5.1 Overview

5.1.1 Introduction

There are many aspects to consider when developing and refining skills. Selecting the appropriate level of challenge to match the physical and psychological capacity of the learner is important, as is controlling the environment in which learning takes place. Various other factors such as body awareness, control and technique ensure proficient movement execution. Characteristics of good technique include better flow and rhythm as well as economy of movement. Furthermore, applying biomechanical principles such as stability and momentum to movement patterns can enhance the efficiency of this movement and further assist your skill proficiency.

When swimming we require momentum to move smoothly through the water.

**Resources**

- eLesson: Skills for thrills (eles-2967)
- Digital doc: Key terms glossary (doc-29328)

**Essential Question**

What do we need to know to move, throw and execute high level sporting skills to the best of our ability?

**Syllabus Outcomes**

A student:

- adapts and improvises movement skills to perform creative movement across a range of dynamic physical activity contexts (PD5-4)
- appraises and justifies choices of actions when solving complex movement challenges (PD5-5)
- critiques contextual factors, attitudes and behaviours to effectively promote health, safety, wellbeing and participation in physical activity (PD5-6)
- refines and applies movement skills and concepts to compose and perform innovative movement sequences. (PD5-11)
5.2 Practice and training regimes to improve performance

The type and style of practice you require will depend on your level of skill proficiency. Manipulating variables such as opponents, space, time and synchronisation simulates the performance experience and challenges you.

5.2.1 Training requires rehearsal of skills

Performance of skills in a game or competitive situation requires practice and training in a less competitive and more controlled situation. Coaches set up practice regimes that allow the athlete to rehearse their skills and movement repeatedly.

What are the different types of practices and training regimes available to and used by coaches and athletes? What tactics can be practised and rehearsed and how can athletes apply these to a game situation? In this subtopic you will explore and answer these questions.

Use the Training drills weblink in the Resources tab to view some training and skill drills. Do you think they are basic, intermediate or advanced drills? As a class, discuss what you think characterises an advanced skill drill.

5.2.2 Practice and training regimes

In topic 4, we discussed practice as an essential factor in enabling individuals to acquire and develop proficiency in motor skills. We learned that practice could be massed or distributed, whole or part, and mental or physical. We will now consider some other aspects of practice that can assist us in acquiring and developing motor and sporting skills. One important element in developing skill proficiency is having the ability to perform the skills in game-like situations. Most often, skills are initially taught and practised through the use of basic skill drills. Many of these drills take place in lines, lanes, circles, squares or triangles, which can result in individuals attending to what is happening in only limited
situations. If there is an overemphasis on practising the skills in this way, the individual may struggle to apply these skills in game situations, where peripheral vision and an awareness of teammates and opponents are required. Therefore, skills should be developed through basic skill drills to begin with and, once learned, individuals should advance their performance of these skills through intermediate skill drills, advanced drills and, eventually, game-like practice activities. This is to prepare individuals for the type of movements and situations that take place during actual games.

5.2.3 Basic skill drills

Basic skill drills are designed to allow the individual to learn and perform the skills in an environment where variables such as opponents are removed. In other words, they are performed in a closed environment. These types of drills are often performed with the individual stationary or moving slowly at a walking or jogging pace. In this early phase of skill learning, if the individual is required to direct his or her attention to anything other than performing the skill itself (such as moving to provide support or taking notice of where an opponent is positioned), his or her focus can be distracted, leading to a lack of concentration on the performance of the skill. These types of drills are best for individuals in the cognitive stage of learning.

In ball games such as basketball, Rugby league, soccer, netball and hockey, basic skill drills are usually set up with the players in formations such as lines, circles, squares or triangles (see the figure below). The ball is generally played in the direction of the arrows, with players performing the skills in a stationary position, or while walking or jogging. It is easy to imagine setting up such drills for any number and range of skills, such as the push pass in hockey or kicking in soccer. It is important that players are capable of performing a skill before advancing from basic to more advanced drills.

In ball games, basic skill drills are usually set up with the players in formations such as lines, circles, squares or triangles.

5.2.4 Intermediate skill drills

Once players have acquired the basics of the skill, the skill may then be practised using an intermediate skill drill, which slightly opens up the performance. In intermediate drills, movement is the only other factor that the player must consider. The player must adapt to perform the skill with movement involved, and with the pace of the movement slowly progressing, all the while attempting to perform the skill correctly. The types of movement involved should include:

- stationary to moving — performing the skill from a stationary position, or playing the ball to a moving partner or into a moving zone
- moving to stationary — performing the skill while moving, or playing the ball to a stationary partner or into a fixed zone
- moving to moving — performing the skill while moving, or playing the ball to a moving partner or into a moving zone.

Intermediate skill drills can also be set up with the players forming lines, circles, squares or triangles. In a moving to moving skill drill, the ball may move in one direction and the player in another.
5.2.5 Advanced skill drills
As the individual moves through the stages of learning, the difficulty of the drill is increased. The aim of this is to make the activity more like a real game situation. With advanced drills, the challenge to the player is heightened by progressively increasing the speed with which the drill is performed, so that it eventually reaches match tempo. In addition, reducing the space and time the players have to perform the skill, introducing opponents and asking players to modify their skills (such as application of spin in a tennis serve) are ways to increase the degree of difficulty.

Use the acronym SSTEP to change any one or more of the parameters in table 5.1 to advance a skill drill.

