good communication and teaching skills.
- Analytical skills.
- Problem-solving abilities.

### Responsibilities of a coach

- Set vision, goals and standards for training and competition.
- Engage in and support ethical practices.
- Build relationships.
- Effective communication and collaboration.
- Develop a safe and inclusive environment.
- Reward improvement and good performance.
- Conduct practices and prepare for competition.

- Strive for continuous improvement.
- Coaches continually improve through mentorship, professional development and evaluation.

### Attributes of a Coach

- *Passion*: Passion inspires coaches about a sport and an athlete. It motivates them to seek additional skills and research to improve. This passion also helps them envision the best for athletes, enabling them to create an environment where athletes can thrive and have fun while developing their skills.
- *Confidence*: Teams and athletes rely on their coach to advise them on how to perform, overcome obstacles or react to challenges. If you display confidence as a coach, athletes will trust that any information you communicate is reliable.
- *Observation*: When working with athletes, careful observation helps coaches recognise how individuals communicate within a team or why a player's performance is suffering. Coaches must be active observers enabling them to recognise an athlete's resilience and pitfalls. Observation furnishes coaches with in-depth feedback on their procedure and output which will eventually help them improve.

### Key principles of coaching

- *Responsibility*: Responsibility is a key coaching principle because it helps coaches identify the right direction and put in the extra effort. The benefit of responsibility as a principle for coaching is direction setting, accountability, and trust-building.
- *Solution focus*: Among the powerful strategies for coaching is solution-focused coaching. The solution-focused principle concentrates on assisting the athlete to discover outcomes rather than dilemmas. It builds on resilience instead of shortcomings and uncovering optimistic directions rather than evaluating obstacles.
- *Challenge*: The majority of athletes are full of positive energy. They explore their boundaries and take away restrictions. This, in turn, evolves into a strength booster. Being challenged pushes athletes to strive harder.
- *Self-belief*: A strong belief in one's capabilities is an important step towards achieving a goal. Coaches assist athletes to develop self-belief by providing opportunities for them to learn from their mistakes and build confidence from their training and performance.
- *Directing*: This refers to the process of leading, instructing and guiding athletes to achieve specific goals and objectives. It involves a combination of leadership, communication, planning and motivation to ensure that athletes perform at their best and reach their full potential.

### What is a net game?

A net game is a type of sport or game where players or teams compete by hitting or propelling a ball or shuttlecock over a net, typically dividing the playing area into two halves. The objective is usually to send the ball or shuttlecock over the net into the opponent's side in a way that they cannot return or successfully defend against it.

### Examples of net Games

- *Tennis*: Players use rackets to hit a tennis ball over a net into the opponent's court, aiming to win points by forcing errors or hitting unreturnable balls.
- *Badminton*: Similar to tennis but with a shuttlecock instead of a ball, badminton involves hitting the shuttlecock over a net with rackets.
- *Volleyball*: Teams of players use their hands to hit a ball over a net, trying to land it on the opponent's court to score points.

- *Table Tennis*: Also known as ping-pong, this game involves hitting a small ball across a net on a table using paddles.

### **Characteristics of a good net game coach**

- Must possess a sound technical knowledge of the game.
- Must be a good communicator.
- Be a good listener.
- Be flexible and adaptable.
- Needs a sense of responsibility, good personal organisation and administrative ability.

### **Net games coaches' code of ethics**

The Net Game coach should:

- Act with integrity.
- Exhibit competence.
- Act in the best interest of the athlete's development.
- Accept judgments from officials.
- Demonstrate the principles of fair play.

### **Benefits of coaching to athletes**

Coaching has helped athletes, in many ways, to become a better version of themselves. Some of the benefits athletes get from coaching include:

- Improved relations.
- Improved communication.
- Better time management.
- More positive thinking.
- Increased trust and respect.
- Improved health.
- Self-discovery.
- Greater ownership and responsibility.
- Developing self-awareness.
- Improves specific skills or behaviour.
- Greater clarity in roles and objectives.
- Improved athlete/player retention.
- Improved morale and satisfaction.
- Increased teams' performance.

### **Officiating**

Officiating is the supervision of sports competitions in accordance with established rules. The quality of sports officiating depends on the officials' knowledge of the rules and the ability to apply them accurately and neutrally.

### Officiating as a science and as an art

Officiating as science has to do with the knowledge and interpretations of the rules, whereas as an art, it deals with the conduct of the game. The quality of officiating depends on the officials' knowledge of the rules while observing the requirements of sportsmanship, unbiased judgement, accuracy and relying on their experience.

### Differences between coaching and officiating

**Table 21.1:** Comparisons of Coaching and Officiating

| Coaching   | Officiating  |
|--|--|
| Coaching trains people or prepares them for participation in a sport.                            | Officiating supervises a sport while applying rules and regulations.   |
| Coaching develops skills and tactics in athletes   | Officiating ensures the success and integrity of the sport.  |
| A coach trains, supports, motivates and inspires athletes to achieve the best.                   | An official gives judgement by aptly interpreting the rules.   |
| Coaching requires knowledge of sport-specific techniques, team dynamics and motivational skills. | Officiating needs a comprehensive understanding of game rules, quick decision-making skills and the ability to remain impartial. |
| Coaches have authority over their team or athletes but do not control game outcomes.             | Officials have authority during games and can influence outcomes through their rulings.  |

### Principles of officiating

- *Openness:* The officials' communications with all coaches, athletes, scorekeepers and team personnel should be respectful and formal in nature. Do not be too friendly. On the other hand, do not display a condescending attitude.
- *Knowledge of the rules:* It is important for an official to be up to date with the latest rules of the sport. The competent official is an expert in the interpretation of the rules.
- *Decisiveness:* Be precise when applying the rules in making a decision by exhibiting complete confidence.
- *Enthusiasm:* Officials should show a demeanour of excitement in performing the trade, no matter the level of competition to which they are assigned.
- *Safety:* Diligent officials must check to ensure athletes are legally equipped before the event starts, especially when it is a contact sport. They must also check the environment to ensure it is clear of dangerous and obstructive substances.

### Types of officiators in net games

- *Referee/Umpire:* The umpire or referee is the main official who oversees the game, makes final decisions and resolves any disputes.
- *Assistant Referees:* Assistant referees help the main referee to officiate and monitor different aspects of the game.
- *Scorer:* The scorer keeps track of the games' goals or scores and ensures the final scores reflect the outcome of the game.
- *Timekeepers:* Timekeepers manage the game's clock and keep track of time out and breaks of play.

**The qualities of officiators include:**

- *Trustworthiness* - Honest and impartial.
- *Responsibleness* - Have integrity and take the role seriously.
- *Prepared for their role* - Prepared physically and mentally for the task.
- *Competence* – Capable and further developing the skills for the task.

**Code of conduct for sports officiators**

- Officials shall generate public confidence in the sport.
- Officials shall be impartial and fair in judging competitions.
- Officials shall hold and maintain the values of officiating e.g. integrity, neutrality, respect, sensitivity, professionalism, discretion and tactfulness.
- Officials shall master the rules of the sport.
- Officials shall uphold the honour and dignity of the sport.
- Officials shall have good communication skills, both verbal and non-verbal.

**General Basic Rules of Net Games**

Net games constitute a variety of sports where players or teams are separated by a net and the net divides the playing area into two halves. Some of the most common net games include tennis, badminton, volleyball and table tennis. Despite their differences, these games share several basic rules and concepts.

**Note:** It is important that you research further the specific rules of the particular net sport you wish to teach and guide learners to do the same.

