David Tod

Sport Psychology

the basics

Second Edition

ROUTLEDGE

SPORT PSYCHOLOGY

THE BASICS

Sport Psychology: The Basics provides an accessible introduction to the fundamental ideas at the heart of Sport Psychology today. This new revised and updated second edition examines the links between sport participants' behaviours, their personality, and their environment to identify the factors which affect performance. Exploring theory and practice, it uses case studies to illustrate how key areas of theory are applied within a sport psychologist's practice, answering such questions as:

- What is sport psychology and what do sport psychologists do?
- What factors affect sporting performance?
- How can sport psychologists help parents and sport organizations?
- Which psychological characteristics are associated with achievement in sport?
- How can sport psychologists help with athlete's mental health?

With a glossary of key terms, suggestions for further study, and ideas for improving performance, *Sport Psychology: The Basics* is an ideal introduction for students of sport and coaches who would like to know more about how sport psychologists address questions about human behaviour in sport.

David Tod, PhD, is a Senior Lecturer in Sport Psychology at Liverpool John Moores University. David is a UK-registered practitioner psychologist who has worked with elite, professional, and Olympic athletes across several sports. David's research focuses on sport psychologist expertise development, training, and supervision. David teaches on the sport psychology, sport and exercise science, and strength and conditioning degrees at Liverpool John Moores University, and is a former associate editor for *The Sport Psychologist* and the *International Review for Sport and Exercise Psychology*. David is a former committee member for the British Psychological Society's Division of Sport and Exercise Psychology.

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SPORT PSYCHOLOGY

THE BASICS

SECOND EDITION

David Tod

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1

INTRODUCTION

CHAPTER LEARNING OBJECTIVES

1 Define sport psychology
2 Distinguish sport psychology from exercise psychology
3 Describe sport psychology as an academic field and as an applied profession
4 Illustrate the scientific basis of sport psychology
5 Show how anyone can use sport psychology knowledge
6 Explain how to become a sport psychology practitioner

Buffy plays for Sunnydale High School's female basketball team. She is about to step up to the free throw line during the final seconds of a close game against a rival school. Her two points, if she puts both free throw attempts through the hoop, will win the game. Unfortunately Buffy has had a terrible year so far after returning from a knee injury that ended her previous season early. She had started the previous season strongly; feeling like the hoop was so large she could have scored with a beach ball. This year, however, Buffy has been hesitant in all parts of the game and has had self-doubts. Giles, her coach, calls a time out to help Buffy relax, but he does not know what to say. Think about what you would say to Buffy if you were the team's sport psychology practitioner.

Buffy's situation illustrates topics falling within the scope of **sport psychology**. Most people would give Buffy advice that had a psychological bent, such as telling her to think positively, to focus on the task, or to take a deep breath and relax. These

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opinions show that most people are familiar with psychological ideas. This familiarity is one reason why sport psychology is a fascinating subject: most athletes, coaches, and sports fans are able to have a conversation on the topic. As you read the following chapters, you will also probably understand the topics in this book, although you may not use the same scientific jargon as sport psychology practitioners. As well as using technical jargon, practitioners explore sport psychology topics scientifically to help separate valid ideas from those without any evidence. Studying sport scientifically allows sport psychology practitioners to discover the knowledge and strategies that help athletes improve their performance, enhance their wellbeing, and gain satisfaction from playing sport. In this chapter I will (a) define sport psychology, (b) show how it is different from related topics (e.g., exercise psychology), (c) describe why it is both an academic subject and an applied discipline, (d) explain how it is underpinned by **science**, (e) show how all people can use sport psychology knowledge, and (f) discuss how a person can become a sport psychology practitioner.

DEFINING SPORT PSYCHOLOGY

Sport psychology is the study of behaviour in sport. It is a science that examines how our thoughts, feelings, behaviour, and environment interact during sport. More specifically, sport psychology practitioners try to describe, explain, predict, and maybe even change people's thoughts, feelings, and behaviour so they can have more fun, play better, or accrue other benefits from sport, such as reduced **stress** or increased wellbeing. When helping Buffy, for example, a sport psychology practitioner may start by describing the situation. What thoughts does Buffy have at the free throw line? What does she feel? How does she act? What things and people affect her? After describing the situation, a practitioner may try to explain why Buffy behaves, thinks, feels, and performs the way she does. Perhaps her injury has lowered her **confidence** and increased her **anxiety**. Buffy's anxiety might have stopped her making decisions automatically and hindered her from moving in a fluid fashion. Her hesitancy and loss of form may be

the reasons for her poor free throw performance. The sport psychology practitioner will then test the explanation to find out if anxiety predicts Buffy's performance. If anxiety does predict performance, then the practitioner can create strategies to help Buffy control her worries and fears, build her confidence, and improve her performance. If Buffy's performance gets better, the practitioner has evidence that the strategies work. The practitioner may then be able to use the strategies to help other athletes control anxiety and play well.

Based on the sport psychology definition above, the discipline has two broad questions (Williams & Straub, 2021):

1 How do psychological factors influence thoughts, feelings, behaviour, and performance in sport?
2 How does playing sport influence a person's thoughts, feelings, and behaviour?

Examples of the first question include:

- Will relaxation training help Buffy focus on the free throw and perform better?
- Do individuals with negative body image find it difficult to socialize with teammates and will they avoid sports with revealing team uniforms?
- Do sprinters' **self-confidence** levels influence their race times?

Answers to these questions assist sport psychology practitioners to find ways to help athletes achieve **goals** and gain happiness from playing sport.

Examples of the second question include:

- How will Buffy's free throw success or failure influence her self-esteem?
- Can playing team sports teach people leadership and teamwork skills?
- Does sport build character?

Answers to these questions assist sport psychology practitioners, and others, when discussing the value of sport for people and their communities. A common reason for spending public money on sport is the belief that people and communities will attain psychological and social benefits from playing and hosting sporting events. Sport psychology practitioners can examine if these claims about the social value of sport are plausible.

Sport psychology has been influenced by several other scientific fields, principally **psychology** and **sport and exercise science** (which was often labelled Physical Education or **Kinesiology** when sport psychology grew in earnest during the 1960s and 1970s). Both psychology and sport and exercise science contain sub-disciplines (see Table 1.1). Well-trained sport psychology practitioners understand the basic principles of the sub-disciplines in Table 1.1. Sport psychology professionals need to understand the basics of these other subjects because psychological factors interact with variables from the other disciplines to influence thoughts, feelings, behaviour, and performance. For example, psychological factors like **self-talk** (the words people say to themselves) influence athletes' skill levels and abilities, which then affect performance. To illustrate, sport psychology researchers have found that self-talk, such as "I can jump high", influences athletes' jumping technique and increases their jump height (Edwards et al., 2008). Understanding how psychological and other factors interact with each other gives sport psychology practitioners a greater understanding of sporting behaviour than if they studied these factors separately.

Table 1.1 Example psychology and sport and exercise science sub-disciplines

Psychology	***Sport and exercise science***
Counselling psychology	Biomechanics
Clinical psychology	Exercise physiology
Developmental psychology	Motor learning
Health psychology	Sports medicine
Organisational psychology	Sport sociology
Abnormal psychology	Sport pedagogy
Forensic psychology	Coaching science

DIFFERENCES BETWEEN SPORT PSYCHOLOGY AND EXERCISE PSYCHOLOGY

Whereas sport psychology addresses thoughts, feelings, and behaviour in competitive sport, **exercise psychology** embraces physical activity, exercise, and health contexts. For many years sport psychology practitioners considered sport and exercise psychology to be a single field of study. More recently, practitioners have been able to specialize, studying topics and offering academic courses on either sport or exercise. Since the 1980s, the amount of **research** produced each year in both areas has increased a lot, and sport psychology practitioners find it difficult to stay on top of the knowledge associated with both sport and exercise.

The split is not complete. In many universities sport and exercise psychology is taught under one title. Professional organizations across several countries require sport psychology practitioners to have knowledge and skills in both areas (e.g., Australia, the United Kingdom, New Zealand, and the USA). The separation of sport psychology and exercise psychology is most visible in places where practitioners focus on specific **groups** of people (e.g., in universities, sporting institutes, medical centres, pain clinics). In other places where practitioners have less freedom to specialize, the differences are less noticeable (e.g., practitioners working in private practice).

SPORT PSYCHOLOGY AS AN ACADEMIC DISCIPLINE

Sport psychology academics focus on creating and teaching sport psychology knowledge and are normally employed in universities. When undertaking research or creating knowledge, practitioners apply **scientific methods** to examine psychological factors in sport. They develop and test theories that explain athletes' thoughts, feelings, and behaviours in sporting environments. For example, practitioners have examined **imagery** (also called visualization) and have found that it can help athletes improve their sporting skills (Toth et al., 2020).

Once academics have answered their research questions, they then disseminate the new knowledge to other people. Practitioners may inform other people about their research by writing articles in scientific journals. There are several sport psychology scientific

journals, including *The Sport Psychologist*, *International Review of Sport and Exercise Psychology*, *Psychology of Sport and Exercise*, and *Journal of Applied Sport Psychology*. Practitioners may also tell other people about their new knowledge at sport psychology conferences held by professional groups, including the International Society of Sport Psychology, the Association for Applied Sport Psychology, and the Fédération Européenne de Psychologie des Sports et des Activités Corporelles (FEPSAC, European Federation of Sport Psychology). Academics may also teach sport psychology knowledge to students enrolled on university degrees in psychology or sport and exercise science. In some countries sport psychology also appears in high school physical education or psychology classes.

SPORT PSYCHOLOGY AS AN APPLIED PROFESSION

Applied sport psychology practitioners use sport psychology knowledge to assist athletes and coaches in achieving their goals, enhancing their performance, and dealing with their issues or problems (e.g., feeling depressed). For example, practitioners may use **goal setting** to help athletes plan and achieve their sporting dreams. As another example, practitioners might help athletes and coaches who are having communication problems with each other. In recent years, sport psychology professional organizations in some countries have established registration, accreditation, or licensing schemes so that practitioners can show potential clients they have the knowledge and skills needed to help people. In the USA, for example, the Association for Applied Sport Psychology qualifies people as *Certified Mental Performance Consultants*. In the UK, the Health Care and Professions Council registers people as *Sport and Exercise Psychologists*.

When the popular media mentions sport psychology it is usually related to high-level professional sport, and many people believe sport psychology practitioners work only with elite athletes, and only when they are in a crisis or performing badly. Such media coverage contributes to the myth that practitioners offer quick fixes or **band aid psychology**. Elite athletes do benefit from sport psychology, but they do not need to be in crisis or to be performing poorly to be helped. They can work with sport psychology practitioners at any time, such as when they are playing well and want

to get even better. Other groups of athletes also benefit from sport psychology, including youth, senior, non-elite, disabled, nondisabled, female, and male athletes. Sport psychology practitioners can help these individuals prepare for performance and cope with difficult situations. Athletes also have challenges outside of sport, such as relationship problems, mental health issues, and substance abuse, and they can get help from sport psychology practitioners for these concerns just as much as with their sporting issues (if the consultant has knowledge about these issues).

People have been researching and applying sport psychology ideas since the late 1800s, and over that time the discipline has changed greatly (Kornspan, 2012). For example, in recent years practitioners have increasingly become mindful that great diversity exists among athletes and coaches in terms of culture, ethnicity, gender, sexual orientation, religion, etc. To do a good job, sport psychology practitioners need to be competent and comfortable in working with people who are different to them, such as a female practitioner working in a male-dominated sport (Hanrahan & Lee, 2020). Practitioners also need to be accepting of athletes who have different religious beliefs, sexual preferences, cultural backgrounds, etc.

Another exciting development in sport psychology is the greater attention researchers and practitioners are giving to athletes' mental health and wellbeing. Traditionally, applied sport psychology has focused on performance enhancement, with much less attention given to athletes' psychological health. Athletes and coaches, however, face the same challenges as all people, and in some cases they are at greater risk of mental health issues. For example, eating disorders are more prevalent among athletes than the general population (de Bruin, 2017). Sport psychology practitioners are able to help more athletes, with more issues, if they are not limited to assisting only with performance enhancement, although they need to have the necessary skills and knowledge relevant to the athletes' problems.

As a third trend in the profession, sport psychology practitioners are helping people outside of sport more and more, such as individuals in the music, acting, law enforcement, medical, and military industries. Police officers, soldiers, musicians, actors, lawyers, surgeons, for example, have to perform in stressful situations, just as athletes, and they can also benefit from working with sport

psychology practitioners. Some individuals have called for sport psychology to be recognized as a branch within the broader discipline of performance psychology (Portenga et al., 2017). Other people refer to themselves as sport and performance psychology practitioners to advertise that they are able to help people outside of sport, not just athletes or exercise participants. Becoming a sport psychology practitioner, however, does not mean a person can automatically work with other types of performers. Each performance domain (e.g., performing arts, business, sport) has specific cultures, languages, and traditions. Sport psychology practitioners need to understand the performance domain before they can help clients effectively.

THE SCIENTIFIC BASIS OF SPORT PSYCHOLOGY

Sport psychology training is based on the **scientist–practitioner model**. Students are trained to use the scientific principles of problem solving and to base decisions on the best evidence available when working with clients (Tod & Van Raalte, 2020). For example, professional organizations encourage practitioners to use only those interventions where there is evidence or research that they help people. Adherence to the scientific basis of sport psychology is a core value for many practitioners because it shows they are professionals who can offer specialized help. Also, organizations that accredit, register, or licence practitioners require them to rely on the best scientific evidence, such as the Association of Applied Sport Psychology in the US, the Health Care and Professions Council in the UK, and the Psychology Board of Australia, in Australia.

To be effective **scientist–practitioners**, students receive training in the scientific method. This method is an approach to solving problems, answering questions, and learning about the world. The scientific method is based on the accumulation of observable and repeatable facts, which inform **theory** development. A theory is a model that integrates a series of facts or observations about the world. In sport psychology, theories may be broad and explain much behaviour, or they may be limited in scope. At the narrow end of the continuum, goal setting theory (Locke & Latham, 2020) helps explain how athletes can use goals to achieve their dreams. At the broad end of the continuum, Albert Bandura's (1977)

Social Learning Theory helps explain much behaviour in sport. According to Social Learning Theory, athletes learn acceptable and unacceptable behaviour via reward, punishment, and **modelling** (watching how other people act). Social Learning Theory suggests people learn most of their complicated behaviour from modelling rather than direct reward and punishment. For example, in some sports youth athletes learn it is acceptable to verbally abuse the opposition because they see elite or professional athletes trash talking and being praised for being aggressive and competitive. In other sports youth athletes learn that abuse is not acceptable because elite athletes are penalized for making derogatory comments towards opponents.

Good theories help sport psychology practitioners in many ways. For instance, a good theory helps them ask relevant questions when working with athletes and collect the information they need to understand athletes' issues. Further, theories assist practitioners in making good decisions and using interventions with the best chance of helping clients achieve their goals. For example, a good theory about anxiety will help a sport psychology practitioner understand why Buffy gets nervous at the free throw line and what interventions will best help her reduce her self-doubts.

The scientific method is illustrated in Figure 1.1. During the first step, sport psychology researchers pose a specific question to answer, such as what is the influence of positive coaching **feedback** on cricketers' batting skill? Once they have a suitable question, sport psychology researchers decide the best way to define and assess the factors they are examining. In the cricket example, researchers need to define and work out how to assess positive coaching feedback and batting skill. To complete step one, scientists describe their **hypotheses** or expected results. In the cricket example, researchers probably expect that positive coaching feedback will increase batting skill, compared with neutral, negative, or no coaching feedback. Researchers may develop their hypotheses from conversations with coaches and athletes or from learning about the results from other studies that have been completed.

In step two, sport psychology researchers develop high-quality studies to test their hypotheses and answer their research questions. Scientists select from a range of different study designs, as shown in Box 1.1. The assorted study designs produce different types of data

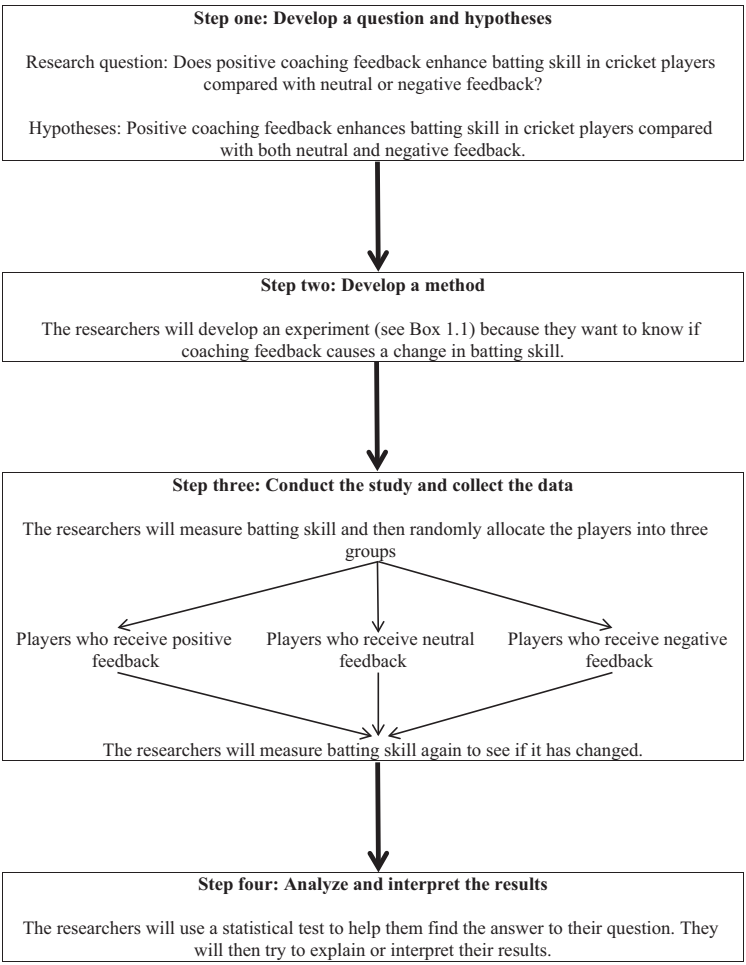

Figure 1.1 The scientific method in sport psychology

BOX 1.1 TYPES OF STUDY DESIGNS

- **Meta-analysis** and systematic reviews: Researchers combine the results from all the research conducted on a topic to find the answer to their research questions. Meta-analyses combine the results from quantitative research (studies that collected

numerical data) using statistics. Systematic reviews combine quantitative and non-quantitative (or qualitative) data. When meta-analyses and systematic reviews are conducted to a high level, they are considered strong forms of scientific evidence.

- **Experiment**: Researchers manipulate one variable (called the independent variable, e.g., coaching feedback) to see if it affects another variable (called the dependent variable, e.g., skill learning). A high-quality experiment allows researchers to say the independent variable caused the change in the dependent variable (e.g., positive feedback led to skill learning).
- **Longitudinal or cohort study**: Investigators follow a group of people overtime, assessing the same variables on several occasions. If researchers manipulate an independent variable to observe its effects on a dependent variable, then it is a longitudinal experiment, otherwise it is a longitudinal descriptive study.
- **Cross-sectional quantitative descriptive study**: Scientists measure variables using numbers on one occasion only, such as scores on a personality test. The investigators do not manipulate the variables but observe them as they exist in the world. Although descriptive research can show if two variables are related, this type of study cannot reveal if one caused the other to change.
- **Cross-sectional qualitative descriptive study**: Researchers explore people's experiences, perceptions, and knowledge using words, text, and videos, and may sometimes also collect quantitative data. The results are based on researchers' subjective interpretations of the data.
- **Case study**: An in-depth investigation of a single person, event, or organization. It is seldom possible to establish a cause-and-effect relationship or generalize the results to other athletes, events, or groups.
- **Expert opinion**: Evidence based on the opinion of a knowledgeable person. Experts may be biased in their thinking and unreliable. Expert opinion is the lowest form of evidence.

Understanding the different types of study design helps people judge the quality of the evidence for a topic. Knowing, for example, that the evidence for an intervention's effectiveness is based on a meta-analysis of high-quality experiments leads to greater confidence that it is useful to athletes than if the data had come from a case study.

and varying types of evidence. In the current example researchers will probably select to do an **experiment**, because these types of studies show if one factor influences another variable. For example, a good experiment might show that positive coaching feedback increases batting skill. In doing an experiment, the researchers will randomly allocate cricketers to groups that receive different types of coaching feedback (e.g., positive, neutral, or negative). The researchers will measure the batters' skill levels before and after the coaching feedback. Also, they will standardize the feedback (e.g., amount, frequency, or method of delivery), so that the only difference between the groups is whether the feedback is positive, neutral, or negative. The researchers also standardize the type of cricketers in the study (e.g., gender, age, or skill level), so that any factors that might influence the results are controlled. Perhaps, for example, experienced batters respond to coaching feedback differently to novice players. If so, then the researchers may decide to use just one type of player, perhaps the novices.

During step three the researchers will conduct their study and will collect the data. In step four, they will analyze and interpret the data. In the cricket example, the scientists will probably measure skill level numerically and use a statistical test to answer the research question: does positive coaching feedback enhance batting skill compared with neutral or negative feedback? The scientists will then interpret the findings, such as suggesting how the results might help coaches or offering an explanation for what they observed. If the results showed that positive coaching feedback led to greater skill improvement when compared with negative feedback, the scientists might suggest it was due to athletes having increased self-confidence. Positive feedback increased athletes' self-confidence, whereas negative feedback lowered their confidence. The researchers may also suggest that coaches give positive rather than negative feedback.

Having completed their study, the researchers will then tell others about their findings. Disseminating results allows athletes and coaches to learn how they can enhance their performance or gain greater happiness from playing sport. Other researchers can design new studies to extend sport psychology knowledge. For example, other researchers might conduct another study to find out if self-confidence was the reason that positive feedback increased skill

learning. As these studies accumulate, the knowledge base grows and practitioners can make evidence-based decisions about how to help athletes.

HOW ALL PEOPLE CAN USE SPORT PSYCHOLOGY KNOWLEDGE

The scientific method is a form of problem solving, and anyone, including athletes, coaches, or other folks working in sport can use the four steps to help them apply sport psychology knowledge to their situation. People can use the four steps through self-reflection and experimentation. A football fitness coach, for example, may have difficulty getting team players to complete extra training outside of squad sessions. To solve her challenge, she reads a sport psychology textbook about **motivation** and learns ways to change behaviour. Through reading the textbook, the coach learns about some strategies that might be useful, such as using reinforcement or helping players identify why they would benefit from extra training. The fitness coach then implements her ideas and records how much extra training the players undertake. Over time the coach will have the information she needs to decide if her ideas have worked, and whether to continue or change what she is doing. Most likely, not every strategy will work and she may need to adjust her interventions so they work better with more players. With reflection and experimentation, the fitness coach will improve the chances that players will increase their personal training outside of squad sessions.

HOW TO BECOME A SPORT PSYCHOLOGY PRACTITIONER

Working as a sport psychology practitioner, teacher, or researcher can be rewarding. Assisting athletes to enhance their performance, wellbeing, or meaning in life is highly satisfying. Helping students develop themselves and complete qualifications leaves teachers with a sense of making a difference in people's lives. Equally, doing research, contributing to sport psychology knowledge, or finding evidence for a novel intervention is personally fulfilling. These personal rewards are in addition to the pleasure of working in a sport-related industry. Sport participation can be enjoyable and

beneficial mentally, physically, and socially, and is valued by large segments of the population in many societies. Many students and other people are attracted to sport psychology because it can lead to fantastic careers. These individuals often want to know how to become sport psychology practitioners.

The answer to this question depends on the country where you will work. In many countries there are no legal or government restrictions about who can do sport psychology. Increasingly around the world, however, psychology and **sport science** organizations are developing mandatory training pathways that lead to official recognition. Also, there may be legislation detailing how people can describe themselves when marketing their businesses. In the USA, for example, the label "psychologist" is a protected title. Only licensed individuals can promote themselves as psychologists or sport psychologists. In the UK, only those individuals registered with the Health Care and Professions Council can use the title "sport and exercise psychologist" (Eubank & Tod, 2017). Individuals interested in working in sport psychology need to find out what laws and standards exist in their countries of work.

In several places, such as Australia, Europe, the UK, and the USA, training to be a recognized practitioner typically includes undergraduate and postgraduate study in psychology, sport and exercise science, or a blend of both. Specializing as an applied practitioner normally begins in earnest at the postgraduate level. Sport psychology at the undergraduate level is usually theoretical and covers a wide range of subjects, including several listed in Table 1.1. At the postgraduate level, students will:

- Learn about sport psychology, exercise psychology, psychology, sport science, and research methods
- Complete a research dissertation (conduct a piece of research)
- Undertake placements where they help athletes under the guidance of a supervisor.

These activities may lead to master's degrees or doctoral-level studies. The specific details are generally influenced by the country's relevant professional psychology or sport science organizations.

In countries that have educational pathways and accreditation or licensing schemes, there may still be people practising as sport

psychologists without relevant qualifications. These individuals call themselves "mental skills trainers", "performance consultants", "mental coaches", etc. Some of these people may help athletes and coaches, but some may be less effective. Having recognized qualifications and being accredited, registered, or licensed as a sport psychology practitioner, however, demonstrates that a person has the relevant knowledge and skills and is likely to be a suitable and helpful consultant. There is a greater risk that unqualified people will be ineffective, or even harmful, when helping athletes.

To become a sport psychology academic working in a university, students generally need to complete doctoral-level studies, such as a PhD, and show they can teach and produce research. In places such as Australia, the UK, and New Zealand, a PhD typically involves a 3-year programme of research and students complete a series of related studies. In other places, such as the USA, PhDs consist of a mixture of research and advanced courses. In a university, there is often no requirement for academics to undertake applied consultancy with athletes, but many do so because of their passion for helping people. Traditionally, academics did not need qualifications leading to applied sport psychology practitioner status. In recent years, however, academics who are qualified as applied practitioners offer the benefit to universities of being able to supervise students undertaking work experience modules.

To bring these ideas together, individuals wishing to pursue careers in sport psychology benefit from finding out the legal and professional requirements in the countries where they want to work. If they want to be an applied practitioner, then completing qualifications leading to accreditation, registration, or licensure makes sense. If the person wants to be an academic, then completing a PhD is generally the minimum standard. Completing both a PhD and gaining applied practitioner status ensures students are best prepared for a career in sport psychology.

CONCLUSION

When listening to athletes and coaches being interviewed after they have won or lost an event, you will often hear them offer psychology-related explanations for their performances. After winning, a team captain may praise players for staying focused

or cool under pressure. After losing, the captain may say the team played well as individuals but not as a group, or suggest the opposition had a greater desire to win. These explanations are then debated by journalists, spectators, and sports fans. Sport psychology practitioners also debate these explanations, but adopt a rigorous scientific perspective when trying to understand athletes' thoughts, feelings, behaviours, and performances. The scientific method has allowed practitioners to build a body of knowledge that underpins the discipline. As applied scientist–practitioners, sport psychology consultants aim to use the knowledge to help athletes, coaches, and others achieve their dreams, enhance their performance, and gain happiness from playing sport. In the following chapters I present the basic principles in sport psychology and show how practitioners apply the discipline's knowledge to assist sports participants.

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2

PERSONALITY

CHAPTER LEARNING OBJECTIVES

1 Define personality
2 Explore ways sport psychology practitioners approach personality
3 Detail typical personality assessment methods
4 Discuss the personality and sport performance relationship

Like his brother Dean, when Sam enrolled at the University of Kansas, he decided to try out for the men's rugby union team, the Kansas Jayhawks. And like Dean, Sam enjoyed the game and showed flair for the sport. He quickly became a starting player, and in his first year he won the *Most Valuable Player* award five times. Sam wondered if he could get a contract in the US professional rugby competition, known as Major League Rugby, and get into the US national team. The thought of being a professional sportsman and representing his country appealed to Sam, but he was unsure if his ambition was realistic. One Saturday, after the Jayhawks beat the Kansas City Blues team, Sam talked to Coach Bobby Singer in the team's club house above Johnny's Tavern and asked if turning pro and playing for the US was realistic. Coach said yes, it was possible, and Sam probably had a better chance than his brother had, when Dean had played. Dean had been a great player as well, but Sam could be better because he had the character to develop his skills and was hungrier for success. Coach Singer went on to say that Sam also worked harder in training than Dean, who had liked to enjoy the social life surrounding the team too much. Coach finished by saying that Sam worked on his weaknesses more than Dean, was more coachable, and was a better team player.

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Like Coach Singer, many people believe that **personality** contributes to sporting success. These people see a parallel between personality **traits** and physical attributes. As athletes climb the sporting pyramid and play at elite levels they become increasingly similar to each other physically. Some people also think elite athletes share similar personality characteristics, such as being driven, being mentally tough, having high pain thresholds, and having unshakeable self-confidence. When academic sport psychology expanded rapidly in the 1960s and 1970s, personality was a popular topic and researchers published more than 1000 studies examining whether or not specific personality traits, such as **conscientiousness**, **extraversion**, **introversion**, and risk taking, predicted sporting performance (Fisher, 1984). Research on personality continues today, although it is less popular than it was in its heyday. To learn about the results of all this research, in this chapter I will (a) define personality, (b) explain how sport psychology practitioners view personality, (c) describe how practitioners measure personality characteristics, and (d) summarize the research examining the relationship personality has with sports performance.

DEFINING PERSONALITY

When discussing what personality is, most people suggest it includes the characteristics that make individuals different from each other, echoing common scientific definitions. Psychologists usually define personality as the collection of enduring psychological features that make people different from others (Carducci, 2015). This definition contains three ideas:

- Personality includes the sum total of our social, perceptual, cognitive, affective, and behavioural tendencies
- Although we share some of the same attributes with other people, the blend of our characteristics is what makes us unique
- There is some consistency to our personality and behaviour over time

Learning about athletes' personalities and getting to know them as individuals allows sport psychology practitioners, coaches, and others to decide how to interact with and help them effectively. Coach

Singer, for example, would likely treat Sam and Dean differently to get the best out of them because of their different personalities.

APPROACHES TO PERSONALITY

Personality is a complex idea. There are many psychological features on which people vary, and psychologists differ on those they consider fundamental to understanding personality. Further, psychologists have developed several theories to help explain the central features of personality and how those attributes develop. In the following sections I describe the major theories that have appeared in sport psychology research: the psychodynamic, biological, trait, humanistic, and **social-cognitive approaches** (Carducci, 2015).

PSYCHODYNAMIC APPROACHES

In psychodynamic approaches, personality characteristics and behaviour are influenced by the interactions among people's conscious and unconscious mental processes, such as drives, needs, and motivations. Sigmund Freud was an early proponent of the psychodynamic approach and suggested that personality consisted of the **id**, **ego**, and **superego** (Freud, 1916/1973). The id is the source of mental energy and has two drives: the drive for life, love, and sex (**Eros**) and the drive for death and aggression (**Thantos**). The id seeks to satisfy the urges for pleasure. The superego represents a person's moral standards they learned from parents and others in society. The superego represents rational thought and tries to delay the id's attempts to satisfy people's urges until suitable occasions. The ego mediates the interactions among the id and the superego. The conflicts among the id, superego, and ego result in anxiety. If people cannot deal with their anxieties they develop **defence mechanisms** that help them to change, deny, or modify their view of reality. Many defence mechanisms exist, such as pushing unwanted thoughts into the unconscious or changing negative emotions into positive actions. Mentally healthy individuals typically make adaptive use of their defence mechanisms. People have mental health difficulties when their defence mechanisms are unable to handle their anxieties adequately.

Psychodynamic approaches have appeared only sporadically in sport psychology literature, partly because these theories are

difficult to test and give insufficient emphasis to how the environment influences people's behaviour. Also, practitioners focus too much on older **psychodynamic theories** and have not learned about modern approaches, which have much to offer. The psychodynamic approach has evolved greatly since its early beginnings (De Queiroz & Andersen, 2020). Those sport psychology practitioners who have learned about modern approaches recognize that psychodynamic ideas can help them understand many aspects of athlete's personalities and behaviour in sport. For example, psychodynamic ideas highlight that athletes are not always aware of why they behave in certain ways and they may lack awareness of some of their needs and motivations. Also, some of the ways athletes act in sport echo psychodynamic defence mechanisms. One example is sublimation, where people transform unacceptable impulses into acceptable actions or behaviours. To illustrate, a losing coach might say the team needs to turn a negative into a positive, meaning they need to use their unhappiness to motivate them to train hard and improve their abilities.

BIOLOGICAL APPROACHES

Biological approaches focus on the extent that genes and physiological factors account for variations in personality and behaviour. The Ancient Greeks, for example, proposed that bodily fluids influenced personality (e.g., too much blood leads to a sanguine attitude). Contemporary versions examine how biological, psychological, and environmental factors interact to determine personality and behaviour (Wrzus, 2021).

Although many sport psychology practitioners recognize that the way biology, psychology, and the environment interact with each other influences behaviour and personality, most theories are not detailed enough to allow specific predictions. It is difficult to state which specific biological, psychological, and environmental variables interact to produce particular behaviours and personality characteristics (Baumert et al., 2017). Consequently, although biological approaches are intuitively appealing, they have not influenced sport psychology as much as other personality theories because they typically fail to provide enough detail or guidance to help practitioners when working with athletes.

HUMANISTIC APPROACHES

Adherents to the **humanistic approach** emphasize personal worth and dignity, adopting a positive view to understanding people. Humanistic thinkers consider people to be active and creative agents who are motivated towards personal growth and self-fulfilment. Further, to understand personality and behaviour, we need to understand a person's subjective interpretation of a situation, because perceptions, rather than reality, influence action. Another key tenant is that people are motivated towards actualization, or to become the person they want or need to be. Self-actualization is summed up by Abraham Maslow (1943, p. 382), one of the early humanistic **leaders**, in his eloquent quote: "a musician must make music, an artist must paint, a poet must write, if he [or she] is to be ultimately happy." Humanist sport psychology practitioners might assume athletes must play sport if they are to be happy and fulfilled.