<table>
<thead>
<tr>
<th>TABLE 5.1 SSTEP parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
</tr>
<tr>
<td>• The speed at which the drill is being performed</td>
</tr>
<tr>
<td>• Having the player perform a number of repetitions within a set time limit or timeframe</td>
</tr>
<tr>
<td>Space</td>
</tr>
<tr>
<td>• Changing the amount of space available to the player performing the skill</td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>• Changing the period of time in which the drill is being performed</td>
</tr>
<tr>
<td>• Increasing the time period in which the skill has to be practised; this increases the physical demands on the performer</td>
</tr>
<tr>
<td>• Decreasing the time period in which the skill has to be practised; this increases the speed of the performance</td>
</tr>
<tr>
<td>Equipment</td>
</tr>
<tr>
<td>• Introducing different equipment, or setting up a drill with different equipment. By altering the equipment, the performer can be challenged to complete a skill using a more advanced technique.</td>
</tr>
<tr>
<td>An example is a junior tennis player who learns to play using a short racquet that is easy to swing and hit a ball accurately. When the player is using this technique correctly, they can be challenged by introducing a longer racquet that will be harder to control but produce more force. The technique used for this longer racquet may be altered. For example, the player may hold the racquet closer to the head to maintain control and gradually lengthen this as they improve their skills.</td>
</tr>
<tr>
<td>Pressure</td>
</tr>
<tr>
<td>• Introducing opposition to the person performing the skill. This can be done progressively — first with passive opposition, where the performer is not challenged for possession; second, allowing the performer to get possession and then providing opposition in the form of attempted blocking; and, finally, by providing full opposition where the possession is contested in a game-like manner.</td>
</tr>
</tbody>
</table>

5.2.6 Opposed drills
Introducing opposition into any skill drill will provide more of a challenge and mimic the performance experience in a game-like situation. Opposed drills involve the player and opponent weighing up the available options and choosing the best way to perform the task. Other skills, such as tackling and evasion, are also developed alongside the focus skill in some sports.

5.2.7 Grid games
Grid games are an extension of intermediate and advanced skill drills. They take place, as their name suggests, within a grid or defined area and usually involve a relatively small number of players, such as three to five players per side. An example of a grid game would include a keepings-off passing game, which requires players from each side to make a certain number of passes while moving continuously within the defined grid or area. As the players’ movements are not as defined as in a skill drill, players must make decisions on where and when to move, as in a real game situation. Such games not only encourage awareness of time and space but also help develop characteristics of teamwork, such as communication and running to support.
In grid games, it is also possible to limit the movement of players to certain zones within the grid or area (non-invasive practices). This allows players to develop positional sense and limits the type and amount of opposition that they encounter. Grid games provide an opportunity for players to begin developing what is referred to as **tactical proficiency**.

### 5.2.8 Tactical proficiency

Tactical proficiency or **decision making** is the ability to weigh up game situations and decide which option to take and when to take it; for example, whether to carry the ball or pass it to a teammate, or whether to shoot for a score or pass to a player who is in a better position. Tactical proficiency can be developed through activities that closely mirror game situations.

#### Game sense

Game sense can also be considered as an approach to coaching that uses the game as the focus of the practice session. By focusing on the game (not necessarily a full game but, often, a modified version of the game), players are encouraged to:

- start thinking strategically about game concepts
- become more tactically aware and able to make better decisions during the game
- develop skills within a game-simulated context rather than practising them in isolation
- develop a greater understanding of the game being played.

By using a game sense approach, players need to consider their choices and the reasons for them. Game sense activities require players to perform skills while in situations that mimic those they may be exposed to in a real game. Players are forced to weigh up the choice of which skill to perform, and how to perform the skill in order to successfully complete the drill. These sessions help players choose the appropriate technique at the right time in a more competitive environment.

Game sense activities are an essential link between the development of skill or technical proficiency and being prepared to play in full-game situations.

#### Synchronicity

An even more advanced skill is the creation of movement sequences aligned to the movement of others. Sometimes these are synchronous movements that require two or more athletes to move in unison for optimal performance to occur. To move synchronously means to move at the same time. Synchronised diving is an example of such an activity where two divers perform the same dive simultaneously. In a game of volleyball, a skill that requires synchronous movements is that of two athletes jumping up at the net together to block an incoming spike.

Individual movements are done by a performer in isolation. Using the above examples, a diver performing by themselves or a volleyballer independently performing a serve, dig or set are examples of these types of movements. In team sports the individual movements performed by different players are combined to create a set play. This can occur at the same time, such as in a game of soccer where two athletes may run into the
penalty area to enable the player with the ball to keep dribbling and provide options for a pass to these players. Others are done in sequence, such as in volleyball where one player receives and passes a serve via a dig, then a different player sets the ball up for a third player who attempts to spike the ball down for a winner.

### 5.2 Activities

#### Drill down

1. (a) Work with a partner and select a skill from a sport of your choice.
   (b) Describe a basic, intermediate and advanced skill drill that you could use when teaching the skill to a group of secondary school students. Make sure that your three skill drills show progressions and each activity has two rules or specific instructions to enhance success.
   (c) Demonstrate any one of your skill drills to the class during a practical session.
   (d) Reflect on the success of your drills and explain why each drill was successful or what needed to be modified to improve the drill.

#### Game, set, match

2. List as many examples in sport as you can where set plays and routines can be applied to the advantage of the team.

#### SSTEP parameters

3. Refer to table 5.1 and create a skill drill for each of the five steps by using one of the following skill drill levels:
   - basic
   - intermediate
   - advanced
   - opposed.

#### Creating a synchronous routine

4. In a group size of your choice, complete the following tasks in relation to either a dance routine or gymnastics routine.
   (a) Choreograph (plan) together a routine of your choice.
   (b) Practise the routine, aiming to incorporate synchronous movements between participants.
   (c) Video the performance using a tool of choice, such as Dartfish or Coach's Eye (there are many free options available for you to use).
   (d) Using this footage, critique the performance, highlighting areas of individual and group strengths and weaknesses.
   (e) Use this feedback in your next stage of practice with an emphasis on improving the quality of individual and group performance.
   (f) Video the final performance and again critique the quality of the performance.
   (g) Discuss the benefits of using ICT as a mechanism to give feedback and improve performance, particularly reflecting on synchronicity and timing of movements.