The following is a summary of general rules common in net games:

- i. Net separation:** The central defining feature of net games is a net that separates opposing sides. Players or teams must not cross or interfere with the net during play, except in certain cases where the net may be intentionally attacked (like in volleyball).
- ii. Scoring:** Scoring in net games generally involves a team or player hitting a ball or shuttlecock over the net into the opponent's side, with the goal of landing it within a defined boundary or forcing an opponent's error. Points are typically scored when the opposing team/player fails to return the ball/shuttlecock within the boundaries, hits it into the net, or commits a fault.
- iii. Service rules:** Net games have specific rules for serving, such as serving from behind a baseline or serving within a designated service box. Generally, the serve must clear the net and land within the opponent's designated area. There may be restrictions on how many times a player can serve, who serves or the direction of service (like alternating sides in tennis and badminton).
- iv. Boundaries and out-of-bounds:** All net games have clearly defined boundaries. If the ball/shuttlecock lands outside these boundaries, it is considered out and the opposing side is awarded a point or the serve. Boundary lines are typically part of the court, meaning a ball/shuttlecock landing on a line is considered in play.
- v. Rally-based gameplay:** Net games often involve rallies, where the ball/shuttlecock is hit back and forth across the net. The rally ends when one side fails to return the ball/shuttlecock, hits it into the net, or commits a fault.
- vi. Faults and violations:** Common faults in net games include hitting the ball/shuttlecock into the net, hitting it out of bounds, stepping over the baseline during a serve, or crossing the net during play. Some games (like volleyball) allow for specific exceptions, such as when blocking or spiking near the net.



- vii. Equipment Regulations:** Each net game has specific equipment requirements, including the size, tension and height of the net, as well as specifications for rackets, balls or shuttlecocks. Players must use approved equipment to ensure fairness and safety.

### Learning Tasks

1. Give three reasons why coaching and officiating require special skills.
2. As an officiator, select a net sport and design a plan on two basic things you will do before, during and after the game.
3. Give four reasons why you might venture into a net game coaching or officiating.

### Pedagogical Exemplars

- a. **Group-Based Learning:** In groups, guide learners to research from available relevant sources such as books, journals, the internet etc. Support them to discuss the concepts and principles of coaching and officiating of net games. Support learners to put findings into PowerPoint slides and make presentations to justify their findings. Ensure shy and struggling learners' participation in group work. Allow whole class feedback and input. Encourage civility in the use of language.
- b. **Digital Literacy:** Break learners into groups and assign each group a net sport. The groups research the rules governing their assigned sport and report their findings to the whole class. Guide learners with their searches on the internet. Ensure they stay on the sole purpose of their search. Encourage shy learners to lead. Give leading roles to female learners with the use of technology. Encourage learners with special educational needs and disabilities (SEND) to take an active part.
- c. **Activity-Based Learning:** Motivate learners to identify suitable coaching approaches. Support learners to use their findings to draw up a plan on coaching a net game during inter-class/school competition. Learners justify the selection of their coaching plan for such activities with guidance. Support the shy and struggling learners to act as moderators during discussions and provide opportunities for learners to participate irrespective of their background.
- d. **Collaborative Learning:** In pairs, assign learners as coaches to your school's net teams to assist in preparing them for an upcoming competition. Assign others to act as officiators during the training sessions. Encourage learners to apply and implement the principles and rules of playing net games. Provide support to individuals and pairs when needed.

**Occasionally stop and ask learner officials and coaches why they made certain decisions on the game and athletes' performances regarding the rules and performance principles governing net games. Give individualised and paired feedback to motivate and build their confidence levels.**

### Key Assessment

1. **Level 1:** What is coaching?
2. **Level 1:** What is officiating?
3. **Level 2:** Explain why coaching and officiating require specialised skills.
4. **Level 2:** Describe four differences between coaching and officiating.
5. **Level 3:** Describe the responsibilities of a net game coach and a net game official.
6. **Level 3:** Select a net sport, research its rules and analyse how they impact successful officiating and athletes' performance.

## Suggestions For Additional Learning

The rules of the individual sports in net games should be further researched and learnt by the teacher and learner coaches and officiators to ensure an in-depth understanding of the games.

## References

1. MACKENZIE, B. (1997) Coaching Principles [WWW] Available from: <https://www.brianmac.co.uk/coaching.htm> [Accessed 5/9/2023]
2. <https://coachfoundation.com/blog/coaching-principles/>
3. <https://akilaavinuty.blogspot.com/2020/02/introduction-of-officiating-and-coaching.html> (Introduction of Officiating and Coaching)
4. <https://www.referee.com/principles-with-interest/>
5. <https://melbournesocialnetball.com.au/how-many-players-in-a-netball-team-new-rules-to-remember/>

**WEEK 22**

**Learning Indicator:** *Put into use the concepts and principles of coaching and officiating in the performance of net games*

**Theme or Focal Area:** **Application of the concepts and principles of coaching and officiating in the performance of net games**

### Coaching And Officiating Net Games

Table 22.1 below summarises the framework for how to set up a good practice session.

**Table. 22.1:** Net Game Practice Session Guide

| Phase                           | Description and principles  | Length     |
|---------------------------------|---|------------|
| Warm-up                         | Important for preparing the body for the more vigorous exercise that follows.<br>Should be as varied as possible to maintain the interest of the players.<br>As the players warm up, increase the intensity and pace of activities.<br>Make activities specific to the particular net game. | 10 minutes |
| Skills development and training | Focus on the introduction and reinforcement of new skills.<br>Time spent on specific skill development will depend on the progress made by players. Don't teach more advanced skills until mastering the basic skills.  | 30 minutes |
| Match or game                   | A short match is a great way to end a practice session and exposes players to proper play.<br>Mini games or 'attack vs. defence' matches work well.   | 15 minutes |
| Cool-down and closure           | Gentle activity such as a slow jog leading to a walking pace.<br>Opportunity to get all players together at the end to reinforce key lessons of the practice.   | 5 minutes  |

### Net Game Skill Development And Training (Selected Sport – Volleyball)

**Note:** Teachers can choose to teach alternate net sports from within the curriculum subject to equipment and facility availability etc.

#### Volleyball Coaching (service and reception)

Volleyball is a team sport where players use their hands to hit a ball over a net into the opponent's court, aiming to score points by making the ball land on the ground. Teams work together to block, pass and attack the ball to gain an advantage. The game relies heavily on teamwork, communication and agility.

##### a. Teaching the underarm serve

The underarm serve or underhand serve is a basic method to start a rally in volleyball. It is often used by beginners and requires a consistent technique.

### i. Serve techniques

- *Stance:* Stand with your feet shoulder-width apart and your non-dominant foot slightly ahead.
- *Grip:* Hold the ball with your non-dominant hand, keeping it steady.
- *Swing:* Make a pendulum-like swing with your dominant hand, keeping your elbow slightly bent.
- *Contact:* Strike the ball with the heel of your hand or the flat part of your forearm, aiming to send it over the net.
- *Follow-through:* Continue the swing in the direction you want the ball to travel.

### b. Teaching digging (Reception)

Digging reception is a defensive skill used to receive serves, passes and spikes. It involves controlling the ball with a forearm.

#### i. Digging reception techniques

- *Stance:* Stand with your feet shoulder-width apart, knees slightly bent and weight forward.
- *Grip:* Bring your hands together with one palm over the other, thumbs aligned and pointed downward and the rest of the 4 fingers holding the other hand.
- *Contact:* As the ball approaches, keep your arms straight and meet the ball with your forearms, cushioning the impact.
- *Follow-through:* Direct the ball upwards towards the setter or target, keeping the ball under control.
- *Body movement:* Use your legs to help with balance and control, keeping your body steady during contact.

## Volleyball officiating

### a. Basic officiating skills in volleyball

- i. **Rule knowledge:** An in-depth understanding of the official volleyball rules, including scoring, rotations and violations. This skill is fundamental to making correct decisions during the game.
- ii. **Signal familiarity:** Mastery of standard hand signals used in volleyball officiating to communicate decisions, such as those for points, faults, rotations, and timeouts.
- iii. **Attention to detail:** The ability to closely observe the game, watching for rule violations like double hits, lifts, net touches and out-of-bounds plays.

### b. Basic rules in volleyball

- i. **Team composition:** Volleyball is played with two teams of six players each. The standard positions are setter, outside hitter, opposite hitter, middle blocker and libero.
- ii. **Rotation and positions:** Teams rotate clockwise when they gain the serve from the opponent. Proper rotation must be maintained to avoid violations.
- iii. **Serving rules:** A serve is initiated from behind the end line. The server cannot step on or over the line during the serve (foot fault). If the serve hits the net but goes over, it is still in play.
- iv. **Scoring system:** Most volleyball games use rally scoring, where each point ends with a point for one team. A team wins a set by reaching 25 points with a minimum lead of two points. A match is typically best-of-five sets.