Humanistic ideas have influenced many sport psychology practitioners (Katz & Keyes, 2020). These practitioners often draw on Carl Rogers' (1959) person-centred approach to helping clients (Rogers was a leader in the humanistic school). In **person-centred therapy**, the practitioner assists clients to develop awareness of how their perceptions, attitudes, thoughts, feelings, actions, reactions, and behaviour influence their health and happiness. With this self-knowledge, clients are able to work towards their true potential and attain meaning and fulfilment. The practitioner creates a comfortable, non-judgemental relationship with the client by being genuine, being empathetic, and offering acceptance or unconditional positive regard. Practitioners also allow clients to find their own solutions to their problems. For example, instead of telling an archer how to control anxiety, a sport psychology practitioner might help the athlete to explore why she is getting anxious and how she can reduce and manage her emotions.

TRAIT APPROACHES

Traits are enduring and consistent ways of behaving. For example, **trait anxiety** refers to a person's tendency to perceive non-dangerous people and events as threatening and respond with high levels of worry and **arousal**. Each individual has some level of trait

anxiety or likelihood to display worry and nervousness in response to non-dangerous events. Some people have a low likelihood, while others have a higher tendency to experience anxiety. Whereas traits are enduring and consistent ways of behaving, **states** are feelings, thoughts, and behaviours that people experience in the present moment (a "right now" reaction). States can change quickly as situations and people change.

A contemporary trait theory that has become popular and gained acceptance among many psychologists is the five-factor model in which similar traits are grouped under five dimensions, as illustrated in Table 2.1 (Widiger, 2017). Some of the five factor dimensions, such as **neuroticism** and conscientiousness, may predict sport performance (Mirzaei et al., 2013; Piedmont et al., 1999). Much research examining the trait–sport performance relationship, however, has been descriptive and cross-sectional. Referring to Box 1.1 in the last chapter, descriptive research cannot determine if traits influence performance or if performance influences traits. An experiment is the suitable type of study to find out if traits cause performance. Perhaps there is another variable that influences both performance and the trait. For example, maybe good coaching helps athletes develop both their performance levels and

Table 2.1 The dimensions of the five-factor personality model

Dimension	***Description***
Extraversion	Includes energy, talkativeness, positive emotions, assertiveness, sociability, and tendency to seek the company of others
Agreeableness	A tendency to be compassionate and cooperative instead of suspicious or antagonistic towards others
Conscientiousness	A leaning towards self-discipline, acting dutifully, and aiming for achievement
Neuroticism	The inclination to experience negative emotions easily, such as anger, anxiety, depression, and vulnerability. Also refers to emotional stability and impulse control
Openness to experience	Appreciation for the arts, emotion, adventure, unusual ideas, creativity, and variety of experiences. Openness also reflects intellectual curiosity, creativity, and a preference for novelty and variety

conscientiousness. An overreliance on descriptive research is one reason why numerous sport psychology practitioners have criticised trait theories. Another reason is that they believe trait theories often fail to acknowledge enough the influence the situation has on behaviour and performance. Sport psychology practitioners have divided opinions on the value of the **trait approach** in explaining sport performance.

SOCIAL-COGNITIVE APPROACHES

Social-cognitive theorists emphasize cognitive processes in understanding people's characteristics and behaviour. Some examples of cognitive processes include how people handle information, regulate their behaviour, and evaluate the possible consequences of their actions. To illustrate, to predict athletes' likelihood of taking illegal performance-enhancing substances, we would benefit from knowing:

- Their thoughts about their skill levels compared to others (information processing)
- The amount of time and effort they spend preparing for **competition** (degree of **self-regulation**)
- Their beliefs about how much improvement they will gain from consuming drugs (evaluating of consequences)

We might predict athletes will be tempted to use illegal substances if they believe they are less skilled than competitors, they cannot think of other ways to improve performance, and they consider they will gain many benefits from taking drugs.

Although social-cognitive theorists acknowledge that the environment influences behaviour, they argue that it does so through the filters provided by people's worldviews. As an example, the extent that praise from a coach increases desirable training behaviours in a youth team will be influenced by the athletes' perceptions of the positive feedback. Some athletes may relish the praise and change their behaviour more than teammates who do not believe the coaches' words. The same environmental factor (coach praise) yields different effects depending on the players' interpretations.

The social-cognitive approach has underpinned much research and practice in sport psychology. For example, applied sport psychology practitioners often use interventions to help athletes modify their cognitive processes, such as helping them develop their imagery skills, engage in planning, or enhance their self-regulation abilities (Eubank et al., 2020). Practitioners believe that helping athletes strengthen their cognitive processes will allow them to cope effectively when placed in stressful competitive situations.

WHICH IS THE BEST APPROACH?

It seems obvious to ask which approach is correct or the best, but each has strengths and weaknesses. Sport psychology practitioners can draw on more than one approach and do not have to subscribe to one exclusively. Rather than ask, "which is best?", a more helpful question is, "which approach is useful for allowing practitioners to understand and help the athletes in front of them here and now?" The answer will vary depending on the athlete and the situation. For example, a social-cognitive approach may be helpful if athletes want to understand how their thoughts influence performance. The psychodynamic model may be useful if an athlete wants to explore how their childhood influenced their current behaviour. One way that personality theories help practitioners is by guiding their selection of suitable measurement tools when they need to assess athletes' personal characteristics.

TYPICAL PERSONALITY ASSESSMENT METHODS

Measuring personality characteristics helps sport psychology practitioners understand athletes and predict how they might react in specific situations (e.g., such as knowing when Buffy, from Chapter 1, will typically doubt herself during competition). With this information, sport psychology practitioners can tailor interventions to suit athletes' temperaments and tendencies. Also, personality measures may let practitioners gather information in ways that make it easy for them to communicate details about athletes' personality characteristics to clients and colleagues. Common methods sport psychology practitioners use to assess personality characteristics include **standardized questionnaires**,

projective tests, **behavioural observations**, and psychophysiological measurements.

STANDARDIZED INVENTORIES

Standardized inventories contain a list of questions designed to assess some feature of personality. For example, a standardized inventory on motivation may have 10 questions all designed to measure some feature of an athlete's motives for playing sport. In standardized inventories, the questions are presented in the same way to all athletes taking the test (e.g., the questions are worded the same way and presented in the same order). Also, athletes respond to the questions in the same way (e.g., in many questionnaires they all respond on a Likert scale from 1 to 5). Any variation in the results among athletes is then due to individual differences, not the questionnaire. For example, individuals with higher levels of self-belief will score higher on standardized self-confidence questionnaires than people with lower levels. Sport psychology practitioners use questionnaires that measure either general (non-sport specific) personality characteristics or specific (sport-related) athlete attributes. One example of a general personality questionnaire is the **NEO Personality Inventory-Revised** (NEO-PI-R), which assesses the characteristics associated with the five-factor model and presented in Table 2.1 (Costa & McCrae, 1992). An example of a sport-specific questionnaire is the **Competitive State Anxiety Inventory-2**, which assesses athletes' current levels of **cognitive anxiety**, **somatic anxiety**, and self-confidence (Martens et al., 1990). Generally, sport psychology practitioners prefer sport-specific questionnaires over general assessment tools (Vealey et al., 2019). Sport-specific measures predict athletes' competitive behaviour and performance better than general questionnaires.

Broadly, however, sport psychology practitioners have mixed views about how helpful questionnaires are when working with athletes (Vealey et al., 2019). Questionnaires help sport psychology practitioners to learn about clients, build good relationships with athletes, and assist them in developing an awareness of their personality tendencies. Many questionnaires, however, lack evidence that they provide useful information. Sometimes athletes do not learn any new information about themselves. Also, some clients react

badly to completing a questionnaire, especially if it reminds them of being at school and sitting exams (and they found exams stressful). Given the possible advantages and disadvantages to using questionnaires, effective sport psychology practitioners tread carefully when deciding whether or not to use them with clients.

Before selecting a questionnaire to use with a client, sport psychology practitioners usually find out if the test is of high quality; if not, the information may not help, or it may even turn athletes off sport psychology. The practitioner would read the scientific literature to see if the questionnaire is valid and reliable. A valid test assesses what it purports to measure. For example, a valid anxiety questionnaire assesses anxiety and no other variables, such as confidence or motivation. A reliable test yields the same result or score when used in a similar way over time (called test–retest **reliability**) or when different practitioners use the same questionnaire (called **inter-rater reliability**). If the scientific literature provides evidence that a questionnaire is valid and reliable, then practitioners can be confident that the test may be worth using.

Even when using standardised questionnaires of high quality, there are benefits and trade-offs to their usefulness. They are easy to use, because administration and scoring is standardized and each athlete is treated in the same way. Standardized questionnaires also reduce practitioners' subjective bias when scoring athletes' responses, enhancing reliability. Standardization may help to assess how much athletes change over time; allowing practitioners to find out if their interventions have been helpful. Nevertheless, standardized questionnaires rely on athletes being honest about and aware of their thoughts, feelings, and behaviour. Athletes may be tempted to fudge their answers, for example, if they think their coach might obtain and use the results to select the starting line-up.

Ideally, practitioners who want to use questionnaires will consider the ethical issues associated with assessing athletes' personality characteristics. For example, practitioners who are members of professional organizations, such as the British Psychological Society or the American Psychological Association, are mandated to use only those questionnaires they know how to use properly. If a practitioner is not trained to use a questionnaire, several issues may arise that prevent athletes from gaining benefits from sport psychology or may even cause them harm. Poorly trained practitioners may select

unsuitable or poor-quality tests, administer and score them incorrectly, misinterpret results, or report findings without considering ethical principles or how clients might react (such as sharing results with coaches and breaking athlete confidentiality). When practitioners use questionnaires competently and ethically they can learn much about their clients, although such measuring tools are not error-free and are best used as part of a range of assessment methods.

PROJECTIVE TESTS

When completing projective tests, athletes respond to ambiguous stimuli and their answers reveal aspects about their personalities, including those parts they are aware of, those they are not aware of, and those they are reluctant to discuss openly. The **Thematic Apperception Test**, for example, consists of a series of cards containing black and white illustrations of a person or people in ambiguous situations (Murray, 1943). Googling "Thematic Apperception Test images" returns many websites containing the illustrations used in the measure. People taking the test construct a story about what is happening in the picture, and by doing so reveal their personalities and inner worlds, including their conscious and unconscious hopes, dreams, desires, anxieties, fears, and conflicts. The **Athlete Apperception Technique** (AAT) is an example of a sport-specific projective test (Gibbs et al., 2017). Again, a google search of "Athlete Apperception Technique images" will return example illustrations from the test. The AAT consists of a series of sporting images designed to evoke themes such as anxiety, concentration, leadership, **team cohesion**, confidence, motivation, and team relationships. Similar to many projective tests, the AAT is best used as part of a battery of assessment techniques rather than as a standalone instrument.

There are benefits and drawbacks to projective tests. Regarding benefits, for example, projective tests allow athletes to bring up material important to them (either consciously or unconsciously) and do not force them to focus on information they think is irrelevant, as may occur with standardized questionnaires. Also, projective tests may lead to a holistic understanding of the athlete. It may be difficult for athletes to distort their responses based on what they believe projective assessments measure because of the

tests' ambiguous stimuli. Critics, however, highlight the lack of evidence for projective tests' **validity** and reliability, especially compared with many standardized questionnaires. Such attacks are often unfair, however, because projective tests are typically not designed to be scored or used in the same way as standardized questionnaires. Whereas standardized questionnaires aim to yield information about specific characteristics, such as anxiety, motivation, or confidence, projective tests allow for a global understanding of people and their relevant psychological characteristics. Nevertheless, practitioners using projective tests find it helpful to reflect on how they are assessing athletes' responses because they want to avoid their own beliefs biasing their interpretations of the data they gather from their clients. If practitioners do not reflect on how they use projective measures, the test results may reveal more about them than their clients.

BEHAVIOURAL OBSERVATIONS

When completing questionnaires or projective tests, athletes' responses may be biased and limited by their self-understanding. Athletes' levels of self-understanding and bias are less likely to influence the results from behavioural observations than questionnaires and projective tests. Behavioural observations involve sport psychology practitioners watching, recording, and evaluating observable client behaviour. During a behavioural observation, sport psychology practitioners watch athletes behave, perform, and interact with others (coaches, teammates, supporters, spectators) when competing, training, or in non-sporting situations. There are several benefits from observing athletes in real settings. For example, if practitioners observe athletes over time then they can assess the effectiveness of their interventions (Holder & Winter, 2017).

As one example, the **Coaching Behaviour Assessment System** (CBAS) helps practitioners observe coaches' behaviour during competition and training (Smith et al., 1977). The CBAS contains the 12 categories listed in Table 2.2, along with examples. Coaches' behaviours are classified as either reactive or spontaneous. Reactive behaviours follow athletes' desired or undesired actions, and include reinforcement, non-reinforcement, mistake-contingent encouragement, mistake-contingent technical instruction, punishment,

Table 2.2 Reactive and spontaneous behaviours in the Coaching Behaviour Assessment System

Behaviour	***Explanation***	***Verbal example***
Reactive behaviours		
Reinforcement	A reward for a desired action	"Well done for taking it on yourself to clean up the equipment today"
Non-reinforcement	Absence of a response to a desired action	Silence
Mistake-contingent encouragement	Encouragement given after a mistake	"We don't expect perfection, but you are working hard so you will get it right with time"
Mistake-contingent technical instruction	Instruction given after a mistake	"Your front foot was not far enough to the left. Get your nose behind the ball and the front leg will get into position"
Punishment	Negative response following an undesired action	"You gave away too many penalties this week, I am going to replace you for next week's game"
Punitive technical instruction	Punitive instruction given after a mistake	"Stop playing like a fool, I am annoyed that you won't follow the ball with your nose"
Ignoring mistakes	Absence of a response to a mistake	Silence
Keeping control	Reaction designed to maintain control	"You did really well in the first quarter and it's great to see the buzz in the air. I want you all to go sit at your locker so we can start to focus on the next half"
Spontaneous behaviours		
General technical instruction	Spontaneous instruction	"Focus on your stance before the next ball"
General encouragement	Spontaneous encouragement	"Way to hustle, you're looking strong"
Organization	Administrative behaviour	"Get yourselves into six groups for the next drill"
General communication	Non-sport-related communication	"How did the drum exam go? When do you get the results?"

punitive technical instruction, ignoring mistakes, and keeping control. Spontaneous behaviours include general technical instruction, general encouragement, organization, and general communication.

Similar to questionnaires and projective tests, behaviour observations have advantages and disadvantages (Martin et al., 2020). On the plus side, observations allow practitioners to view athletes in natural settings and notice how social or physical factors in the environment influence behaviour. Observing athletes also provides information that practitioners can discuss with athletes at future meetings. Behaviour observation systems are flexible and can be adapted to suit different situations. On the minus side, practitioners can easily collect a large amount of data and they may be unsure what information is worth collecting. Behaviour can be ambiguous and difficult to interpret because it is not always clear how or if athletes' actions are related to the personality characteristics the practitioner wants to assess. Further, practitioners' biases influence their interpretations of athletes' behaviours. For example, changes in talking (more or less), going to the toilet often, or being sick are possible signs of anxiety, but it is also possible that athletes displaying these signs are tired, excited, or unwell. Further, knowing that sport psychology practitioners are watching may lead to changes in athletes' behaviour, either consciously or unconsciously.

PSYCHOPHYSIOLOGICAL MEASUREMENT

Although used much less often than standardized questionnaires, psychophysiological measures allow practitioners to collect data about bodily functions that may yield insights into personality characteristics. As examples, heart rate, sweat response, and skin temperature can help practitioners examine athletes' anxiety levels. Similarly, eye movement and pupil dilation could indicate attention and concentration. Hormone levels may signal mood and emotion, such as testosterone indicating aggression. Physiological measures could form the basis of **biofeedback** interventions to help athletes. In biofeedback, athletes learn to monitor and regulate a bodily response. For example, New Zealand scientists showed that athletes given information about their heart rate, ventilation, and oxygen consumption during exercise, and who were taught a relaxation technique, were able to improve their running economy (Caird et al., 1999).

Psychophysiological measures have limitations that prevent them from being used more often in sport psychology. For example, sometimes the equipment needed is cumbersome, and this means that measuring some functions is impractical and cannot be undertaken when athletes are playing sport, such as using an electroencephalogram (EEG) to assess brain waves. Similar to behavioural observations, physiological measurements can be ambiguous and difficult to link to specific personality characteristics. A thumping heart rate could mean an athlete is either anxious or excited. There are numerous physiological variables that could be assessed and their suitability may change from one situation to the next. Also, the way athletes' physiological functions react to specific stimuli varies and can change quickly, sometimes without explanation.

PERSONALITY MEASUREMENT: CONCLUSION

Each personality assessment method has advantages and limitations, and many sport psychology practitioners suggest that using multiple tools will lead to a more complete understanding of an athlete's characteristics than when using them in isolation. The assessment techniques that practitioners use often reflect the personality theories they believe to be valid. Projective tests, for example, are associated with the psychodynamic approach. Standardized questionnaires are linked to the trait approach. Despite the limitations with assessment methods, sport psychology practitioners are interested in measuring personality characteristics to find out if they are related to performance. The way that personality characteristics relate to performance has occupied a large amount of sport psychology practitioners' time over the years, and is the focus of the next section.

THE RELATIONSHIPS BETWEEN PERSONALITY AND PERFORMANCE

As mentioned above, sport psychology practitioners have conducted numerous studies to find out if personality characteristics influence sport performance. Such a broad question, however, is difficult to answer because there are many types of sports (e.g., contact, non-contact, team, and individual) and different personality characteristics might lead to success in each one. Also, there are a

large number of personality characteristics and athletes vary on all of them. One way to explore how personality characteristics relate to sport performance is to consider the role of traits, states, and cognitive strategies (Morgan, 1980).

PERSONALITY TRAITS

In the late seventies and early eighties, William Morgan (1980) suggested there were two camps within the sport psychology community. In one camp lived individuals who believed personality traits could predict sporting performance and success. In the second camp were those people who doubted that traits predicted performance. Today, there are still people in each camp, although the sceptics outnumber the believers. There is evidence that some personality traits are associated with sporting performance and success, such as conscientiousness and neuroticism, however, most professionals acknowledge that limitations in the research have contributed to a lack of definitive answers and an incomplete understanding (Allen et al., 2013). For example, investigators have used different criteria to define and distinguish athletes from non-athletes. A person considered an athlete in one study might be viewed as a non-athlete in a different investigation. As another limitation, much research has been cross-sectional and descriptive. Recall from Box 1.1, if the research has been descriptive and cross-sectional, it is difficult to determine if personality causes sporting success or the other way around. Most practitioners broadly agree that the understanding of the trait and performance relationship is incomplete, and they generally counsel against the use of trait measures for purposes such as team selection, especially without reference to other information such as recent performance or physical conditioning data (Marchant, 2010).

PERSONALITY STATES

Researchers have examined the relationship between mood and performance. The **Profile of Mood States** (POMS) questionnaire has been used most often to measure mood in the sporting context. The POMS measures anger, depression, confusion, fatigue, tension, and vigour. Morgan (1980) proposed that successful athletes had an

"**iceberg profile**" relative to the general population, as illustrated in Figure 2.1. When scores from the POMS are adjusted so that the average from the general population equals 50, then successful athletes score lower on anger, confusion, depression, fatigue, and tension, but higher on vigour. The iceberg profile is also labelled the **Mental Health Model**.

The iceberg profile has stimulated much research and the POMS is a popular measure among sport psychology practitioners (Vealey et al., 2019). Overall, the POMS questionnaire suggests that mood is not related to ability levels. Athletes at different skill levels report similar mood profiles (Beedie et al., 2000). When used before a competitive event, however, **mood states** predict performance, albeit weakly (Beedie et al., 2000). Specifically, better performance is associated with vigour, and poorer performance is related to confusion, fatigue, and depression. Anger and tension are sometimes related with better performance, and sometimes with worse performance. The relationships between mood and performance are a little stronger for open skill, individual, and short-duration sports than for closed skill, team, and longer-duration sports. Also, the relationship is stronger for self-reported performance (e.g., coach ratings) than for objective measures (e.g., time, distance, and score). In all cases, however, the strength of the relationship is not strong: mood does not predict performance well. As another limitation, the

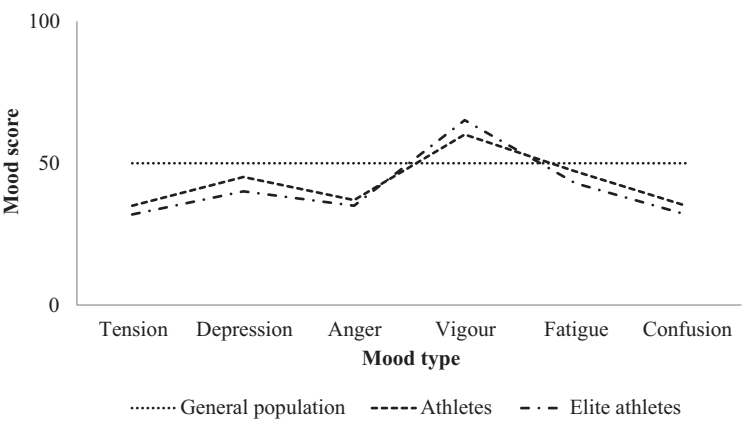

Figure 2.1 Morgan (1980) Mental Health Model or the iceberg profile

research has primarily been cross-sectional, so again, the direction of causality cannot be assessed. Mood might cause performance or it could be the other way around. Even when mood is measured before an event, another factor, such as supportive teammates, may lead to better mood and enhanced performance.

COGNITIVE AND BEHAVIOURAL STRATEGIES

Cognitive and behavioural strategies are deliberate thoughts and actions athletes use to ensure they are mentally and physically ready to perform and achieve their goals. These cognitive and behavioural strategies are the most dynamic aspect of personality and may be easier to learn and modify than traits. They are also related to enhanced sports performance. Examples include (Krane & Williams, 2015):

- Setting goals
- Imagery
- Self-talk
- Arousal and anxiety management
- Attention control
- **Competition plans** and **refocusing plans**
- Competition simulation

Athletes use cognitive and behavioural strategies to help them attain the **Ideal Performance State** that is related to performance in their sport. The Ideal Performance State refers to the profile of mental and physical conditions that allows athletes to perform their best, such as being warmed-up, having high self-confidence, and being focused on performing well. The Ideal Performance State also helps athletes cope with challenging or difficult situations. To assist athletes in achieving their Ideal Performance States, some sport psychology practitioners have developed **psychological skills training programmes** designed to teach athletes to learn cognitive and behavioural strategies for performance enhancement and coping with stress. These psychological skills training programmes are also available in self-help books and multimedia materials. The extent to which these self-help materials are useful is influenced by how easily athletes can apply, adapt, and tailor the strategies to

their specific circumstances and personal tendencies. Adapting these strategies to specific situations is more easily achieved with the help of a sport psychology practitioner than without. I discuss these psychological skills training programmes in more detail in Chapter 8.

CONCLUSION

Most people agree that athletes' physical, social, and psychological characteristics influence sporting success. Physically, jockeys benefit from having a different body type compared to Sumo wrestlers, and socially, good coaching and positive support from family and friends helps athletes lift their performance levels. Likewise, when discussing psychological factors, individuals often construct similar lists of personality traits they view as being characteristic of good performance and elite athletes. Their lists frequently include being tough-minded, focused, disciplined, confident, coachable, dedicated, imperious to pain, and resistant to criticism. To date, however, sport psychology research has not yielded comparable straightforward answers. Although features of personality seem to be associated with enhanced performance and sporting success, the current understanding is not complete and much remains for sport psychology researchers to learn. Nevertheless, the science does imply that there are behaviours and habits that help athletes adapt to and cope with the challenging and competitive situations they find themselves in and perform to their best, such as the cognitive and behavioural strategies outlined above. Sport psychology practitioners with a sound understanding of personality can help athletes identify, assess, and develop relevant psychological attributes and tendencies that allow them to achieve their goals and dreams. In Chapter 8 I discuss some of the ways and interventions practitioners use to help athletes, and in Chapters 3–7 I explore other athlete and environment dimensions relevant to sport performance.

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3

MOTIVATION

CHAPTER LEARNING OBJECTIVES

1 Define motivation
2 Review reasons athletes play sport
3 Discuss examples of the major motivation theories in sport psychology
4 Identify common lessons about motivation from the major theories

Coach Kate Beckett had just started with the Manhattan Magpies, a community softball team that had been bottom of the local league for the last 7 years. Coach Beckett, who had represented her country at softball, volunteered to coach because no one else would, and the league threatened to discontinue the team if they could not find a coach. The squad was made up of a motley group of males and females who had joined for various reasons including liking the sport, wanting to be with friends, getting out of the house, and needing to do exercise. During the preseason, only two players, Ryan and Esposito, attended all the training sessions, focused on the drills, and seemed to be trying to get better. The other players attended sporadically and displayed inconsistent effort. One person in particular, Richard, although a skilled player, seemed more interested in chatting to the female team members than playing the game. Coach Beckett thought her biggest challenge was to organize the players into a cohesive unit and motivate them to play to their best. To assess how competitive the team might be, Beckett organized a warm-up game with a local team, who beat the Magpies 7–0.

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Coach Beckett might be tempted to say the players lack motivation, a reason people frequently use to explain sporting success and failure. If you read sporting autobiographies, you will often read athletes stating their passion, drive, or desire to be the best led to their success. When athletes fail, spectators and pundits often accuse players of lacking willpower, commitment, or resolve. A pervasive belief in society today is that motivation is an internal personality characteristic that results in athletes striving to achieve success, sometimes against the odds. These beliefs also underpin many sporting movies, novels, and TV programmes, such as *Rocky* or *Rudy*, where the hero wins because of dogged determination. Perhaps because of the role that athletes, coaches, and spectators ascribe to willpower or desire, sport psychology practitioners have devoted tremendous effort to examining, evaluating, explaining, and enhancing motivation.

Motivation, however, has proved complicated to understand. For a start, sport psychology practitioners cannot observe or measure motivation directly, they have to infer it from athletes' actions, self-reports, and behaviours. Also, athletes may not want to tell other people about their reasons for playing sport, or they may not be conscious of their motivations. An American football player, for example, may not disclose that he enjoys hurting opponents because it is usually not a socially acceptable reason to play. Furthermore, athletes' behaviours are influenced by both their psychological states and factors in the environment. Any adequate theory needs to explain how motivation results from the interactions between factors in the environment and the athlete's other attributes (e.g., anxiety and confidence). As a result of these difficulties, sport psychology practitioners have developed a wide range of theories to describe motivation. In this chapter I will (a) define motivation, (b) examine reasons athletes give for playing sport and dropping out, (c) present some common theories sport psychology practitioners use to understand athletes' motivations, and (d) show how these theories help practitioners when working with athletes.

DEFINING MOTIVATION

A classic definition of motivation describes it as a force that impels action (Sage, 1977). To illustrate, hunger is a force that impels people to eat, thirst impels them to drink, desire impels them to

mate. Similarly, in sport, athletes and coaches view motivation as a force that drives people to train and compete. As a force, motivation influences the *direction* and *effort* of athletes' behaviours. Direction, or intention, refers to whether or not athletes choose to participate, and effort or intensity describes the amount of energy they expend in striving towards their aims. Athletes may decide their goal (direction) is to win an Olympic gold medal, and they may invest much time and energy (effort) over many years to realize their dream. Alternatively, a person may choose to join a social sports team so they can make new friends (direction) but coast through training (intensity) because they are more interested in socializing than maximizing performance.

PARTICIPATION MOTIVATION

To understand the direction aspect of motivation, sport psychology practitioners have studied why people choose to play sport, and once they have started, why they might decide to stop. The reasons people play sport fall within the realm of **participation motivation**. Understanding the reasons why people start and continue playing sport helps sport psychology practitioners, coaches, and administrators keep these individuals involved and entice more people to participate. Across the Western world most people fail to get enough physical activity to reap health benefits. Governments want to encourage people into physical activities, such as organized sport, to improve physical and mental wellbeing and reduce national healthcare costs. Sport psychology researchers can help because they have examined participation motivation a great deal.

The major motives people have for playing and withdrawing from sport are diverse, and individuals often have multiple reasons (Weiss, 2019). Broad categories of participation motives include competence, friends, fitness, and fun. Regarding competence, many people participate in sport to learn and improve their skills. People can interpret their competence in relation to themselves or in comparison to others. When self-referenced, people feel competent if they believe their skill levels are improving or they are proficient at the activity. When others-referenced, individuals participate for competitive reasons and feel competent when they show they are better than the other people playing. These folks are motivated to

win and beat others. For these athletes the desire to win is a major reason for participating, particularly at the elite and professional level, where their livelihoods are influenced by their ability to defeat opponents.

Regarding the friends, fitness, and fun motives, people often play sport for lots of reasons, including to:

- Make friends
- Be part of a team
- Interact with others
- Improve their health
- Enhance their appearance
- Be active
- Gain enjoyment
- Relieve stress
- Experience sensations associated with the sport

The above list is not exhaustive and there are many other reasons. Also, the reasons a person plays a sport may change over time. The research on participation motivation supports the benefits of tailoring sport around the reasons individuals play. Tailoring sport involves understanding the target group and their reasons for participating. For example, if people in a community want to meet others, do something active, and destress after work, then organizers of a local touch rugby league may decide to deemphasize the competitive aspects of the sport and highlight the social and fitness benefits.

As well as knowing why people play sport, finding out why they stop is helpful to coaches and administrators. Similar to participation motives, athletes have many reasons for not playing or stopping (Weiss, 2019). Some of the common reasons include: a lack of enjoyment or fun, a lack of time, relationship difficulties with the coach or other players, injuries, not getting enough playing time, an overemphasis on winning, and a desire to try other activities. For sport administrators and coaches, some of the reasons are controllable, such as avoiding relationship difficulties by teaching athletes and coaches how to communicate with each other. Other reasons for dropping out may be beyond coaches' control, such as a lack of time or a desire to try out new activities.

MAJOR MOTIVATION THEORIES IN SPORT PSYCHOLOGY

Participation motivation explains why people play sport. In addition to understanding why people play, sport psychology practitioners also want to understand how motivation influences athletes' thoughts, feelings, and behaviours when they are participating. To explain how motivation influences thoughts, feelings, and actions, sport psychology professionals have used a number of theories over the years, such as Atkinson's Achievement Motivation Theory, Attribution Theory, Achievement Goal Theory, and Self-Determination Theory. These are not the only theories of motivation, but they have been the more popular ones in the discipline.

ATKINSON'S ACHIEVEMENT MOTIVATION THEORY

Achievement situations occur when people know their performances will be evaluated, either positively or negatively, against a standard of excellence, either by themselves or others (Atkinson, 1964). An example is a runner aiming to beat a personal best time for a particular distance. The personal best is the standard of excellence, and the person can evaluate if that time has been beaten or not. Atkinson's (1964) theory was one of the early models sport psychology practitioners used to understand athletes' motivation and behaviour in sport. Figure 3.1 presents the theory's major components. The model shows that the interactions between athletes' personal characteristics and the situations they are in shape their emotions, thoughts, behaviours, and performances. Regarding personal characteristics, athletes have two motives: the **motive to achieve success** and the **motive to avoid failure**. The motive to achieve success describes people's capacities to experience pride and satisfaction when they succeed at a task. Individuals with a high motivation to achieve success focus on the rewards they can get when achieving their goals. The motive to avoid failure is the capacity for athletes to react with shame and embarrassment when they fail to achieve their goals. Athletes with a high motivation to avoid failure tend to think about how awful it will be if they do poorly in a sporting event.

Figure 3.1 also presents the situational factors in Atkinson's (1964) model. The probability of success refers to athletes' expectations

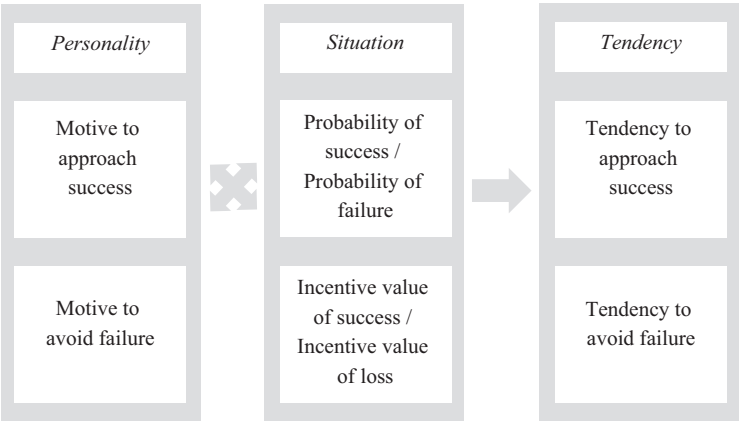

Figure 3.1 Atkinson's Achievement Motivation Theory

they will achieve their goals. Associated with the probability of success is the incentive value of success, or how much pride individuals anticipate they will have if they reach their goals. In contrast, the probability of failure indicates individuals' expectations they will not attain their goals. Mirroring the incentive value of success is the incentive value of loss, or the capacity for reacting with shame and embarrassment when athletes fail to attain their objectives.

As shown in Figure 3.1, these personal characteristics and situational factors interact to produce two tendencies: the tendency to approach success and the tendency to avoid failure:

- Atkinson (1964) suggested that the motive to achieve success, probability of success, and the incentive value of success combine to determine a person's tendency to approach success. When athletes have a high tendency to approach success, they think about the pride and satisfaction of goal attainment, look for challenges and achievement situations, and often perform well.
- In contrast, when the motive to avoid failure, the probability of failure, and the incentive value of avoiding failure combine, they result in the tendency to avoid failure. Individuals high in the tendency to avoid failure will focus on the embarrassment

and shame of not attaining their goals, avoid achievement situations and risk, and, if they must attempt a challenge, often perform poorly.

In rounding out his theory, Atkinson (1964) defined an overall or resultant tendency, which was the difference between the tendencies to approach success and to avoid failure. In many achievement situations, people do not have only the tendency to approach success or avoid failure. Instead, they may have both to varying levels (i.e., high in both, low in both, or some mixture). When an athlete's tendency to achieve success is stronger than to avoid failure, the overall resultant tendency will be positive. Athletes will display the thoughts, feelings, and behaviours linked with the tendency to approach success (think about the pride and satisfaction of success, look for challenges and achievement situations, and often perform well). Alternatively, when an athlete's tendency to avoid failure is stronger than to achieve success, the overall resultant tendency is negative. The athlete will display the thoughts, feelings, and behaviours related to the tendency to avoid failure (focus on the embarrassment and shame of failing, avoid achievement situations and risk, and, if they must attempt a challenge, often perform poorly).