### 5.2 Check and challenge

#### Explain

1. Outline the key differences between a basic, intermediate and advanced skill drill.
2. Which level of skill drills are grid games best suited for?

#### Evaluate

3. How can training and skill drills be used to build and improve the game sense of an athlete?
4. What does ‘game sense’ mean to you?
5.3 Body control, body awareness and technique

To become proficient in movement execution you need to be aware of the position of your body parts and adjust according to your movement patterns.

5.3.1 Movement skill
To perform sporting movements, skill is required. The level of skill varies considerably from one person to the next, due to an individual’s shape, size, physical and psychological ability. Movement skill development requires time and practice. With repetition and practice, the body becomes familiar with the requirements of particular movements, and errors occur less often, which enhances confidence, self-efficacy and skill execution.

One way to improve movement skills is by mastering the required technique. Use the Pose method weblink in the Resources tab to learn about the running technique called the Pose method; how strong do you think the relationship is between sound technique and good performance?

Weblink: Pose method

5.3.2 Improving the way we move
There are a number of aspects of movement skill development including body control, body awareness, object control, anticipation, timing and technique. The way we perform movement will be improved through development of each of these areas.
Body control develops as our sensory skills improve. Balance and coordination are important components of body control. As we improve our movement skill, the control we develop over the use of our body parts, and particularly our arms and legs, increases. As a result, we perform movements with better technique, precision and control. For example, we understand that a throw requires us to grip an object properly, transfer our weight during the movement, release at the right time and follow through to a balanced position. As body control improves, these smaller parts fall into place automatically. Body control is also important for everyday health and function and can be linked with muscular strength and coordination.

Successful movement execution also requires kinaesthetic sense. This relates to the mind being aware of what is required of the trunk and limbs and being conscious of how movement is being performed. During an inward one-and-a-half somersault from the 1-metre board, for example, a diver needs to be aware of body position in relation to the water to allow sufficient time to straighten the body before entry.

HEALTH FACT
In the Netherlands, courses are delivered by physiotherapists and occupational therapists to assist the older population in the technique of falling correctly. This aids in the prevention of bone breaks and develops confidence and ultimately mobility. The courses are so popular and successful, some insurance companies cover their cost.

Good technique is important for skill improvement. It ensures the movement is economical by using only the essential muscles and improves the chances of the movement flowing smoothly and being successful. The correct technique usually enables us to achieve at a higher level.

When we observe a skill such as the tennis serve, we find many common characteristics that constitute good technique. All good players hold a tennis racquet in much the same way, swing the racquet behind the body, toss the ball and move their weight forward as the ball is struck. As learners, we always need to be conscious of developing sound technique (which implies using the correct method).
Advantages of developing the correct technique.

<table>
<thead>
<tr>
<th>Economy of movement</th>
<th>There is no waste of energy during the movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill</td>
<td>The movement uses the correct muscles to perform the action</td>
</tr>
<tr>
<td>Flow</td>
<td>The movement is well timed and looks good</td>
</tr>
<tr>
<td>Consistency</td>
<td>The action has a better chance of being successful</td>
</tr>
<tr>
<td>Confidence</td>
<td>Self-assurance grows from successful execution and challenges us to apply what we know to similar situations</td>
</tr>
</tbody>
</table>

When athletes have developed sound technique, they are able to adapt it to different circumstances — for example, kicking a wet ball or being able to control an object being hit into a strong wind. Technique is developed through the use of drill and skill practices discussed in this subtopic. Use the swimming worksheets in the Resources tab to examine sound technique in freestyle, breaststroke and backstroke.

**DID YOU KNOW?**
Do you want to ‘bend it like Beckham’? Bending the ball is an advanced soccer skill that allows a player to kick the ball around their opponents. The key to bending a ball is to kick it off centre and hard enough to cause the spin. The harder the kick and the more off centre, the greater will be the spin and swing. Remember to focus your eyes on the contact spot of your foot on the ball.

**Resources**
- Digital doc: Worksheet 5.1 Freestyle: technique and drills (doc-29317)
- Digital doc: Worksheet 5.2 Breaststroke: technique and drills (doc-29318)
- Digital doc: Worksheet 5.3 Backstroke: technique and drills (doc-29319)

**5.3 Activities**
**Exploring technique**
1. Form groups of four or five students and appoint one person as the coach. As a group, read the information about the three skills in the table on the next page. The coach should then set up the first drill, which focuses on the inside foot pass, and supervise practice for about five minutes. The coach provides feedback to players relating only to technique points. If the coach notices that the skill is not being performed as outlined in the technique points, the player should be given that feedback.