- v. **Ball in and out of play:** The ball is in play if it lands within the boundary lines, including the lines themselves. The ball is out of play if it lands outside the lines or hits the antenna, net posts, or other non-playable areas.
- vi. **Three-touch rule:** Teams can touch the ball a maximum of three times before sending it over the net. The same player cannot touch the ball twice consecutively, except after a block.
- vii. **Net violations:** Players must not touch the net or cross under it into the opponent's court. The ball must also not be caught in or against the net on a play.
- viii. **Double hits and lifts:** Double hits occur when a player contacts the ball twice in succession. Lifts occur when the ball is caught or thrown rather than hit cleanly. Both are considered faults.
- ix. **Attacking and blocking:** Front-row players are allowed to attack the ball above the net, while back-row players must be behind the attack line when doing so. Blocking is allowed but cannot interfere with the opponent's side of the net.
- x. **Libero rules:** The libero is a specialised defensive player who cannot attack or serve but can replace any back-row player without counting as a substitution. The libero wears a different coloured jersey to distinguish them.

### Learning Tasks

1. Practice the underarm serve in pairs or small groups by focusing on accurate technique.
2. Practice digging from different angles in a controlled environment by focusing on proper technique.
3. Combine serving and digging in a single drill, where one group serves, and the other digs in a more game-like context.
4. Practice serving and receiving where you are encouraged to use the learnt skills in a real-game situation.
5. Demonstrate coaching and officiating in volleyball.

### Pedagogical Exemplars

#### a. Warm Up:

**Circle Pass and Move:** In groups of mix-abilities, learners form a circle, with each person standing about 1-2 metres apart and all jogging on the spot together. One learner with a ball passes it to another person in the circle in whatever direction or location. As soon as they pass the ball, they quickly move to that person's spot. The person who receives the ball does the same—passing and then moving to the sender's spot. This continues rapidly around the circle, creating a dynamic and energetic atmosphere. Encourage learners to vary their passes (overhead, underhand, bounce pass or chest pass) to keep it interesting. Encourage learners to be patient with each other. Guide them to keep the intensity of the pass under moderation.

#### b. Skill Learning/Digital Literacy:

- i. **Demonstrations and Modelling:** In mixed-ability and mixed-gender groups, learners practice proper techniques for underarm serving and digging. Another group of learners demonstrate officiating in volleyball. Use visual aids, such as slow-motion videos or diagrams to illustrate the skill and key points. Assist less skilled learners with much simplified and broken-down steps to execute the skill.
- ii. **Guided Practice with Feedback:** In mixed-ability groups and alternating between coaching, officiating and playing groups, learners practice serving, reception and, coaching

and officiating. Provide direct feedback during drills to correct form and improve technique. Use positive reinforcement to encourage learners to refine their skills. Offer alternative drills for learners with different skill levels. For beginners, focus on basic technique; for advanced learners, introduce more challenging elements, such as directional serves or digging under pressure. Make provisions for gender and identity differences and design simpler skill-learning drills to suit them.

- iii. **Skill Stations:** Set up stations focusing on specific skills, allowing learners to rotate through them. They learn both coaching and officiating skills in volleyball. This provides variety and accommodates different learning styles. For learners with mobility issues, adjust the rules to allow more flexible movements and focus on hand-eye coordination. Emphasise patience among learners for learners who require additional support.
- iv. **Peer Coaching:** Pair learners to act as coaches for each other, offering guidance and feedback. They then switch roles with officiators. This encourages peer learning and supports learners who may need additional help. To keep the game inclusive, ensure mixed teams and encourage positive reinforcement. Offer guidance to learners who need extra support and celebrate successes to build confidence. Encourage highly skilled learners to assist less skilled ones with additional support while demonstrating cooperation.
- v. **Cool Down and Closure:** Learners walk around the volleyball court freely. While walking, they raise and shake their arms in the air to help relax their muscles.

Learners come together in a horse-shoe formation and describe and demonstrate the skill learnt. Answer learners' concerns about difficulty executing the skill and assure them of improvement in subsequent practice.

## Key Assessment

1. **Level 1:** Describe digging and receiving skills in volleyball.
2. **Level 1:** Identify three basic rules in volleyball.
3. **Level 2:** Demonstrate serving and digging skills in volleyball in a scrimmage (game situation).
4. **Level 2:** Demonstrate officiating in volleyball in a scrimmage (game situation).
5. Use a rubric to ensure consistency and objectivity.
6. **Level 3:** Reflect on your performance as a coach or official and identify areas for improvement. This fosters self-awareness and encourages continuous improvement.
7. **Level 3:** Organise a class volleyball competition. Take turns to coach and play during this session. Coach some selected athletes and present a peer assessment report on their technique, positioning and teamwork. This promotes collaborative learning and helps learners understand the importance of constructive feedback.
8. **Level 4:** Create a coaching plan to coach your school's selected net game team preparing for a tournament.
9. **Level 4:** Create an officiating plan to prepare for officiating your school's selected net game team when participating in a tournament.

## Suggestions For Additional Learning And Practice

Assist learners in learning the coaching and officiating techniques in the other net games during times like Club Meetings, weekends and after-class training. Some of the skills are:

- a. Other skills in volleyball such as names of zones, rotations, other forms of reception etc.
- b. The basic skills in coaching/playing and officiating other net games such as table tennis, badminton and tennis.

- c. The volleyball example is to serve as a guide to assist in teaching the application of coaching and officiating techniques in the other net sports, depending on your school's situation and the resources available.

## References

1. MACKENZIE, B. (1997) Coaching Principles [WWW] Available from: <https://www.brianmac.co.uk/coaching.htm> [Accessed 5/9/2023]
2. <https://www.du.edu/sport-sense/news/why-sport-coaching-education-important>
3. [https://www.discovery.co.za/microsites\\_za/vitality\\_schools/web/linked\\_content/pdfs/for\\_coaches/netball\\_coaching\\_manual.pdf](https://www.discovery.co.za/microsites_za/vitality_schools/web/linked_content/pdfs/for_coaches/netball_coaching_manual.pdf)

## Section Review

Over the past two weeks, Section 7 covered critical aspects of coaching and officiating net games. This section is designed to give learners both theoretical knowledge and practical experience in roles that are essential for the success of net games like volleyball, badminton, tennis and table tennis.

During week 21, learners were introduced to the foundational principles of coaching and officiating. They should have gained an understanding of the responsibilities of a coach, such as planning, leadership and team management. Key coaching concepts, like effective communication, motivational techniques and strategic planning were covered. On the officiating side, learners are expected to grasp the basic rules, understand the role of an official in ensuring fair play, and learn the importance of impartiality.

In Week 22, the focus shifts to applying the concepts and principles in real or simulated game situations. Learners should practice various roles—coaching, refereeing and team-leading to understand the practical challenges and responsibilities involved. They should gain hands-on experience in setting up a game, managing teams and officiating matches while emphasising sportsmanship and fair play.

Advanced learners should be given leadership roles and additional responsibilities while those needing more support be provided with extra guidance and simpler tasks to build their confidence. By the end of this section, all learners should have developed a deeper understanding of coaching and officiating roles in net games. They should be capable of demonstrating basic officiating skills, such as calling fouls and managing game flow as well as coaching skills like team strategy and motivation.

# SECTION 8: COACHING AND OFFICIATING OF THROW EVENTS

Strand: **Academic and Career Pathways**

**Sub-Strand:** Coaching and Officiating of Athletics

**Learning Outcome:** *Apply concepts and principles of coaching and officiating in the performance and management of field events*

**Content Standard:** Demonstrate understanding in the application of the concepts and principles of coaching and officiating of throw events. (e.g., Shot Put, discus, javelin, hammer)

## INTRODUCTION AND SECTION SUMMARY

In Section 8, learners are introduced to the fundamentals of coaching and officiating in throw events, with a focus on javelin and shot put. By the end of this section, they should understand key concepts and principles that govern these events, including safety procedures, proper techniques, and the roles of coaches and officials. The overall performance indicator for this section is the learners' ability to demonstrate proper coaching methods and officiating practices in throw events. This section also emphasises teamwork, communication and adherence to safety standards. Subjects like physics (related to force and trajectory) and biology (human anatomy and muscle function) are closely linked, providing a broader understanding of the skills involved in these sports.