Atkinson's (1964) theory was popular in the 1950s and 1960s, and has influenced contemporary approaches to **achievement motivation**. In recent decades, however, sport psychology professionals have not used it a great deal because of its complexity. Nevertheless, the theory shows that people have multiple achievement motives and that these desires interact with situational factors to influence thoughts, feelings, and behaviours.

ACHIEVEMENT GOAL THEORY

In more recent years, sport psychology practitioners have drawn on Nicholls' (1989) Achievement Goal Theory to understand athletes' achievement motivation. According to Nicholls (1989), understanding how athletes define success provides insights into their motivation, behaviour, thoughts, and feelings. Athletes typically define success in two ways, labelled task orientation and **ego orientation**:

- Task orientation: Athletes with a strong task orientation define success in comparison to themselves. They focus on self-improvement. These individuals believe they are successful when they get better at their sport. Task-focused athletes play sport for enjoyment and they favour activities giving them chances to improve their skills.
- Ego orientation: Athletes with a strong ego orientation define success in comparison to other people. Ego-oriented individuals want to show they are better than the other participants. For example, they will perceive success when they win, and they believe they have failed when they lose. Ego-oriented athletes view sport as an opportunity to compare themselves to others and reveal their superior abilities. They prefer tasks that let them show they are higher in ability than others.

To illustrate each orientation, consider the players running onto a netball court. The task-oriented players are keen to find out if the drills they have practised have helped them improve their skills during a competitive game. Although task-focused players still want to win, they will measure their success by how well they and the team play. The ego-oriented players, however, want to beat the other team and outshine their teammates. Although task and ego orientations are separate definitions of success, athletes are not usually one or the other. Instead, they may be high in both, low in both, or high in one and low in the other. Many elite athletes, for example, have high levels of both orientations (they want to be the best they can be and they want to win as well). Alternatively, some people may be low in both task and ego orientation, and these individuals are at risk of withdrawing from sport unless they have other reasons for playing, such as to be with friends.

Achievement goals are associated with different behaviours (Keegan, 2018). A high task orientation, for example, is related with an adaptive achievement profile. High task athletes will:

- Maintain high effort during training and competition
- Persist in performing as well as they can during training and in competition, even when they are facing difficulties
- Select optimally challenging tasks and opponents when a choice is available (i.e., when there is a 50/50 chance of success)

- Consistently perform close to their potential
- Sustain their focus on improving their skill levels

When ego-oriented athletes have high **perceived competence**, they will also display the same adaptive behaviours as task-oriented people. But when ego-oriented athletes have low perceived competence, they will display maladaptive behaviours. Their anxieties about their low competence will cause them to:

- Reduce their effort in training and competition
- Perform poorly
- Select either overly difficult challenges (so they will not feel bad about losing) or overly easy tasks (where success is guaranteed) when they have a choice
- Drop out of sport because they do not think they are good enough to play

As mentioned above, athletes are not usually only task or ego oriented, but they may have various levels of both. Studies that have examined the various profiles of task and ego orientations (e.g., high in both, low in both, or a mixture) reveal that a high ego orientation does not lead to maladaptive behaviours if athletes also have a strong task orientation or a high level of perceived competence. A high task orientation is a buffer against the negative effects of a strong ego orientation combined with low perceived competence.

The two orientations are also related to athletes' beliefs, perceptions, and attitudes about sport (Keegan, 2018). Athletes with a strong task orientation believe that hard work leads to success, and sport is an avenue to promote mastery, cooperation, social responsibility, enjoyment, and satisfaction. In contrast, sports people with high ego orientations think (a) ability and deception lead to success and (b) the purpose of sport is to enhance the self (e.g., popularity, wealth, and social status). Also, a high ego orientation, a low task orientation, and a low perceived competence are related with unsporting attitudes and a willingness to cheat, hurt opponents, and take any unfair advantage to ensure winning and to demonstrate superior ability.

So far, I have described goal orientations as trait-like personality dispositions. Athletes also display state-like situation-specific goals,

labelled as "**goal involvement**". Players can display an ego goal involvement or a task goal involvement, and these echo the ego and task orientations above. Goal orientations and goal involvement do not always match each other. Somebody who is primarily ego oriented, for example, may display task involvement in situations where the focus is on personal improvement (such as during training). Equally, an athlete who is task oriented might become ego involved during a competitive match if there is an emphasis on winning the game (such as playing a close rival).

A person's goal orientation (trait-like factor) can be different to their goal involvement (state-like factor) because of a situation's **motivational climate**. Motivation climate describes the influence the social environment has on a person's motivation and behaviour, including the degree that coaches and teammates promote either task mastery or social comparison goals (Harwood et al., 2015). Similar to a task orientation, a perceived task mastery climate is associated with adaptive behaviours, thoughts, and feelings, such as:

- Enjoyment and satisfaction
- The belief that effort leads to success
- Improved performance
- Helpful coping strategies
- Reduced burnout
- Perceptions that coaches provide positive feedback, instruction, and support
- High perceived competence
- Enhanced team cohesion and relationships
- The view that sport fosters a strong work ethic, prosocial values, and high moral attitudes
- Less instances of **self-handicapping** or athletes creating performance excuses so their self-esteem is not harmed in the event of failure, such as when athletes say they might lose an upcoming game because they have not had time to adjust to rule changes

A perceived competitive climate is correlated with maladaptive behaviours, thoughts, and feelings, similar to an ego orientation, such as:

- Anxiety
- The belief that ability determines success

- Dropping out of sport
- Team conflict
- Defining success through social comparison
- Perceiving coaches as punishing athletes rather than providing supportive feedback
- Less developed moral reasoning and behaviour
- Increased frequency of self-handicapping

Coaches promote a task mastery climate, and encourage task involvement, when they offer supportive comments and encourage athletes to persist, improve their skills, and help others through teamwork. In contrast, coaches encourage a competitive climate, along with ego involvement, by using competition and social comparison as a way to evaluate athletes (Duda & Balaguer, 2007).

SELF-DETERMINATION THEORY

Atkinson's theory and Achievement Goal Theory describe athletes' goals or what they hope to achieve, such as self-improvement or showing they are better than others. Self-Determination Theory separates (a) what people what to achieve (goal content), (b) from the processes by which they pursue their goals (e.g., do they feel in control of their choice to seek a goal), and (c) the degree that their goals satisfy the underlying human needs that all people share (Ryan & Deci, 2017). Self-Determination Theory is a broad framework, consisting of several mini-theories explaining why humans engage in activities for no external rewards. The theory is relevant for sport because most people participate voluntarily, especially at the amateur level, and they often spend lots of time, money, and effort without the material gains or social status accorded to professional athletes. Sport provides opportunities to examine intrinsic motivation, a key concept in Self-Determination Theory. **Intrinsic motivation** is the desire to play sport for the experiences and satisfaction inherent to the activity. For example, a person may weight train because they enjoy the activity or because they find it satisfying to challenge themselves and successfully lift heavier weights.

Athletes' levels of intrinsic motivation are influenced by the ways the social environment facilitates or hinders the satisfaction of three basic psychological needs: competence, autonomy, and relatedness.

Competence refers to the degree to which athletes think they can perform the sport and reach desired outcomes. Autonomy refers to the extent people believe they are free to choose whether or not they play a sport, rather than having their choice controlled by others. Relatedness refers to individuals' thoughts regarding how well they are connected to and supported by the other folks in a group. Social environments facilitating the satisfaction of these three needs enhance people's intrinsic motivation. Coaches, for example, who focus on skill improvement (and enhance perceived competence), who build team cohesion (and develop relatedness), and who allow athletes a voice in how the team operates (and encourage autonomy) enhance intrinsic motivation. Environments that thwart the satisfaction of these needs reduce intrinsic motivation. Coaches, for example, who control athletes' behaviours through rewards and punishments (that reduce autonomy), who provide destructive criticism (that decrease perceived competence), and who ignore **cohesion** (and lower relatedness) reduce intrinsic motivation.

Athletes often have multiple reasons for playing sport, including both intrinsic and extrinsic motives. **Extrinsic motivation** refers to the desire to participate for outcomes not inherent to the activity. Playing soccer for the possibility of gaining a professional contract and earning money is an example of an extrinsic motive. Athletes may also experience **amotivation**, or a lack of desire to participate in a sport. Amotivated athletes are likely to withdraw from sport. There are several types of extrinsic motivation (see Figure 3.2), and we can place them along a continuum indicating the degree that (a) they reflect perceived autonomy and (b) athletes have internalized them. The types of extrinsic motivation include:

- **External regulation**: The least autonomous type of extrinsic motivation. Athletes participate in sport because of the rewards and punishments imposed by other people, such as when children play because of parental pressure.
- **Introjected regulation**: Is somewhat more internalized and based on behaviours carried out to avoid guilt, anxiety, and shame, or to improve the ego, feelings of value, or pride. Athletes, for example, may engage in personal training to avoid feeling guilty for not exercising or to feel happy for having worked on their fitness.

- **Identified regulation**: People play a sport because they identify with the activity's purpose and values. Some people, for example, take up running because they believe it enhances their health and appearance.
- **Integrated regulation**: Athletes choose a sport because it is coherent with their overall life goals, their lifestyles, and their sense of identity. People might start mountaineering because it expresses who they are and contributes to their self-fulfilment.

The types of motivation in Figure 3.2 are points along a continuum, not discrete stages. People do not enter at one end of the continuum, procced along the different stages, and shed each motive as they move to the other end. Instead, athletes can enter the continuum at any point, and the way they move among the various motivations is influenced by how the social environment facilitates or hinders the satisfaction of their basic psychological needs. Athletes might even have more than one type of motive at the same time. For example, an adult starts swimming and entering races because she wants to lose weight and improve her appearance, reflecting extrinsic motivation. Over time, however, she finds satisfaction in the sport, as learning a new skill gives her a sense of competence and the belief that she is making a free choice to look after her health (feelings of autonomy), reflecting intrinsic motivation.

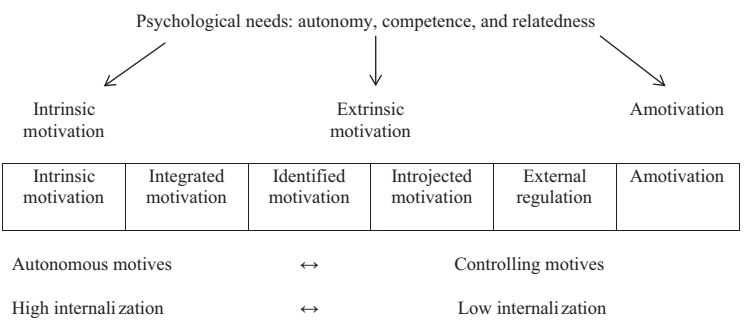

Figure 3.2 Overview of Self-Determination Theory (based on Ryan & Deci, 2017)

Self-Determination Theory provides a helpful explanation of people's behaviour in sport (Ryan & Deci, 2017; Standage & Ryan, 2020). For example, coaching that provides competence-based feedback and supports player autonomy is associated with self-determined regulation, athlete persistence, increased participation rates, reduced dropout rates, and enhanced performance. In contrast, coaching that reduces players' sense of competence, autonomy, and relatedness is associated with less self-determined regulation, greater dropout rates, increased burnout, and athlete withdrawal. Coaches can draw on Self-Determination Theory when deciding how to structure their team environments and enhance the chances that athletes (a) find their psychological needs satisfied, (b) gain a sense of self-determination, and (c) attain the social, physical, and mental benefits of playing sport.

As another example, Self-Determination Theory can help coaches and administrators think about the value of giving people external rewards, such as trophies, t-shirts, and prizes. According to Self-Determination Theory, external rewards can increase, but can also decrease, intrinsic motivation. Giving an athlete an external reward can be either an **informational** or a **controlling event**. As an informational event, if rewards provide positive feedback about an athlete's competence or autonomy, intrinsic motivation increases (e.g., a Most Improved Player award signals that an athlete is developing competence). Equally, negative feedback about competence and autonomy can reduce intrinsic motivation (e.g., when coaches and teammates criticize an athlete without offering additional support). When an external reward is used as a controlling event (e.g., it is used to pressure the person to act, think, or feel in specific ways), intrinsic motivation decreases (Standage & Ryan, 2020). When thinking about using external rewards, coaches benefit from considering the athletes' views. For example, if a coach delivers praise with the purpose of highlighting how the athletes have improved but the players believe the reward is an attempt to manipulate their behaviour, then the benefits may be lost and intrinsic motivation may decrease.

ATTRIBUTION THEORY

Attribution Theory helps sport psychology practitioners understand the reasons athletes give for the events that happen when

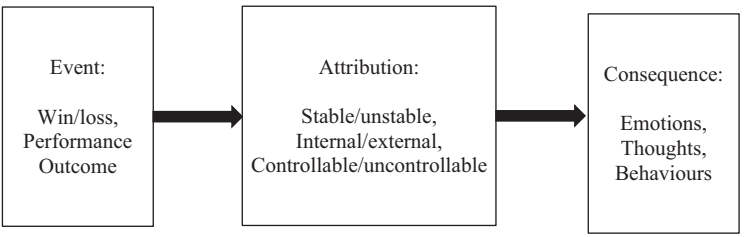

Figure 3.3 Weiner's (2018) Attribution Theory

they play, such as why they won or lost a game. **Attributions** are explanations for the outcomes athletes experience, and help them to predict future events (Coffee et al., 2020). For example, lacrosse players may suggest their team won because of superior skill levels compared to the opposition. Athletes from the opposition, however, may suggest they lost because of poor officiating. Attributions influence motivation, thoughts, emotions, and future behaviour, as illustrated in Figure 3.3 (Weiner, 2018). For example, if Coach Beckett suggests that the Magpies lost because they didn't try hard enough, then the players may be keen to exert more effort to avoid future defeats. If Coach says they lost because they lacked natural talent, however, then the players could decide to drop out because they think they can never win.

Athletes give a great many reasons or attributions for their performances and other events in sport. Figure 3.3 lists the three main types of attributions athletes give: (a) stable or unstable, (b) internal or external **locus of control**, and (c) controllable or uncontrollable reasons (Weiner, 2018).

- Stable versus unstable attributions: Stable attributions refer to unchangeable factors, such as natural ability ("I lost because I have reached the genetic limit of my potential"). Unstable explanations imply that the cause may change in the future, such as luck ("I won today because the ball just bounced my way").
- Internal versus external locus of control: Internal attributions imply that the athlete caused an event, such as through effort ("I won because I worked hard"). External explanations suggest

the cause was outside the athlete, such as task difficulty ("I won because the task was easy").

- Controllable versus uncontrollable attributions: Controllable attributions focus on things athletes (or others) can change, such as effort ("I lost because I did not work hard enough, but I will work harder next time"). Uncontrollable explanations imply athletes (and others) cannot change what happened ("I lost because the rules do not suit my style of play").

The three dimensions can be combined for a complete description of an attribution. For example, athletes who suggest they won because of luck are using an external, uncontrollable, and unstable attribution. As another example, when athletes say they tried hard, they are making an internal, unstable, but controllable attribution.

Examining attributions helps sport psychology practitioners understand athletes' styles of thinking and predict their thoughts, emotions, and future behaviours. For example, some athletes regularly attribute failure to stable and uncontrollable causes (e.g., "I always lose and I cannot do anything to change the situation"). Their attributions reflect their beliefs that they have no control over negative (or positive) events, a type of thinking called **learned helplessness** (Seligman, 1972). High levels of learned helplessness are associated with negative emotions, anxiety, depression, a lack of persistence, poor performance, and avoiding challenge. Athletes with learned helplessness are likely to withdraw from sport. As another style of thinking, a common pattern among athletes is to attribute success to internal factors (e.g., ability) and failure to external causes (e.g., bad luck). Although this pattern is self-serving, and is labelled the **self-serving attribution bias**, it reflects that people normally intend to succeed in their endeavours, and they may think it is reasonable that they attribute success to themselves and failure to unexpected external causes.

Although athletes may have typical ways of thinking and show patterns to their attributions, they can change these to ensure they have helpful and adaptive cognitive profiles. Attribution retraining aims to help athletes give adaptive rather than maladaptive reasons for their performance outcomes (Coffee et al., 2020). During retraining, sport psychology practitioners provide athletes with feedback, information, or other reasons to accept that performance outcomes

are unstable and controllable rather than stable and uncontrollable. For example, Coach Beckett can help the players see that their level of effort and skill learning (unstable and controllable) will help them in future games, rather than think they can do nothing to change their abilities (stable and uncontrollable). Effective attribution retraining promotes constructive thoughts, positive feelings, adaptive actions, and enhanced performance among athletes (Coffee et al., 2020).

LESSONS LEARNED FROM MOTIVATIONAL THEORIES

Although sport psychology practitioners have used several motivation theories to help them understand athlete behaviour, the models share many similarities. These theories are like a range of fine New Zealand wines: despite each having different tastes, they are still wine. Below are some common lessons from the theories that help sport psychology practitioners when working with athletes.

PEOPLE HAVE SEVERAL REASONS FOR PLAYING SPORT

Sport is competitive because people's performances are compared against those of others. Some athletes give winning the highest priority, especially at the elite and professional levels where social and tangible rewards are unequally distributed according to outcome (e.g., competitors get different amounts of prize money depending on their finishing order). The desire to win, however, is not always the sole or even the main reason individuals play sport. At all levels of competition, athletes may have others goals they rate as important as winning. Participants in sport define success in multiple ways. Sport psychology practitioners and coaches who find out the reasons people have for playing will be able to tailor how they help those individuals stay motived and keen to participate. They can also use the information to help attract new athletes.

ENVIRONMENTS INFLUENCE MOTIVATION

Significant others, such as coaches, teammates, family, and friends can influence athletes' motivation. When significant others emphasize interpersonal rivalry, being better than others, and winning

rather than playing well, and when they take control over decision-making, athletes' motivation can change from being intrinsic and task oriented to being extrinsic and ego oriented. Conversely, when coaches and support staff focus on self-improvement, social support, and autonomy, then they promote task mastery and self-determination. Further, changes in motivation are associated with differences in persistence, performance, and commitment. Significant others who promote mastery climates and intrinsic goal involvement may help athletes achieve greater success and meaning from sport.

SPORT CAN SATISFY PEOPLE'S SELF-DETERMINATION NEEDS

Although athletes have many motives for playing sport, these reasons reflect common psychological needs, such as competence, autonomy, and relatedness. Achievement-based activities such as sport are structured in ways that allow people to satisfy their needs for competence. Sport, however, can also be a place where other psychological needs are met, such as relatedness and autonomy. One way in which sport psychology is an art, as well as a science, is in understanding how to help athletes fulfil several of their needs. For example, the ways that athletes' relatedness needs are met in contact sports may differ from those in non-contact sports because of the diverse cultures, expectations, and norms. Further, athletes also differ from each other in many ways. The optimal way to help one person satisfy relatedness, competence, and autonomy needs may not work for another individual.

TASK MASTERY IS OFTEN ASSOCIATED WITH POSITIVE OUTCOMES

As stated above, a task mastery orientation is related with adaptive behaviours and outcomes. Coaches and sport psychology practitioners can use several strategies to encourage task mastery in athletes. One strategy involves setting up training so that drills are challenging, varied, interesting, and clearly linked with performance. A second strategy is to recognize and acknowledge good performance and learning, as well as successful outcomes. As a third strategy, coaches can evaluate athletes' performances against those players' previous efforts, instead of solely against other people. For example, when athletes lose, there is value in identifying aspects they did well

and areas where they might improve rather than only those parts they did poorly compared to the opposition. A fourth strategy is to encourage athletes to be proactive and to share in decision-making to help them attain a sense of ownership and autonomy over their participation. A fifth strategy is promoting interaction among teammates so they support each other and satisfy their relatedness needs.

A STRONG DESIRE TO WIN IS NOT NECESSARILY RELATED TO NEGATIVE OUTCOMES

Some people argue a strong desire to win and show superior skill over opponents is best squashed in athletes because an ego orientation is associated with maladaptive motivational and behavioural outcomes. It is worth remembering, however, that a maladaptive motivational pattern occurs only when athletes have a strong ego orientation, a weak task orientation, and a low perceived competence. Otherwise, a strong desire to win can be a source of motivation to power athletes' attempts to attain top performance. Any detrimental effects of a strong ego orientation may be buffered by high perceived competence or a task focus. Athletes can be both task and ego oriented. Defining success according to both ego- and task-related criteria may help athletes achieve optimal performance.

CONCLUSION

When Coach Beckett played softball she was competing at the international level, where winning is a priority. She will find that emphasizing winning with the Magpies will motivate only a few players. Other players, perhaps the majority, will be turned off by the message that winning is the team's primary goal. These players have other reasons for joining the team. A useful place for Coach Beckett to start is to listen to the players and find out why they decided to play the sport. These reasons probably have as much to do with having fun, being with friends, and learning new skills, as they do with winning. Structuring the team environment to allow athletes to satisfy their motives and psychological needs will encourage players to attend training regularly (direction of effort) and invest more energy (intensity of effort) when they turn up. The Atkinson, Achievement Goal, Self-Determination, and Attribution

theories presented in this chapter can help Coach Beckett find specific ways to develop a mastery climate that is task oriented and promotes autonomy, competence, and relatedness. As mentioned above, one way to protect against the maladaptive consequences of a strong ego orientation is to enhance an athlete's task orientation and their perceived competence or self-confidence. In the next chapter, I discuss self-confidence and ways to promote self-belief in athletes.

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4

SELF-CONFIDENCE

CHAPTER LEARNING OBJECTIVES

1 Define self-confidence and self-efficacy
2 Overview major theories of self-confidence and self-efficacy
3 Depict the relationships self-confidence has with performance, thoughts, emotions, and behaviour
4 Illustrate how to build self-confidence

John and Chris were best friends and seniors playing for Sacred Hearts University's basketball team. Although they were close buddies and had grown up together, they had different personalities and acted completely unlike each other during a game. Chris bristled with confidence and in any pressure situation told Coach Cox that he wanted to be on court and he would win the game for the team. John, however, would freeze and make mistakes when under pressure or stressed. Coach Cox often had to take John off the court for his own good and the team's benefit. Coach was an excitable character who sometimes let his emotions get the better of him. On occasion Coach would lose his cool and say something he would later regret. One time, for example, Coach got frustrated and told John he was a lame excuse for a player and he was no better than a rabbit caught in a car's headlights. Later, Coach apologized for his outburst and asked John about why he froze in competition. John said he did not know why, but he just did not think he could come through for the team when it counted. Coach Cox wished he could take some of Chris' confidence and inject it into John. Sometimes Coach thought Chris was overconfident, especially when playing

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against weak teams. In these games, Chris was a slow starter, acting like he was not bothered with the game. His attitude was infectious, and in two recent games the team had almost let the opposition get too far ahead on the scoreboard before upping the intensity of the game and coming from behind to win. Coach Cox decided to ask Molly Clock, the school's counselling psychologist, if she had any ideas for helping both John and Chris.

Athletes, coaches, and spectators believe strongly that self-confidence in sport is good and helps players succeed. When athletes and coaches are asked about the psychological ingredients contributing to good performance, they almost universally include self-confidence on their lists. Furthermore, journalists and spectators describe elite and successful athletes as being supremely confident, and they also attribute poor performance to a lack of self-belief. Nevertheless, being an elite athlete does not mean individuals have unshakeable self-confidence. Elite and successful athletes experience self-doubts. It is possible, however, for athletes to perform well even when they have doubts and anxieties (see Chapter 5 on arousal, anxiety, and stress). On the flip side, high self-confidence does not guarantee optimal performance or sporting success because it is just one of a large number of factors that influence whether or not athletes play well or win their events. Examples of other factors that influence performance and outcome include the weather, the opponents' level of play, and how well teammates interact. Athletes may also suggest that self-doubts can help them play well by increasing their motivation, refocusing their attention to the task at hand, or allowing them to discover weaknesses they can then overcome. Potentially, a drop in confidence might lead to improved performance (or increased effort to increase skill levels). The relationship between confidence and performance is more complicated than the simple belief that more is better. Sport psychology practitioners have conducted a considerable amount of research on confidence in sport, and in this chapter I will (a) define self-confidence, (b) describe theories that help us understand self-confidence, (c) explore the relationship self-confidence has with sport performance, as well as with emotions, thoughts, and behaviour, and (d) discuss how to build self-confidence.

WHAT IS SELF-CONFIDENCE?

Self-confidence focuses on athletes' perceptions about their ability to achieve success. Gymnasts with high self-confidence, for example, believe they have the technical skill, strength, flexibility, and stamina to perform their routines and attain high scores. Confident golfers have faith in their swing and believe they will score below their handicap in an upcoming round. Similar to other psychological attributes, self-confidence can be viewed as being state-like or trait-like. From a state-like viewpoint, self-confidence refers to athletes' beliefs about their ability to achieve success in the current moment. Athletes' levels of **state self-confidence** will fluctuate over time as their thoughts about the situation and their ability change. State-like confidence will also be influenced by a person's trait-like beliefs. **Trait self-confidence** refers to athletes' usual or typical thoughts about their chances of succeeding at their sport. People's trait self-confidence varies less on a moment-by-moment basis compared with state self-confidence, although it can still be domain specific (e.g., a person might be confident when playing sport but less so when applying for a job). Distinguishing between trait and state self-confidence helps explain why elite athletes can have high levels of self-belief but also experience personal doubts from time to time. Separating state from trait self-confidence also helps us understand why elite athletes can bounce back from adversity or use their self-doubts to enhance their focus, increase their motivation, or develop their skill. When examining self-confidence, sport psychology practitioners have drawn on Albert Bandura's (1997) Self-Efficacy Theory and Vealey's (2001) Model of Sport-Confidence, and it is useful to discuss these two frameworks.

BANDURA'S SELF-EFFICACY THEORY

Self-efficacy refers to athletes' beliefs they can execute behaviours required to produce desired outcomes, and they are distinct from outcome expectations, which involve thoughts that certain actions lead to specific consequences. A javelin thrower, for example, might believe he is able to execute the correct technique and attain a particular distance (he has high self-efficacy). His outcome expectation

might be that the distance will result in him winning a competition. Both self-efficacy and outcome expectations influence behaviour and performance. Athletes who do not think a desired outcome will result from a specific behaviour (low outcome expectancy) may not be motivated to try or may not persist in those actions. Even if they do believe a specific behaviour will result in a desired outcome, they may lack motivation if they doubt their ability to perform that behaviour (low self-efficacy).

There are three dimensions along which self-efficacy can vary, including level, generality, and strength. Level describes the standard of performance athletes believe they can achieve or the degree of difficulty they think they can surmount. For example, in the case study opening this chapter, Chris might be confident he can sink eight out of ten attempts at the free throw line, whereas John might believe he can only get two from ten attempts. Regarding the generality of self-efficacy, people may view themselves as capable across a range of domains (e.g., sport, education, and career), or only in a small number of areas. Generality also varies across types of activities, capability modality (e.g., thinking, emotion, and behaviour), different situations, and the types of people with whom athletes interact. For example, a hockey player might believe she can play well both defensively and offensively in an upcoming game. Her self-efficacy, however, might vary depending on the type of surface she will play on (natural or artificial turf) or the opposition the team is up against.

Self-efficacy also varies in strength. People with strong self-efficacy have tenacious beliefs in their abilities and typically persevere in their efforts despite difficulties and obstacles. These athletes are not put off by adversity. Differences in self-efficacy strength do not cause athletes to change the behaviours they choose to perform when attempting a task. Athletes need a minimum threshold of self-efficacy before they will attempt a task, but stronger levels of self-efficacy result in the same behaviours. Stronger self-efficacy, instead, leads to greater perseverance and likelihood that the athlete will perform the chosen activity successfully.

According to Bandura (1997), self-efficacy, motivation, and ability together influence behaviour and performance. When athletes have the physical capacity and desire, self-efficacy predicts performance. Further, self-efficacy influences performance through

behaviour, thoughts, and emotions. Lacrosse players with high self-efficacy, for example, will choose to attend training regularly, expend high levels of effort, and persist longer than teammates with low self-efficacy. Individuals with high self-efficacy will set challenging goals and have helpful thoughts and emotions. As a result of their adaptive behaviours, thoughts, and feelings, they have a better chance of success.

Four major sources of information contribute to athletes' self-efficacy beliefs: (a) **mastery experiences**, (b) **vicarious experiences**, (c) **verbal persuasion**, and (d) their interpretation of their physiological and emotional states. These sources can enhance or deflate self-efficacy. In ice hockey, for example, players sitting on the bench watching teammates performing well against the opposition (a vicarious experience) may experience heightened self-efficacy. Alternatively, these players' self-efficacy may drop if they watch their teammates struggling. The four sources of information, however, do not automatically change self-efficacy. It is athletes' interpretation of the information related to the sources that influence their self-efficacy. Benched ice hockey players' self-efficacy may not improve when observing teammates performing well if they think they are not as good as those players on the ice.

- Mastery experiences have more influence on self-efficacy than the other three sources. Having completed a task previously provides the most authentic evidence that an individual can perform an action. Past success can enhance self-efficacy, whereas failure may dampen self-belief. Nevertheless, previous success and failures do not necessarily influence self-efficacy if athletes attribute outcomes to other causes. Coaches and athletes know that sports performance is influenced by many factors, such as opponents, officials' decisions, and circumstances surrounding the events (e.g., weather, surface, spectators). An athlete's reading of these factors influences whether or not a previous performance affects self-efficacy. A sprinter who achieved a personal best in a recent event may experience a large increase in self-efficacy for an upcoming race if she thought she had achieved the time against a head wind. Her self-efficacy may not change if her time had been wind assisted.

- Vicarious experiences refer to watching other people perform an activity, either live or on a screen. Self-modelling occurs when athletes view themselves performing, such as when coaches have filmed them for instructional purposes. Self-modelling also includes imagery, a technique sport psychology practitioners use when helping athletes (see Chapter 8). When athletes watch someone perform a task, their self-efficacy rises or falls depending on how they interpret the demonstration (as explained with the ice hockey players above). The type of person (or demonstrator) performing the task may also moderate changes in self-efficacy. An athlete's self-efficacy can increase when watching a demonstrator who is similar in ability and other personal attributes. Alternatively, self-efficacy may not change, or may even drop, if the demonstrator is dissimilar (e.g., the person performing the skill is an elite athlete, and the individual watching is a novice).
- Verbal persuasion occurs when coaches, teammates, and other credible people express a positive belief in an athlete's capabilities, such as when players in a squad talk themselves up before a game. Players may also persuade themselves via their own self-talk (see Chapter 8). Although realistic verbal persuasion can elevate self-efficacy, it may not lead to lasting improvement. Nevertheless, verbal persuasion can improve self-efficacy long enough so that athletes persist until they succeed at the task, and then the mastery experience further enhances self-belief. When verbal persuasion comes from another person, the athlete's view of the speaker's credibility moderates the effect on self-efficacy. Athletes will more likely believe the words of a highly respected and experienced coach, for example, than comments from unknown or uninformed spectators.
- Physiological and emotional states provide clues regarding athletes' abilities to meet task demands successfully. People who get tired walking, for example, doubt they can complete a 5 km fun run. Netball players who observe they are feeling loose and excited prior to a game may believe they are ready to perform well. Actual physiological and emotional states do not influence self-efficacy. Instead, athletes' thoughts about these states affect self-belief.

In any situation, athletes receive information from multiple sources and each may have a different effect on self-efficacy. Also, athletes vary in their responses to the sources. For example, athletes' recent performances (mastery experience) may influence their self-efficacy more than a teammate's exhortations (verbal persuasion). Coaches improve the chances that their attempts to build self-efficacy will be fruitful if they consider how athletes might react to their interventions. In the opening case story, for example, Coach Cox probably needs to handle John and Chris differently to achieve the same result – high self-efficacy. Perhaps he needs to encourage John, whereas he needs to challenge Chris.

VEALEY'S MODEL OF SPORT CONFIDENCE

Building on Bandura's work, Vealey (2001; Vealey et al., 2018) proposed a Model of Sport Confidence. Vealey described **sport confidence** as the levels of certainty athletes have about their abilities to achieve success in sport. Baseball pitchers with high sport confidence, for example, may believe they can throw the perfect game against upcoming opponents. Sport confidence can be both state-like and trait-like. State sport confidence focuses on a specific task or event at a particular moment of time (e.g., the pitchers may be confident about the balls they are about to throw). Trait sport confidence refers to individuals' typical beliefs about their ability to succeed across time (e.g., across a series of games or a season, the pitchers may believe they are able to throw well).

Figure 4.1 presents Vealey's model, and illustrates that both an athlete's characteristics and a team's organizational culture shapes how sport confidence develops and manifests. Regarding organizational culture, for example, in a professional team with a long history of success, new recruits may believe they are in a good position to build their skills and have lucrative careers. In struggling teams with high player turnover and frequent coaching changes, recruits may be unsure if they will be nurtured and will succeed. Players' characteristics also influence confidence. Young recruits in a professional team, for example, may believe they can outplay the older athletes in their positions and win a place on the starting line-up, and because of these beliefs, they have high self-confidence.

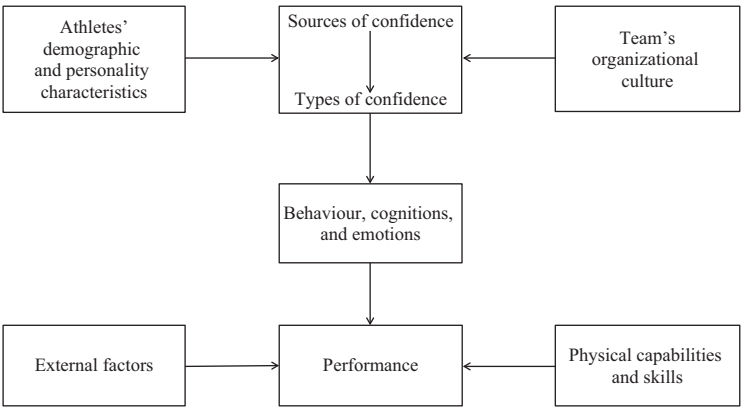

Figure 4.1 Vealey's Model of Sport Confidence

Different types of confidence exist under the broad umbrella that is sport confidence, such as resilience, cognitive efficiency, and physical skills and training. Resilience refers to athletes' beliefs they can regain focus, resolve doubts, overcome setbacks, and recover from poor performances. Physical skills and training refers to athletes' faith they can execute the skills and movements needed for successful performance. The cognitive efficiency type refers to how much athletes believe they can focus, maintain concentration, and make suitable decisions.