Move on to the next skill/drill and appoint a new coach. Continue until all three skills have been practised. At the conclusion, have players evaluate the importance of being aware of technique in the learning of skill.
### Correct technique for soccer skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Technique points</th>
<th>Learning activities/drills</th>
</tr>
</thead>
<tbody>
<tr>
<td>The inside foot pass</td>
<td>• Approach the ball and place the non-kicking foot behind and a little to the side of the ball.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Bend the knee and pivot at the hip with the striking leg.</td>
<td>1. In pairs, pass the ball to one another, alternating between the right and left foot as the striking foot.</td>
</tr>
<tr>
<td></td>
<td>• Make contact with the ball using the inside of the foot.</td>
<td>2. In pairs, place an object in the middle to kick the ball over.</td>
</tr>
<tr>
<td></td>
<td>• Keep eyes on the ball until contact is made.</td>
<td>2. In pairs, place an object in the middle to kick the ball over.</td>
</tr>
<tr>
<td></td>
<td>• Follow through.</td>
<td>2. Use markers to test your skill with the curve ball.</td>
</tr>
<tr>
<td>The long high kick</td>
<td>• Approach using a short run-up.</td>
<td>1. Practise kicking for distance using right and left feet.</td>
</tr>
<tr>
<td></td>
<td>• Place the non-kicking foot to the side and back from the ball.</td>
<td>2. In pairs, place an object in the middle to kick the ball over.</td>
</tr>
<tr>
<td></td>
<td>• Lean back.</td>
<td>2. Use markers to test your skill with the curve ball.</td>
</tr>
<tr>
<td></td>
<td>• Flex the kicking knee.</td>
<td>1. In pairs, take one step and try curving the ball right or left.</td>
</tr>
<tr>
<td></td>
<td>• Strike the ball with the top of the foot.</td>
<td>2. Use markers to test your skill with the curve ball.</td>
</tr>
<tr>
<td></td>
<td>• Follow through using arms for balance.</td>
<td>1. In pairs, take one step and try curving the ball right or left.</td>
</tr>
<tr>
<td>The curve ball</td>
<td>• Approach from the side of the ball.</td>
<td>2. Use markers to test your skill with the curve ball.</td>
</tr>
<tr>
<td></td>
<td>• Place the non-kicking foot beside the ball.</td>
<td>1. In pairs, take one step and try curving the ball right or left.</td>
</tr>
<tr>
<td></td>
<td>• Lean slightly back to enhance elevation of the ball.</td>
<td>2. Use markers to test your skill with the curve ball.</td>
</tr>
<tr>
<td></td>
<td>• Swing foot across the ball.</td>
<td>1. In pairs, take one step and try curving the ball right or left.</td>
</tr>
<tr>
<td></td>
<td>• Follow through.</td>
<td>2. Use markers to test your skill with the curve ball.</td>
</tr>
</tbody>
</table>

### Skills

- **The inside foot pass**
- **The long high kick**
- **The curve ball**

### Technique points

#### The inside foot pass
- Approach the ball and place the non-kicking foot behind and a little to the side of the ball.
- Bend the knee and pivot at the hip with the striking leg.
- Make contact with the ball using the inside of the foot.
- Keep eyes on the ball until contact is made.
- Follow through.

#### The long high kick
- Approach using a short run-up.
- Place the non-kicking foot to the side and back from the ball.
- Lean back.
- Flex the kicking knee.
- Strike the ball with the top of the foot.
- Follow through using arms for balance.

#### The curve ball
- Approach from the side of the ball.
- Place the non-kicking foot beside the ball.
- Lean slightly back to enhance elevation of the ball.
- Swing foot across the ball.
- Follow through.
Object control games

2. The following game is an example of developing a control skill and transferring it to a more demanding context. Perform the skills and then play the modified game.
   Trapping a ball, as in soccer, requires the sole or toe of the foot to trap the ball against the ground. Try the following skills with a soccer ball or soft rubber ball to improve your object manipulation and control.
   Trap the ball from each of the following situations:
   (a) Drop the ball from just in front of you.
   (b) Put the ball on your head and let it fall.
   (c) Kick the ball against a wall.
   (d) Have a partner throw the ball to you so it lands at your feet.
   (e) Trap a rolling ball and then kick it to a target. Use both right and left feet.
   Modified activity: Place markers on the ground to create a small playing space and set up games of three-on-three or four-on-four soccer. Each time a team gains possession of the ball, three traps from general play must be made before a goal can be scored.

5.3 Check and challenge

Explain
1. Our senses gather information from our eyes, ears, nose, tongue and touch. Explain how our senses assist us to gain control over an object such as when dribbling a soccer ball.
2. Explain the advantages of developing good technique.

Evaluate
3. Choose a skill. Evaluate the importance of body control and kinaesthetic sense to improved execution of the skill.
4. Evaluate the importance of good technique in executing a skill of your choice.
5. Describe how strong kinaesthetic sense might improve a gymnastics, dance or games skill.
6. Use the weblink in the Resources tab to view Roger Federer’s serve. Discuss techniques Federer uses to aid in his success. Describe the reasons why his serve is fluent, powerful and accurate.

5.4 Object manipulation, anticipation and timing

Skill improves as your ability to control objects and to respond to the speed and path of moving objects develops.

5.4.1 Object manipulation

Many sports require us to control, manipulate and project objects. These objects may include balls, ribbons, bats or racquets. When playing games, we often need to control an object that has been thrown, kicked or hit towards us, decreasing the predictability of the skill and making control more challenging.
Most sporting activities require some form of **object manipulation**. In athletics, the performer may be required to throw the discus; in gymnastics, to manipulate the ribbons; or, in hockey, to scoop the ball. Successful skill execution requires control over the object. Without control, an object such as a soccer ball or basketball may be lost over the sideline or taken away by a good defender.
5.4.2 Anticipation and timing

The final two aspects that underpin improvement in movement skill development are **anticipation** and **timing**. Many factors need to be taken into account when anticipating something. For example, our ability to respond to an object, such as a tennis ball hit towards us, is influenced by:

- the size of the object
- the distance from the object
- the speed of the object
- the colour and brightness of the object
- the sound made when the object hits the ground
- our ability to analyse the information and respond, commonly called our reaction time
- our ability to position ourselves according to the information we have gathered.

There are numerous examples in sports where the development of anticipatory skills assists performance. In swimming and athletics, the sprinter tries to leave the blocks as close to the sound of the signal as possible. In racquet sports, players move to where they anticipate the next shot will be to allow more time to play. In gymnastics, vaulters pay attention to their speed in approach, flight, distance from the mats and the size of the mats to anticipate their landing and control their bodies. Good anticipatory skills result in better body control and better safety.