The weeks covered by the section are:

**Week 23:** Discuss the concepts and principles of coaching and officiating throw events

**Week 24:** Put into use the concepts and principles of coaching and officiating in the performance of throw events

## SUMMARY OF PEDAGOGICAL EXEMPLARS

Teaching strategies should include direct instruction, demonstrations, interactive activities and practical applications. Differentiation is crucial to meet varying learner needs. For those requiring additional support, provide extra guidance and simplified tasks focusing on basic techniques. For advanced learners, offer challenging drills and additional coaching roles. Teachers should focus on safety and technique, encouraging learners to collaborate and support one another. Consider group activities to foster teamwork and use varied learning methods to cater to different learning styles.

## ASSESSMENT SUMMARY

Assessment methods should include practical demonstrations and written quizzes to evaluate learners' understanding of coaching and officiating concepts. In Week 23, assess their grasp of the theoretical aspects through quizzes and discussions. In Week 24, focus on practical skills, observing how learners implement coaching and officiating in throw event drills. Use rubrics to ensure objective assessment of performance and safety compliance. Record learners' progress, noting areas for improvement and those excelling in their skills, and use this information to inform future lesson planning and individualised feedback.



**WEEK 23**

**Learning Indicator:** *Discuss the concepts and principles of coaching and officiating of throw events*

**Theme or Focal Area:** **Concepts and principles of coaching and officiating of throw events**

## Coaching And Officiating Throw Events

### Concepts and principles of coaching throws

Coaching is described as the provision of technical support and insight to an athlete or a group of athletes to help them develop and improve.

The following are some key principles of coaching throws:

- i. **Technique grasp:** Concentrate on teaching the correct throwing technique. Start with the basics and gradually progress to more advanced techniques. Break down the movement of the technique into phases. Use different drills to target specific aspects of the technique.
- ii. **Safety procedure:** Focus on safety measures for athletes and other individuals by maintaining a safe throwing area. Ensure the throwing area is clear and well-marked. Be careful with the handling of the equipment and practice safe throwing practices by athletes. The equipment must be in good condition and properly maintained.
- iii. **Conditioning and strength:** Develop athletes' strength in the core muscles (i.e. muscles of the abdomen, lower back, pelvis and hips), legs and upper body. Incorporate training activities or drills to improve power, speed, strength and coordination, flexibility, agility and foot positioning.
- iv. **Providing feedback:** Provide clear and constructive feedback to help athletes refine their skills. There are two main sources of feedback available to the athlete and these are: **Intrinsic feedback:** This is naturally available information from within the athlete. **Extrinsic feedback:** This is additional information to the athlete that can be provided by some external sources such as from a coach, other athletes, spectators, mirrors or from watching a video replay.
- v. **Individualised coaching:** Every athlete has unique strengths, weaknesses and learning styles. Modify coaching strategies and training plans to meet a particular person's specific needs, preferences, characteristics or circumstances rather than applying a one-size-fits-all approach. Tailor your coaching methods to meet the individual needs of each athlete.
- vi. **Mental preparation and consistency:** Develop athlete mental toughness and focus. Encourage goal setting and mental visualisation of techniques to enhance good performance. Use consistent cues and coaching methods to promote acquiring skills. Motivate regular practice to reinforce technique and build muscle memory.
- vii. **Competition preparation:** Teach athletes how to handle competition and pre-event pressure. Prepare athletes for various competition situations and environmental factors.
- viii. **Continuous learning:** Stay updated on modern techniques, training methods and coaching strategies. Support athletes to continually improve and seek opportunities for growth.
- ix. **Creating fun and enjoyment:** While striving for excellence is important, as a coach, ensure that athletes have fun and enjoy their sport. A positive experience can lead to long-term participation and success.

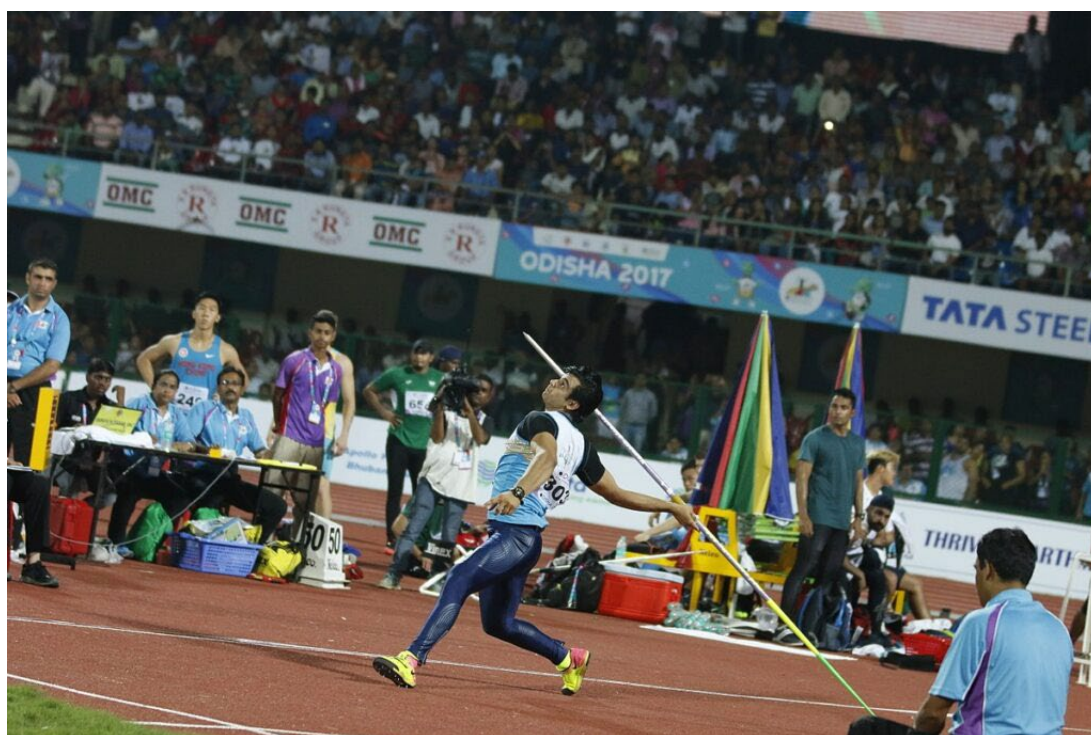
## Concepts and principles of officiating throws

An official is an individual who is responsible for overseeing and enforcing the rules and regulations of a particular event, competition or activity. These officials ensure that the event is conducted fairly and in accordance with established guidelines.

Officiating in throw events such as shot put, discus, javelin and hammer throw involves several key concepts and principles to ensure fair and safe competition.

Here are some of the essential concepts and principles of officiating in throw events:

- i. **Practising fairness:** The primary goal of officiating is to ensure a level playing field for all competitors. Officials must enforce rules and regulations consistently to prevent any athlete from gaining an unfair advantage.
- ii. **Ensuring safety:** Safety is of paramount importance in throw events. Officials must ensure that athletes and spectators are safe during competition. This includes setting up appropriate throwing areas, enforcing safety rules and monitoring the competition for any potential hazards.
- iii. **Knowledge of rules and regulations:** Officials must have a comprehensive understanding of the rules and regulations specific to each throw event. These rules cover everything from equipment specifications to proper techniques and fouls. Officials should be able to interpret and apply these rules accurately.
- iv. **Taking accurate measurements:** In throw events, precise measurement of the distance achieved by the athlete is crucial. Officials are responsible for measuring and recording these distances accurately, often using specialised equipment such as measuring tapes or lasers.
- v. **Monitoring markings and fouls:** Officials must closely monitor the athletes to determine whether a throw is valid or a foul. Fouls can occur for various reasons, such as stepping out of the throwing circle or releasing the implement incorrectly. Officials use specific signals and markings to indicate fouls.