Vealey, when compared with Bandura, lists a wide range of information sources that influence sport confidence. Athletes' sport confidence increases when they:

- Start believing they are proficient at a task (mastery)
- Reveal high skill levels (ability demonstration)
- Observe others performing well (vicarious experiences)
- Deem others are supporting and encouraging them (social support)
- Trust in their coach's leadership (coach leadership)
- Sense they are mentally and physically ready (prepared)
- Think they appear well to others (physical self-presentation)

- Judge that the situation favours them (situational favourableness)
- Feel comfortable in the environment (environmental comfort)

Understanding the sources that enhance sport confidence helps coaches pinpoint ways to foster athletes' self-beliefs and enhance performance. They could, for example, foster good team cohesion so that players encourage and support each other. Knowing about the sources also allows coaches to diagnose why a player may experience low self-confidence. For example, the way Coach Cox provides feedback and loses control of his emotions may be hindering John's level of self-confidence.

Figure 4.1 shows that sport confidence influences how athletes think, feel, act, and perform (Vealey, 2001). Vealey acknowledges, however, that sport confidence is just one influence on performance. Many factors other than sport confidence affect athletes' performances and competitive outcomes. Further, some of these factors are outside people's control (e.g., weather or luck), and high levels of self-confidence may be insufficient to help overcome these challenges. Athletes may also not have the necessary skills and capabilities to complete tasks successfully, so again self-confidence may not lead to success.

Similarities between Bandura's and Vealey's models reinforce key aspects about confidence. First, both confidence and self-efficacy are multidimensional and can vary in strength and specificity. Second, athletes' levels of self-assurance fluctuate as they are exposed to different sources of information, arising from both within (e.g., physiological state) and outside (coach's feedback) of themselves. Third, athletes are not born with or without confidence, but they acquire their self-beliefs as they encounter different situations and gather life experiences. Fourth, coaches and sport psychology practitioners who boost athletes' self-confidence encourage persistence, adaptive thoughts, and improved performance. Fifth, although self-confidence influences performance, it is just one factor among several that contribute to goal attainment in sport. Sometimes pop psychologists and motivational speakers argue that confidence is sufficient for performance success, and they bandy around adages such as "what the mind can conceive and believe, the body can achieve". Bandura and Vealey remind us that sporting success depends on

many factors, some of which are within athletes' control and some of which are not.

SELF-CONFIDENCE AND SPORT PERFORMANCE

Sport psychology practitioners have conducted many studies examining the relationship between self-confidence and sporting performance. To summarize the research, it is helpful to recall the differences between descriptive and experimental research discussed in Chapter 1 (see Box 1.1). In descriptive research, sport psychology practitioners measure athletes' self-confidence (e.g., using a questionnaire) and their performance (e.g., sprint times). They then work out if the two measures vary together; that is, do people with high confidence scores also have quicker sprint times than individuals with low confidence scores. Although descriptive research tells us if confidence is related with performance, it does not indicate causality. That is, descriptive research cannot reveal if confidence causes performance. Maybe performance caused confidence. Maybe another variable affected both confidence and performance, and the two are not related. Experimental research allows us to find out if confidence influences performance. In an experiment, researchers manipulate confidence to see if performance changes. If performance rises when researchers increase athletes' self-beliefs but drops when they lower athletes' self-assurances, then there is evidence that confidence causes performance.

Descriptive research tells us that athletes and coaches believe self-confidence contributes to sporting success (Krane & Williams, 2015). When asked, athletes and coaches almost always list self-confidence or self-belief as a characteristic of elite performance and sports people. Further, descriptive research also reveals that self-confidence does vary with performance. For example, when measured before competition, self-confidence is related to performance, albeit weakly (Woodman & Hardy, 2003). Although in such cases performance cannot have caused self-confidence, it is still unclear whether confidence influenced performance. There is still a chance another variable influenced both confidence and performance. For example, other variables that appear to moderate the confidence–performance relationship include gender, competition standard, and how confidence is measured (Woodman & Hardy, 2003). The confidence–performance relationship seems stronger or

more robust in male rather than female athletes, in high levels rather than low levels of competition, and when researchers use sport-specific rather than general measures of self-confidence.

Realizing that descriptive research cannot indicate if confidence enhances performance, sport psychology practitioners have undertaken experiments that do suggest a causal relationship. In a classic study, Nelson and Furst (1972) had 12 pairs of participants arm-wrestle each other, with both contestants in each pair believing the objectively weaker person was the stronger individual. In 10 of the 12 pairs, the objectively weaker person won. Since this study was conducted, other research has shown that people's expectations influence performance. Another belief related to self-confidence among athletes and coaches is **psychological momentum**, or the idea that success breeds success. People often believe that when athletes have a run of successes, or develop a "**hot hand**", they will continue to perform well. Box 4.1 examines the evidence for psychological momentum (Avugos et al., 2013; Morgulev & Avugos, 2020).

Before accepting that self-confidence helps athletes, it is useful to consider that it may sometimes lead to decreased performance (Woodman et al., 2010). Athletes with high self-confidence, for example, may sometimes reduce their effort, allow their minds to wander off track, or engage in unnecessary risks, and as a result their performance may decrease. Some self-doubt can provide an

BOX 4.1 DOES CONFIDENCE HELP ATHLETES GET ON A ROLL?

Many sports-minded people believe that success breeds success or that players who experience positive performance outcomes are more likely to continue being successful than if they have a series of failures. For example, some people think that players who score a run of baskets early in a basketball game will get on a hot streak and will be more successful for the rest of the game than if they miss their early attempts. Such a run of success is labelled psychological momentum. Athletes and spectators suggest that increased confidence underpins momentum. Early success enhances athletes' self-beliefs, resulting in greater performance, allowing for further

increases in self-confidence, and so on; leading to a spiral of confidence-fuelled success. People may also believe in a spiral of failure, where one mistake or poor performance leads to another through the lowering of confidence. Although sport psychology practitioners are not immune to such views, some researchers have examined if psychological momentum exists, hoping to find out if there are ways to help athletes trigger a run of success.

Research into sporting psychological momentum has occurred for more than 30 years, but there is still uncertainty about what it is, whether it is real or an illusion, and what causes it if it does exist (Morgulev & Avugos, 2020). Broadly, various descriptions of momentum propose that some event, typically a physical one, triggers changes in athletes' mental state (e.g., confidence, motivation, attention, etc.) that influences their persistence, effort, or skill level, and, ultimately, performance outcome. These triggers may be called game-changing plays. In rugby union, for example, a spark of brilliance leading to a try or a thumping tackle that leaves an opposition's attacking play dead in the water helps players and teams realize they have the ability to do well and so increases the intensity of their game, eventually overpowering their opponents. Equally, failure to score after a period of sustained attack may leave players dejected and despairing of being able to win a game. Perceptions of impending doom lead to a withdrawal of effort.

Investigators have used two main approaches to examine psychological momentum. First, they have examined archival data from sporting events to see if performance increases after a hot streak. A recent meta-analysis of 30 studies (see Box 1.1) showed no evidence that a hot hand exists in sport (Avugos et al., 2013). Second, sport psychology practitioners have conducted experiments where they have manipulated participants' perceptions about psychological momentum. Results have been inconsistent, with both positive and negative findings emerging, although people have criticized the quality of the research. Neither avenue of work provides convincing evidence for the existence of momentum. If researchers have not shown that momentum exists, it is not surprising that there is uncertainty about the underlying mechanisms. Nevertheless, the notion of psychological momentum and game-changing plays is appealing and likely to continue to be alluring for sport fans, athletes, and coaches as an intuitive explanation for what they observe in sport.

incentive for athletes to rally together the resources they need to master a task (Bandura, 1997). In the chapter's opening vignette, for example, Chris seems to be an athlete who, on occasion, might benefit from some self-doubt or uncertainty about the result to help motivate him to work hard and play well from the beginning of a game rather than waiting until it might be too late.

SELF-CONFIDENCE, BEHAVIOURS, COGNITIONS, AND EMOTIONS

Knowing that self-confidence influences performance begs the question, why? Possible explanations focus on behaviours, cognitions, and emotions (Bandura, 1997; Williams et al., 2015).

- First, existing evidence indicates that athletes with higher levels of confidence or self-efficacy exert more effort, persist longer, and select more challenging tasks when performing than individuals with lower self-beliefs. Individuals who select difficult tasks, expend a lot of effort, and persist in their attempts probably improve their skill levels and attain greater sporting success than people who choose easy activities and do not persevere.
- Second, self-confidence is related to thoughts, perceptions, and beliefs that influence performance, such as perceived ability, self-esteem, athletic identity, competitiveness, goal commitment, self-improvement, concentration, and decision-making. Confident individuals, compared with people who doubt their abilities, have positive self-perceptions and adaptive achievement-related beliefs that contribute to enhanced performance.
- Third, self-confidence increases as positive moods and emotions improve, and decreases as negative moods and emotions intensify. Self-confidence also buffers the affect anxiety has on performance.

Taken together, self-confident athletes develop high levels of skill and a mindset that lets them perform well.

ENHANCING SELF-CONFIDENCE

Kurt Lewin (1943, p. 118), a famous psychologist, once said, "there is nothing as practical as a good theory", words applicable to helping

athletes develop confidence. Using Bandura's and Vealey's theories, we can generate ways to enhance athletes' self-beliefs and positive expectations (Short & Ross-Stewart, 2009). Bandura's sources of self-efficacy, for example, can help Coach Cox find strategies to enhance John's confidence.

Regarding mastery, Coach could structure practice to focus on progressive skill development and physical conditioning. Increased skill and physical conditioning will allow John to feel ready for competition. Coach could also use simulation training and recreate the circumstances that arise in basketball, such as having to make shots at the free throw line to win games. Enhancing John's familiarity with the sort of situations where he is expected to perform will enhance his confidence that he can cope. These strategies will build John's efficacy if he succeeds in coping with the recreated situations and his skill level grows, otherwise his self-efficacy might drop. To help ensure success, Coach Cox could use goal setting to plan realistic targets and manage the progression of John's skill development (see Chapter 8).

Some strategies draw on the idea that vicarious experiences enhance confidence. Coach Cox could use demonstrations (both live and recorded) to help John develop a mental picture in which he sees himself playing well. Although videos of elite basketball players exist on the internet, John might respond better to videos featuring Chris and other teammates because they demonstrate skill levels John can realistically achieve. Videos of elite players might show playing levels John believes he has no chance of ever reaching. The effectiveness of these videos may be enhanced if the players in them demonstrate high self-confidence. Other useful videos include recordings of John coping well in game-specific situations. Imagery is another vicarious experience, and is a technique where athletes imagine themselves coping with the demands of their sport (see Chapter 8). John can use imagery to picture himself as a capable, confident athlete. Just as positive imagery can promote self-efficacy, however, negative images can reduce John's confidence, such as when he sees himself making mistakes.

Coach Cox can use verbal persuasion to help John's self-confidence. Understanding the role of verbal persuasion can help Coach learn why his outbursts are unlikely to help John, such as the comment dismissing John as a lame excuse for a player, no

better than a stunned rabbit. Coach was communicating implicitly that he had no confidence in John. If players in the team view Coach as a credible source of knowledge about basketball, then John may have thought, "if Coach has no faith in me, and he knows basketball, why should I think I can get better?" Focusing on John's capabilities and outlining how he can improve will enhance his self-efficacy more than highlighting his deficiencies will. Further, Coach Cox's verbal persuasion will yield better results if he makes realistic and believable statements rather than outlandish comments. One way to make verbal feedback realistic is to separate outcome from skill execution. By talking about what John can do or control, Coach's verbal persuasion can be more realistic than when discussing things over which John does not have control (i.e., winning or losing). Self-talk is another persuasion technique where athletes direct their conscious attention to those thoughts they want to have, rather than letting their minds wander, potentially resulting in unhelpful or irrelevant inner dialogue (see Chapter 8). Coach could teach John self-talk methods that remind him of his achievement, his existing skills, and what he is capable of accomplishing.

There are two types of strategies Coach can use that would adjust John's interpretation of his physiological and emotional states. First, Coach could help John reinterpret his physiological cues and feelings as signs of desire and his readiness to play rather than as signals of anxiety and fear. Second, Coach could teach John methods for regulating his emotions and physiological states. Typically in sport, athletes need to relax and reduce, rather than increase, their arousal levels. There are various techniques sport psychology practitioners can teach athletes to help them reduce and regulate arousal and manage anxieties and emotions, such as relaxation, centring, and mindfulness (see Chapter 8).

In addition, Coach Cox could draw on Vealey's theory for additional strategies. For example, Vealey's model indicates that supportive teammates and environments foster self-confidence. Developing a cohesive team in which Coach and the players are working towards a common goal and want to help each other may allow John to feel he belongs and that his teammates believe in him. Thinking he is accepted, he fits into the team, and that his teammates believe in him may enhance his belief in himself.

Coach Cox's attempts to increase John's confidence will likely be more successful if he uses several strategies rather than one. For example, Coach might set realistic goals focused on skill improvement (mastery), periodically point out how John has improved (verbal persuasion), encourage positive self-talk (verbal persuasion), film John playing well in competition (vicarious experiences), and teach him a relaxation technique to allow him to control his anxieties (physiological and emotional states). Making use of multiple ways to get his message across increases the likelihood that John will respond with greater self-confidence.

CONCLUSION

Self-confidence shows how applied sport psychology benefits from a practical theory, supported by research, to guide how practitioners help athletes. Both Bandura's and Vealey's theories highlight that athletes' confidence levels are influenced as much by the people around them as they are by themselves alone. Although many coaches and athletes think self-confidence is a key ingredient to successful performance, they may also believe it is something people have or do not have, are born with or lack. Instead, self-confidence is an attribute that fluctuates and athletes' self-expectations can increase or decrease. The implication is that athletes can be helped to attain high confidence levels. Also, even elite athletes can experience a crisis of confidence and sometimes need assistance to maintain their self-efficacy. Similar to anxiety and stress management, confidence is a common reason athletes work with sport psychology practitioners. In Chapter 8 I will explore some of the common ways that practitioners help athletes have greater faith in themselves and their skills.

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5

AROUSAL, STRESS, ANXIETY, AND PERFORMANCE

CHAPTER LEARNING OBJECTIVES

1 Define arousal, anxiety, and stress
2 Explore how practitioners measure arousal, stress, and anxiety
3 Identify why athletes experience anxiety and stress in sport
4 Overview the relationships among arousal, anxiety, and performance
5 Discuss how sport psychology practitioners help athletes manage anxiety and stress

Over the past year, since teaming up with his dance partner Sarah, Chuck had experienced anxiety each time he had stepped onto the floor to compete in dancesport competitions. Although Chuck had always enjoyed Latin and ballroom dancing as a child, things changed once he began competing. He found being evaluated by judges and spectators threatening to his sense of self. He dreaded knowing that his mistakes stopped Sarah from dancing well, and he hated thinking he had let her down when he committed errors and made mistakes. Failure meant that he was not good at something he enjoyed and he had not come through for a friend when it mattered. He had difficulty removing these fears from his mind before and during competitions. Chuck found it challenging to focus on what he wanted to think about, which was going over the moves in his mind and reminding himself of technical features, including his body position, his hold with Sarah, and his hip movement in Latin. Instead, he found himself tense and worried to the point that his personality changed. He lost his sense of humour, became

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quiet and edgy, and snapped at people around him. He seldom slept well the night before competitions, and he had vomited on two occasions from fear. Chuck had found talking to Coach Beckmann and John, one of the senior dancers at the Carmichael School of Dance, unhelpful because they had just told him to relax and focus on dancing. Chuck wanted to ask, "okay, but how do I relax?" He spent a lot of time talking with his best friend Morgan and his sister Ellie. Talking about his worries lessened Chuck's fears, but they would return before each competition. In the run up to competition he would recall his first event where his mind had gone blank when he had been on the floor and he had been unable to remember the moves he and Sarah had practised. Chuck was tempted to end his partnership with Sarah and stop dancing.

Similar to Chuck, athletes commonly have anxieties and fears about competition. These worries range from a mild case of butterflies in the stomach to extreme instances, as Chuck illustrates above. Because these emotions are so common in sport, sport psychology practitioners have spent much effort trying to understand the causes of anxiety and stress, how they influence performance, and how to help athletes manage their fears and worries. In this chapter I will (a) define arousal, anxiety, and stress, (b) explore how they are assessed, (c) detail when athletes experience these emotions, (d) explain how they influence performance, and (e) present strategies for helping sports participants cope with and control these unpleasant feelings and thoughts.

DEFINING AROUSAL, ANXIETY, AND STRESS

In everyday life, people use the terms arousal, stress, and anxiety interchangeably. When sport psychology practitioners wish to examine these ideas, they need to define them precisely so they can identify exactly what they mean and can study how they relate to and influence each other. The following details the common ways practitioners define these terms.

- Arousal refers to an athlete's level of excitation or activation, and it exists on a continuum from low (e.g., sleep) to high (e.g., hyperactive). When sunbathing, most people have low levels of arousal. If it starts raining suddenly, most people's arousal levels increase rapidly as they jump up to gather their towels to head

for shelter. Increased arousal helps people prepare for coping with environmental demands, both physically and mentally.

- Anxiety describes an athlete's level of perceived threat and any accompanying worries, nervousness, and apprehensions. A key aspect of anxiety is that it involves athletes' interpretations of the dangers to their wellbeing. Sometimes anxiety is a normal response to real threats, for example, when individuals are confronted by an armed person. Other times anxiety involves an exaggerated response to an imagined threat, as illustrated by many people's reactions to spiders. Anxiety typically occurs with high arousal, but the two ideas are not the same. People can be highly aroused, yet not anxious, as occurs when athletes win major competitions.
- Trait anxiety represents a person's characteristic response or predisposition to perceive situations as threatening and to react with high anxiety. Competitive trait anxiety is a particular type of predisposition and describes a person's reaction to competitive situations, such as sport. Levels of competitive trait anxiety vary among athletes and influence their **state anxiety**, or right-now, moment-to-moment perceptions of threat and accompanying worries and apprehensions. Athletes with high levels of competitive trait anxiety are more likely to respond to sporting events with high levels of state anxiety compared with participants with low levels of trait anxiety. The relationship is not perfect, however, and state anxiety is also influenced by the situation. For example, athletes with high levels of trait anxiety may not respond to competition with high state anxiety if they do not view any threat to their wellbeing, such as when they are playing against weak opponents. Alternatively, athletes with low trait anxiety levels may experience high state anxiety on occasion. A low trait anxiety athlete, for example, may find a high-level event nerve wracking, such as an Olympic final.
- Anxiety consists of physical and mental components. Physical or somatic anxiety refers to people's perceptions of their physiological arousal symptoms, such as heart rate, sweat response, or breathing rate. Some athletes, for example, might view a thumping heart rate as a sign they are nervous, whereas others might think they are excited. Cognitive anxiety refers to the

worries, qualms, apprehensions, and negative expectations athletes have about competition.

- Stress occurs when athletes think they have less ability or skill than is needed to match the demands of the situation they are in, and failure has meaningful consequences. Athletes usually respond to stress with state anxiety. For example, a football player may find an upcoming game stressful if she has been unable to prepare for the event because of illness and she is aware that talent scouts will be present to watch her play. She believes her illness has prevented her from practising and ensuring her skill level is sufficient to play at a high level in front of talent scouts, people who might help her get into a professional club.

MEASURING AROUSAL, STRESS, AND ANXIETY

When measuring arousal, anxiety, and stress, sport psychology practitioners assess physiological, psychological, and behavioural variables. For example, physiological variables include heart rate, blood pressure, and muscle tension. Psychological variables include worries, decision-making, and interpretations of bodily responses. Behavioural variables include nail biting, pacing, or frequent visits to the toilet. Similar to personality measurement, sport psychology practitioners use self-report questionnaires, physiological measures, and behavioural observations to assess anxiety, stress, and arousal.

QUESTIONNAIRES

Researchers have used questionnaires most often when assessing anxiety and stress in sport because these types of measures are convenient and easily scored compared with physiological measures and behaviour observations. The Competitive State Anxiety Inventory-2 (CSAI-2) is an example questionnaire frequently used in sport (Martens et al., 1990). The CSAI-2 has 27 items assessing cognitive anxiety, somatic anxiety, and self-confidence. Using a 4-point Likert scale (1 = "not at all" and 4 = "very much so"), athletes indicate the current intensity of their anxiety and confidence. An example cognitive anxiety item is "I have self-doubts". An example somatic anxiety item is "I feel jittery". One self-confidence

item is "I feel self-confident". A revised version of the CSAI-2 also allows athletes to report (a) the intensity of their anxieties and (b) their interpretation of how helpful or harmful those anxieties are to their performance. Specifically, for each of the 27 items, along with reporting the intensity of their anxieties, athletes also report the degree to which their anxieties will have a positive or negative influence on their performance (Jones et al., 1994).

A large number of anxiety questionnaires exist. Although questionnaires have helped sport psychology practitioners examine anxiety in sport, they have limitations similar to the weaknesses mentioned about self-report measures in Chapter 2. Different questionnaires, for example, yield different scores and may not measure anxiety in the same way. Also, asking athletes to reflect on their anxieties may alter their thoughts, feelings, and behaviour. People need to be cautious about interpreting anxiety questionnaires at face value (Uphill, 2008).

PHYSIOLOGICAL MEASURES

Physiological measures of anxiety have been used less often compared with self-report questionnaires. Depending on the measure, physiological assessment can be (although is not always) invasive, time-consuming, inconvenient, or expensive. For example, although measuring heart rate is straightforward, it is difficult to assess other variables such as brain waves or levels of hormones without expensive specialist equipment. Further, these measures may provide information that has limited value. For instance, sometimes these measures can only be used in laboratory or artificial settings, and they cannot provide information about how athletes are reacting when they are experiencing anxiety during competition. Physiological measures also typically measure arousal rather than anxiety. Arousal and anxiety measures do not always correlate highly with each other because changes in arousal do not necessarily mean people are getting anxious. Perhaps due to the drawbacks, there is little consensus on the best physiological variable to use when assessing anxiety, and it may be more helpful to collect a profile of measures. Further, the most suitable physiological variables to assess depend on the task, athletes, and situation. For example, heart rate might not be a suitable measure when studying weightlifting

tasks (Tod et al., 2003). Athletes also interpret bodily sensations differently, making it difficult to explore the effect of physiological variables on performance or other outcomes. Despite these limitations, sport psychology practitioners have used physiological measures to advance knowledge and help athletes. One example is when they use biofeedback techniques with shooters to help them learn to fire between heartbeats to increase accuracy (Ortega & Wang, 2018).

BEHAVIOURAL OBSERVATIONS

Similar to physiological measures, sport psychology practitioners have used behavioural observations less often than self-report questionnaires to assess anxiety symptoms. Echoing the use of behaviour observations to assess personality (see Chapter 2), behaviour observations of anxiety symptoms involve professionals making judgements about what information to collect and how to score athletes' actions. Further, behaviour observations are open to being influenced by sport psychology practitioners' subjective biases. Observations are frequently difficult to interpret because behaviours could represent anxiety or any other personality dimension. For example, increased levels of chatter may reflect either anxiety or excitement. Also, the knowledge that sport psychology practitioners are watching may lead to changes in athletes' behaviours and actions, either consciously or unconsciously. For example, athletes who know they are being watched by a practitioner may find their anxiety levels go up.

WHY DO ATHLETES EXPERIENCE ANXIETY AND STRESS?

Earlier I defined stress as a perceived imbalance between the demands athletes are facing and their skill levels, where failure to complete the task has severe consequences. Athletes who think their skill levels are low are likely to experience stress more often than those individuals who believe they are capable of the task. The athletes' actual skill has less influence on their stress levels than their perceptions of their capabilities, explaining why highly talented individuals can still react to sporting situations with stress. Also, if

athletes do not think that failure or poor performance carries negative consequences, then they will have less stress, even if they think they are incapable of succeeding at the task. To understand why athletes experience stress and anxiety, it is helpful to (a) view stress as a process, (b) identify when people are likely to perceive an imbalance between task demands and skill levels, and (c) list the sources of stress that trigger negative perceptions.

STRESS IS A PROCESS BASED ON AN ATHLETE'S APPRAISAL OF THE SITUATION

Viewing stress as a four stage process helps us to understand why athletes' perceptions have a greater influence on stress and anxiety than their actual skill levels (McGrath, 1970):

- Stage 1 includes the objective demands of the situation. For example, the objective demands placed on a group of triathletes include the course, the conditions, and the other contestants. To win the event, athletes need to complete the course faster than the other competitors. The triathletes' own attributes are also part of the objective demands and influence how well they perform (e.g., fitness levels, motivation, confidence).
- Stage 2 involves athletes' interpretations of the objective demands. For example, triathletes may perceive a race as nonthreatening because they believe they have sufficient skill to attain their goals, they have enough physical conditioning to win, or they are not worried about the consequences of losing (such as athletes who may have entered the race for enjoyment and are primarily focused on doing well). Individual differences among athletes influence their perceptions of threat. Two athletes, for example, who have the same ability levels, who are experiencing the same task demands, and who are facing the same consequences of failure may differ in their stress levels if they have different levels of competitive trait anxiety. The athlete with the higher trait anxiety will likely perceive a greater imbalance between the task demands and skill and will respond with greater stress than the low trait anxious person.
- Stage 3 describes athletes' responses to their interpretations. Triathletes, for example, who perceive a substantial imbalance

between the task and their skill level will react with high levels of arousal and anxiety, especially if they believe there are severe consequences associated with failure. These athletes may experience muscle tension, along with disruptions to their attention and concentration. Elevated muscle tension can impair coordinated movement and hinder skill execution. In triathletes, impaired coordination may reduce movement economy and performance. Also, increased arousal is associated with attention field narrowing, meaning triathletes may miss important cues, including where opponents are or mile markers during the cycle and running phases. The athletes may also focus on irrelevant cues that do not help performance. One example of this happens if athletes notice they are stressed and then start to worry about their worries. In these cases, anxiety can spiral out of control, athletes can choke, and performance catastrophes can occur.

- Stage 4 details the behavioural consequences, and these refer to performance and competitive outcomes. Triathletes who have become stressed, and who have experienced a loss of coordination due to muscle tension and who have missed relevant cues, may record slow race times and low finishing positions.

Understanding the stress process is useful because it highlights areas where sport psychology practitioners are able to help athletes. For example, practitioners might help athletes change their perceptions so there is not a perceived imbalance between task demands and skill levels. Alternatively, practitioners can assist athletes to manage their reactions to stressful situations by teaching them coping strategies, like relaxation training or helpful self-talk (see Chapter 8). To assist athletes effectively, sport psychology practitioners might explore when athletes are most likely to perceive an imbalance between their skill levels and the situational demands. Some of these times are discussed next.

WHEN ATHLETES MAY PERCEIVE IMBALANCES BETWEEN TASK REQUIREMENTS AND THEIR SKILL LEVELS

We can predict when athletes are more likely to perceive an imbalance between the task demands and their skill levels by examining

the properties of the situation or the basis on which people are making their decisions. For example, athletes may react with stress and anxiety when they perceive the following about the situations they are in (Thatcher & Day, 2008):

- *Novelty*: Athletes are more likely to display signs of stress and anxiety in situations they have not experienced previously, rather than those they have encountered before. For example, athletes may feel overwhelmed during their first Olympic Games but more relaxed during their second Olympiad.
- *Unpredictability*: Stress and anxiety arise when athlete's expectations are inaccurate and they cannot predict what is going to happen. For example, if the rules of a sport are changed and athletes are unsure how those adjustments will influence performance, they may become stressed because they cannot predict how well they will play.
- *Uncertainty*: Uncertainty refers to the probability of an event occurring, and prevents athletes from assessing the demands of a task and being able to plan their response. For example, the threat of rain during a cricket game may lead to stress for the batting team because it might increase the difficulty of them scoring the necessary runs to win.
- *Anticipation*: The anticipation of an event can lead to anxiety and stress. For example, weightlifters may become anxious in the lead up to an important attempt that will determine the finishing order of a competition.
- *Duration*: Athletes can find events of longer duration more stressful, and respond with greater anxiety, than those that are shorter in length.
- *Temporal uncertainty*: Athletes can react with stress when they know an event will occur but are not sure when, such as a cricket player who is the next batter in a team's line-up.
- *Ambiguity*: Ambiguity refers to times when there is insufficient information for an athlete to appraise the situation they are in, for instance, when opponents make last minute changes to their teams and bring in new players.
- *Timing of events*: When multiple demanding events occur in the same time period, athletes can react with anxiety and stress. For example, professional rugby league players may experience

stress if they become injured around the time their employment contracts are coming to an end.

- *Self–other comparison*: Athletes frequently compare themselves against their opponents and negative evaluations can lead to stress if associated with potentially unpleasant consequences. For example, rugby union players may become stressed if their opponents seem larger, stronger, and more aggressive than they are and they consider the possibility of physical harm is high.
- *Inadequate preparation*: Perceived lack of preparation for an event is associated with stress.

SOURCES OF STRESS IN SPORT

There are a large number of people, things, and events that can act as a source of stress. If stress is the result of a perceived imbalance between skills and the task, then anything that leads to athletes doubting their abilities to meet the challenges they are facing is a possible source of stress. Sources of stress can come from athletes' personal lives (e.g., relationship difficulties), or they can be related to the sporting situation. Organizational stressors refer to those sources arising from the structure and functioning of the sporting organizations in which athletes work (Woodman & Hardy, 2001). Organizational stressors are distinct from those that occur in athletes' lives outside of the sport team or club. There are many features within sporting organizations that can trigger stress in athletes, and these can be classified as environmental, personal, leadership, and team sources of stress (Fletcher & Hanton, 2003; Woodman & Hardy, 2001).

- *Environmental stressors*: Athletes can experience stress when there are issues and difficulties with player selection (e.g., unfair selection policies), financial support (e.g., lack of payment), the training environment (e.g., inadequate facilities), accommodation (e.g., incompatible flatmates), travel (e.g., poorly planned), and competition settings (e.g., disruptions to preparation).
- *Personal sources*: Personal sources of organizational stress include challenges associated with nutrition (inadequate provision of food), injury (e.g., needing to train when unfit to play), and goals and expectations (e.g., conflict over personal and team goals).

- *Leadership sources*: These sources of stress include coaches (e.g., difficult coach–athlete relationships) and coaching style (e.g., incompatible coaching style with athlete preferences).
- *Team sources*: Team sources of organizational stress include team atmosphere (e.g., strained or fractured relationships among players), unhelpful support networks (e.g., unapproachable support staff), roles (e.g., lack of clarity around people's roles), and communication (e.g., non-existent lines of communication).

The examples of stressors under the environment, personal, leadership, and team headings are not exhaustive. There are many more examples. The key principle is that any event, object, or person can be a stimulus for stress if athletes interpret these as signalling that they are unable to cope and if failure has unpleasant effects.

WHAT ARE THE RELATIONSHIPS AMONG AROUSAL, ANXIETY, AND PERFORMANCE?

Several theories attempt to explain how arousal and anxiety influence performance. Although each theory offers some insight in the relationship, they all have both supportive and non-supportive research, and none have conclusive evidence (Zhang et al., 2018). The theories presented here illustrate the typical ways sport psychology practitioners explain how arousal and anxiety affect performance.

DRIVE THEORY

Drive theory states that increased arousal elicits an individual's dominant or well-learned response to a stimulus (Hull, 1951). In simple tasks, or for athletes skilled in a sport, the dominant response is probably the correct one and high arousal likely leads to better performance than low arousal. In complex tasks, or for novice athletes still learning the sport, the dominant response is not usually the correct one, and increased arousal leads to reduced performance compared with low arousal.

INVERTED-U THEORY

According to the Inverted-U theory, best performance occurs at an optimal level of arousal, as illustrated in Figure 5.1 (Yerkes &

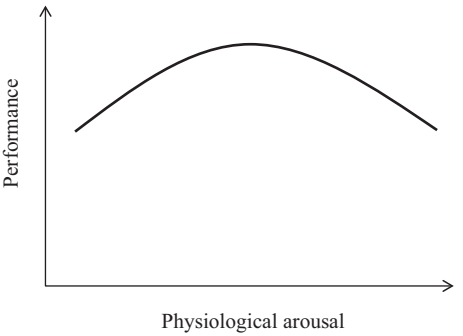

Figure 5.1 The inverted-U theory

Dodson, 1908). Athletes display reduced performance when their arousal levels are above or below the optimal level. Increases in arousal lead to better performance until athletes reach the optimal level, as shown in Figure 5.1. Further increases in arousal beyond the optimal level lead to decreases in performance.

Two factors influencing the effect of arousal on performance are task complexity and individual differences among athletes. Regarding task complexity, the optimal level of arousal is higher for simple tasks than for complex actions. These differences apply both across and within sport. For example, the optimal level of arousal dart throwers need is lower than for wrestlers. Similarly, within American football, a defensive linesman probably needs a higher level of arousal than the goal kicker. Regarding individual differences, some athletes perform better when they are highly aroused, and others when they are relaxed and calm. For example, athletes with high trait anxiety levels will probably become anxious with increased arousal levels, and their worries and tensions may hinder performance. Instead, they will perform best when their arousal levels are low. In contrast, athletes with low trait anxiety levels are less likely to become anxious with increased arousal. These athletes might find that low levels of arousal are associated with poor performance because they are not motivated enough to organize and focus all their physical, mental, and behavioural resources on the task at hand.

Sport psychology practitioners have criticized the inverted-U theory for several reasons. For example, the inverted-U theory

treats arousal as a one-dimensional concept, whereas it is a multidimensional idea with physical, cognitive, and behavioural features. Also, performance increases and decreases are not usually smooth. Incremental changes in arousal are not associated with incremental changes in performance. Instead, changes in performance are often dramatic and potentially catastrophic.