**DID YOU KNOW?**

The reaction times of elite sprinters usually range between 0.12 and 0.16 seconds, which is slightly faster than the average person’s reaction time. Reaction time is the amount of time it takes the athlete to respond to the signal at the start of the race. Usain Bolt had the second slowest reaction time in the 100-metre final at the Rio Olympic Games, responding to the signal in 0.155 seconds. He went on to win in 9.81 seconds.

Timing is a consideration when executing complex skills such as the tennis serve or the golf swing. Because many parts of the body are moving at the same time and in relation to one another, application of force that is out by even a fraction of a second can make a big difference in the success of execution. Most aspects of timing in movement relate to effective transfer of weight while maintaining balance. Use the worksheets in the Resources tab to apply this information to three field events in athletics, reflecting on the similarities and differences on each technique.

When movement skill is developed and a skill is performed correctly, it has a certain aesthetic appeal — that is, it is pleasing to the eye. Well-performed skills develop this appeal because the skill parts, commonly called **subskills**, have been put together in the correct order. Each subskill flows onto another, with the quality of each subskill depending on the execution of the one before. If one or more of the linking subskills is poorly performed or rushed, it will adversely affect the overall performance of the skill.

Use the **Testing reaction time** weblink in the Resources tab to test your reaction time in baseball, then read the information on the web page to understand the link between your brain and the time it takes for you to swing for the ball. How important is timing in sports like baseball?
The importance of good timing is illustrated in the figure below.

Good timing (a) when each subskill flows smoothly onto the next, which results in good performance of the skill, compared with poor timing (b) when one or more of the linking subskills is rushed, resulting in poor performance of the skill.

DID YOU KNOW?
At the elite level, a tennis serve can move at over 220 kilometres per hour, while a volleyball can be spiked at approximately 120 kilometres per hour. Athletes with superior overall timing have an advantage over players who react and move less quickly.

Resources
- Digital doc: Worksheet 5.4 Javelin (doc-29320)
- Digital doc: Worksheet 5.5 Discus (doc-29321)
- Digital doc: Worksheet 5.6 Shot-put (doc-29322)
- Weblink: Testing reaction time

5.4 Activities
Softball soccer — object manipulation
1. Form teams of six to seven players and measure out a softball field with bases. The batting team lines up outside the diamond and the fielding team spreads out within the diamond, with the pitcher in the middle. The first batter places the soccer ball on the ground, kicks to the pitcher and then runs the bases as in softball.

In the meantime, the pitcher must inside foot pass to fielder two, who passes to fielder three and so on around the circle until the ball is returned to the pitcher. If the runner arrives home before the ball returns to the pitcher, a run is scored.

Both teams bat, with the winning team being the one that gains the most runs.
Relating anticipation to a racquet sport

2. Anticipation is an important element in racquet sports. Organise and play a tennis or table tennis round robin competition so each person in the class plays all other members, then answer the questions below.
   (a) Why is good anticipation an advantage in such activities?
   (b) Suggest how anticipation could be improved.

5.4 Check and challenge

**Explain**
1. Choose two sports and explain where object manipulation can be found in each.
2. Explain how kinaesthetic sense can be developed, using soccer dribbling as an example.
3. Explain the importance of anticipation in receiving a tennis serve.

**Evaluate**
4. Evaluate the importance of anticipation and timing to improve execution of a chosen skill.
5. Evaluate the importance of timing in a golf swing or a tennis serve.
6. Describe how better body awareness might improve a gymnastics, dance or games skill.
7. Use the [Soccer skills](#) weblink in the Resources tab to watch the clip of Cristiano Ronaldo. Discuss the images of him training for soccer. What skills has he mastered? Which of these relate to object manipulation, anticipation and timing?

**Resources**

- Weblink: Soccer skills

5.5 Learning environments and feedback

The rate and success with which you learn skills is influenced by factors that relate to how your learning program is conducted and the environment in which it takes place.

5.5.1 The key to faster learning

We know that certain factors enhance learning while others can make learning more challenging. We all want to become proficient in the activities in which we participate. We admire those who show a high level of skill and are sometimes amazed by their capability. While some players seem to have more ability, it could be that they have benefited from knowledge and practices that enabled them to acquire proficiency at a more rapid rate.

Skill development and performance are influenced by a number of factors, including:
- **transfer** — how well we are able to use what we have learned in a similar environment
- **structure** — our body size, shape and flexibility
- **environments** — where we learn and the effect of those surroundings on our performance
- **feedback** — information we receive about our performance that will help us improve
- **practice** — methods of developing skills correctly
- **safety** — being aware of principles and practices that help avoid injury
- **rules and regulations** — knowing how laws governing play assist safe participation.
5.5.2 Structure

Our body size and shape are genetically determined and give us a predisposition to have the capacity to develop some skills easily, while others may be more challenging. A tall individual with long limbs may suit sports such as volleyball or basketball where height is important to reach the ball. A muscular individual may be more suited to speed-based activities such as hockey or soccer, where moving to the ball quickly is an advantage.

Flexibility can be an asset in more sports than just gymnastics and dance. Having a large range of motion around the shoulder joint will assist skill development in swimming and greater hip flexibility will assist in creating a longer stride length, potentially increasing efficiency and speed when running.

5.5.3 Learning environments

Positive learning takes place in safe, friendly and stimulating environments. It might be a gymnasium, cricket oval, swimming pool or athletics track. Learning environments can enhance or detract from skill learning. A cricket wicket, for example, where the surface is in a state of disrepair may impede the development of batting skills because the uncertainty of the ball movement means the performer cannot develop a consistent and repetitive stroke.