**Fig. 23.1:** Judges Closely Monitoring Neeraj Chopra,  
Winner of World Athletics Championship 2023 Javelin Throw

- vi. **Timing accurately:** Accurate timing is essential to ensure that athletes do not delay unduly before throwing their implements.
- vii. **Good judgement of throws:** Officials often need to judge the validity of throws in terms of their trajectory, landing position and any potential fouls. They may also need to determine the order of finish when multiple competitors achieve the same distance.



**Fig. 23.2:** *A Judge Having a Good Judgement of Shot Put Thrown by Tomasz Majewski a Former Olympic Gold Medallist – 2008 & 2012.*

- viii. **Starting and stopping competitions:** Officials are responsible for starting and stopping the competition, signalling when it is time for athletes to throw, timing the competition and announcing the results.
- ix. **Equipment inspection:** Before the competition begins, officials must inspect all equipment to ensure that they comply with the rules. These include checking the weight and dimensions of implements and ensuring they are in a proper condition.
- x. **Protest resolution:** Officials may need to address protests or challenges from athletes or coaches regarding decisions made during the competition. They must follow established procedures for reviewing and resolving protests.
- xi. **Following the code of conduct:** Officials must maintain a high standard of professionalism and impartiality. They must not show favouritism and must avoid any conflicts of interest. A code of conduct is typically in place to guide officials' behaviour.
- xii. **Effective communication:** Effective communication among officials, athletes, coaches, and spectators is crucial. Officials must be able to convey information clearly and efficiently, especially when announcing results, explaining fouls, or addressing protests.
- xii. **Continuous education:** Officials must engage in ongoing education and training to stay updated on rule changes, new techniques and best practices in officiating.

**SOURCE:** *The International Association of Athletics Federations (2009)*

### Learning Tasks

1. Identify three basic concepts of officiating throws.
2. Outline four basic qualities of an effective/good coach for throws.
3. Analyse four key principles that guide coaching of throw events.

### Pedagogical Exemplars

- a. **Group/Collaborative Learning:** Put learners in groups of equal numbers to analyse the roles of coaches and officials in athletics throw events. Encourage open, respectful dialogue among group members. Motivate learners to listen attentively to give constructive feedback. Support learners to reflect on their collaborative experience individually and as a group. Opportunities should be given to those who want to present their work verbally. Encourage learners to respect individual differences and views.
- b. **Talk-for-Learning:** Learners analyse how a coach's good knowledge of athletes and their unique qualities can lead to an athlete's successful performance. They also analyse how these qualities in themselves can make them good officials. Provide support for learners who have issues with mobility, speech, hearing or are shy etc. Offer guidelines on how to express opinions and give constructive feedback. Help learners understand that mistakes and different opinions can lead to a greater understanding of concepts. Give guidelines on group ethics for discussion and approval by class.
- c. **Digital Based Learning:** Learners use their digital devices to research guidelines for developing leadership qualities in throws for successful coaching and officiating. They examine the impact of effective leadership on coaching. Assist all learners in accessing relevant digital tools and other search engines including those with disabilities. Provide constructive feedback. Offer opportunities for choice in learning activities. Encourage peer-to-peer help with the use of digital and other tools.

### Key Assessment

1. **Level 3:** Examine one role of feedback for each of the following: skill learning, right delivery and success in a throw career.
2. **Level 3:** Examine the impact of an officiator's knowledge of rules and regulations on the success of a throw tournament.
3. **Level 3:** Examine the impact of a coach's knowledge of rules and regulations on the success of an athlete's performance.
4. **Level 4:** Analyse the roles and impacts of any three of the following principles of officiating (your analysis should be linked to how these roles and impacts affect the success of tournaments, entertainment of spectators and output of athletes):
  - i. Taking accurate measurement
  - ii. Monitoring markings and fouls
  - iii. Timing accurately
  - iv. Having good judgement of throws
  - v. Starting and stopping competitions
  - vi. Equipment inspection
  - vii. Protest resolution
  - viii. Following the code of conduct
  - ix. Effective communication

## References

1. England Athletics (2023): Event Group Throw: <https://www.englandathletics.org/coaches-and-officials/coaching-qualifications/event-group-throws/>
2. Study IQ (2023): World Athletics Championships 2023, Results, Neeraj Chopra Won Gold: <https://www.studyiq.com/articles/world-athletics-championships/>
3. The International Association of Athletics Federations (2009): Introduction to Coaching: The Official IAAF Guide to Coaching Athletics: IAAF Coaches Education and Certification System; Warners Midlands plc, Bourne, Lincolnshire, PE109PH, UK
4. Wikipedia (2023): Shot Put: [https://en.wikipedia.org/wiki/Shot\\_put](https://en.wikipedia.org/wiki/Shot_put)

**WEEK 24**

**Learning Indicator:** *Put into use the concepts and principles of coaching and officiating in the performance of throw events*

**Theme or Focal Area:** **Applying the concepts and principles of coaching and officiating in the performance of throw events**

### Applying The Concepts And Principles Of Coaching And Officiating Throws

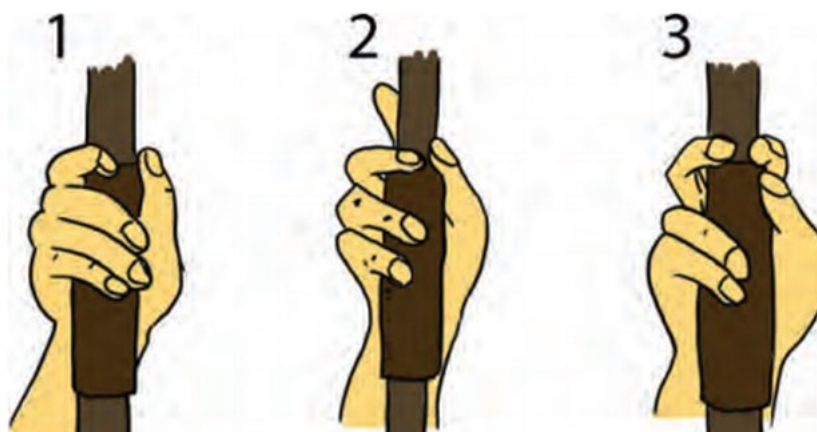
**Note:** The discussions on Javelin and Shot Put are for the purpose of providing a guide. Teachers can choose to substitute throw events from within the curriculum subject to equipment and facility availability etc.

#### Coaching of Javelin

##### i. The grip

This is intended to grasp the javelin firmly and comfortably.

- *Technical characteristics:*
  - Thumb and first finger – American grip (1), or
  - Thumb and second finger – Finnish grip. (2), or
  - Index finger and middle finger – Fork or V grip (3)
  - Javelin lays diagonally in the hand.
  - Palm faces upward.
  - Grip hand is relaxed.



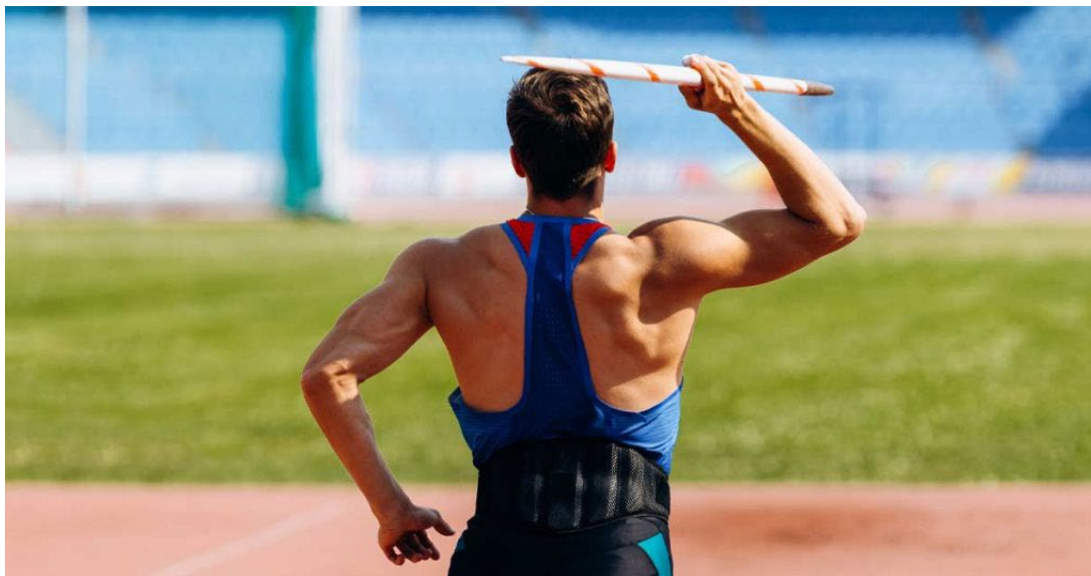
**Fig. 24.1:** *Javelin Grips*

##### ii. Approach run phase

The objective is to accelerate the thrower and javelin.