MULTIDIMENSIONAL ANXIETY THEORY

According to multidimensional anxiety theory, cognitive anxiety, somatic anxiety, and self-confidence each have different relationships with performance (Martens et al., 1990). Cognitive anxiety and performance share a negative relationship: as cognitive anxiety increases, performance drops. Somatic anxiety and performance have an inverted-U relationship, similar to Yerkes and Dodson's (1908) model above. Self-confidence and performance enjoy a positive relationship: as self-confidence increases, so does performance.

Multidimensional anxiety theory has stimulated much research in sport psychology, and was the basis for the popular CSAI-2 mentioned above. Similar to drive theory and the inverted-U theory, however, research evidence for multidimensional anxiety theory has been mixed. One weakness with the multidimensional anxiety theory is that it does not account for interactions among somatic anxiety, cognitive anxiety, and self-confidence. The way these different types of anxiety interact with each other will influence performance. The catastrophe model is one theory that examines how the interactions among somatic anxiety, cognitive anxiety, and self-confidence might influence performance.

THE CATASTROPHE MODEL

The catastrophe model outlines how cognitive anxiety, physiological arousal, and performance interact, and is illustrated in Figure 5.2 (Hardy, 1990). Although the model seems complicated, it is best understood by examining each of its components individually. When cognitive anxiety is low, physiological arousal has a flattened inverted-U relationship with performance, as shown in Figure 5.3 (a) and the back wall of Figure 5.2. When physiological arousal is low, cognitive anxiety and performance have a positive relationship: increases in cognitive anxiety lead to improved performance,

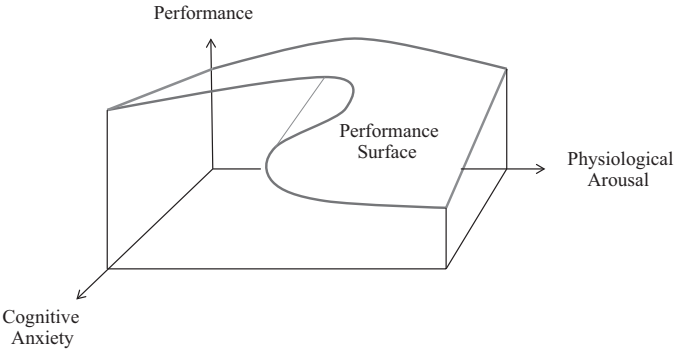

Figure 5.2 The catastrophe model

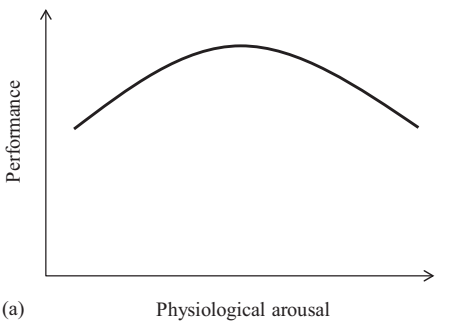

Figure 5.3 The faces of the catastrophe model: (a) The relationship between performance and physiological arousal under low cognitive anxiety

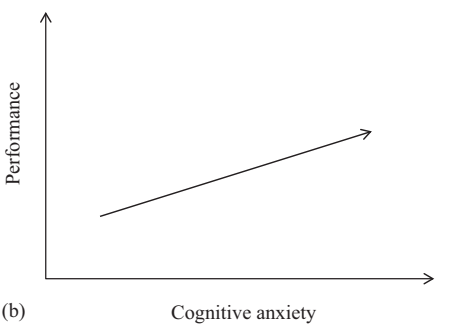

Figure 5.3 (b) The relationship between performance and cognitive anxiety under low physiological arousal

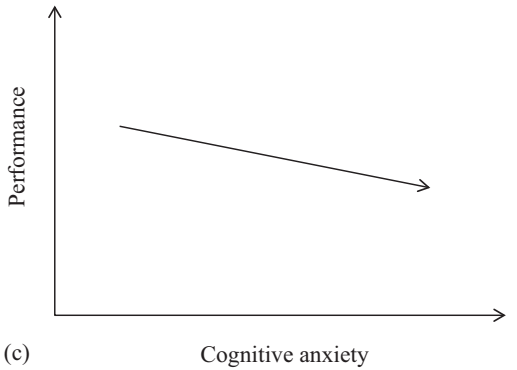

Figure 5.3 (c) The relationship between performance and cognitive anxiety during high physiological arousal

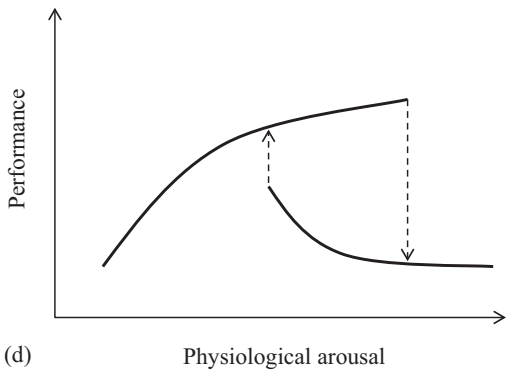

Figure 5.3 (d) The relationship between performance and physiological arousal during high cognitive anxiety

as revealed in Figure 5.3 (b) and the left-hand wall of Figure 5.2. When physiological arousal is high, performance and cognitive anxiety share a negative relationship: as cognitive anxiety increases, performance drops, see Figure 5.3 (c) and the right-hand wall of Figure 5.2. When cognitive anxiety is high, the catastrophe model makes its most dramatic predictions. At high levels of cognitive anxiety, physiological arousal increases are related to improved

performance until reaching the athlete's tolerance or threshold. At this point there is a sudden and catastrophic drop in performance, as presented in Figure 5.3 (d) and the front wall of Figure 5.2. When such a catastrophic performance decline has occurred, large decreases in physiological arousal are needed before athletes can build towards their previous high performance levels.

In addition, the catastrophe model also predicts that when physiological arousal and cognitive anxiety are both high, performance will be either outstanding or dismal; that is, hot or cold, but not lukewarm. When cognitive anxiety is high, the same level of physiological arousal may have a different effect on performance depending on whether it is increasing towards or decreasing from its maximum level, as shown in Figure 5.3 (d). When arousal is increasing, performance improves. When arousal is decreasing, performance drops.

DIRECTIONAL INTERPRETATION HYPOTHESIS

The models above focus on how the intensity or level of an athlete's anxiety and arousal influences sports performance. In contrast, the directional interpretation hypothesis argues that how athletes interpret their arousal or anxiety-related thoughts, feelings, and sensations also influences performance (Jones & Hanton, 2001). Knowing both the intensity and the athlete's interpretations of their anxieties will allow us to make the best predictions about how well they will perform. Athletes vary in how they interpret their anxiety symptoms, with individuals viewing their sensations and emotions either as facilitative (helpful) or as debilitative (unhelpful) for performance. Although two athletes may experience the same intensity of anxiety, they are likely to perceive its effects on performance differently, and it is these interpretations, rather than the intensity, that are most influential for performance. Athletes who interpret their anxieties as facilitative will likely have greater self-confidence, be more resilient, cope more effectively with obstacles, and perform better than individuals who interpret their nerves as debilitative. The interpretations people make about their anxiety symptoms, however, can be modified. Sport psychology practitioners can teach people how to have facilitative rather than debilitative interpretations and these changes are associated with improved performance (Gustafsson et al., 2017).

Sport psychology practitioners, however, have identified some limitations with the directional hypothesis. For example, if anxiety is defined as the perception of threat but athletes are interpreting their symptoms positively or as indicating they are ready to perform, then are they really experiencing anxiety? Despite the difficulties, the directional hypothesis highlights how different interpretations of anxiety can influence athletes' perceptions and performance, an idea that may stimulate ways to help athletes. For example, sport psychology practitioners can help athletes interpret their arousal and anxiety-related sensations as facilitative (e.g., they are signs that the athlete is ready and keen to play) rather than debilitative (e.g., they are signs that the individual fears negative consequences).

CONSCIOUS PROCESSING HYPOTHESIS

The models discussed so far usually do not explain why anxiety influences performance. In contrast, the conscious processing hypothesis is an example of a model seeking to describe how anxiety may interrupt performance (Masters & Maxwell, 2008). As athletes become skilled at a task, they are able to perform automatically and can focus their attention elsewhere. When first learning a skill, beginners need to coach themselves through the task as they attempt to coordinate the movement of their limbs and bodies. Further, they may not have the ability to perform the task and take in other information, such as what is happening in the environment. As beginners become comfortable with the skill, they are able to execute it automatically without conscious thought, and they can then engage in other activities at the same time. For example, when basketball players first learn to dribble, they may have to watch the ball and their hand working together. They will have difficulty dribbling the ball during a game when they also need to be aware of the opposition and their teammates. With practice, accomplished basketball players will dribble the ball without thinking and will focus on cues needed to play well, such as being aware of the opposition and coordinating tactics with teammates.

Such automation of skill contributes to athletes attaining high levels of performance. For example, elite cricket batters may experience automatically playing a shot without realizing they have reacted to the bowler. In team sports, players may react to opponents and

interact with teammates instinctively without consciously planning their actions. According to the conscious processing hypothesis, anxiety may lead people to assume conscious control over automated movements, triggering disruptions in coordination and deterioration in skill. A golfer approaching the last few holes of a round, for example, may realize she has the opportunity to win the tournament and she may respond with heightened anxiety. The threat, according to conscious processing hypothesis, is that her anxiety may trigger attempts to focus on particular aspects of the swing, such as those her coach had recently emphasized, disrupting her coordination and leading to poor performance, a phenomenon sometimes labelled "paralysis by analysis".

CONCLUSIONS

The relationships among anxiety, arousal, stress, and performance have been popular topics among sport psychology practitioners, who have expended much effort to find the answers. Despite the effort exerted, research has yielded inconsistent results (Ford et al., 2017). Regardless of the mixed results, however, sport psychology practitioners do agree that sport-related anxiety affects performance. The influence that anxiety has on performance can be either positive or negative, depending on the athlete and the situation (Ford et al., 2017).

WHAT ARE THE IMPLICATIONS FROM THE COMMON THEORIES?

Athletes and coaches may wonder what can be learned from the various theories if there is mixed evidence for each. All the theories, however, contribute to our understanding of the relationships among arousal, anxiety, and performance, and together they provide a foundation for applied strategies, such as those at the end of the chapter. For example, the theories reveal that arousal and anxiety are multidimensional, having physical, psychological, and behavioural components. Explanations that treat arousal and anxiety as one-dimensional constructs are unlikely to be accurate or helpful.

Athletes' interpretations of their arousal and anxiety symptoms are just as, if not more, influential on their performance than the

intensity of those symptoms. For example, athletes may interpret butterflies in their stomach as a sign they are ready to perform well or as a signal that they are not prepared and they are going to play poorly. The role of athletes' perceptions highlights the value of helping them develop self-confidence and of teaching them how to interpret their bodily cues as positive signals that they are ready to perform well. As a related implication, athletes who develop self-awareness and who can monitor their bodily states, feelings, and emotions are able to make accurate interpretations of their arousal and anxiety.

The effect anxiety has on performance is not always or automatically negative. Sometimes anxiety can influence performance positively. Athletes often report they do not want to start sporting events completely free from anxiety because it might mean they are not bothered with the event. Some level of anxiety appears to have value for performance. Similarly, anxiety can be a signal that the athlete has some limitation they need to overcome, rather than avoid, before achieving a higher level of skill at the sport. For example, rugby league players who realize that their pre-game anxieties are due to fears they will be hurt by stronger opponents might use this information to help them engage in resistance training to develop their size and strength.

Another reason for developing self-awareness is because optimal levels of anxiety and arousal vary with the athlete's personal characteristics and with the task being performed. Athletes who can recognize the optimal levels of anxiety and arousal that they need to perform well can learn and use strategies to manage their emotions. By monitoring and managing their arousal and anxiety levels, athletes increase the likelihood that they will perform to their potential.

HELPING ATHLETES WITH THEIR ANXIETIES AND STRESS

In the case study that opened this chapter, there are many ways Coach Beckmann could help Chuck cope with and manage his apprehensions, worries, and nerves. One strategy is to reduce Chuck's perceived imbalance between the task demands and his capabilities by developing a structured training programme to help

him improve his skill levels and physical conditioning. Increasing his skill level, as long as he is aware of his improvement, will reduce the chances of Chuck believing he is out of his depth. Simulation training may also help Chuck prepare for competition. In simulation training, Coach Beckmann would attempt to recreate a competition as closely as possible to the real thing during a practice session. Chuck might then become comfortable having to perform under pressure.

Coach Beckmann could also help Chuck reduce the perceived consequences of failure. Chuck is worried that failure shows he is not good at something he values and that he cannot come through for a friend. Coach could explain to Chuck that his ability is just one factor among several things that influence the judges' decisions and they have a short time to assess several couples in any one dance. The presence of other good competitors on the floor does not mean he is not a skilled dancer. Instead, being on the floor already suggests that he is a skilled performer. A poor placing in a competition does not show he is without skill at something he values. Coach Beckmann might also explain that it takes two to tango, waltz or jive, and ask him what advice he would give Sarah if she expressed the same worries about not delivering for a friend. Chuck could then use the same advice to help him cope with his fears. Some consoling words from Sarah might further help to reduce the perceived consequences.

As a third series of strategies, Coach Beckmann, or a sport psychology practitioner, might teach Chuck ways to manage his emotions and reactions before, during, and after competition. In Chapter 8 some common strategies that sport psychology practitioners use as part of psychological skills training programmes are discussed, including goal setting, imagery, self-talk, and relaxation training. These interventions can assist athletes in accepting, controlling, reducing, and maybe eliminating anxieties, worries, and stress. Relaxation techniques, for example, might allow Chuck to reduce his feelings of nervousness and muscle tension. Self-talk may help him focus on task-relevant thoughts or even alter his perceptions so they are facilitative rather than debilitative.

Another way these strategies can assist Chuck is by helping him develop his confidence. In some ways, self-confidence is the antithesis of anxiety. Anxiety involves the perception that "I might fail

here, and that will hurt me in some way (physically, psychologically, or socially)". Self-confidence involves thinking that "I can do well here". Helping Chuck build his self-confidence might buffer or protect him from experiencing anxiety in future competitions.

CONCLUSION

Although sport psychology practitioners have worked hard to understand the influence that arousal, anxiety, and stress have on athletes' performance, research results have been inconsistent. Robust, well-supported theories are yet to emerge. The stilted progress, however, has not prevented practitioners from being able to help athletes assess and manipulate their worries and apprehensions. Many strategies exist to help athletes and several of these methods also lead to improved performance, such as relaxation training, imagery, and self-talk. I will discuss these techniques in more depth in Chapter 8, when I focus on how sport psychology practitioners often work with athletes via an approach known as mental skills training. Before exploring these applied strategies, however, it is useful to learn about the environments and settings surrounding athletes when they play. In the next chapter we start by examining what makes sport competitive.

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6

COMPETITION AND AUDIENCE EFFECTS

CHAPTER LEARNING OUTCOMES

1 Define competition
2 Detail the competitive process
3 Explore how competition influences performance
4 Examine if sport can build life skills
5 Review the home field advantage in sport
6 Describe how audiences influence athletes' performances

Jayne and his wife Kaylee are members of the Parent Teachers Association at Brownell High School. They are attending a school staff meeting because they are outraged with a proposal that teachers will stop keeping score during sporting events run by the school and will do away with the house cup (at Brownell High students are allocated to one of four school houses and compete annually for a trophy called the house cup). Jayne and Kaylee are worried the proposal reflects a larger educational trend to avoid evaluating and comparing students with each other. The two teachers leading the proposal, Zoe and Hoban, tell the meeting about Simon and Inara, two pupils who are underachieving and who think they are worse than the other students at sports and classroom learning. Simon and Inara believe they fail at everything, feel bad about themselves, and have poor self-esteem. Zoe argues that keeping score on sports day and evaluating pupils against each other are part of the reasons why Simon and Inara are doing poorly and have negative self-opinions.

When it is his turn to speak, Jayne responds by saying the proposal is short-sighted because students have to learn that the real world

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is competitive and tough. The sooner the students learn the truth the better. Avoiding competition stops good students from pushing themselves and excelling. Also, doing away with competition tells people it's okay to coast through life because someone else will look after you. Jayne goes on to describe himself as a self-made businessman, and he credits his success to learning early in his life that the world did not care about him and he had to look after himself because no one else would. The meeting is getting heated and both sides are using emotive language, accusing the others of not caring about the students. The final speaker is Coach Reynolds who leads the school's football team, the Browncoats. Reynolds is in a cantankerous mood because he would rather be preparing for a clash against the Reavers, a local rival school. He declares the proposal as educational namby-pamby, and says it will make no difference at all because the students will still compare themselves against each other. He finishes by saying that the only way to make sport non-competitive is to stop playing.

Competition is pervasive throughout Western society and appears in almost every domain that involves human interaction, such as sport, business, the military, entertainment, education, science, medicine, hospitality, and the arts. With regards to sport, many people have polarized views about competition, especially at the youth level, and may describe competitiveness as good or bad. Some people, like Jayne above, argue that competitive sport helps prepare people for what they will experience in life. According to these individuals, other domains in life are competitive and sport helps people learn how to survive in any domain they enter. Other individuals, including Zoe and Hoban, argue that competition is associated with negative psychological consequences that are best avoided. For example, repeated failure during competition teaches people that they lack skill and leads to reduced self-worth, confidence, and self-esteem. At the extreme end, people with views like Zoe and Hoban attempt to remove competitive elements from sport through actions like abolishing score keeping.

People's opinions about the value of competition are typically based on their experiences and anecdotes from other individuals. For example, some elite athletes may describe themselves as fighters who are fiercely competitive, and suggest that their attitude is one of the reasons for their success. Based on how some elite athletes present themselves, or even just on their success alone,

people suggest that competition is healthy and helps produce champions. Alternatively, other individuals argue that a lot of athletes take competition too seriously, as shown in instances where they are prepared to cheat, injure opponents, or consume banned, illegal, and harmful drugs to secure victory. These individuals believe that the negative consequences of competition outweigh the benefits. Rather than rely on opinions and anecdotes, a more productive way to determine the value of competition in sport and other domains is to apply the scientific method to examine the phenomenon. Sport psychology practitioners have explored the topic because they have wanted to discover the positive and negative consequences of competition, along with the ways it might affect thoughts, feelings, and behaviour. The research that sport psychology practitioners have conducted can inform debate about the value of sport in society and also helps them when they work with clients, such as when they teach athletes ways to manage or interpret competitive situations to cope with anxiety. In this chapter I will (a) define competition, (b) detail how it is a process, (c) explore the effect competition has on sports performance, (d) discuss if sports build **life skills**, (e) review research on the home field advantage, and (f) consider the effect the presence of an **audience** has on athlete performance.

DEFINING COMPETITION

Competition is a social process that occurs when desired outcomes (e.g., prize money, trophies, and work rankings) are distributed among participants unequally, based on performance relative to each other (Martens, 1975). The rugby union world cup final is an example that most people would agree is a competitive event. There is one winner who is awarded the Web Ellis Trophy, and the teams are ranked according to their final placings. In contrast, people's opinions vary about whether or not a social game of netball among work colleagues during lunchtime is competitive. Some individuals may think the game is not competitive because they do not perceive that any meaningful rewards are available, and they are not engaging in social comparison. Other people will believe that the game is competitive because they think intangible rewards exist, such as bragging rights, and they are keen to win.

COMPETITION AS A PROCESS

Figure 6.1 presents Martens' (1975) model, which shows competition as a process of social comparison that involves four stages. The **objective competitive situation** contains the actual setting in which the athletes' performances are judged against some standard of excellence provided by an opponent, in the presence of others who are aware of the comparison. American football is an example and involves opponents on the field interacting with each other. Each team provides their opponents with the standard of performance that must be reached to win the game. The players, coaches, and spectators are aware of the comparison. As another example, gymnasts provide each other with the standard of performance, as scored by the judges, despite not competing against each other at the same time. The situation is objective in the sense that it is the same for each competitor. All the runners in a 10 km race, for example, have to pass the start line, travel the same distance, and cross the finish line.

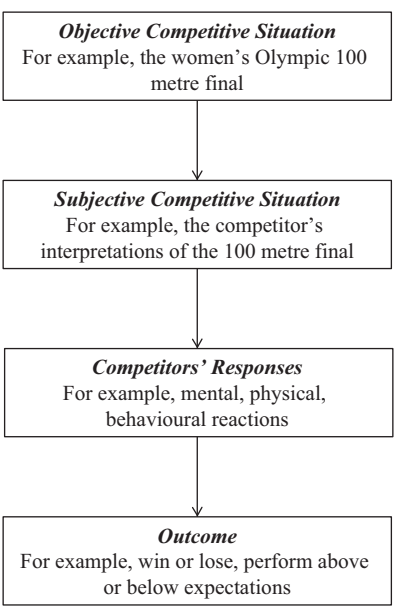

Figure 6.1 Martens' (1975) model of competition

The **subjective competitive situation** describes how athletes perceive, appraise, and interpret the objective competitive situation. Prior to a 100-metre sprint final, for example, some contestants may perceive they can win the upcoming race and display their talent in front of others. These confident individuals react differently to those athletes who think they will lose and who wonder about how spectators will respond. Athletes' appraisals reflect their personalities, histories, needs, and other characteristics, explaining why people interpret the same situation differently. Competitive trait anxiety is one athlete factor that influences how people perceive an objective competitive situation. High trait-anxious individuals will interpret the objective competitive situation as more threatening to their wellbeing compared with low trait-anxious athletes.

The ways athletes respond to their interpretations is described in stage 3 of the model (labelled response). Athletes' interpretations of the objective competitive situation influence their responses in either positive or negative ways. Their reactions include their thoughts, feelings, and behaviours. Psychological reactions among people with high levels of trait anxiety typically include worries, thoughts of doom, and low self-confidence. Physiological reactions might include increased sweating, heart rate, and breathing frequency. Behavioural reactions might embrace changes in the individuals' usual levels of fidgeting, pacing, and talking. Another behavioural outcome includes performance: how well athletes play. For example, some athletes seem to play better at higher levels of competition, whereas other individuals find that their performance decreases.

Stage 4 (consequences) details the outcomes and, objectively, these are often dichotomous: athletes win or lose, perform above or below expectations. Another type of consequence is a person's subjective evaluation of performance (e.g., the assessment of the athlete or coach). To predict how athletes' will interpret their performance, it is useful to understand the expectations they hold prior to the event. For example, swimmers at the Olympic Games may not win a medal or even get past the qualifying rounds but still feel proud of their achievements because they attained or surpassed their expected performance levels, or even obtained a new personal best. They may even feel happy just to have been selected for the games. Equally, other swimmers may win a silver or bronze medal but feel

disappointed and think they have not been successful because they expected to win.

THE COMPETITION–PERFORMANCE RELATIONSHIP

The polarized views people have about the role of competition in sport parallels similar opinions appearing in other domains of life. People compete with others in many aspects of life, such as finding romantic partners, gaining entry onto education programmes, and securing employment. Perhaps as a result of how widespread competition is in society, scholars from various fields (psychology, business, sociology, education, philosophy, etc.) have examined its determinants and consequences, including its effects on performance across the various domains. Sport psychology practitioners have been counted among these investigators by exploring the effect that competition has on athletes' performances. Divided opinion exists across scientists and scholars about whether competition enhances or hinders performance.

Murayama and Elliot (2012) provide an answer to the question that might appease both the proponents and opponents of competition. They argued that competition could be examined in three ways: as a personality characteristic (**trait competitiveness**), as a perceived situation (**perceived situational competitiveness**), or as an actual situation. Trait competitiveness is a personality tendency to compete against others in an activity. Some people treat all situations as competitive, even if other people do not, such as runners who try to beat their friends during informal training runs. Perceived situational competitiveness refers to the extent to which a person interprets an event as being competitive (e.g., some runners view a club training run as competitive, whereas others do not). Actual competitive situations have competition built into their structure, such as sport. Murayama and Elliot's (2012) actual competitive situation parallels the objective competitive situation Martens (1975) described in his model above. The perceived competitive situation parallels the subjective competitive situation in Martens' (1975) model. Trait competitiveness is a personality factor that influences how athletes interpret the objective competitive situation.

Murayama and Elliot (2012) reviewed research investigating the effect of competition on performance across all domains of life.

They found, at best, that actual and perceived competitive situations have weak influences on performance. Their results show that performance does not necessarily improve as situations become more competitive – it can just as easily decrease. Also, trait competitiveness and performance shared a trivial relationship with each other. People with high trait competitiveness do not perform better than individuals with low levels. These results emerged consistently across all life domains, including sport, education, and work.

Although these findings indicate that competition has no direct relationship with performance, they leave open the possibility of an indirect relationship. Murayama and Elliot (2012) proposed that competition is related to achievement goals, which in turn influence performance, a suggestion Figure 6.2 illustrates. Figure 6.2 reveals two types of performance goals: approach and avoidance goals. **Performance approach goals** reflect people's desires to do well relative to others (similar to ego goals as discussed in Chapter 3). Athletes with performance approach goals want to show they are better at the sport than other competitors. **Performance avoidance goals** represent a desire to refrain from doing poorly compared to others. Athletes with performance avoidance goals want to prevent themselves from appearing worse than others at the sport. People who have an approach goal mindset play to win. Individuals with an avoidance goal viewpoint do not want to

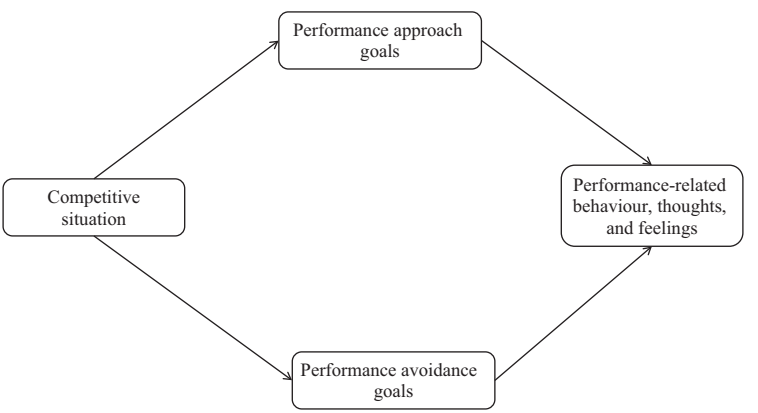

Figure 6.2 Murayama and Elliot's (2012) model

lose. Athletes may be motivated by both goals to a greater or lesser extent; they do not have to focus on just one.

According to Murayama and Elliot (2012), competition stimulates social comparison among participants and brings normative standards of behaviour to the forefront of people's thinking. In many sports, for example, direct competition occurs when athletes are evaluated according to how well they perform against each other through the scoring system. These social comparisons are inherent to sport and trigger athletes to adopt performance approach goals, performance avoidance goals, or both. These goals are related to thoughts, feelings, actions, and performance:

- Performance approach goals are related, for example, to eagerness, task absorption, persistence, and positive performance outcomes.
- Performance avoidance goals are related with worry, task distraction, self-handicapping, and negative performance outcomes.

Murayama and Elliot (2012) provide one answer to the question "is competitive sport good or bad?" The answer is that competition is neither good nor bad, but instead, it is the way that the people involved in a sport manage the social comparison processes that influence their responses and the consequences. For example, if coaches emphasize avoidance goals, then athletes may experience anxieties and reduced performance, especially if they doubt their abilities. In contrast, if coaches focus on approach goals, then performance may be enhanced. To encourage athletes to adopt approach rather than avoidance goals, sporting leaders and coaches can get to know their athletes as individuals. For example, coaches could learn things such as the players' motives for participating, how they respond to different types of feedback, and what stresses them. Coaches can draw on the information to help them tailor how they interact with athletes.

CAN SPORT BUILD LIFE SKILLS?

A second answer to the question about whether or not competition is good or bad revolves around the influence sport has on athletes. Some people value sport for its supposed ability to build moral

character or life skills. For example, the International Olympic Committee (IOC, 2020, p. 16) states that "the goal of the Olympic Movement is to contribute to building a peaceful and better world by educating youth through sport practised in accordance with Olympism and its values." The implication is that sport provides a context through which people can learn to be model citizens. At the same time, however, frequent examples exist where athletes do not appear to be acting as productive and exemplary members of society; for example, they get caught cheating, committing crimes, abusing recreational drugs, and taking banned performance-enhancing substances. Coaches are caught abusing athletes verbally, physically, and sexually. No wonder some people view claims that sport builds character with a healthy dose of scepticism.

People, including sport psychology practitioners, who believe in the prosocial value of sport realize that personal and moral growth does not occur automatically because individuals participate. Instead, if sport is to contribute to participants' personal and moral growth, then it needs to be structured in ways that help people learn life skills and moral fortitude. Character is taught not caught (Miles & Hodge, 2020). To help athletes experience personal and moral growth, some people have created programmes designed to build life skills. The World Health Organization (WHO, 1997) describes life skills as cognitive, emotional, interpersonal, and social characteristics that allow people to deal effectively with the challenges and demands they face as they go about their daily business. WHO identifies specific life skills, including:

- *Self-awareness*: Self-esteem, confidence, self-monitoring, self-evaluation, and goal setting
- *Self-management*: Anger control, stress management, time management, coping skills, impulse control, and relaxation
- *Social awareness*: Empathy, active listening, recognizing and appreciating individual and group differences
- *Relationships*: Negotiation, conflict management, resisting peer pressure, and networking
- *Responsible decision-making*: Information gathering, critical thinking, evaluating different actions, and assessing consequences

Potentially, sport is a suitable arena in which to promote life skills because it is an attractive activity and a valued domain of life. Many

people play sport and so individuals wanting to promote life skills can reach and influence a significant proportion of the population, particularly among the younger segments. For sport to be a viable arena, however, life skills need to be transferable across domains and not unique to one context.

Athletes, however, do not learn only adaptive life skills as a result of playing sport. They can also learn maladaptive and antisocial behaviours though sport, just as easily as adaptive and prosocial actions. If people running competitive sport programmes want participants to develop positive life skills then they need to implement deliberate strategies to that end. Adaptive life skills development occurs if coaches, sports administrators, and other leaders create the right environment and learning opportunities (Miles & Hodge, 2020).

Numerous programmes have been created and evaluated for teaching life skills in sport. One example was the Developing Champions programme to help young elite athletes in Western Australia (a) develop interpersonal and intrapersonal life skills and (b) apply those abilities in different contexts (Hardcastle et al., 2015). The programme was aimed at elite high school student-athletes who needed to cope with the demands associated with (a) regular training and competition, (b) academic life, and (c) personal relationships. Athletes participate in interactive workshops supplemented by a workbook and take-home tasks. Example life skills include goal setting to balance commitments across multiple life domains and self-regulation skills for managing stress and anxiety. When researchers evaluated the Developing Champions programme, athletes who had participated thought it (a) fostered better engagement in training, (b) enhanced time management and planning skills outside of sport, and (c) allowed them to improve personal characteristics they needed to achieve sporting success (Hardcastle et al., 2015).

Similar to many other life skills programmes, Developing Champions was tailored towards student-athletes. There are also life skills and personal development programmes that cater to elite adult athletes. Sport at the top level typically necessitates a full-time commitment and athletes may not have sufficient opportunities to prepare themselves for life after they retire. Many athletes finish their competitive careers in their late 20s or early 30s, and many may

have trouble adjusting to a non-sporting life (Park et al., 2013). To assist retiring athletes, some sporting bodies have developed career assistance programmes to help with the transition out of an elite or professional competitive career. One example is the Athlete Lifestyle Support programme offered at the Hong Kong Sports Institute (https://www.hksi.org.hk/support-to-athletes/athlete-lifestyle-support). Similar programmes exist around the globe in countries such as Australia, China, New Zealand, the USA, and the UK. The support programme at the Hong Kong Sports Institute helps athletes with their educational, vocational, and social development, alongside their retirement from sport to another career. Athletes can access different types of support, such as career counselling, educational subsidies, and opportunities to enhance their life skills (e.g., communication, time management, and financial management).

HOME FIELD ADVANTAGE

One component of the objective or actual competitive situation is the venue or location where the sporting event occurs. Athletes, coaches, and fans often think that there is no place like home. They believe that teams are more likely to win when playing at home than when playing away. The **home advantage** refers to the performance benefit athletes and teams have when they compete at their home grounds compared with when they play at away locations under similar conditions. Sport psychology practitioners have accumulated evidence that the home advantage exists across sports. In his synthesis of the research, Jamieson (2010) found that the home team could expect to win about 60% of their games. The advantage was the same for team versus individual sports, and across the college and professional levels.

Jamieson (2010) also showed that the home advantage was stronger before 1950 than after, and he offered three reasons that might account for this observation. First, as sporting competitions have changed and evolved, officials may have changed the rules and venues to increase the standardization of events. Increased standardization reduces the home team's opportunities to take advantage of local playing facilities, such as playing on smaller or larger fields than normal. Second, as sport has become more commercialized, stadiums have increased in size and may include retractable roofs,

reducing the home team's ability to take advantage of weather conditions. Third, shortened travel times may also explain why the home field advantage has reduced. Within time zones, for example, quicker travel resulting from faster trains and increased use of airplanes may have led to fewer disruptions for athletes than previously. Across time zones and countries, however, although travel has become quicker, the effects of fatigue and jet lag accumulate and may still influence athletes. Sport scientists have, nevertheless, developed strategies to help sports teams manage the effects, such as how best to coordinate training and travel (van Rensburg et al., 2020).

Some sport psychology practitioners have argued for a home field disadvantage, whereby teams playing at their own grounds may choke more often in high-pressure or championship games compared with less critical regular season games. In contrast to these suggestions, Jamieson (2010) found that the home field advantage becomes stronger from regular to championship games. Although home teams do lose and can choke in championship events, on average they are likely to do better than during the regular season.

Jamieson (2010), however, found some differences in the home field advantage across sports. For example, the home advantage was stronger in soccer compared with other sports. In contrast, baseball exhibited the weakest effect. The differences among the sports may have been due to season length: typically, the sports with the longest seasons had the weakest home advantage. Season length does not provide a complete explanation, however. American football, which has a short season, also had one of the weakest home advantages.