Additionally, the performer must perceive the social environment to be encouraging. This means the people around them must give appropriate and constructive feedback as well as the opportunity to make mistakes without feeling like they are failing. Coaches or teachers play an important role in ensuring that the environment for the session is positive and conducive to skill learning.

Resources

- Digital doc: Worksheet 5.7 Skills overview (doc-29323)

5.5 Activities

Social environment

**Equipment:** Basketball, cones and basketball ring

1. (a) In groups of three, create a list of three focus points you think are important when dribbling and shooting a basketball. Discuss these as a class to set some common points that all players will reference.
(b) In your groups of three, set up cones randomly scattered around a basketball key. Take turns selecting a cone, then dribbling to the ring and shooting. Each player has three shots then passes to the next player. The two players who are watching should give positive, encouraging feedback, stating a focus point that has been achieved and encouraging one that still needs work.

(c) After the group has rotated five times, reflect on the following questions:
- How did the positive encouragement make you feel?
- Did you enjoy receiving feedback from your peers or did you find it challenging. Why?
- How challenging do you think it would be if you had to give feedback on more than three points?

(d) Extend this activity to a full basketball game and when you are on the sideline, continue to provide this feedback to other players. Note how this active role as a sideline player contributes to a more positive environment and culture of the session.

5.5 Check and challenge

Explain
1. Briefly explain the factors that influence skill development and performance.
2. Explain how the structure of someone's body could influence their skill learning.

Evaluate
3. Choose a skill that you have learned recently. Describe how a positive social environment assisted you to understand what you had to do and how you were able to execute the skill in the correct manner.

5.6 Safety and rules and regulations

The success with which you learn skills is largely dependent on positive practice. This will be more rewarding and enjoyable when safety precautions are taken and specific rules and regulations adhered to.

5.6.1 Introduction

All physical activity carries some risk, but this is often removed or minimised through appropriate safety practices and the use of rules and regulations. That is, a set of agreed principles that control procedures used within sport. For example, in some sports a lighter bat is used for junior players. Rules and regulations will also govern individual and team behaviour and conduct while playing, and there are often consequences or sanctions applied to those who break these rules.

5.6.2 Safety

Ensuring safe environments and use of protective equipment enhances skill learning. Injury not only hampers the learning of skills but can also negatively affect interest, motivation and future involvement. While there is a greater risk of injury in contact sports, when safety rules are adhered to this risk is minimised. Important safety awareness points are outlined on the following page.
Safety awareness

- Always warm up and undertake a dynamic stretching routine at the beginning of training sessions and before games.
- Focus on technique development leading to safe, efficient and correct skill execution.
- Ensure you develop a level of fitness appropriate to the game or activity.
- Use protective equipment (such as helmets) when recommended.
- Check the training area to ensure that it is safe and free of objects that could cause injury.
- Seek a healthcare professional's advice before returning to competition following an injury.
- Be aware of and follow the safety rules for the sport or activity.
- Perform new and difficult skills under supervision.
- Wear sunscreen if practising or performing outdoors.
- Ensure adequate fluid levels are maintained.
- Match competitors according to skill level and body size.
- Remain alert and be aware of what is going on and use a common-sense approach to skill learning and working with others.

HEALTH FACT

When riding a bicycle, you are required by law to wear an approved bicycle helmet, securely fitted and fastened on your head. This will reduce the risk of brain or head injury by up to 60 per cent in the event of an accident. You must look for the sticker certifying that the helmet meets Australian and New Zealand standards (AS/NZS2063) to ensure it has passed strict safety tests.

5.6.3 Rules and regulations

Rules and regulations exist to enhance safe activity participation. They provide the boundaries within which all people connected with the sport or activity must participate. Rules apply directly to the game situation, whereas regulations apply to the overall structure of the code, including competitions.

Most people obey rules and regulations that they understand. People are more likely to breach rules and regulations if they do not understand them or are unaware of them. An important part of skill development and practice sessions is taking time to ensure rules and regulations, and the logic behind them, are fully explained and understood by everyone who is affected by them. Our understanding of these rules needs to be supported by enforcement. Referees, for example, need to know the rules and be able to apply them within the competitive environment. Disciplinary committees need to be familiar with the rules governing inappropriate play and be consistent in their handling of situations. Review the activities in the Resources tab to further reflect on safe practice.

The following are examples of rules and regulations with which you are probably familiar:

- the maximum number of players on a netball court is seven
- a basketball player who incurs five fouls must leave the court for the remainder of the game
- head-high tackles are illegal in rugby.

Consider how each of these sports would differ in terms of safety if the appropriate rule was not applied.

on Resources

Digital doc: Worksheet 5.8 ‘Sledge pledge’ (doc-29324)
5.6 Activities

Awareness of rules and regulations
1. As a class, choose an activity you would like such as a game of touch football, soccer or basketball. Brainstorm ten rules or regulations that will enhance safety. An example would be that players must wear appropriate footwear (no bare feet). Rank the rules in order of importance to safety. Ask for volunteers to referee and oversee implementation of the rules during a game. When finished, as a class, evaluate the need for rules and regulations in terms of player safety.

Tackling
2. The lower body tackle used in Rugby League and Rugby Union is quite safe if it is performed correctly. Investigate how the tackle is performed both from the front and the side. Under teacher supervision, practise the tackle on tackle bags and a soft surface such as grass or mats. Examine the technique and make suggestions as to how the impact in a collision situation between two players can be minimised and safety improved.

Rules, strategies and tactics
3. Consider yourself the coach, developing appropriate rules, strategies and tactics for the following situations.
   - Penalty kick in football
   - Short corner in hockey
   - Tennis serve
   - Passing in netball

5.6 Check and challenge

Explain
1. Explain why it is important that players understand rules.
2. Describe how you develop positive attitudes towards safety in physical activity.
3. Outline safety precautions that you need to be aware of during practice situations.