- *Technical characteristics:*
  - Hold javelin horizontally over the shoulder.
  - Top of the javelin is at head height.
  - Arm is held steady (no forward or backward movement).
  - Begin running at optimum speed towards your target with javelin (9 to 14 steps).
  - Keep your hips high and run on the balls of your feet.
  - Let your free arm swing across your body.

- Flex the arm carrying javelin to fix javelin's position.

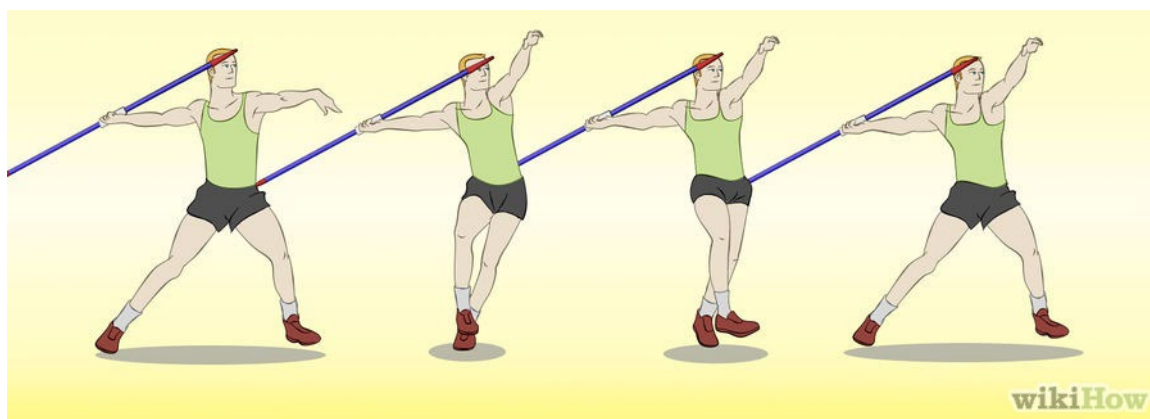


**Fig. 24.2:** *The Approach Run*

**iii. 5-stride rhythm phase (withdrawal):**

The objective is to position the javelin correctly for the delivery.

- *Technical characteristics:*
  - Withdrawal starts on the landing of the left foot for right-handed athletes (and for left-handed athletes, the right foot starts the landing).
  - Keep your head facing the direction of your target.
  - Left shoulder faces the direction of throw, left arm is held forward for balance.
  - Throwing arm extends backwards during first and second strides.
  - Throwing arm is at shoulder height or slightly higher after withdrawal.
  - Tip of the javelin is close to the head.



**Fig. 24.3:** *The 5 – Stride Rhythm Run*

**iv. Impulse or pre-delivery stride phase**

The objective is to position and prepare the body for the delivery.

This is the step taken just before javelin is thrown.

- *Technical characteristics:*
  - Drive-off is active and flat from the whole sole of the left foot (no loss of velocity).
  - Right knee swings forwards (not upwards).
  - Body leans backwards: legs and trunk 'overtake' the javelin.
  - Left shoulder and head face the direction of the throw (for right-handed athletes).
  - Throwing arm and shoulder axis are parallel.
  - Impulse stride is longer than the delivery stride.

**v. Delivery phase****Part 1: Transition:**

*Note:* All the instructions from here to the end are based on a right-handed throw.

The objective is to transfer velocity from the legs to the trunk.

- *Technical characteristics:*
  - Place right foot flat at an acute angle to the direction of the throw.
  - Legs have overtaken the trunk.
  - Axes of the shoulder, javelin and hip are parallel.
  - Push right knee and hip forwards actively.
  - Throwing arm remains extended.

**Part 2: Power Position**

The objective is to transfer velocity from the trunk to the shoulder and arm.

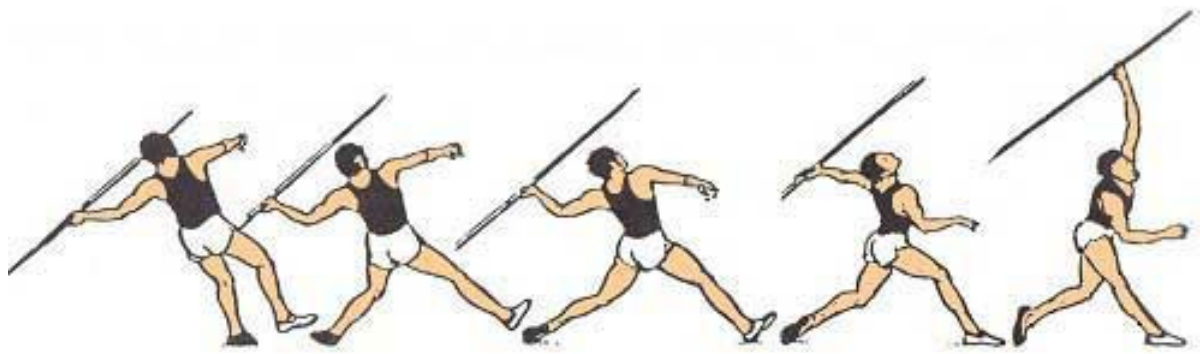
- *Technical characteristics:*
  - Place left foot active and solid.
  - Left side is stabilised.
  - Trunk is raised and there is a turning movement around the left leg.
  - Muscles in the front of the body are highly pre-tensed in the 'Arc Position'.
  - Throwing shoulder pushes forward.
  - Throwing elbow turns inwards, palm remains up.

**Part 3: Final Arm Movement**

The objective is to transfer velocity from the shoulder and arm to the javelin.

- *Technical characteristics:*
  - Right elbow draws forwards and upwards alongside the head.
  - Trunk moves forwards.
  - Throwing elbow straightens explosively.
  - Left side of the body is blocked by a solid left leg and the fixing of the bent left elbow close to the trunk.
  - Right foot maintains ground contact until the javelin is released.
  - Right foot turns on its outside edge and is dragged behind (Image 1).
  - Trunk leans slightly to the left; the right shoulder is directly over the left foot (Images 2 & 3).
  - Throwing arm should be as close to vertical as possible at release (Image 3).





**Fig. 24.5:** *Delivery, Power Position and Final Arm Movement*

**Note:** The athlete in the image is using their left hand

**Note regarding images:** The athlete in Fig. 24.5 is of an athlete using their left hand. All the other images and instructions are from a right-hand use perspective.

**vi. Recovery Phase:**

The objective is to stop the forward movement of the body and avoid fouling.

- *Technical characteristics:*
  - Legs are reversed quickly after the release.
  - Right leg is bent.
  - Upper body is lowered.
  - Left leg swings backwards.
  - Distance from the foot of the brace leg to the foul line is 1.5 – 2.0 m.



**Fig. 24.6:** *Applying the Recovery Skills*

## Coaching of Shot Put – Linear or Gliding Technique

The common phases or techniques used in shot put are:

- Grip
- Preparation
- Momentum Building
- Delivery
- Recovery

### i. The grip

The objective is to hold the shot firmly.

- *Technical characteristics:*
  - Shot rests on the fingers and the base of the fingers.
  - Fingers are parallel and slightly spread.
  - Shot is placed at the front part of the neck, the thumb on the collarbone.
  - Elbow is out at a 45° angle to the body.