Despite these differences in time period, sport, and season length, home teams have a better chance of winning than away teams. Carron and colleagues (2005) identified specific reasons that may explain the home advantage, including a supportive crowd, venue familiarity, travel arrangements, and competition rules favouring the home teams (see Figure 6.3). These factors influence athletes' psychological states, which in turn lead to changes in behaviour and performance outcomes. For example, a supportive crowd or venue familiarity may lift the home team's confidence or motivation. Carron and colleagues, however, admitted that more evidence was needed to support their suggestions. Although researchers are still exploring the reasons for the home advantage, they have

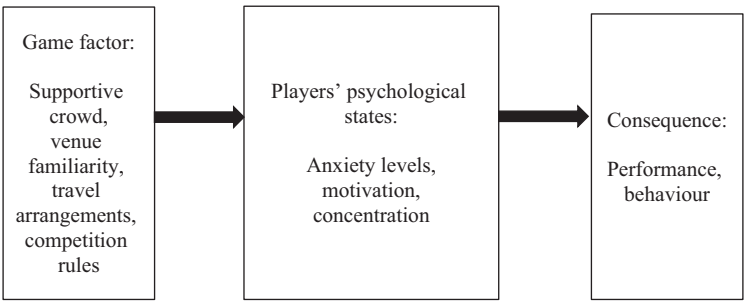

Figure 6.3 Carron et al.'s (2005) explanation for the home ground advantage

consistently shown that the audience or crowd effects athletes' performances (Inan, 2020).

AUDIENCE EFFECTS

Athletes typically perform in front of audiences. Events such as the Olympic Games, along with the netball, rugby union, and soccer world cup finals, attract huge global TV audiences, sometimes in the billions. They may have hundreds of thousands, and often more than one million, spectators attending the events in person. Not all sporting competitions generate such interest, but even when there are no fans present, athletes perform in front of opponents, coaches, teammates, support staff, family, and friends. Sport psychology practitioners are interested in learning about how individuals perform when they have an audience. Although there is potential for an audience to affect athletes in ways that lead to improved performance, it is also possible the presence of other people may hinder performance. Knowing if and when an audience may affect athletes may help practitioners find ways to support clients when they are playing in front of a crowd.

In a study published in 1898, often heralded as the first sport psychology-related investigation, Triplett observed, when reading the archives of the Racing Board of the League of American Wheelmen, that cyclists with a pacesetter were five seconds faster than those without one. Triplett hypothesized that the difference was due to the presence of other people. He tested his hypothesis by asking

children to wind a thread on a fishing reel as quickly as possible, either alone or with another child doing the same task. Children spun the reel faster when in competition with other participants than when they were on their own. These results demonstrated a co-action effect: a phenomenon whereby enhanced performance results from the presence of other people simultaneously and independently engaged in the same activity.

Triplett's (1898) work stimulated research on **social facilitation**, and investigators examined the influence that the real, imagined, or implied presence of other people had on an individual's behaviour (e.g., an athlete's performance). Strictly speaking, Triplett examined the co-acting effect because the other children in the situation were performing the same task as the child being tested. Any differences in the child's performance may not have been due to the mere presence of other people, but could have resulted from the other individuals also performing the same task. Many of the initial studies following Triplett's work also examined the effect co-actors had on an individual's performance. From the 1960s, social facilitation research focused on whether, how, and why people change their behaviour when other individuals are just present but are not engaging in the same task. Specifically, researchers compared people's performances when they were alone with when they were being observed. The results from the research were mixed. Sometimes performance improved and sometimes it dropped.

HOW MIGHT SOCIAL FACILITATION BE EXPLAINED?

The mixed results showed that social facilitation did not have a simple relationship with performance. Any good explanation of social facilitation needed to account for why performance might either improve or decrease in front of other people. A breakthrough in understanding came when Zajonc (1965) argued that the presence of other people increases a performer's arousal or activation levels. As arousal increases there is a greater probability that people will respond to a stimulus with their dominant or most well-learned response. If the person's dominant response is the correct one, then performance will be enhanced. In tasks where the person's dominant response is incorrect, performance will be impaired. In sport, for example, performance will increase for skilled athletes or in

simple tasks when people move from being alone to being observed by others. In contrast, performance will be hindered for novice athletes or during complex activities.

Since Zajonc (1965) proposed his model other people have suggested modifications, with most of these alternative explanations still focused on the influence of arousal on performance. According to the Evaluation-Apprehension Theory, for example, the mere presence of other people is not enough to influence an athlete's arousal and performance. Instead, athletes' arousal and performance levels change if they know that the other people present are evaluating them and can approve or disapprove of their behaviour. Athletes' arousal and performance changes because they realize that other people's evaluation of them influences the social rewards and punishments they receive. As another example explanation, according to the Distraction-Conflict Hypothesis, the presence of other people distracts performers and increases their arousal levels. When athletes' attention is not sufficiently on the task and their arousal levels are too high, their performance will drop on complex tasks. On simple tasks performance will increase or decrease depending on the extent to which arousal has increased.

Bond and Titus (1983) published a large review of the research examining social facilitation that included 241 studies and about 24,000 participants. They found that the presence of others:

- Increases the speed of performance during simple tasks, but decreases the speed of performance in complex tasks
- Impairs accuracy in complex tasks and enhances accuracy in simple tasks
- Is unrelated to performers' evaluation apprehension
- Heightens individuals' physiological arousal only if they are undertaking complex tasks

Although Bond and Titus found that the presence of an audience does influence performance, the effect was weak. Their results suggest that social facilitation does not have a large influence on performance and does not support arousal-based explanations. Bond and Titus' findings, however, were based on research that was not focused only on sport but included other tasks as well. For

sport psychology practitioners, it would be useful to review just the sport-related studies.

When Strauss (2002) reviewed just the sport-related research, he also examined the type of movement being performed. Broadly, he considered three types of movement: (a) conditioning-based tasks, or those placing large demands on the body's energy systems, such as running, swimming, or weightlifting; (b) coordination-based tasks, or those that test the synchronization of the body's systems, such as golf, shooting, or gymnastics; and (c) mixed tasks involving equal measures of conditioning and coordination, such as many team sports (e.g., soccer, netball, hockey). Strauss found conflicting results for the effect of social facilitation on performance during coordination or mixed (coordination and conditioning) tasks. Social facilitation had a small, but positive, influence on performance during power or stamina-based tasks (i.e., conditioning-based tasks). Overall, social facilitation does not appear to greatly affect performance in a sporting context.

Although research has mostly focused on the type of tasks being examined, differences among athletes may influence the effect of social facilitation on performance (Uziel, 2007). Social facilitation may influence some athletes more than others. One difference among athletes that seems to affect the power of social facilitation is their **social orientation**. Two broad social orientations have occupied researchers' attention. The first is a positive orientation that involves an athlete's tendency towards self-assurance and enthusiasm, and this is reflected in high extraversion and self-esteem. The second is a negative orientation involving a tendency towards anxiety and apprehension, and this is reflected in high neuroticism and low self-esteem. A positive orientation is associated with a performance benefit, whereas a negative orientation is debilitating. For individuals adopting a positive social orientation, the presence of an audience is linked to performance gains. For people with a negative social orientation, performance drops. These effects are independent of whether the task is simple or complex.

When studying social facilitation, researchers want to compare people's performance when they are alone (the alone condition) with when other people are present (the audience condition). Sometimes sport psychology researchers have not used a proper alone condition. Often during the alone condition the researcher

has been present, so participants have not really been on their own when performing the task (e.g., the scientist has still been in the room). If we know this flaw, we can separate the studies into two piles based on the type of alone condition used: those where participants performed when truly alone and those where the scientists were present. The **audience effect** is stronger when compared to a real alone condition than when scientists were present. Further, if only the studies using the truly alone condition are considered, the influence of social orientation is magnified. A positive social orientation enhances performance and the negative social orientation hinders performance even more when compared with the truly alone condition than when compared with the presence of the researcher. Without knowing this flaw in the research, sport psychology practitioners may reach inaccurate conclusions.

CONCLUSION

Earlier in the chapter I highlighted how the role of competition in sport and other domains generates polarized views about its value, and these opinions are often based on hearsay and anecdotes. Situations similar to the case study at the start of the chapter have occurred in many schools. Coach Reynold's observations ring true for lots of people. Competition and social comparison are inherent in the structure of sport. People who have played or coached sport will typically testify that even when not keeping score, such as in warm-up or training games, players are still comparing each other in some way based around their competence in the activity. The social comparison that occurs, however, is neither good nor bad, but can have either positive or negative consequences. Similar to most domains in life, the way that people manage the human interactions and communications that happen in sport has a significant bearing on the consequences. Although Jayne might believe that competitive sport helped him to achieve success in business, it was probably not sport *per se* that helped. Instead, the type of coaching and mentoring he received when playing likely helped him to develop skills he was able to transfer to the commercial world. Zoe and Hoban are also correct in saying that there can be negative psychological and behavioural consequences. These detrimental results occur when people have not been shown how to interpret winning

and losing in adaptive ways, to evaluate their competence against a variety of criteria, and to separate their self-worth from their sporting abilities. In many sporting contexts, positive outcomes can occur if coaches and leaders develop an atmosphere focused on personal achievement as much as one that emphasizes meeting the competitive demands of the situation.

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7

GROUP PROCESSES

CHAPTER LEARNING OBJECTIVES

1 Describe groups and how they develop
2 Examine the relationship between group size and productivity
3 Define cohesion
4 Explore the role cohesion has in sport
5 Describe leadership effectiveness
6 Examine the coach–athlete relationship
7 Detail common team-building interventions

Liam is the player/coach of the Hyperion Angels, a mixed soccer team sponsored by the Hyperion Hotel. The players have nicknamed him "Angelus" because he is the Angels' leader. The team formed in 1999 and have won the league several times. This year the Angels have been performing poorly, however, and Liam thinks it might be due to high player turnover and a sudden influx of many new faces. Among the individuals to leave was Cordelia, one of the long-standing female team members, who was replaced with Faith, a young player with a fiery temper. The team has always had a reputation for good player conduct, but in the previous three games Faith had been penalized frequently for foul language and unsporting behaviour. As the season has progressed, infighting has emerged among the players, particularly Wesley and Charles. One night, for example, Charles accused Wesley of not being committed to the team and Liam had to separate the two individuals. Liam thinks that the team's lack of unity is contributing to their poor performance, but he is unsure how he can change the situation. Liam decides to chat with a work

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colleague, Lindsay, who also happens to be the captain of a rival team, the Wolves. Lindsay told Liam to throw the team a barbecue, as social events can help players get to know each other.

Liam's belief that disunity is causing the Angels' poor performance echoes the value people in sport and society place on teamwork and unity among members in a group. People typically work in groups in many domains across life, including sport, the military, education, science, the arts, and business, and they consistently assume that happy teams are more productive and successful than unhappy ones. Frequently, coaches and athletes attribute success or failure to high or low team cohesion. People readily recognize that group dynamics are an integral part of team sports. They may not always, however, realize that group dynamics are also a central feature in many individual sports. Athletes in individual sports often belong to squads and train or compete in group settings. The responsibility for managing team unity usually falls to coaches, managers, captains, and other people in leadership positions. Leaders are interested in knowing how they can manage group dynamics to promote successful team performance. To assist coaches and team mangers, sport psychology practitioners have studied group dynamics and leadership extensively. In this chapter I will (a) describe groups and how they develop, (b) examine the relationship between group size and productivity, (c) define cohesion, (d) explore the role of cohesion in sport, (e) describe leadership effectiveness, (f) examine the coach–athlete relationship, and (g) detail team-building interventions.

DEFINING GROUPS AND TEAMS

What makes a number of individuals a group or a team? It is fascinating to ask sport psychology students or sport spectators to define groups and teams because the discussions are engaging and enlightening. Some people argue groups and teams are the same thing. Other individuals suggest groups and teams are different. According to these people, groups consist of two or more people who interact and may coordinate their efforts (e.g., spectators who sing or perform stadium waves at sporting events). Teams involve groups of people striving towards a common goal, who share task interdependence, who interact, who describe themselves as members, and who maintain boundaries and expectations (Kozslowski &

Bell, 2013). These views help explain why sports teams are teams. Players describe themselves as members who are working together towards a common goal and they rely on each other to achieve success. Smaller teams may exist within larger ones. At the Olympics, for example, within the national squad there may be sport-specific teams, such as those for archery, swimming, or cycling.

In sport, teams can be categorized according to the interactions players have with each other, including:

- **Independent teams**: Individuals in the team compete separately from each other (e.g. gymnasts)
- **Reactive teams**: Individuals interact during performance and respond to their teammates' actions, but not always at the same time (e.g. the softball catcher, pitcher, fielder, and person holding base)
- **Coactive teams**: Individuals compete side by side at the same time but with limited interaction (e.g. canoeists)
- **Interactive teams**: Individuals continuously interact with each other throughout the contest (e.g. netball, volleyball)

Understanding the various ways athletes from different sports interact with each other helps people appreciate how group dynamics and team processes may need to be tailored to ensure optimal functioning.

Coaches, managers, and sport psychology practitioners are interested in the following question: how does a collection of individuals become a productive team? A widely cited framework detailing team development or lifecycle goes by the phrase forming, storming, norming, performing, and adjourning (Tuckman & Jensen, 1977).

- *Forming*: Individuals familiarize themselves with each other, establishing the team's purpose
- *Storming*: Conflicts arise as players start to discuss suitable goals for the team
- *Norming*: Players resolve conflicts, build cohesion, and set team norms
- *Performing*: The team is operating effectively in pursuit of its goals
- *Adjourning*: Following task completion players reduce their contact with each other

The model above adopts a linear approach to team development, but they do not always grow in such a manner. For example, teams may experience storming when they are performing. Team development may be better described as consisting of repeated cycles. One such approach includes the following stages (Arrow et al., 2004):

- *Discontent*: Athletes do not identify with the team but feel alienated from it (e.g., new players or those having difficulties with coaches).
- *Team identification*: During the selection process, players may be retained or dropped. The selected players' experience an increase in their commitment and identification with the team.
- *Group productivity*: Athletes focus on production and contributing to the team.
- *Individuation*: Members start to demand recognition for their contributions (e.g., athletes may become dissatisfied with their roles and seek change).
- *Decay*: Players become less interested in being team members, leading to a return to the discontent stage, change, or abandonment.

Both approaches highlight that conflict is a normal part of a team's lifecycle. Rather than avoiding conflict, members could accept that disagreements occur and treat these encounters as opportunities to enhance team functioning. For example, the conflict between Charles and Wesley above likely reflects that both players are committed to the team, but they express it differently. Once they realize that they are both committed but operate in different ways, they might learn to assist each other to maximize their contributions.

There is a voluminous body of literature on group and team dynamics, and it is beyond the scope of the current chapter to do the topic justice. Instead, I have selected topics to provide a flavour of the area in sport psychology. One topic that coaches, athletes, and sport psychology practitioners are interested in is how group size affects team productivity.

GROUP SIZE AND PRODUCTIVITY

Max Ringelmann (1913), a French agricultural engineer, first examined the influence of group size on individual and team performance when he examined factors affecting a worker's ability

to push or pull a load horizontally. He found that as group size increased, individual members became increasingly less productive, an observation that became known as the **Ringelmann Effect**. Further, Ringelmann suggested that individuals contribute less because of losses due to motivation and coordination. He favoured coordination losses, suggesting the workers were increasingly unable to synchronize their efforts. The following equation provides a useful framework for understanding group productivity:

ACTUAL PRODUCTIVITY = POTENTIAL PRODUCTIVITY – MOTIVATION AND COORDINATION LOSSES

As the number of group members increases, potential productivity grows because the pool of human resources, skills, and capabilities expands. At some point, however, adding additional people does not increase potential productivity because the necessary resources to achieve the task are already available: adding more people does not add new or unique skills or capabilities. At the same time, with increasing group size it becomes more difficult to run the team efficiently (coordination losses), and players become less keen to supply an optimal effort (motivation losses). For example, coaches may not be able to give as much individual instruction to each player as desired, and some athletes may be less inclined to interact with all the other team members. Although team productivity increases, so do coordination and motivation losses, and the relative contribution per player decreases. In touch rugby, for example, although a minimum of seven players is needed to field a team, increasing the number of people in the squad may lead to improved performance because players can be substituted on and off throughout a game so they remain fresh and avoid fatigue. There comes a point, however, where additional players will not increase performance because there are already enough people to ensure they are fresh when they enter the fray. Instead, team performance might start to decrease because there are too many players to coordinate effectively and some individuals may lose interest in the game or become upset because they are not getting sufficient game time.

Although Ringelmann believed that the effect was due to coordination losses, later investigations showed the relative decrease

in individual performance resulted primarily from motivation losses, possibly reflecting **social loafing** (Karau & Wilhau, 2020). People who loaf socially exert less effort when working in teams than when they are working alone. For example, as more individuals join a tug-of-war team, the amount of effort each person provides decreases. The risk of social loafing increases when athletes' productivity cannot be evaluated independently from others or when they think their efforts are redundant and not unique. For example, social loafing might occur in team sports where coaches and managers have difficulty assessing athletes' performances objectively. Increasing coaches' ability to assess players' individual performances lowers the effect of social loafing. The increase in video analysis, for example, may reduce social loafing because it has provided a way for coaching staff to obtain objective indices of each individual's effort. To illustrate, in rugby union, performance analysis allows coaches to obtain a large number of statistics for each player, including the number of tackles made or broken successfully, metres gained per run with the ball, or minutes in a game spent walking, running, or jogging. In addition, performance analysis lets coaches work with players on one particular aspect of the game at a time, such as reviewing every tackle attempted to identify ways to improve technique. Sports leaders and coaches who can assess the contributions of individual players may reduce or eliminate social loafing in their squads (Karau & Wilhau, 2020).

The risk of social loafing may also increase when players perceive the task to be meaningless and they have no personal involvement in its achievement. For example, social loafing may occur in soccer when athletes think their efforts will have no influence on a game and the result is a foregone conclusion, signalling a form of learned helplessness (Seligman, 1972). One challenge for leaders is to help players realize how their roles contribute to attaining a team goal. Helping players believe in the value of the team's goals and realize they are making a worthwhile contribution will likely reduce social loafing (Simms & Nichols, 2014).

Social loafing may also happen when it is difficult to evaluate the team's performance against suitable criteria, such as when teams or competitors are unequally matched. In sport, the opposition provides the standard by which to evaluate the team's performance

(e.g., did they win or lose?). To help overcome social loafing in situations where the difference between the opposing athletes or teams is large enough to reduce uncertainty regarding the outcome, teams may develop new goals, such as scoring a specific number of points or preventing the opposition from achieving certain objectives. For example, at half time a hockey team losing to a superior opponent may treat the second half as a new game and attempt to win it by scoring more points. The superior team may also treat the second half as a new game and set a minimum score they need to achieve to consider that they have been successful. Another time when social loafing may occur is when the players do not know each other or when teams rely on certain highly skilled members to perform well and win the game (Karau & Williams, 1993). Coaches will reduce social loafing by helping athletes realize team success results from every person's contribution, and not from a single person's outstanding performance. Increasing team cohesion also minimizes social loafing, and is the focus of the next section.

TEAM COHESION

Group cohesion is defined as the propensity of a team to stay together as they strive for goal attainment and member satisfaction (Carron et al., 1998). This definition indicates that goal achievement and member satisfaction are two desired outcomes of a team and they reflect social and **task cohesion**. High **social cohesion** occurs when athletes get on with each other and find their teammates enjoyable company. Good task cohesion happens when teammates work together to achieve common goals.

Team cohesion is multidimensional, as illustrated in Table 7.1. The table has four cells built around two axes (Carron et al., 1985). Along one axis, athletes' perceptions about their team focus on either *group integration* or *individual attraction*. Group integration involves players' perceptions regarding group closeness and unification. Individual attraction refers to athletes' perceptions regarding their motivations to be part of the group and their personal feelings about the team. Along the second axis, athletes can have a task orientation or social orientation. A task orientation involves striving towards achieving a team's goals. A social orientation reflects

Table 7.1 Athletes' team-related perceptions

		Athlete's perceptions of the group	
		Group integration	***Individual attraction***
Group orientation	Social orientation	*Integration–social*: Athletes' views regarding how well players relate to each other and enjoy being part of the team	*Attraction–social*: The degree to which a player enjoys the company of teammates
	Task orientation	*Integration–task*: Perceptions about how well players have bonded over their attempts to define and pursue task goals	*Attraction–task*: The extent that players are committed to the team's goals

a desire to develop and maintain social relationships in the team. These two axes yield four types of perceptions players can have about team cohesion:

- *Integration–task*: Perceptions about how well players have bonded over their attempts to define and pursue task goals
- *Integration–social*: Athletes' views regarding how well players relate to each other and enjoy being part of the team
- *Attraction–task*: The extent that players are committed to the team's goals
- *Attraction–social*: The degree to which a player enjoys the company of teammates

These four types of perceptions can help sport psychology practitioners assess a team's needs regarding cohesion. For example, if the players in a squad report that they avoid interacting with the other athletes outside of practices and games, then a practitioner may decide to enhance the social attractiveness of the team. Sport psychology practitioners often field requests to assess and develop team cohesion because coaches and athletes believe it leads to better performance. It is useful to examine the role of cohesion in sport.

THE ROLE OF COHESION IN SPORT

THE COHESION–PERFORMANCE RELATIONSHIP

Athletes and coaches prize cohesion highly, believing it influences performance. There are, however, examples of teams that have performed well but have not been cohesive. Similarly, many cohesive teams have failed to achieve their sporting goals. Sport fans can find examples to argue for and against cohesion being related to performance. Fortunately, sport psychology practitioners have conducted enough research to help find answers and start to settle the argument (Carron et al., 2002; Filho et al., 2014). The major conclusions from the research suggest the following:

- All three types of cohesion (e.g., task, social, and overall cohesion) are related with performance
- Task cohesion, however, has a stronger relationship with performance than social cohesion
- The relationship between performance and cohesion is bi-directional. Increases in cohesion contribute to enhanced performance. Increases in performance, in turn, contribute to enhanced social and task cohesion

In addition to identifying a relationship between cohesion and performance, sport psychology practitioners have explored possible **moderators**, or variables, that influence the relationship between two factors. For example, the relationship between cohesion and performance is stronger in female teams compared with male squads (although there is still a significant association for men). As another example, the strength of the relationship between cohesion and performance is influenced by how performance is measured. The relationship is stronger when athletes rate their performance subjectively compared to when performance is measured objectively (e.g., actual scores, times, etc; Carron et al., 2002; Filho et al., 2014).

COHESION IN SPORTING CONTEXTS

In addition to performance, cohesion is related to other factors in sport, and knowing about these other variables helps athletes,

coaches, and teams. For example, learning about what increases and decreases cohesion allows coaches to structure their teams to maximize group togetherness. Also, identifying the benefits of cohesion beyond performance might help teams decide how much value to place on building player unity and camaraderie. Increased knowledge might help people to develop cohesion so they reap performance and other benefits. To understand the myriad of factors that are related to cohesion, it is helpful to sort them into contextual, athlete, team, and leadership factors (Burke et al., 2014; Carron & Eys, 2012).

Contextual factors: Two contextual factors include team size and level of competition. Broadly, as team size increases, cohesion decreases, possibly because it becomes difficult to communicate and coordinate team activities. Also, player motivation may be reduced. Competition level is another contextual factor, and as the level of competition increases, cohesion decreases. Perhaps cohesion is higher in lower-level teams because with less experienced players coaches and leaders find it is easier to reach consensus regarding team goals.

Athlete factors: Athlete factors correlated with cohesion include similarity, satisfaction, and adherence. First, cohesion is higher in groups where athletes are similar to each other across demographic and individual differences, compared with teams where they are dissimilar to each other. People who share similar cultural, religious, moral, and other beliefs may find it easier to communicate and interact with each other. Second, satisfaction is related with cohesion and performance in a circular fashion. Cohesion enhances satisfaction, which leads to good performance (happy athletes like to train with each other). Then, increased success builds satisfaction, which leads to cohesion (winning athletes feel closer to their teammates). Third, cohesion is associated with adherence, probably because perceptions of cohesion are related with attending training and competition, being on time, and perceptions of resilience.

Team factors: Team factors include norms, roles, and **collective efficacy**. First, cohesion accompanies conformity to group norms, and although the relationship sometimes benefits the team, sometimes it does not. If team norms focus on striving for excellence, for example, conformity to norms may allow the team enhanced performance. Second, cohesion correlates with role clarity, acceptance,

and performance. The relationships may be bidirectional. Increasing cohesion helps players settle into their roles, and then role clarity and acceptance increases cohesion. Third, collective efficacy is a group's shared belief in its combined resources to undertake actions to achieve a task. For example, the belief teammates share that their team can play well enough to defeat an opponent. The relationship collective efficacy has with cohesion and performance is circular, in a similar way that athlete satisfaction related to cohesion and performance. Enhancing either cohesion or performance increases collective efficacy, which then further improves the other variable.

Leadership factors: Leaders and coaches influence athletes' perceptions of cohesion. High task cohesion, for example, is associated with leadership behaviours focused on instruction, skill development, training, and positive feedback. Also, high cohesion is linked with democratic decision-making, or the degree that leaders encourage athletes to participate in team decision-making. Given the role that leaders play in team cohesion, and in sport more generally, it has been a popular topic of study among psychologists.

LEADERSHIP

A leader is someone who influences another person or group of people towards achieving a common goal (Carron & Eys, 2012). In sport, teams may have multiple leaders. For example, some people hold formal or prescribed leadership positions, such as coaches, captains, or managers. Other people occupy informal positions that are not prescribed, such as senior players who act as mentors for younger athletes. A question that captures the attention of athletes, spectators, and sports fans is what makes a good leader, coach, manager, or team captain? Over the years, sport psychology practitioners have proposed many explanations for what makes an effective leader. Some explanations suggest that good leaders are born, and focus on the person's personality traits, such as charisma and dedication. Other explanations suggest that people learn to be good leaders and emphasize the need for favourable situations, such as a team being full of athletes willing to follow their leaders. The theories providing the most useful explanations concentrate on the interactions between leaders' characteristics and the environments in which they operate (Kane, 2020). Interaction-based theories suggest that

people who are effective leaders in one team may not necessarily be successful with another group. Two leadership theories popular among sport psychology practitioners include the multidimensional model of leadership and transformational leadership.

MULTIDIMENSIONAL MODEL OF LEADERSHIP

The multidimensional model of leadership is illustrated in Figure 7.1 (Chelladurai, 2013). The model proposes that team performance and member satisfaction is influenced by the congruence among (a) a leader's actual behaviours, (b) the athletes' preferred leadership behaviours, and (c) the leadership behaviours the situation requires. As the congruency among these three aspects increases, there is greater athlete satisfaction and better team performance. For example, if the athletes and situation both call for democratic leadership, and the coach follows suit, then there is likely to be enhanced player satisfaction and optimal team performance.

According to the multidimensional model, a number of factors influence coaches' behaviours, including (a) their knowledge, skills, and coaching style, (b) the athletes' leadership preferences, and (c) the leadership behaviours that suit the situation. A rugby union coach, for example, who knows how to play attacking football (knowledge), who has the skills to teach players (skills), who gets on well with the athletes (coaching style), who leads the team in ways the athletes value (players' preferred leadership actions), and who adapts well to the situation will likely be successful in teaching the team to play a strong offensive game.

As shown in Figure 7.1, three types of antecedents influence actual, required, and preferred leadership behaviour, and include athlete, situation, and coach characteristics. Examples of athletes' characteristics may include their needs, abilities, and circumstances. To illustrate, if players believe that their technical proficiency is lacking then they may prefer their leader to spend time coaching them in the basic skills of the sport. Examples of situational characteristics include organizational structure, culture, and the broader context. In some sporting competitions, for instance, there might be league regulations detailing the specific fair play standards that teams must adhere to, such as not showing disrespect to officials. As a result of these regulations, to be effective, coaches may have

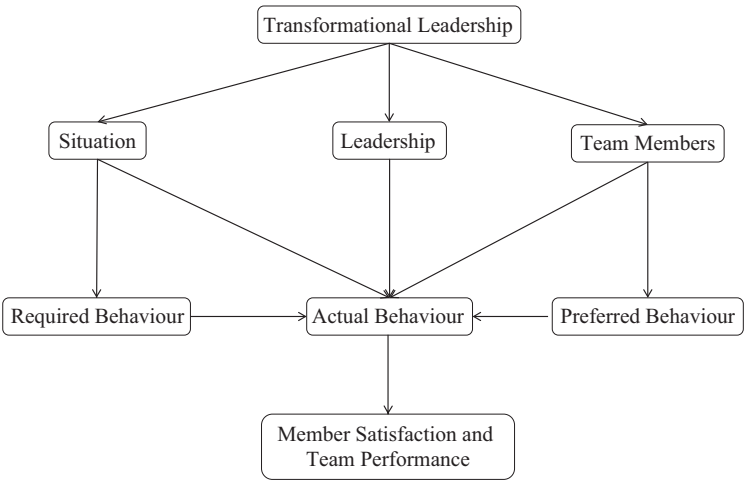

Figure 7.1 Chelladurai's multidimensional model of leadership

to know how to manage volatile players. Leaders' own characteristics are another type of antecedent influencing behaviour. A coach with high self-awareness, for example, and who knows her strengths and weaknesses will be able to draw on her self-knowledge when selecting support staff to ensure that the necessary coaching skills are available to the players.

Included in the multidimensional model is the notion of transformational leadership, as illustrated in Figure 7.1 (Chelladurai & Kerwin, 2018). In the context of the model, a **transformational leader** influences the aspirations and attitudes of players and subordinate leaders. Transformational leadership is discussed in the next section, but according to the multidimensional model, these types of leaders modify situational and athlete characteristics by altering goals, values, and norms; by providing a vision; and by instilling confidence in athletes. Nonetheless, although transformational leaders may be highly effective, coaches do not have to be so inspirational for a team to do well. Individuals who are not transformational can still be effective leaders if their behaviours, according to the multidimensional model, fit the situation and meet the needs of the athletes involved.

TRANSFORMATIONAL LEADERSHIP

Some leaders, coaches, and managers in sport seem to inspire athletes to reach high levels of performance and achieve beyond expectations. Examples include Alex Ferguson (soccer), Phil Jackson (basketball), and Vince Lombardi (American football). Transformational leadership theory helps us to understand why these individuals are effective. Transformational leaders are charismatic individuals who inspire followers to extraordinary outcomes (Bass & Riggio, 2006). These coaches also empower players to become leaders themselves, and align the team's goals with individual athletes' aspirations. The following four components explain why these people influence others so dramatically:

- *Idealized influence*: Transformational leaders are admired, respected, and trusted. Group members identify with transformational leaders, treat them as role models, want to emulate them, and endow them with extraordinary attributes (e.g. persistence, determination, and skills). Further, these leaders take risks, are consistent in their decision-making and behaviour, and have high moral standards.
- *Inspirational motivation*: These leaders inspire and arouse followers by providing meaningful goals and high but realistic challenges. They communicate enthusiasm, optimism, and clear expectations. These people also encourage and build team spirit and identity.
- *Intellectual stimulation*: Transformational leaders enhance group members' efforts to be creative and innovative by questioning current beliefs and procedures, reframing issues and difficulties, and viewing existing situations from new perspectives. Such leaders do not dish out public criticism but encourage group members to explore new ideas and novel problem-solving strategies. Team members are included in attempts to address problems and search for solutions.
- *Individualized consideration*: Leaders act as mentors and focus on individual group members' needs for growth and achievement. They provide learning opportunities within supportive contexts. Tasks are delegated to help group members develop. Such leaders recognize and accept differences among group members.

They encourage two-way communication and personalize interactions with followers.

Considerable research has explored transformational leadership in various domains such as business, education, health, and, more recently, sport. This leadership style relates positively to objective and subjective performance across these areas, and this includes sport (Arthur et al., 2017). In addition, positive relationships exist between transformational leadership and leadership effectiveness, team members' job satisfaction, leadership satisfaction, and players' motivation (Bass & Riggio, 2006). Further, investigators have examined the reasons why transformational leadership is associated with performance. For example, transformational leaders may enhance group members' self-efficacy or intrinsic motivation, which in turn increases persistence and performance. As a second example, these leaders inspire members to identify with them and emulate their achievements, again leading to increased effort and performance. As a third example, through aligning organizational objectives with group members' individual goals, transformational leaders focus team efforts in a coordinated fashion, thereby enhancing productivity.

COACH–ATHLETE RELATIONSHIP

In many athletic settings, coaches are the primary leaders and they have a significant influence on athletes' performance and satisfaction. Coaches who build good relationships with players find athletes are more receptive to their ideas. According to Jowett (2017), strong coach–athlete relationships have four features:

- *Closeness*: There is an emotional bond between the parties that includes trust, care, and support.
- *Commitment*: Coaches and athletes desire to maintain their relationship both now and in the future.
- *Complementarity*: Athletes and coaches cooperate and feel affiliated to each other.
- *Co-orientation*: Coaches and athletes share common ground and congruence in their relationship perceptions.

The coach–athlete relationship is like "glue" that binds a team together. Further, strong coach–athlete relationships are associated with performance; team cohesion; role clarity; athlete satisfaction; and motivational climates emphasizing skill learning, player improvement, and prosocial values.

Coaches and athletes can develop their relationships in several ways. For example, to enhance closeness, they can identify reasons to trust, respect, and appreciate each other. They can treat each other consistently and fairly. And coaches and athletes can be empathetic and supportive towards one another. To enhance commitment, both individuals can form a shared understanding of their goals, roles, values, and reasons for being in partnership. It also helps if individuals get to know each other on a personal level and they adopt an open and genuine stance towards one another. Getting to know each other on a personal level helps coaches and athletes learn how best to express their trust, respect, and concern for the other individual. Some athletes, for example, might respond well to caring words or even a hug, whereas others may respond to pragmatic attempts to demonstrate concern (e.g., making a person a cup of tea to create time so the individual has the opportunity to talk).