Evaluate
4. Choose any piece of protective equipment used in sport (such as a helmet or mouth guard) and evaluate its role in the prevention of injury.
5. Use the Safe rugby tackles and Unsafe rugby tackles weblinks in the Resources tab to view the clips on safe and unsafe tackling. Discuss how rules enhance the safety of a game. How do you think players should be punished if they break rules, leading to the injury of another player?
6. Select a sport and describe rules that have been put in place to assist the safety of the performer.

Resources

- Weblink: Safe rugby tackles
- Weblink: Unsafe rugby tackles
5.7 Stability, balance and momentum

Understanding the biomechanical principles that influence your performance can assist skill development. Concepts such as stability, balance and momentum assist movement control and help you develop appropriate body positions for a variety of sporting situations.

5.7.1 Introduction

Stability and balance are often associated with static, or still, positions such as those held in gymnastics and dance. However, we also require the application of these principles when we are in dynamic positions, that is, when we are moving. Such actions include changing direction while surfing or on the field in hockey or soccer.

The Guinness World Record for the longest handstand on a stationary skateboard is two minutes. Superior balance and stability allows skaters to perform skills such as these. Use the Handstand on a skateboard weblink in the Resources tab to watch a handstand on a moving skateboard. How do you think this skater achieves and maintains his balance and stability?

 우리는의 범위 : Handstand on a skateboard

5.7.2 Stability and balance

Understanding balance and stability is important for the proficient execution of many skills as well as the prevention of injury. Stability refers to the body’s ability to withstand disruption to equilibrium and balance is the ability to control equilibrium. It is easy to appreciate how a person performing a handstand needs to apply the concept of balance. However, even dynamic situations such as sprinting also require an understanding and application of balance. The sprinter is momentarily balanced on the pad of either foot at any moment during a race, and must remain balanced with every step. Loss of balance would upset the flow and efficiency of the stride and contribute to a poor performance.

When a body is stable it has a high degree of equilibrium and will resist forces that try to move it from this position. Stability depends on several factors including centre of gravity and base of support.

The centre of gravity in the human body is located at the approximate centre of the body around which mass is equally distributed (see figure on right). However, the position will vary according to the type of activity we are performing. As shown in the following figure, the centre of gravity moves as our body shape changes according to the activity we are performing.

The base of support relates to the parts of the body (or object) in contact with the ground and the area between these supporting parts. When we are standing straight on two feet, the base of support is both our feet. The base of support could be increased if we were to widen our stance or bend over and place our hands on the ground. This, in turn, would increase our stability (see figure on the following page).
Our centre of gravity changes according to the skill we are performing.

When we widen our base of support, our stability is increased.

**HEALTH FACT**

Judo is a martial art that demands an understanding of forces, stability and motion. The main aim of judo is to overcome your opponent’s stability. The basic hip throw is an example of a movement that requires anticipation and reaction to your opponent’s movements, and requires an understanding of forces, stability and motion.

A body that is in a stable position is more likely to be well balanced. We can be stable when we are stationary or when we are moving. When we are at rest and not moving, we may possess **static balance**. When we move and still have control of our body, we demonstrate **dynamic balance**.

**Balance** depends on how well we are able to control our centre of gravity in relation to the base of support. If we elevate our centre of gravity by lifting our arms, as required in an ice-skating manoeuvre, it will be more difficult to balance. However, when our arms are brought down by our side, our balance will be increased because our centre of gravity will be lower. If our centre of gravity moves outside the base of support, we are likely to lose balance and fall over.
The sprinter progresses from a very stable position of static balance to a less stable dynamic position during the one event.

Static ________________________________ Dynamic

The centre of gravity changes according to the type of momentum we are performing. However, we remain stable as long as the centre of gravity is located over the base of support. Generally, stability in selected sporting events can be increased by:

- lowering the centre of gravity by bending the knees — for example, a basketball defender
- widening the base of support — for example, using two hands to support the head in a headstand
- increasing friction between base of support and ground — for example, the studded footwear worn by footballers.

Stability is related to the area of the base of support. In these figures, the base of support increases with progression from A to E, resulting in more stability.
The level of stability required varies from one sport to another. Some sports (such as wrestling) require a high degree of stability, whereas others (such as evading players in touch football) will benefit from less stability as it is easier to move and run from the opposition.

5.7.3 Momentum
Momentum is the amount of motion a body has. An understanding of how momentum relates to various sporting activities can help us to enhance performance and safety in movement. In sport, we are usually concerned with ways to increase momentum. This allows us to throw the discus further or tackle harder.

To increase momentum, we can either increase an object’s mass or velocity. This works to a point. Some cricketers, for example, choose a heavier bat (more mass) as a way of hitting the ball further. However, if the bat selected is so heavy that it cannot be wielded at the same speed (less velocity), the ball will not be hit as far as before. Conversely, if we lighten the bat significantly, and try to hit the ball with a very fast action (increased velocity), we may find that our control is affected and the combination of less mass and less control leads to a poorer shot.

5.7 Activities
Stability
1. Examine the images below and rate them (1–10) from most stable to least stable. Justify your answers.
2. The following activities and skills relate directly to the centre of gravity and base of support principles.
   Explain how manipulation of the centre of gravity and/or base of support can affect the final outcome in each scenario.
   (a) Two tug-o-war teams are of equal weight. One is able to convincingly beat the other. How?
   (b) A shot-putter who bends his legs is able to throw further than when the legs are kept relatively straight.
   (c) A person who stands on one leg tries to hit a golf ball as far as a person standing on both legs.
   (d) A person does a headstand and removes their hands from the mat.
   (e) A full-back in Rugby League jumps to catch the ball and is tackled while still in the air.