**Fig. 24.7:** *Grip and Placement of the Shot*

### ii. Preparation phase

The objective is to prepare for the glide.

- *Technical characteristics:*
  - Thrower starts upright at the rear of the circle with back to the stopboard.
  - Trunk is bent forward parallel to the ground.
  - Body is balanced in the single support.
  - Support leg is bent while the free leg is drawn towards the back of the circle (1 in image 24.8 below).

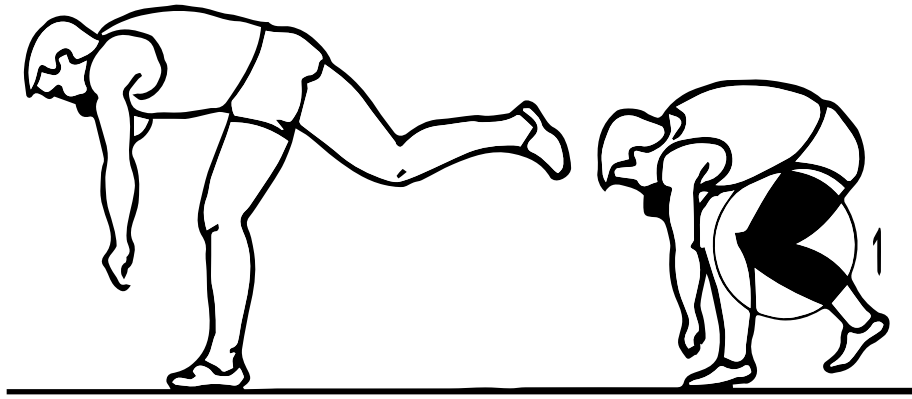


Fig. 24.8: Preparation Action

### iii. Momentum building or glide phase

The objective is to initiate acceleration and position the body for the final putting action.

- *Technical characteristics:*
  - Body moves from the forefoot on to the heel, unseating the hips.
  - Free leg is driven low towards the stopboard.
  - Support leg extends over its heel.
  - Support leg maintains ground contact through most of the glide.
  - Shoulders are kept square to the rear of the circle (1 in image 24.9 below).

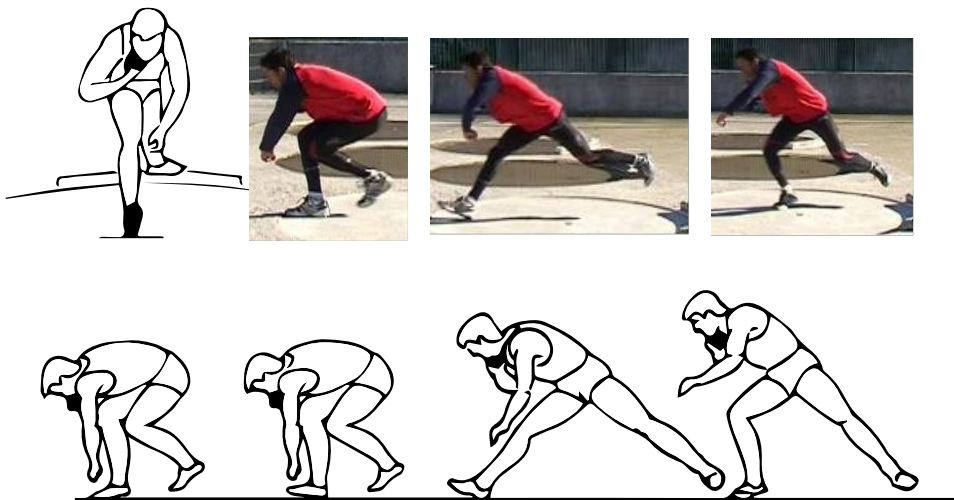


Fig. 24.9

Source: IAAF (2009)

### iv. Delivery phase – The power position

The objective is to maintain the speed of the shot and begin its main acceleration.

- *Technical characteristics:*
  - Body weight is carried on the ball of the right foot, right knee is bent.
  - Heel of the right foot and the toe of the left foot are placed in line – ‘Heel-Toe Position’.
  - Hips and shoulders are twisted.
  - Head and left arm locked back.
  - Right elbow is at a 90° angle to the trunk.



Fig. 24.10

Source: IAAF (2009)

#### v. Delivery phase – Main acceleration

The objective is to transfer velocity from the thrower to the shot.

- *Technical characteristics:*

- Right leg is extended in an explosive twisting movement until the right hip faces the front of circle.
- Left leg is almost extended and braced, lifting the body – and influencing the angle of release.
- Trunk's twisting movement is blocked by the left arm and shoulder.
- Right elbow is turned and raised in the direction of the throw.
- Body weight is transferred from the right leg to the left.

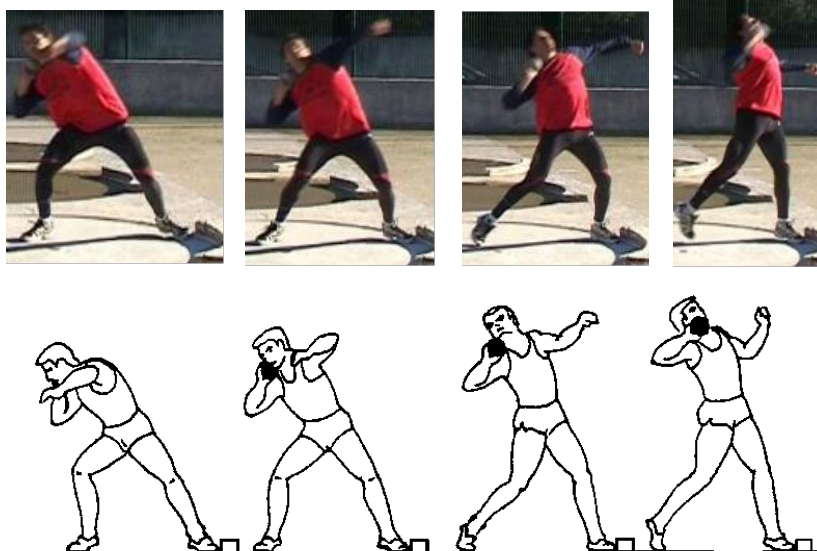


Fig. 24.11

Source: IAAF (2009)

**vi. Delivery phase – Final arm movement**

The objective is to transfer velocity from the thrower to the shot.

- *Technical Characteristics:*
  - “Strike” of the putting arm begins after full extension of the legs and trunk.
  - Left arm is bent and fixed close to the trunk.
  - Acceleration is continued by the pre-stretched wrist (thumbs down, fingers turning out after the release).
  - Feet are in contact with the ground for the release.
  - Head is behind the left - bracing-foot until the release.



Fig. 24.12

**vi. Recovery phase**

The objective is to stabilise the thrower and avoid fouling.

- *Technical Characteristics:*
  - Legs ‘reverse’ – change quickly after the release.
  - Right leg is bent.
  - Upper body is lowered.
  - Left leg naturally swings backwards.



Fig. 24.13

Source: IAAF (2009)

## Key officials -Their roles and positions

### i. Shot Put

- *Chief Judge*: Oversees the entire event, ensuring it runs smoothly. Usually positioned near the throwing circle to observe athlete conduct and ensure safety.
- *Assistant Judges*: Assist with measurements and ensuring compliance with rules. Positioned in and around the throwing sector to mark the landing point and measure throws.
- *Recorder*: Keeps track of the results, recording distances and fouls. Typically positioned at a table near the throwing area.
- *Sector Judges*: Positioned at each boundary of the throwing sector to observe and mark foul throws, ensuring athletes stay within the designated area.

### ii. Javelin

- *Chief Judge*: Supervises the event and ensures safety. Positioned near the runway to observe athletes' approach and release technique.
- *Assistant Judges*: Assist with measuring distances and verifying valid throws. Positioned along the throwing sector, usually near the landing area, to measure distances and mark landing points.
- *Recorder*: Responsible for record-keeping, documenting distances and fouls. Typically positioned near the start of the runway or at a table close to the throwing sector.
- *Sector Judges*: Positioned at key points within the sector to monitor foul throws and ensure that the javelin lands within the designated boundaries.