HELPING THE HYPERION ANGELS: TEAM-BUILDING INTERVENTIONS

Managers and coaches use team-building interventions for lots of reasons, such as to improve cohesion, performance, training, player commitment, and interpersonal relationships. Team-building exercises range from one-off events (e.g., social gatherings and team-building camps) to regular activities that are integrated into a group's typical behaviours (e.g., performance review sessions). Sport psychology practitioners have shown that team-building activities can improve team performance and player cognitions (Martin et al., 2009). To be helpful, however, sporting leaders need to use team-building strategies with judicial thought and planning. For example, these interventions work better if they are long-lasting (e.g., at least two weeks) rather than one-off events. Further, the most effective interventions are based around goal setting and adventure sports (Martin et al., 2009). Regarding the Hyperion Angels, Lindsay's suggestion above to throw a barbecue may seem like a good idea

but as an unstructured, one-off event it may not be as effective as other solutions. Simply spending time together is not likely to solve team conflict.

Team-building interventions enhance performance when they encourage teamwork (Beauchamp et al., 2017). Teamwork occurs when players collaborate to carry out the tasks needed for the team to achieve its goals. More specifically, effective team-building interventions focus on (a) regulating team performance and (b) maintaining a group's interpersonal dynamics or team maintenance (McEwan & Beauchamp, 2014). Teams regulate their performances when players focus on the actions allowing them to achieve their shared objectives and goals. Team maintenance involves handling conflict and providing players with psychological or social support.

PLANNING AND USING INTERVENTIONS

A straightforward approach to team-building interventions includes (a) setting objectives, (b) identifying strategies to achieve the objectives, and (c) evaluating if the interventions work (Carron & Eys, 2012). The initial phase in developing effective interventions involves identifying the goals and reasons for engaging in team-building activities. It is helpful to establish the goals because team-building interventions involve time, effort, and money. Leaders and teams need to be confident that the likely benefits outweigh the costs. To illustrate, Liam might review the four dimensions associated with cohesion (integration–task, integration–social, attraction–task, and attraction–social) and decide which ones need the most development in his team. Identifying which aspects of cohesion need development will help him select suitable interventions. He might, for example, want to develop good team processes, structures, roles, and norms. To achieve these aims, Liam can use goal setting principles to develop clear, specific, and measurable objectives. The level of goal setting and planning varies depending on the team's needs and situation. Professional teams will likely have more money, time, and personnel to focus on these outcomes compared with Liam, as the player/coach of an amateur squad.

Having established the objectives, the next phase is to identify the strategies best suited to achieving the aims, given the athletes and the situation. Strategies do not have to be activities on top of normal

team procedures. Instead, they can be part of the normal day-to-day life of the team, such as ensuring that good communication occurs, that players meet regularly, and that there are opportunities for players to discuss issues. With respect to the Hyperion Angels, Liam can achieve a great deal without the need for separate, unusual, or expensive activities.

Nevertheless, Liam might decide that an additional strategy or event will be useful, and he may consider asking an outside consultant to help. There are many sport psychology practitioners, managerial consultants, and other individuals advertising their expertise in group development. It is in Liam's interests, however, to reflect on the likely benefits of employing an outside individual to run a one-off event. One comment that the athletes in the Angels may make about one-off team-building activities is that they do not observe lasting changes. Instead, the ideas, decisions, or cohesive spirit that was generated are forgotten as the team returns to its normal activities, and as personnel and circumstances change. Identifying ways to review and maintain progress when developing objectives and strategies will help Liam to carry forward momentum gained from the initial activities.

EXAMPLE TEAM-BUILDING STRATEGIES

There are some variables that influence team performance or cohesion that Liam may be unable to control because the Hyperion Angels are an amateur team. Although it may be desirable to limit player turnover or team size, most probably Liam, like most coaches, will not have unrestricted freedom to manage these factors. Liam, for example, may simply have to accept that Cordelia has left and been replaced by Faith. Nevertheless, there are strategies that Liam will be able to implement, which may include the following:

- *Setting group goals*. Developing team goals will help the Angels' members to develop a common understanding of their team's purpose and activities. Similar to goal setting on an individual athlete basis, helping the Angels to develop group objectives may enhance their focus, motivation, persistence, problem solving, and identification of achievement strategies. Chapter 8 discusses goal setting in greater detail. Although group goal setting

helps ensure players are harmonizing their efforts, the team will benefit from engaging in debate and critical reflection. The absence of debate might indicate the presence of the **groupthink** phenomenon. Groupthink reflects a type of interaction characterized by attempts to minimize conflict and obtain a consensus without testing and evaluating ideas (Janis, 1991). The group may make irrational decisions or fail to accurately understand their position in the broader context. Groupthink may occur in groups that do not have interaction with outsiders or do not have clear rules for decision-making, and where the people involved have similar backgrounds.

- *Establishing role clarity and acceptance*. Team goal setting might also contribute to enhanced role clarity and acceptance. The Angels' teamwork and performance will probably improve when the players understand what their own and teammates' roles are within the squad and how they and others can fulfil their obligations. Some roles in the Angels are likely to be more desirable than others, such as starters versus non-starters. A challenge for Liam is to help people in each role to accept their position and appreciate the contribution they are making.
- *Creating common norms and values*. The goal setting process might also provide an opportunity to discuss team norms and values. Teamwork improves when players ascribe to similar beliefs and ways of behaving. In this regard, the team may benefit from Liam helping Faith to control her fiery temper if the squad values its reputation for high standards of fair play. Leaders who invite players to identify and police team norms, values, and ground rules encourage them to take ownership and have an active part in the maintenance of a team's daily activities.
- *Communicating effectively*. Open, supportive, empathetic, and clear communication helps to prevent and resolve issues and conflicts. Such communication also leads to people feeling they have been heard and are valued members of a team. One advantage of a barbecue or other social events where people relax is that team members learn about each other, including the ways they typically express themselves and communicate. Getting to know each other on a personal level may assist the quality of team communication during training and competition.

- *Developing identity and distinctiveness*. Identifying events, symbols, articles of clothing, history, etc. that promote a sense of identity, belongingness, and distinctiveness among the Angels may help players to feel they are part of a valued group or help develop a sense of cohesion among the members. The use of a training or dress uniform, for example, may help them look and feel like a team. Some coaches have observed that training intensity increases when players are in similar clothes and that they behave like a team when in dress uniform. As another example, drawing on a shared history, such as a cultural or community background, may also enhance identity and distinctiveness.

CONCLUSION

Practitioners often define sport psychology as the study of an athlete's behaviour, thoughts, and feelings in sport. Such a definition directs the focus to the individual level and can seemingly ignore the environment. Athletes, however, operate in social and physical contexts that influence their actions. The study of group dynamics helps sport psychology practitioners to consider the immediate social sport environment within which athletes perform, adding complexity to the discipline. A complete examination of the group dynamics in sport would require its own textbook. Instead of covering everything, I have highlighted some of the relevant aspects related to the athlete's immediate social environment. These aspects reveal that groups have a considerable influence on athlete behaviour and performance. There is much that leaders can do at the group level to help athletes and enhance their performance. The next two chapters continue with the applied theme, first by examining typical methods that sport psychology practitioners employ to help athletes with their psychological skills, and then strategies that can assist with physical skills development.

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8

PSYCHOLOGICAL SKILLS TRAINING

CHAPTER LEARNING OBJECTIVES

1 Overview psychological skills training
2 Identify psychological characteristics related to sport performance
3 Examine methods athletes can use to enhance their psychological characteristics
4 Describe how sport psychology practitioners often help athletes
5 Detail characteristics of effective sport psychology practitioners

One game into the playing schedule, Coach Taylor had to promote Matt to starting quarterback because of a season-ending injury to the first-string player. Although Matt worked hard in training, and was committed to the team, Coach thought he was easily distracted during games, typically got anxious, and could be hesitant when making decisions. Despite these behaviours, Coach had kept Matt on the team for the last three seasons because he was highly skilled and had great physical prowess for the sport. According to Coach Taylor, Matt had won several games for the team over the last three years when he had "put it together and forgot about himself". Coach Taylor, however, found that his attempts to help Matt produced inconsistent results and he decided to find out if a sport psychology practitioner could help. He did not know any psychology practitioners, so he asked the assistant coaches for suggestions. One of the defensive coaches mentioned Tammy, a local licensed psychologist who had helped one of the players when he had not been recovering well from injury. The player had found Tammy to be a huge help. Coach Taylor did not understand psychology and

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thought it sounded a bit like mumbo jumbo, but he wanted to help Matt and was keen to try anything. As always, Matt willingly agreed to Coach Taylor's idea and booked an appointment to see Tammy.

Experienced sport psychology practitioners will recognize the situation above, and they are often asked to help athletes who are having difficulties. Athletes, however, do not need to wait until they are having difficulties to approach practitioners. They can seek out practitioners at other times, such as when they are playing well and want to get better. In this chapter I discuss ways sport psychology practitioners typically help athletes with performance enhancement and I share some of the methods they use with sports people. Athletes and coaches also ask practitioners for help with difficulties that seem unrelated to performance or sport, such as career counselling, gambling abuse, or mental health issues. Although the methods in this chapter help athletes with performance enhancement, they can also assist players with non-performance issues. Examples include eating disorders, substance abuse, and relationship breakdowns. When using the methods for non-performance issues, however, practitioners typically need additional knowledge and skills if they are to aid individuals with these challenges. If practitioners do not have the appropriate knowledge and skills then they are ethically obliged to refer clients to suitably trained professionals (e.g., clinical psychologists).

The divide between performance and non-performance issues, however, is often murky. Problems stemming from outside of sport may interfere with performance; for example, when athletes respond to bereavement with feelings of depression, they may be unmotivated to play sport. Also, performance issues may have rippling effects beyond sport. Dependence on performance enhancing drugs, for example, may lead to health, relationship, social, and occupational difficulties. Fortunately, the majority of performance-related issues that athletes and coaches bring to sport psychology practitioners can be helped by the methods detailed in this chapter. These methods are often grouped together under the label of psychological skills training. In this chapter I will describe (a) what psychological skills training involves, (b) the psychological characteristics related to optimal sports performance, (c) the methods athletes can use to develop their mental game, (d) how sport psychology practitioners typically help athletes enhance their

performance, and (e) suggestions to assist athletes in identifying sport psychology practitioners who are likely to be effective in aiding them with their needs and situations.

PSYCHOLOGICAL SKILLS TRAINING

Psychological skills training focuses on teaching athletes strategies to help them develop mental characteristics associated with enhanced performance. A key aspect of these training programmes is the use of psychological methods for the purpose of developing athletes' psychological characteristics (Tod et al., 2020). An analogy can be drawn with physical training. Endurance is a physical attribute that contributes to superior performance in many aerobic-based sports, and long-distance running is a common method used to build athletes' stamina. Similarly, some athletes have motivation difficulties because they cannot find meaning in their sports or see a clear path to follow that will lead them towards their dreams. Goal setting is a psychological method that sometimes helps these athletes channel their motivation, a psychological characteristic, in a useful direction. Figure 8.1 illustrates common psychological characteristics and methods written about in sport psychology. The figure also shows that psychological factors are one of several influences on performance, along with other physical and social aspects.

Figure 8.1 shows that psychological characteristics, along with physical attributes and social interactions, contribute to the Ideal Performance State, or that condition of readiness involving both mental and physical components that allows athletes to perform to their best. From a psychological viewpoint the Ideal Performance State consists of having the mindset that allows athletes to be focused, confident, and sufficiently energized to execute the physical skills they have spent hours, weeks, months, or even years perfecting. The Ideal Performance State encompasses a balanced blend of physical, psychological, and interpersonal attributes, and each characteristic is necessary, but insufficient on its own, for optimal performance. In the case study above, Matt seems like an athlete who has the physical qualities needed to perform well and a good relationship with the coach, but would likely benefit from acquiring some psychological characteristics, such as confidence and concentration.

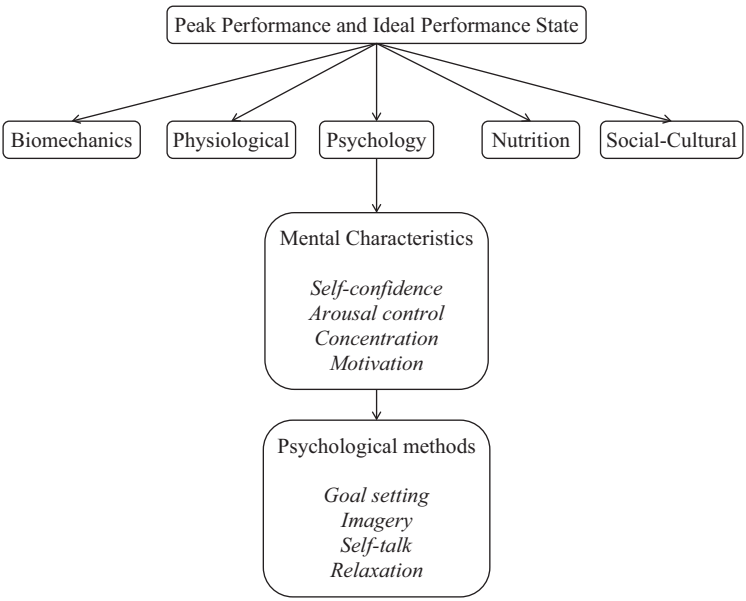

Figure 8.1 Factors that influence performance

Sport psychology practitioners have largely borrowed the psychological methods they use from the cognitive behavioural therapy approach to counselling psychology (Gustafsson & Lundqvist, 2020). One key idea in cognitive behavioural therapy is that people's beliefs and perceptions influence the way they respond to events in their lives. If people change their beliefs, they can alter the way they react to things that happen to them. Another key idea in cognitive behavioural therapy is that thoughts, feelings, behaviour, and situations influence each other, as Chapter 5 illustrated when discussing self-efficacy. Self-efficacy influences performance, a behaviour. In turn, performance (labelled as a mastery accomplishment) is a source of self-efficacy. Coaches and athletes typically share beliefs that are similar to the key ideas in cognitive behavioural therapy: the way individuals think and feel affects their training and performance. Also, the way that athletes perform in competition and training can shape their thoughts and feelings (e.g., raise or

dampen their self-beliefs, anxieties, and motivations). In cognitive behavioural therapy, psychologists use psychological methods to help clients modify their perceptions, beliefs, emotions, and behaviours so they can resolve and manage their issues. Similarly, the methods sport psychology practitioners use help athletes modify their perceptions, states, feelings, and beliefs so they can enhance their training and performance.

TYPICAL PSYCHOLOGICAL CHARACTERISTICS RELATED TO SPORT PERFORMANCE

In Figure 8.1, peak performance refers to the occurrence of superior functioning that involves the display of skills and abilities above the athlete's normal levels of play and often results in new personal bests (Krane & Williams, 2015). When examining the attributes of peak performance, sport psychology practitioners have (a) asked people to describe their best sporting performances, (b) compared successful and unsuccessful athletes on their psychological characteristics, and (c) explored how mental qualities differ between individuals' good and bad performances. Across these studies, common psychological characteristics have emerged and these are listed in Table 8.1. Sport psychology practitioners have also explored the psychological characteristics associated with poor performance and they have found that these attributes are largely the opposite of those in Table 8.1, including when athletes have self-doubts, act differently to normal, focus on irrelevant information, over-emphasize factors outside of their control, become over or under aroused, or interpret situations as threatening (and become anxious). Knowing the psychological characteristics related to performance guides

Table 8.1 Psychological characteristics associated with enhanced athletic performance (Krane & Williams, 2015)

High self-confidence, expectations of success, and beliefs of being in control
Self-regulation of arousal
Total concentration and focus on the present task
Viewing difficult situations as exciting and challenging
Having high but flexible standards
Positive thought about performance
Strong determination and commitment

practitioners on how they can help athletes. For example, if athletes are having difficulty focusing on the present, then sport psychology practitioners can teach clients methods to help them concentrate on the task at hand. Figure 8.1 lists some of these methods (e.g., goal setting, imagery, self-talk, relaxation training, and mindfulness).

TYPICAL METHODS USED TO ENHANCE PSYCHOLOGICAL CHARACTERISTICS

The methods Figure 8.1 lists can help athletes enhance the psychological attributes allied with peak performance and the ideal performance state. There are more methods available than just those listed in Figure 8.1, but those mentioned are ones athletes commonly use and for which there is some evidence that they can enhance skill execution. These strategies can also help boost other non-psychological characteristics associated with superior functioning. For example, goal setting and imagery can enhance muscular strength (Paravlic et al., 2018; Tod et al., 2015).

Although psychological methods help athletes, they do not compensate for poor physical training, inadequate technique, or unsuitable dietary practices. Instead, optimal performance occurs when the different psychological, physiological, and social factors work together. Goal setting is a good example because it helps individuals maximize their physical training. In the absence of training, goal setting does not improve physical conditioning. Without effective goal setting, athletes may not maximize their physical training gains. Together, effective goal setting and optimal training allows athletes to reach their potential. In the following sections I describe goal setting, along with other common methods athletes can use to enhance their performance and psychological readiness for competition.

GOAL SETTING

WHAT IS GOAL SETTING?

Goal setting involves athletes (a) identifying what they want to achieve, (b) planning how they will attain these aims, (c) setting target dates for their goals, (d) working towards their objectives, and (e) reviewing their progress. Many athletes have goals but do

not engage in goal setting. Some of these individuals may achieve their objectives for reasons other than goal setting, such as inherited abilities or good coaching. Goal setting, however, assists athletes in planning a series of steps to help them work towards their dreams in a methodical and proactive manner.

WHY DOES GOAL SETTING HELP ATHLETES?

Locke and Latham's (2020) well-respected theory explains why goal setting helps people achieve their goals. First, goals direct people's attention towards relevant activities that allow them to secure their objectives (i.e., they do the right things, at the right time). Second, goal setting stimulates effort and motivation because people have a clear idea of what they have to do and what they want to achieve (i.e., they work hard). Third, goals inspire athletes to persist, especially when they strike obstacles (i.e., they keep going till they make it). Fourth, goals encourage athletes to solve problems and create new ways of overcoming obstacles so that they can achieve their objectives (i.e., they work out what needs to be done).

HOW MIGHT ATHLETES USE GOAL SETTING?

Table 8.2 presents a series of stages that help athletes and coaches use goal setting. The stages assist athletes to plan what they want, start

Table 8.2 A goal-setting framework for athletes

Stage 1: Determine athletes' long-term aims For example, being selected for a particular team, going to the Olympics, having fun
Stage 2: Identify the specific attributes needed to attain the long-term goal For example, physical, psychological, social, or other attributes
Stage 3: Detail a plan for achieving the long- and short-term goals Develop a programme for achieving the goals, being as specific as possible. Also, identify barriers to goal achievement and develop strategies to overcome them
Stage 4: Implement the plan The only way to know if it works is to try it!
Stage 5: Regularly review progress Initial planning may not result in the optimal programme, but regular evaluation may help make the programme more effective

working towards their desires, and review and adjust their attempts to reach their targets. When proceeding through the stages, athletes can enhance the effectiveness of their goals by observing the following suggestions.

- *Set difficult, specific, but achievable goals*. Increasing goal difficulty enhances performance until athletes reach the limits of their abilities or lose commitment to the target. Moderately difficult goals are associated with better performance compared with easy or unrealistic objectives. Also, specific goals ("increase jump height by 2 cms") lead to consistent performance compared with vague goals ("jump higher") because they stipulate a clear standard of achievement athletes need to reach. Together, specific, difficult, but realistic goals lead to greater and more consistent performance than vague, easy, or unrealistic targets (Locke & Latham, 2020).
- *Set different types of goals*. Having different types of goals is more helpful than having just one kind of objective. Athletes, for example, can set **outcome**, **performance**, and **process goals** (Filby et al., 1999). Outcome goals focus on the results of social comparison, such as the finishing order of a competition. Performance goals detail standards of achievement independent of other people, as illustrated when athletes strive to improve their personal best times in a race. Process goals describe behaviours that individuals will focus on during training and competition; for example, keeping the weight training bar close to the legs during a deadlift exercise. Outcome goals can have tremendous motivational value when they describe the reasons athletes play their sports ("I want to win an Olympic gold medal"). Performance and process goals provide a plan to ensure athletes work towards their dreams.
- *Set short- and long-term goals*. Long-term goals provide individuals with meaning and direction. Short-term goals break a long-term target into achievable steps. Using both long- and short-term targets is more helpful than using either on their own.
- *Develop goal achievement strategies*. Setting a goal on its own is not enough to say an athlete is doing goal setting. Instead, they also need to work out when and how they are going to achieve their goals. Developing goal achievement strategies focuses athletes' efforts towards useful actions and behaviours.

- *Find ways to ensure feedback.* In sport, athletes can often gain immediate unambiguous feedback about their performance (e.g., did a higher jumper clear the bar?). Methods that capitalize on available feedback improve goal-setting effectiveness and athletes' self-awareness. Individuals who understand themselves, their strengths, and their limits can set challenging yet realistic targets, and they can modify their achievement strategies so they are helpful.

Table 8.3 provides a goal-setting plan that a junior powerlifter followed prior to a competition. The plan illustrates long- and short-term goals, along with outcome, performance, and process goals. The lifter had kept training and competition records for the

Table 8.3 A novice powerlifter's training plan

Outcome goal:	To win club competition		
Performance goals:	Total 595 kg, 220 squat, 140 bench press, 235 deadlift		
Short-term training goals (kg × reps)			
Week	*Squat*	*Bench*	*Deadlift*
1	100 × 10	75 × 10	115 × 10
2	110 × 10	80 × 10	125 × 10
3	120 × 8	85 × 8	135 × 8
4	130 × 8	90 × 8	145 × 8
5	140 × 6	95 × 6	155 × 6
6	150 × 6	100 × 6	165 × 6
7	160 × 5	105 × 5	175 × 5
8	170 × 5	110 × 5	185 × 5
9	180 × 4	115 × 4	195 × 4
10	190 × 4	120 × 4	205 × 4
11	200 × 3	125 × 3	215 × 3
12	210 × 2	130 × 2	225 × 2
Competitive performance goals			
1st lift	210	130	215
2nd lift	215	137.5	225
3rd lift	220	140	235
Competitive process goals			
Squat	'Tight and explode'		
Bench press	'Drive the eyes'		
Deadlift	'Through the hips'		

previous three years, and was able to set specific and optimally challenging targets. The plan fitted on a single sheet of A4 paper and the athlete pinned it to his bedroom wall. Each day before and after training he reviewed the plan and made adjustments as needed, illustrating how he engaged in regular review.

The effectiveness of goal setting on enhancing performance, learning, and skill execution is one of the most robust findings in psychological science. Goal setting helps performers from all domains of life, including athletes and sport (Kyllo & Landers, 1995). The research on goal setting parallels the common belief that a clear idea of what your desires are, and how you can attain them, contributes to success in many achievement domains. Based on the scientific evidence, goal setting is a method that can help athletes and deserves its place as a common strategy sport psychology practitioners use with clients. Another common method is imagery.

IMAGERY

WHAT IS IMAGERY?

Imagery is a mental process involving multisensory experiences in the absence of actual perception. For example, weight trainers "see" a barbell above their heads even though they have no equipment. They "feel" the weight pushing down on their hands and the tension in their bodies. They might also "hear" their laboured breathing and their training partners yelling, encouraging them to keep going. Effective imagery includes each of the senses related to performance: visual, tactile, auditory, etc. Imagery is a popular area of research and much evidence shows it increases skill execution and learning (Simonsmeier et al., 2020). A combination of imagery and physical training leads to better skill execution than either one on their own. Further, experienced athletes gain more benefit than novice players, probably because they have a better understanding of the movement they are imagining (Moran, 2016).

WHY DOES IMAGERY HELP ATHLETES?

The most accepted explanation for why imagery works is the functional equivalence hypothesis (Jeannerod, 2006). Imagery shares

similar neural features with actual physical motor task preparation and execution. For example, the same brain areas are active when either imaging or physically performing a movement. Imagery allows athletes to prepare and plan a movement by accessing and refining the same neural pathways as when physically performing the movement.

HOW MIGHT ATHLETES USE IMAGERY?

The PETTLEP framework helps athletes create the type of images that will assist them in enhancing their skill execution and the psychological characteristics associated with optimal performance (Holmes & Collins, 2001). The PETTLEP framework suggests the following features enhance how helpful imagery is for athletes:

- *Physical*: Imagery is more effective if athletes replicate the movements and other physical aspects associated with their sporting skills. For example, they can move during imagery, hold equipment, wear competitive clothing, and act as if they were performing.
- *Environment:* Individuals can mimic the competitive environment as much as possible, perhaps even undertaking imagery at the actual competition location. If athletes cannot visit the location, they can use videos, photographs, and descriptions from others who have performed at the arena.
- *Task*: Focusing on the same things and employing the same senses athletes use during competition enhances functional equivalence. One particular sense is the **kinaesthetic sense** or the feeling of movement. Athletes often find that their movements feel grooved or "right" when performing well. Being able to recreate that grooved feeling during imagery may help enhance functional equivalence.
- *Timing*: Generally, imagery is most effective when athletes mentally rehearse the task at the same speed as they physically perform it, compared to when they visualize it faster or slower. Occasionally, however, changing imagery speed may be beneficial. Imaging movements slowly, for example, may allow athletes to analyze their technique. When slowing imagery down, however, athletes will want to maintain the rhythm of the movement to enhance effectiveness.

- *Learning*: As athletes learn a skill, they change the way they move and react to cues. For example, when first learning the bench press weightlifting exercise, athletes' movements are usually jerky, but their actions become smooth and efficient with practice. During periods of skill development, adjusting imagery content so it mirrors how athletes move and react may enhance the technique's effectiveness.
- *Emotion*: Effective imagery includes the feelings and arousal levels athletes experience when physically performing. Sometimes sport psychology practitioners recommend that sports people should relax when doing imagery. In most sporting situations, however, athletes do not wish to be overly relaxed, so combining imagery with relaxation might be best avoided unless there is a specific reason to pair them together.
- *Perspective*: Athletes can use **internal** or **external imagery**. During internal imagery, individuals visualize the task as they would if they were physically performing the task (much like the perspective people see when playing first-person video games). In external imagery, individuals visualize the task from a third-person perspective (similar to what people see when playing side scrolling video games or seeing themselves on television). Both perspectives can be helpful. Athletes will benefit most when using the perspective that matches their preferences and needs. For example, an internal perspective may be suitable for open-skilled sports where optimal performance depends on perception and reacting to environmental cues.

Athletes can use imagery for various reasons, such as practising techniques when unable to train, correcting mistakes, preparing for competition, enhancing self-confidence, and managing stress. The PETTLEP framework can assist athletes to create helpful images. Furthermore, sports participants can write and record imagery scripts (descriptions athletes use to guide an imagery session). Scripts consist of words, symbols, pictures, or video recordings. One weightlifter's script, for example, had a series of stick-figure diagrams she drew in black, along with red arrows she used to indicate the direction that different body parts had to move when she performed. The athlete painted the arrows red because she associated the colour with high arousal levels, and she wanted to be

highly activated when she performed. The stick figures helped the individual adopt an external perspective because she believed it allowed her to focus on correct technique during imagery.

Imagery is a popular technique among sport psychology practitioners and athletes, and the method reflects the principle that people frequently create things twice: first mentally and then physically. A clear mental image helps athletes plan and execute their sporting skills with greater success than when they do not have a picture in their minds. Imagery is like goal setting in pictures (and the other senses). Whereas imagery focuses on pictures and sensations, another common technique, self-talk, deals with the words that athletes say to themselves.

SELF-TALK

WHAT IS SELF-TALK?

Self-talk refers to statements, said out loud or quietly, that athletes address to themselves for a specific purpose, such as a sprinter who says "explode" at the start line (Hardy, 2006). Self-talk can be positive ("I can do well"), negative ("I will do poorly"), instructional ("lead with the nose"), or motivational ("success will be great"). Self-talk improves skill execution and learning across different athletes and sports. Pop psychology authors typically tell people to make their self-talk positive rather than negative. Although positive self-talk improves skill execution, it is not clear that negative self-talk always impedes performance (Tod et al., 2011). Some athletes use their negative self-statements to motivate themselves and may gain a performance benefit.

WHY DOES SELF-TALK HELP ATHLETES?

There are four possible ways that self-talk might assist athletes with their performances (Hardy et al., 2009). Self-talk might help sports people (a) concentrate on relevant cues (i.e., think about the right things at the right time), (b) become more motivated and expend greater effort (i.e., try harder), (c) produce more efficient movement patterns, or (d) manage their emotions. The best current evidence is that self-talk enhances athletes' technique and concentration levels.

Most likely, however, there is no single reason why self-talk works, but rather it is a combination of the four reasons above (Tod et al., 2011).

HOW MIGHT ATHLETES USE SELF-TALK?

Similar to the other psychological methods in this chapter, athletes benefit the most from self-talk if they have a clear purpose for using it. One rugby player, for example, used the phrase "dominate my channel" at every defensive scrum to focus on his task of stopping any opposition attack that came down his side of the field. Typical reasons for which athletes use self-talk include learning and ensuring good technique, mentally preparing for competition, and enhancing psychological characteristics associated with good performance (e.g., self-confidence, motivation, and concentration).

Landin (1994) provided guidelines for developing self-talk statements that are suitable for athletes to use during competition.

- Keep phrases short, perhaps just one or two words
- Use words associated with the task
- Ensure athletes believe the information contained within the self-talk is meaningful
- Use words that direct athletes' attention to relevant aspects of the movement. For example, athletes often perform better when they have an external focus of attention compared to an internal focus of attention (Wulf, 2013). To illustrate, golfers might focus on the ball rather than the mechanics of their swing when putting
- Consider athletes' skill level and familiarity with the task. Simple instructional self-talk may be suitable for novices, whereas motivational words might be suited to well-trained athletes

Athletes may gain the most benefit from self-talk when they include it as part of their **pre-performance**, performance, and coping routines, and they use it regularly in a structured fashion. The rugby union player above provides an example of self-talk being incorporated in a routine fashion. As another example, a golfer found it useful to identify something she did well after every shot, so that when she had a terrible stroke, she was in the habit of looking

for something positive. The positive self-talk cues helped her stay upbeat and avoid becoming frustrated or angry when her playing faltered. Frequently, athletes make mistakes or execute skills poorly and self-talk helps them to adjust and stay focused. For example, after a cricket batter was hit in the chest by the ball, she used the phrase "nose in line" as the bowler delivered the next ball, so she could stay focused on the present rather than thinking about having just been hit. Self-talk can also help athletes manage stress, anxiety, and arousal levels. Although athletes sometimes need to increase their arousal, more commonly they benefit from reducing activation levels, and sport psychology practitioners can teach players how to relax.

RELAXATION TECHNIQUES

WHAT ARE RELAXATION TECHNIQUES?

Relaxation techniques assist athletes in reducing their physical and cognitive arousal to those levels needed for optimal performance. Relaxation techniques can be classified into three broad categories. Physical techniques reduce physical arousal or somatic anxiety. Mental techniques lower cognitive anxiety or arousal. Multimodal relaxation strategies strive to lower both mental and physical arousal.

- Two example physical relaxation techniques include biofeedback (see Chapter 2) and progressive relaxation training that involves tensing and relaxing each body part (lower leg, upper legs, buttocks, etc.). See Box 8.1 for a sample outline of progressive relaxation training (Bump, 1989).
- An example cognitive relaxation technique is meditation and involves individuals clearing their minds by focusing on a mantra or a single thought. Self-talk and imagery can also reduce cognitive anxiety. Another example is mindfulness, discussed in the next section.
- Multimodal relaxation strategies help athletes lower physical arousal, reduce cognitive anxiety, and learn skills to cope with stressful circumstances. An example of a multimodal strategy is stress inoculation training during which people acquire and rehearse skills they then use in stressful situations (Meichenbaum, 2017).

BOX 8.1 PROGRESSIVE RELAXATION TRAINING (ADAPTED FROM BUMP, 1989)

This physical relaxation exercise draws on the overshoot principle to help a person relax. Try this brief experiment: (a) notice how your left arm feels, (b) contract your muscles and squeeze your arm for 5 seconds, and (c) release your contraction. Now notice again how your arm feels. Most people find that their left arms feel a little less tense. The overshoot principle suggests that after contracting, a muscle will reduce its tension level to one that is lower than the level it had been before it contracted. This principle is the basis for progressive relaxation training.

In progressive relaxation training, athletes can divide the body into muscle groups, such as those presented in Table 8.4. People usually start with the 16 muscle group version, but as they become proficient, they can combine body areas and reduce the number of muscle groups until they can relax the entire body. At this point, athletes can start integrating full body relaxation into their sport, beginning with training before using the technique in competition. Athletes who engage in a full schedule of progressive relaxation training might proceed daily according to the following four phases, moving to the next one at their own pace:

- Engage in the 16 muscle group version for about 7–10 days
- Engage in the 7 muscle group version for about 7–10 days
- Engage in the 4 muscle group version for about 7–10 days
- Engage in full body relaxation for about 7–10 days
- Begin integrating full body relaxation into training and competition

When engaging in a progressive relaxation training session, athletes might initially adhere to the following guidelines:

- Find a comfortable quiet area
- Lie down and stretch out completely. Avoid crossing arms and legs and use a cushion if you wish.

- After relaxing a muscle group avoid moving those body parts
- Tense a muscle group for 5 seconds and then relax for 30 seconds, repeat
- When releasing tension, do so completely. Doing so helps distinguish between a tense and a relaxed state
- Concentrate on the sensations of relaxation

Once athletes have moved through the phases, they can continue to use them for different purposes. For example, they might use the 16 muscle group version to help them sleep at night. They can use the full body version at specific moments during their sport, such as prior to the serve in tennis or on the start line in running.

Table 8.4 Progressive relaxation training muscle groups (Bump, 1989)

16 groups	***7 groups***	***4 groups***	***1 group***
Dominant hand and forearm	Dominant arm	Arms and hands	Full body
Dominant biceps	Non-dominant arm	Face and neck	
Non-dominant hand and forearm	Face	Chest, back, shoulders, and abdomen	
Non-dominant biceps	Neck	Legs and feet	
Forehead	Chest, back, shoulders, and abdomen		
Face	Dominant leg and foot		
Jaw	Non-dominant leg and foot		
Neck			
Chest, back, and shoulders			
Abdomen			
Dominant buttocks and thigh			
Dominant calf			
Dominant foot			
Non-dominant buttocks and thigh			
Non-dominant calf			
Non-dominant foot			

Generally, relaxation techniques are not so clear cut in their effects and do not reduce anxiety in just either the body or the mind. Instead, the mind and the body are interconnected and most relaxation methods lead to reduced anxiety in both.