3. Experiment with the following activities that require balance and stability. For each activity, make variations to body position and technique to enhance performance and safety. Observe the effects and discuss your findings with the class.
   (a) In pairs and on a safe surface, work out ways to destabilise wrestling holds and positions.
   (b) Practise the ‘mark’ in Australian Rules football.
   (c) Practise the jump shot in basketball.
   (d) Try ice skating or roller skating.

5.7 Check and challenge

Explain
1. Explain how stability relates to a stationary activity (for example, a headstand) and a dynamic activity (for example, running).
2. Explain how raising or lowering your centre of gravity will affect your balance.
3. Explain what is meant by dynamic balance.
4. Explain the connection between stability and base of support using a basketball defender or a weight-lifter as an example.
5. Explain how an understanding of momentum could be used to advantage for either a collision sport or tenpin bowling.

Evaluate
6. Evaluate the importance of balance in performing a gymnastics routine.
7. Use examples to describe how the centre of gravity in the body changes according to the type of movement we are doing.
8. Use the Destabilising in judo weblink in the Resources tab and identify the factors that destabilise an opponent in a successful performance of the ‘takedown’.

Resources

Weblink: Destabilising in judo
5.8 Review

5.8.1 Summary

- Aspects of movement skill development include object manipulation, body control, body awareness, technique, timing and anticipation.
- Manipulation, body control and kinaesthetic sense are assisted by enhanced coordination and balance.
- Technique is the method used to perform a skill or movement. Skill execution will be improved considerably by giving attention to establishing sound technique.
- Anticipation and timing are improved through practice. These two characteristics are evident in skill execution by elite players.
- Skill development is influenced by a number of factors including: transfer, structure, environments, feedback, practice, safety, and rules and regulations relating to the activity.
- Rules and regulations ensure safety and help minimise risk, enhancing the learning environment.
- Biomechanics is the study of the mechanics of human performance. Knowledge of biomechanical principles will improve the way we perform many sporting movements.
- An awareness of how the centre of gravity changes within the human body will assist in movements where balance and stability are important.
- Momentum refers to the quantity of movement a body displays. Better understanding of momentum increases our effectiveness and safety in collision sports and in activities such as discus where improved momentum increases distance.

**ESSENTIAL QUESTION**
What do we need to know to move, throw and execute high level sporting skills to the best of our ability?

Evaluate your initial response to the essential question now that you have studied the topic.

5.8.2 Key terms

- **anticipation**  our ability to predict whether a particular action will occur
- **balance**  the ability to control equilibrium while we are stationary or moving
- **base of support**  the parts of the body (or object) in contact with the ground and the area between these supporting parts
- **basic skill drills**  practice drills designed to allow the individual to learn and perform skills in an environment that ignores outside elements such as the opposition or movement
- **body**  in this context refers to a person or an object such as a javelin
- **body awareness**  the ability of the mind to know what is required of the trunk and limbs, and to be conscious of how a movement is being performed
- **body control**  the ability to coordinate movements with precision
- **centre of gravity**  the point at which all weight is evenly distributed, enabling the body or object to be balanced
- **decision making**  the ability to weigh up game situations and decide which option to take and when to take it
- **dynamic balance**  maintaining balance while the body is in motion
- **equilibrium**  a state that arises from our senses about the position and balance of our body
- **feedback**  information provided to a performer about the quality and/or outcome of the performance
- **friction**  develops when two objects rub together
- **grid games**  an extension of intermediate and advanced skill drills; take place within a grid or defined area
- **kinaesthetic sense**  the sense that detects movement, body weight and body position
- **learning environments**  the physical and social environment in which skills are learnt and developed through practice
**mass** is the quantity of matter of which a body is composed. It is slightly different from weight in that it remains constant, whereas weight is affected by gravity.

**momentum** the quantity of motion that a body displays

**movement skill** the proficiency with which we execute movement in all types of physical activity

**object manipulation** the ability to move and control an object

**rules and regulations** policies, laws and guidelines that promote fair play and enhance safety in sport

**safe environments** grounds, equipment and facilities being safe to use

**stability** the ability to maintain a current state or position

**static balance** maintaining a balanced position while not moving

**subskills** a small part of a skill; for example, the toss is part of the skill of serving in tennis

**tactical proficiency** the ability to weigh up game situations and decide which option to take and when to take it

**technique** the method used to perform a skill or movement

**timing** relates to when certain movements occur within a pattern or the use of the body in relation to time; the way in which parts of a movement flow together

### 5.8 Check and challenge

To answer questions online and to receive immediate feedback and sample responses for every question, go to your learnON title at www.jacplus.com.au Note: Question numbers may vary slightly.

**Key terms quiz**

**Multiple choice quiz**

**Check your understanding**

1. Identify and explain the aspects of movement skill development.
2. Explain how knowledge of body control and kinaesthetic sense improves our ability to surf.
3. Discuss the importance of timing in the tennis serve.
4. ‘Good technique is the foundation of skill mastery.’ Discuss.
5. Explain the role of practice in skill improvement.
6. Choose a sporting activity where inertia needs to be considered for safety. Explain the modifications to equipment or rules to enhance the safety of the sport.
7. Apply the concepts of balance, stability and base of support to improved execution of a skill.
8. Identify an activity where momentum is important. Suggest how momentum is developed or improved and contributes to a better performance.

### Resources

- Digital doc: Worksheet 5.9 Applying mechanical principles to a favourite activity (doc-29325)
- Digital doc: Worksheet 5.10 Key terms quiz (doc-29326)
- Digital doc: Worksheet 5.11 Multiple choice quiz (doc-29327)
- Digital doc: Key terms glossary (doc-29328)