## Learning Tasks

1. Research the general rules in throws in athletics and explain your findings to the class.
2. Examine the relevance of rules and regulations in athletics throws officiating.
3. Two athletes have a 'tie' after a javelin throw during the annual inter-house sports festival in your school. Outline steps you would use to resolve the 'tie'.
4. Analyse the importance of quality Delivery and Recovery in a javelin and shot-put throw.
5. Demonstrate the phases of throw in javelin.
6. Demonstrate the phases of throw in shot put.
7. Demonstrate the roles of three officiators in for javelin and three officiators for shot-put.

## Pedagogical Exemplars

- a. Experiential Learning:** With learners in groups, show pictures of each phase of javelin throw. Support and task learners to demonstrate the phases of javelin throw as in the pictures. Ask each individual in the group to demonstrate the combination of all the phases of throw in javelin. Provide resources and guidance to help learners gain understanding from experience. Encourage learners to reflect on their experiences and analyse what they have learnt. Offer immediate and constructive feedback to motivate learners in their experiential activities.
- b. Group-Based Learning:** In mixed-ability and mixed-gender groupings, task each learner to develop a coaching plan for the school's Shot-Put athletes. Encourage participation and cooperation among members during the lesson delivery. Guide class presentations and give individualised feedback. Assign specific roles to ensure each group member has a clear and

defined responsibility. Create opportunities for struggling and shy learners to take active and leadership roles in the various groups.

- c. **Think-Pair-Share:** With the use of digital devices, learners search the general rules on throws, share their findings with their partners and then share their ideas with other class members. Consider learners' abilities and learning styles when pairing. Encourage learners to work together with their pairs. Provide prompt and specific questions to guide learners. Give learners enough time to think independently to jot their findings and thoughts down. Support learners to share their thoughts and listen to their partners' ideas. Encourage respectful feedback and discussion among learners. Create a supportive and inclusive atmosphere to encourage shy and quiet learners to share their thoughts.
- d. **Gamified Learning:** In mixed-ability and mixed-gender groups, learners organise a mini class-based or club athletics tournament. Give specific and different tasks to each group. Learners apply the rules and skills acquired to officiate javelin and shot-put throws. Assist learners in planning the tournament. Provide them with relevant sources of information on the internet. Give further support and attention to learners who need guidance in their search and preparation, Encourage patience and respect for the different learning abilities and identities of learners. Create an environment of inclusion for learners with special educational needs and disabilities (SEND).

### Key Assessment

**Level 1:** Identify three roles of officials of shot-put and three roles in javelin.

**Level 2:** Demonstrate the following skills in javelin throwing:

- i. Grip
- ii. Approach Run

**Level 2:** Describe the various phases of throw in javelin and shot-put.

**Level 3:**

- i. Demonstrate the basic throw techniques to an individual learning the various phases of a shot-put and a javelin throw.
- ii. Explain and demonstrate four key roles of the officials of each of shot-put and javelin.

**Level 4:**

- i. As the coach of your house athletics team, draw up a coaching plan to be used for the inter-house athletics competition. The plan must include the demonstration of the following skills in shot-put:
  - Grip
  - Preparation Action
  - Momentum Building
  - Delivery
  - Recovery
- ii. **Project Work**
  - Organise an athletic tournament for throwing events.
  - Assign roles to each individual as either an athlete or an official.
  - You can invite other interested young athletes from your school or community.
  - Apply the concepts and principles of throws required to have a successful tournament.

## Suggestions For Additional Learning

Form an athletics or sports club to help you find sufficient time outside the timetable to teach the coaching and officiating skills in detail to enable learners to have more time for practice and perfect the skills and techniques in shot-put and javelin. This cannot be done within just one week of learning.

With these sports clubs, you will have the opportunity to teach discus throw which, could not be taught due to time constraints.

The same suggestions above apply to officiating throws. In fact, every elective PEH learner must consider it imperative to join one of these clubs to ensure further studies and practice of many other skills and techniques of other sports.

## References

1. Al Jazeera (2015): <https://www.aljazeera.com/sports/2015/9/30/shot-putters-redefining-feminine-ideals>
2. Brainly: <https://brainly.in/question/7910879>
3. BrianMac: Sports Coach (2023): <https://www.brianmac.co.uk/javelin/index.htm>
4. Constitution Learner (2021): <https://constitutionlearner.blogspot.com/2020/09/discus-throw.html>
5. BrianMac <https://www.brianmac.co.uk/discus/index.htm>
6. Every Thing Track and Field (2023): Discus Throw: To Wind or Not to Wind: <https://www.everythingtrackandfield.com/to-wind-or-not-to-wind>
7. Fritsch 2023: <https://www.fritsch-international.com/sample-preparation/applications-solutions/details/solution/perfect-grip-decides-victory-or-defeat/>
8. International Association of Athletics Federations (2009): Run, Jump, Throw: The official IAAF Guide to Teaching Athletics: 17 rue Princesse Florestine, BP 359, MC98007, Monaco
9. Kompas.com (2022) <https://www.kompas.com/sports/read/2021/03/31/08200008/3-cara-memegang-lembing-gaya-amerika-finlandia-dan-fork-grip>
10. nippon.com (2021): Olympics-Athletics-World discus champ Stahl bags finals spot with just one throw: <https://www.nippon.com/en/news/reu20210730KBN2F00JQ/>
11. Pregash M.: <http://pregashm.blogspot.com/p/court-measurements.html>
12. Research Gate (2023): Dinu Daniel; Houel Nicolas; Louis Julien: [https://www.researchgate.net/figure/Discus-throwing-phases-P1-to-P5-and-critical-transition-points-a-to-f-preceding-each\\_fig1\\_334164725](https://www.researchgate.net/figure/Discus-throwing-phases-P1-to-P5-and-critical-transition-points-a-to-f-preceding-each_fig1_334164725)
13. Sarthaks: <https://www.sarthaks.com/828791/draw-a-neat-diagram-of-a-javelin-runway-and-its-sectors-with-all-dimensions>
14. SimpliFaster (2023): The Technical Keys to Optimizing a Throwing Athlete's Performance: <https://simplifaster.com/articles/optimizing-performance-throwing-athletes/>
15. SportBeezer (2023 ): <https://sportsbeezer.com/asia/american-finnish-and-fork-grip/>
16. Turkey Pines High School Track and Field (2021): Officiating Throwing Events: <https://tphstrack.com/officiating-throwing-events/>
17. wikiHow (2023): via: The Biomechanical Principals of a Javelin Throw: <http://biomechanicsofjavelinthrow.blogspot.com/2015/06/the-javelin-throw-biomechanical.html>
18. Wionews (2022): <https://www.wionews.com/sports/neeraj-chopra-out-of-cwg22-after-stupendous-run-since-tokyo-2020-javelin-stars-misfortune-catches-up-500802>



## Section Review

Overall, Section 8 will provide learners with a comprehensive understanding of coaching and officiating throw events, emphasising both theory and practice. By the end of these two weeks, learners should have a foundational grasp of the safety requirements, rules and techniques for javelin and shot-put as well as an understanding of how to effectively coach and officiate these events.

In Week 23, learners explored the foundational concepts of coaching and officiating throw events. The key concepts included the importance of safety in coaching and the role of an official in ensuring fair competition, understanding the basic rules of throw events and grasping the roles and responsibilities of coaches and officials in these events. Differentiation should be included by engaging more advanced learners in discussions about rule interpretations and strategy while providing additional support to those who need help understanding basic concepts.

In Week 24, learners had the opportunity to apply the principles learnt in the previous week through practical exercises in coaching and officiating javelin and shot-put. This hands-on approach aimed to solidify their understanding of the techniques and rules involved. The expected outcomes for this week are learners successfully demonstrating proper coaching techniques for javelin and shot-put, exhibiting proper officiating skills including measuring throws and ensuring adherence to rules and being able to apply safety protocols during practice sessions. Differentiation should involve assigning leadership roles to gifted students, allowing them to lead smaller groups during practice sessions while providing additional guidance to those who need it.

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