WHY MIGHT RELAXATION TECHNIQUES HELP ATHLETES?

Chapter 4 discussed reasons why too much physiological and cognitive arousal impairs performance. Increased muscle tension interferes with movement coordination, and heightened cognitive arousal leads to attention narrowing and a shift from relevant to irrelevant cues (i.e., athletes miss cues they need to notice and focus on unhelpful details). Relaxation techniques help athletes concentrate and regain movement control. With relaxation training, individuals find their coordination improves and they can focus again on the cues pertinent to their sports.

HOW MIGHT ATHLETES USE RELAXATION TECHNIQUES?

Athletes benefit from learning multiple relaxation strategies because the various techniques suit different situations. Techniques, for example, that help individuals attain deep relaxation often take several minutes or more to implement. These techniques are useful the night before a game or as part of the build-up to an event but are generally not practical or helpful during competition. Methods that are quick to implement help athletes during a competition but usually do not allow individuals to relax as much as the longer techniques. Normally, however, athletes do not want to relax too deeply during an event. Sports participants who are proficient in multiple techniques can select methods that are suitable for the situations they encounter.

Centring is a relaxation technique that takes 2–3 seconds to implement and can be used during competitive events. When centring, athletes control their breathing and use key phrases to clear their thoughts. The following script is an illustrative exercise:

- Stand with your feet shoulder-width apart, arms by your sides, and your head up
- Hold your upper body erect
- Breathe in, lift your shoulders, and expand your chest and stomach. Feel the tension rise in your upper body

- Hold your breath for 1–2 seconds
- Breathe out, letting your shoulders, chest, and stomach return to their normal position
- Say to yourself "relax" and notice the tension drop away into the floor

Athletes can practice centring throughout their daily lives until they are able to reduce their arousal and clear their thoughts. As they become accustomed to centring, they can use it in training and competition. One way to implement centring is to find specific moments in an event where it would help, such as at the basketball free throw line, prior to release in archery, or just before a penalty in many team sports.

MINDFULNESS

WHAT IS MINDFULNESS?

In recent years, mindfulness has become a popular intervention in many areas of applied psychology, including sport, as well as other counselling and self-help domains. Mindfulness is not new – its history stretches back thousands of years (Andersen & Williams, 2020). What is new, however, is that sport psychology practitioners have attempted to tailor mindfulness to help athletes. Mindfulness refers to paying attention to what is happening in the current moment, on purpose and without judgement (Andersen & Williams, 2020). To help athletes make sense of mindfulness, it is useful to differentiate between a mindfulness disposition and mindfulness practices. Dispositional mindfulness refers to individuals' tendencies to be mindful in whatever situation they find themselves, whereas mindfulness practices cover the methods people use to develop their mindfulness abilities (Birrer et al., 2012). In light of Figure 8.1, dispositional mindfulness is a psychological skill or attribute that can influence performance. Mindfulness practices or techniques are psychological methods athletes use to enhance their dispositional mindfulness.

WHY DOES MINDFULNESS HELP ATHLETES?

Some evidence exists that mindfulness can enhance sports performance, although sport psychology practitioners need to conduct much more research before they accumulate a substantial body

of knowledge about the topic (Andersen & Williams, 2020). The initial studies with athletes, for example, indicate that mindfulness practice can improve (a) dispositional mindfulness; (b) physiological functioning, such as resting heart rate; (c) psychological states, including anxiety; and (d) sports performance, particularly in self-paced aiming sports, such as shooting (Bühlmayer et al., 2017). Just as mindfulness can help athletes with their performance and sporting issues, it can also assist them in many other areas of life, such as work, relationships, and mental health. Athletes are individuals, not only sportspeople, and just like other folks in society, they sometimes need assistance for many reasons, such as their wellbeing and mental health (Birrer et al., 2012). There is much evidence that mindfulness can help people with these issues, so athletes will gain many benefits from learning the technique, for both the sporting and non-sporting aspects of their lives.

In addition to knowing whether or not mindfulness aids athletes, sport psychology practitioners also need to know why it is helpful. Birrer et al. (2012) outlined a number of reasons why mindfulness might assist athletes. Again, however, sport psychology practitioners are still conducting the research needed to demonstrate mechanisms or the reasons why the technique might be effective for athletes. To illustrate, below are some of the possible reasons mindfulness practice might work (Birrer et al., 2012):

- *Improves attention and concentration*: Athletes may be able to stay focused on the task during performance, control their attention, and avoid being distracted by irrelevant cues, such as spectators or verbal comments from the opposition.
- *Enhances self-regulation*: Strong self-regulation allows athletes to cope positively with adversity and negative emotions, such as anger and fear. Self-regulation may also lead to persistence during difficulties and the overcoming of obstacles.
- *Enhances athletes' abilities to endure unpleasant experiences*: Athletes could persist during difficult or anxiety-provoking situations in competition, they may extend their pain threshold, and be willing to face aversive training situations.
- *Improves cognitive, emotional, and behavioural flexibility*: When athletes are flexible in their thoughts, feelings, and behaviours, they are able to adapt to changes in the environment and identify alternative ways of achieving goals.

HOW MIGHT ATHLETES USE MINDFULNESS?

Although practitioners have applied mindfulness principles to sport throughout the history of sport psychology, in recent times two formal intervention programmes have arisen in the discipline (Andersen & Williams, 2020): (a) the Mindfulness, Acceptance, and Commitment approach for sport performance (MAC; Gardner & Moore, 2007); and (b) the Mindful Sport Performance Enhancement programme (MSPE; Kaufman et al., 2009). Both MAC and MSPE help athletes learn about the benefits and methods of mindfulness practice, become competent at using the techniques and strategies, and apply the interventions to enhance sporting performance. These two packages are not the only mindfulness interventions sport psychology practitioners offer athletes. There are also several mindfulness exercises athletes can practise to develop dispositional mindfulness, and Box 8.2 provides an example focused

BOX 8.2 A WALKING MINDFULNESS EXERCISE (ADAPTED FROM BUMP, 1989)

Start by walking slowly around in a large circle. Focus all your attention to your feet (wait 10 seconds). Notice the sensations accompanying each step. You lift your foot (wait 5 seconds); you place it on the ground just in front of you (wait 5 seconds); you transfer your weight onto that foot (wait 5 seconds). Focus on the sensations of each phase: the lift (wait 5 seconds) ... the place (wait 5 seconds) ... the put (wait 5 seconds).

Walk slowly, completing one full step before starting the next. Become totally aware of the sensations of walking (wait 10 seconds): the lift (wait 5 seconds) ... the place (wait 5 seconds) ... the put (wait 5 seconds).

Close your eyes as you continue walking, focusing your attention on the feeling of walking. If your mind drifts, do not worry. Instead bring it back to the task of walking, observing the sensations of walking: the lift (wait 5 seconds) ... the place (wait 5 seconds) ... the put (wait 5 seconds). Lift (wait 5 seconds) ... place (wait 5 seconds) ... put (wait 5 seconds). Lift (wait 5 seconds) ... place (wait 5 seconds) ... put (wait 5 seconds). Lift (wait 5 seconds) ... place (wait 5 seconds) ... put (wait 5 seconds).

on walking (Bump, 1989). The aim of the exercise is to allow an athlete the opportunity to become observant, aware, and mindful of the act and sensations associated with walking. Although mindfulness has become a popular product for practitioners to sell to athletes, it is sobering to remember that the scientific evidence that it enhances sporting performance is not as strong as compared with other interventions, such as imagery and goal setting.

HOW PRACTITIONERS TYPICALLY DELIVER PSYCHOLOGICAL SKILLS TRAINING PROGRAMMES

Applied sport psychology involves practitioners assisting athletes to (a) examine their thoughts, feelings, behaviours, and circumstances, and (b) make changes to achieve goals, resolve issues, or tap unused opportunities. Ideally, practitioners guide the helping process and allow athletes to decide what, when, and how they want to change (Tod et al., 2020). To help athletes achieve these aims, practitioners often proceed through a series of steps (Tod et al., 2020):

- *Describe the athlete's current situation*: Practitioners help athletes to describe the problem situations they are in, or the opportunities they want to exploit. For example, a professional football player may have lost her contract and be unemployed. An adolescent golfer may wish to plan a route to becoming a professional player.
- *Detail the athlete's preferred situation*: Here, practitioners help athletes explain their ideal outcomes; how they want things to be different. The professional athlete probably wants another contract. The adolescent golfer may need to find out the standard of performance needed to make a living from golf.
- *Decide what the athlete needs to do to achieve the preferred outcomes*: Practitioners work with athletes to chart a plan for attaining their preferred outcomes. The footballer may identify strategies for contacting clubs and getting trial games to display her talent. The adolescent golfer may work with the practitioner to develop a goal-setting plan.
- *Determine how the athlete takes action*: Practitioners help athletes decide how to execute the plan. Effective applied sport psychology results in clients making changes to their behaviours,

thoughts, feelings, circumstances, or any combination of these. Part of this fourth step involves reviewing progress so athletes know if they making gains or if they need to revise and adjust their plans.

The above steps might take many sessions over an extended period of time, such as during the build-up to an international event or the Olympic Games. Alternatively, the steps may occur over 5–10 minutes, such as when practitioners help athletes control anxiety shortly before a sporting event. Practitioners may not always go through the four steps in an orderly fashion. For example, in the few minutes before a competitive event, when an athlete is having difficulty managing stress, practitioners may jump to the final two steps and offer advice.

Sport psychology practitioners vary in the ways they implement the above steps. For example, when helping athletes describe their current situations, practitioners may use any combination of questionnaires, interviews, behaviour observations, or physiological measurements. To illustrate, one practitioner walked around a golf course with a player during a practice round. Through talking with and observing the golfer, the practitioner helped the athlete identity her current psychological skill needs and a plan for seeking improvement.

When practitioners help athletes use psychological methods, such as goal setting or imagery, they often follow a three-step procedure (Martens, 1987). First, they introduce the method, such as explaining imagery so that athletes understand what it involves and why it is worth learning. Second, practitioners help athletes acquire the ability to use the technique. Third, practitioners assist athletes to integrate the method into their daily lives and sport. For example, athletes might use imagery in training and low-stress events before trying it out in high-pressure games.

Reviewing the effectiveness of a psychological method or intervention allows athletes to decide whether or not they want to continue using it. They might also decide to change or modify the method so it becomes even more helpful. To illustrate, a rugby union player who found imagery useful began having visualization sessions with a teammate with whom she needed a close relationship during games. The athlete found her level of play improved as

she and her teammate spent time walking around the field imaging how they would work together in game-specific situations.

Sport psychology practitioners who tailor psychological skills training programmes to athletes' needs and circumstances help clients attain optimal benefits. Standardized methods, designed to be "one-size-fits-all" interventions, usually only work for a small proportion of clients, and even then, they are generally only moderately helpful. Effective sport psychology practitioners shape methods to athletes' situations; they do not try and squeeze clients to fit the interventions.

THE CHARACTERISTICS OF EFFECTIVE PRACTITIONERS

Many applied sport psychology books and resources exist that athletes can read to learn about the psychological attributes and methods mentioned above. Some athletes find these materials helpful, although most people benefit from working with a sport psychology practitioner. Athletes, for example, do not always find it easy to apply information from a book to their specific sports or needs. Helpful sport psychology practitioners assist athletes to clarify their needs and use methods to get the maximum benefits. When working with athletes, effective practitioners have a range of knowledge, skills, and attributes that can be summed up in the question: "*Do You Know* what makes an effective practitioner?"

- The word *Do* refers to practitioners' abilities to help athletes find solutions to their challenges and issues. Sport psychology practitioners also know how to apply psychological methods and strategies in ways that suit athletes' specific situations. As another feature of *Do*, practitioners are able to create consulting relationships in which athletes feel comfortable and willing to share sensitive information about their challenges, wellbeing, and mental health. In short, effective practitioners know how to *Do* sport psychology.
- The term *You* highlights that practitioners' personal characteristics influence relationships with athletes, and these attributes include integrity, honesty, flexibility, and courage. For example, athletes are unlikely to share personal information with prac-

titioners who lack integrity, are dishonest, and behave unethically. If athletes do not share the relevant personal information, then practitioners may be unable to help.

- The word *Know* refers to the psychological, sport-specific, and contextual knowledge practitioners need so they can assist clients. Having a command of sport psychology theory, methods, and interventions is necessary but insufficient for practitioners to help athletes. Sport psychology practitioners also need to understand the sport and the context in which athletes operate. Understanding the sport and the context helps practitioners use psychological methods in suitable ways. For example, athletes come from different cultural and ethnic backgrounds. People from different cultural and religious backgrounds may respond in various ways to psychological help. Sport psychology practitioners frequently need to adapt their interventions so they fit with the athlete's culture, ethnicity, and religious beliefs (Hanrahan & Lee, 2020).

When athletes are looking for a sport psychology practitioner to work with, they can ask the following questions to allow them to select a suitable person.

- *Is the person qualified?* Knowing that a practitioner has professional recognition gives athletes some assurance that the person has the necessary technical competencies to deliver sport psychology services. Examples include being a Certified Mental Performance Consultant with the Association for the Advancement of Sport Psychology in the USA or being a registered sport and exercise psychologist with the Health and Care Professions Council in the UK.
- *How does the person work with clients?* Sport psychology practitioners who explain clearly how they work with athletes, and who provide examples to illustrate their answers, demonstrate an ability to apply psychological methods in practical and effective ways. Practitioners unable to explain how they work in a clear, straightforward manner may not have a reliable or effective way of helping athletes.
- *Does the person have strong interpersonal skills?* Helpful practitioners have solid communication and counselling skills. They are empathetic and care about their clients. Athletes can ask them-

selves if they "click" with and trust the person. It may take more than one session to establish such an interpersonal bond, but if after several sessions mutual trust and respect are not developing, then service delivery outcomes may be compromised.

- *Does the individual care about me and have my best interests at heart?* Effective applied sport psychology is client-centred. Caring practitioners focus on helping athletes attain their goals and needs. Practitioners who take the time to listen and who acknowledge that clients are experts in their own lives and sports are demonstrating empathy, positive regard, and an interest in the athletes and their welfare.
- *Has the practitioner discussed ethical considerations?* Diligent practitioners recognize that ethical principles and humane behaviour are foundation stones on which applied sport psychology rests. They take principles such as honesty, integrity, and client confidentiality seriously. Athletes will benefit, and avoid potential problems, by avoiding sport psychology practitioners who are dishonest and lack integrity.

When practitioners and athletes work together, positive outcomes result from the combined efforts of both parties. Athletes with positive and realistic attitudes towards sport psychology increase the likelihood they will benefit from working with practitioners. For example, if athletes doubt the usefulness of an intervention then they may not practice it as needed. Lack of practice will delay athletes from attaining benefits. As another example of a realistic attitude, it may take some time before athletes see results. The amount of time for benefits to appear varies with the intervention or the desired outcome. For example, sometimes self-talk yields quick results in helping athletes focus on task-relevant cues. In contrast, athletes may need to spend considerable time developing, implementing, reviewing, and adjusting an effective goal-setting plan.

CONCLUSION

Returning to the opening case example, Tammy will likely help Matt in ways mirroring this chapter's content. She will probably

undertake a needs assessment to help Matt describe what playing football is like for him (describe his current situation). The needs assessment might also include Tammy and Matt deciding on what it is like when he plays well (detailing his preferred situation). From the needs assessment they can find out what psychological attributes and skills Matt needs to develop, such as believing in himself, controlling his anxieties, and being able to make decisions under pressure. Tammy will then help Matt identify how he can gain these psychological attributes (confidence, anxiety control, and decision-making skills) and learn methods that will allow him to achieve these improvements (decide what Matt needs to do to attain his preferred outcomes and determine how he will take action). Example methods could include imagery, goal setting, and **overlearning** skills so he can react automatically during a game. If Matt engages fully with Tammy's help, and the two individuals form a strong collaborative relationship, then Coach Taylor may be surprised by the results and learn that psychology is not all mumbo jumbo, but is a practical applied science that helps people live satisfying and meaningful lives.

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9

PHYSICAL SKILL ACQUISITION AND BEHAVIOUR MODIFICATION

CHAPTER LEARNING OBJECTIVES

1 Overview how athletes produce movement
2 Explore the stages of skill learning
3 Discuss ways to structure training to optimize skill learning
4 Detail how extrinsic feedback can assist learning
5 Review principles of behaviour modification

Coach Lance Sweets has just taken charge of the Jeffersonian School under-12-years-old mixed soccer team. Coach Sweets is a sport psychology practitioner who has not coached previously, although he played a great deal of sport when growing up. He had been a talented soccer player and had enjoyed being part of a team. Coach Sweets was looking forward to being involved in the sport once again. When meeting the squad at the first team practice, however, he realized that he was unsure how to teach the players the skills involved in the game, such as passing and tackling. He was able to perform the skills but did not know how to communicate the technical aspects or help the players acquire them. He was not clear on what drills and exercises to use or how to set them up. Perhaps due to his hesitancy, Coach also found that some players started misbehaving. In particular, several players were picking on one boy, Jack, and calling him names because he had red hair. Jack got angry and started fighting and pushing some of the other players around. Coach Sweets spent several minutes calming Jack down, and as he did so, the other players stopped practising and the boys started playing "chicken" by throwing balls at each other. One

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player, Seeley, threw a ball that hit Angela, a female member of the team, in the head when she was not looking. Sweets sent Seeley on a run around the field and managed to regain control of the team by yelling at the players, before finishing practice with a game of five-a-side. After training Angela and another female player, Temperance, stayed behind and told Coach they were quitting because Seeley was always picking on them, making them feel like they did not belong on the team. Coach said that they had every right to play on the team and he would deal with Seeley. He also said they had talent, showed good skills, and he hoped they would stay in the squad. Later that night, over dinner with his partner, Daisy, Sweets mentioned that he needed to learn how to structure training to keep the team focused on skill learning. He thought that he would then also have better control over their behaviour, especially Jack and Seeley who had misbehaved because he hadn't kept them busy. Daisy asked if any of Lance's psychology training might help.

Coach Sweets has potentially placed himself in an awkward situation because he is a sport psychology practitioner who has started coaching. He may be tempted to adopt multiple roles or a dual relationship with the players: as a coach and possibly a sport psychology practitioner. Responsible sport psychology practitioners adhere to professional codes of ethics so that their services are of high quality, within their realms of expertise, and provided in ways that respect athletes' dignity and welfare. One ethical issue revolves around dual relationships. If relationships start to blur into each other, such as when a sport psychology practitioner is also the athlete's parent or starts being a coach, then applied sport psychology can become messy. There are times, however, when practitioners have to adopt dual roles, and such relationships are not automatically unethical. Instead, practitioners need to reflect on their behaviour and ensure they provide the best possible services to their clients. If Coach Sweets avoids wearing his sport psychology hat when coaching the players, then he will maintain rather than confuse professional boundaries.

Although the coaching and the sport psychology practitioner roles have differences, such as their aims, there are similarities, such as the need to establish good relationships with athletes. Both coaches and sport psychology practitioners benefit from having a solid understanding of several areas in psychology, such as motivation, personality, and anxiety. Two differences between the roles

are that coaches need to organize training sessions and focus on physical skill learning much more than sport psychology practitioners. To help coaches, sport psychology practitioners have studied topics related to assisting athletes to develop their physical skills and manage their behaviour, and Coach Sweets might benefit from reviewing what he learned about these two topics from his psychologist training. In this chapter I will discuss (a) how athletes produce and control their movement and actions, (b) the stages of physical skill learning, (c) ways to structure practice to optimize skill learning, (d) the role of feedback in performance improvement, and (e) ways to modify behaviour.

PRODUCING SKILLED MOVEMENT

To play well, athletes need to produce coordinated movement. At the elite level, athletes' control over their movements fascinates spectators. Watching highly skilled gymnasts, weightlifters, golfers, footballers, etc. perform at their peak captivates audiences. When producing movement, individuals are attempting to achieve two aims. First, they are coordinating their arms, legs, torso, and head to generate specific movements that produce desired outcomes and fit with the demands of the situation (Magill & Anderson, 2020). For example, when putting golfers aim to put the ball in the hole and they need to account for the speed and slope of the green. Second, athletes need to constantly adjust the performance of their skills because, in the vast majority of sports, situations change each time a skill is executed. In squash, for example, a player produces multiple forehand shots throughout a game, generally using a similar technique each time by coordinating the movement of the feet, legs, body, arms, wrists, and head. No two shots, however, will be the same. The player will start from a different location on the court, will need to adjust the orientation of the body, and will want to vary the way the ball is hit to position it out of the opponent's reach, which will be a different place on the court each time. Athletes who achieve these two aims when playing against other elite performers are remarkable to watch.

Coach Sweet's task above is to help his players learn the movements relevant to soccer, such as tackling opponents, interacting physically with teammates, and trapping, controlling, and passing

the ball. He will find his task easier if he understands how athletes control and produce movement. Specifically, if he knows how the players produce and control their movements and actions then he can (Magill & Anderson, 2020):

- Create effective coaching strategies and drills
- Predict when the drills he creates might be most useful
- Evaluate the efficacy of his coaching
- Help players develop over time
- Identify performance problems and errors
- Aid players in overcoming their errors and problems

Figure 9.1 is a simplified illustration of how movement is produced and controlled. When performing, athletes have a nervous system to direct movement (movement controller) and a body to produce it (movement producer, Schmidt & Lee, 2020). The nervous system and the body work together, both in the absence of feedback (open loop system) and in the presence of feedback (closed loop system). In an open loop system, athletes are unable

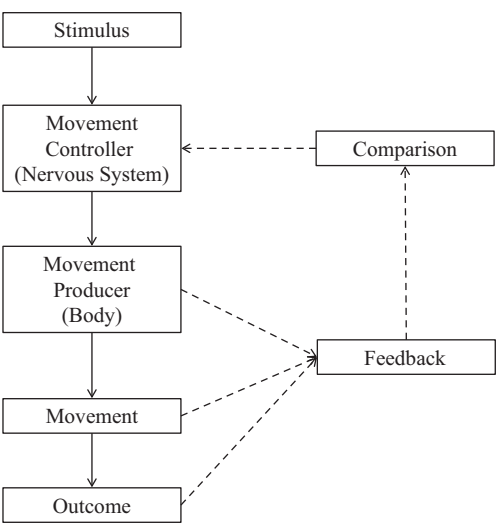

Figure 9.1 Simple illustration of movement control

to make changes to their movement once they have initiated the skill; for example, the golf swing is an open loop system. During a closed loop system, when athletes can use feedback, they compare information about the movement and its results against a mental model of the skill and, based on the comparison, they may make adjustments to their performance. Figure 9.1 is a simplified view of movement. The understanding of how people produce and control movement can get complicated and there are competing points of view (Haibach et al., 2018). One of the topics that skill acquisition scientists debate is the degree to which movement is produced and controlled by either (a) a series of instructions that are stored in the brain, called a motor programme, or (b) information athletes take from the situation they are in as they interact with the people and objects in the environment (Czyż, 2021).

Historically, sport psychology practitioners have based their theories of movement control on the presence of a motor programme residing in the brain or nervous system. A motor programme is a set of instructions stored in a person's memory for producing an action (Keele, 1968). Many people find the idea of a motor programme intuitive and believe that it helps explain how athletes can perform complicated skills consistently over time. Athletes are using the same set of instructions each time they perform an action, and the purpose of practice is to help them create and refine solid motor programmes. Although motor programmes are appealing, they have limitations, such as not being able to explain novel movements and creating a brain storage problem (Schmidt & Lee, 2020). Regarding novelty, athletes frequently need to produce movements they have never performed previously and for which they are unlikely to have existing motor programmes. How do athletes produce a skill they have never executed previously when they do not have a set of instructions to guide the action? If they have not performed the movement before, they will not have been able to create a motor programme for that specific action. Regarding the storage problem, given the number of skills, movements, and actions athletes have to perform, the number of motor programmes they will need is likely to exceed the storage capacity of the brain. How do athletes avoid overfilling the brain with motor programmes, most of which they will probably only ever use once? If the idea of a motor programme is to be credible, it needs to explain how athletes produce novel

movements and overcome the need for unlimited storage (Magill & Anderson, 2020).

To answer these questions, Schmidt's (1975) schema theory helps explain how athletes produce novel movements and avoid storage issues. He suggested that any type or class of movement, such as throwing or kicking, has invariant features and adjustable parameters.

- *Invariant features*: These are features of a movement that athletes must produce every time they perform the skill. For example, they must produce the correct sequencing and timing of muscle contractions.
- *Parameters*: These are aspects of a movement that athletes can change or modify each time they produce a skill so it is the correct movement for the situation, such as the speed or force of the muscle contractions.

According to Schmidt (1975), people have a generalized motor programme in memory that controls a class of actions, such as throwing, walking, or kicking, by detailing the skill's invariant features. People also have schemas (or sets of instructions) that allow them to adjust the parameters of a movement to suit the situation. The generalized motor programme and the schemas work together to initiate and control skill execution (Magill & Anderson, 2020). The generalized motor programme avoids storage limitations because it reduces the number of motor programmes athletes need for a class of actions to one. A single throwing generalized motor programme will cover all types of throws athletes need to perform. Schemas allow athletes to adjust movement parameters so they can produce novel movements. The role of practice is to help athletes learn the relationship parameters have with movement outcomes, such as knowing how much force is needed to putt a golf ball a certain distance given a particular type of green. Typically, elite athletes understand (generally subconsciously) the relationships between movement parameters and outcomes better than novices (Czyż, 2021).

STAGES OF LEARNING

Another way skill acquisition scientists have contributed to understanding skill learning is by examining the changes individuals

experience as they become proficient at a task. One well-known skill learning framework is Fitts and Posner's (1967) three-stage model, which includes the cognitive stage, the associative stage, and the autonomous stage. Although the model presents the three stages as discrete entities, they are more correctly points along a continuum. It is difficult to determine exactly when individuals have moved from one stage to the next.

- The first, or cognitive, stage occurs when people start learning a skill. Individuals engage in a large amount of cognitive activity as they begin developing a mental map of the movement. Skill learners have questions such as "what am I trying to achieve?" "Where do I place my body?" "What is the best posture?" They also talk or coach themselves through the movement. Their performances are inconsistent and highly variable. Learners make large and frequent errors, and they can become frustrated. Beginning athletes also have limited self-awareness and typically do not know when they are developing bad habits or doing something incorrectly. Even if learners are aware something is wrong, they usually do not know how to fix the mistake. For example, cricket batters may be unaware that anxiety is causing them to back away from the batting crease as a fast bowler delivers a ball, leading to an unstable stance. Coaches may need to show players they are moving away by videoing them or placing a brick behind their feet that they step into as they back away. Coaches may also need to advise players on how to control their anxiety so they remain stable, balanced, and relaxed, because the batters will probably not know how to remedy their habit.
- Athletes enter the second, or associative, stage when they have acquired a mental map of the movement. They have also sometimes begun to associate situational cues with the movements needed for good performance. For example, cricket batters may pick up cues from the bowler prior to the ball being delivered that help them decide what shot to play. Skill refinement is a major change during the associative stage and there are improvements in performance levels and consistency. Errors occur less frequently and are smaller in magnitude. Athletes may also begin to detect and correct some of their own performance errors. Returning to the cricket batters above, for

example, they may start to recognize when they back away from fast bowling and may use their coaches' advice on how to stay calm and stable.

- After considerable practice, some athletes arrive at the third, or autonomous, stage. Performance levels are both high and consistent, with few errors occurring. Players execute skills automatically, with little or no conscious thought. Not every athlete reaches the autonomous stage. Those who do are able to do other things when performing, such as responding to situational cues or communicating with teammates. Autonomous players are self-aware, as illustrated by their ability to detect and correct errors. During a cricket game, for example, proficient batters who are called out by the umpires are often able to identify their mistakes and they know what they need to do differently the next time they are in the same situation.

As athletes become skilled, conscious processing drops, movement becomes automatic, and their ability to detect and eliminate errors grows. Other changes also occur. First, athletes' coordination improves and they overcome movement biases or tendencies they learned from similar but different skills. For example, in some racket sports individuals learn to move their hand and forearm together as one unit. When these players take up a different racket sport, they may need to move away from treating the hand and forearm as a single unit and learn how to flick the wrist when striking the ball. Second, as individuals improve, they use less energy, increase movement efficiency, and respond better to the environment, as shown by highly skilled athletes who seem to have all the time in the world to perform. Third, experts are able to direct their attention to features most likely to contain useful information, whereas learners tend to focus on too many cues, some of which are irrelevant. Experts are also able to initiate visual searches earlier than novices. Fourth, experts have greater understanding of the activity, meaning they can solve problems and make decisions quicker than learners. For example, skilled individuals are better able to anticipate the opposition's movements and read a game more accurately compared with novices. Fifth, athletes' rate of improvement decreases as they become skilled because there is less room for development. Experts need to exert greater effort and time to obtain a smaller increase in

skill compared with novices, who typically make relatively large and quick improvements (Fitts & Posner, 1967).

TRAINING DECISIONS

Understanding how people produce movement and the changes that occur with learning can help coaches decide how to structure practice sessions to ensure that athletes improve their skill levels. For example, understanding how people learn and improve their skill levels helps coaches make decisions about the amount of variation they should build into drills, how they will distribute sessions, the amount of time they need to devote to a task, and whether or not they get athletes to practice the whole skill or just parts of the movement. To assist coaches in making these practice-based decisions, sport psychology practitioners can draw on a large amount of research on the topic (Magill & Anderson, 2020; Schmidt & Lee, 2020). One theme from the research is that errors do not necessarily reflect poor learning. Sometimes when researchers have compared different training regimes they have found that one practice schedule yields better performance during the session but poorer results at a subsequent testing session when compared with another schedule, thus indicating a lower transfer or retention of learning. Despite errors in training, athletes may still be learning and be able to perform well in competition. Also, errors may signal ways to improve performance. In sport, athletes train so they can perform well during competition, which happens at a later date after training (so they need good retention or transfer of learning). From a coaching viewpoint, practice regimes leading to good skill transfer or retention are more desirable than training programmes that improve current movement execution but not future performance.

TRAINING VARIATION

A first question coaches can consider is how much to vary skill training. Variation in training helps athletes engage in learning and avoid boredom, but too much might hinder skill development, depending on the task and athlete. Generally, adjusting training drills and exercises can enhance learning if coaches make informed decisions about what and how much to alter. For example, coaches can adjust

the context in which athletes practise a skill (e.g., on a natural or artificial surface). Sport is played in many contexts and conditions, such as in different types of weather, on assorted surfaces, and in front of diverse audiences. A useful principle to enhance learning is for coaches to vary in practice those contexts and conditions that change in competition, and keep constant those aspects that remain similar (Magill & Anderson, 2020). For example, a football coach might get players to practise on both natural and artificial surfaces, if competitions occur on both, but they would not change the size of the playing area because that is standardized across games.

Coaches can also enhance learning by varying how they organize skill practice. Three common strategies are shown in Table 9.1. To illustrate, if Coach Sweets wanted to teach the players three ways to tackle opponents, he could either block or distribute practice. In **blocked practice**, he would direct players to work on one tackling technique per session. If players trained three times a week, then they would practise each way of tackling once every seven days. Coach Sweets would be varying skill practice across, but not within, training sessions. Alternatively, Sweets could have athletes spend time on each of the three tackling techniques during every training session, a strategy labelled **distributed practice**. Further, during distributed practice, the order of the tackling techniques can either be the same (serial distributed practice) or be mixed up (random distributed practice) across sessions (see Table 9.1). To help Coach Sweets understand which type of training variation enhances learning, he could learn about **contextual interference** (Shea & Morgan, 1979).

Contextual interference describes the disruption in memory and performance athletes experience when practicing several skills within a single training session. Low interference occurs when athletes practise one skill repeatedly before moving to the next one. High interference happens when they practise the skills in a random order from trial to trial (see Table 9.1). Although low interference leads to better performance within the training session, high interference results in better performance at a subsequent session, indicating better retention and transfer of learning. Two reasons explain the better retention and transfer. First, during random practice, athletes compare and contrast the different skills they are focused on. As they discover similarities and differences among the

Table 9.1 Block practice, distributed practice, and random distributed practice for Coach Sweets' team

		Weekly practice plan		
		Monday	***Wednesday***	***Friday***
Blocked practice	30 min	Front tackle	Side tackle	Rear tackle
Distributed practice	5 min	Front tackle	Front tackle	Front tackle
	5 min	Side tackle	Side tackle	Side tackle
	5 min	Rear tackle	Rear tackle	Rear tackle
	5 min	Front tackle	Front tackle	Front tackle
	5 min	Side tackle	Side tackle	Side tackle
	5 min	Rear tackle	Rear tackle	Rear tackle
Random distributed practice	5 min	Front tackle	Side tackle	Rear tackle
	5 min	Side tackle	Rear tackle	Front tackle
	5 min	Rear tackle	Front tackle	Side tackle
	5 min	Side tackle	Front tackle	Front tackle
	5 min	Rear tackle	Side tackle	Side tackle
	5 min	Front tackle	Rear tackle	Rear tackle

skills, they refine and develop solid motor programmes and movement schemas. Second, during random practice, athletes forget how to do a skill and need to recreate a plan of action each time they perform it. The constant recreation helps establish a motor programme. The contextual interference effect, however, may not hold for all situations. For example, low-skilled athletes often benefit from blocked practice until they are proficient at a task. The players in Coach Sweets' team probably vary in their skills levels, and he could use a blended approach. He could primarily use random distributed practice but be flexible and use blocked practice if the players are deficient in a specific skill.

TRAINING SESSION DISTRIBUTION

Another question coaches can contemplate is how to distribute the time they have to teach athletes a skill. Often external time limits influence how coaches structure training, such as when they need to prepare players for specific events. When flexibility exists, however, two issues arise: (a) whether to have many short sessions or fewer longer sessions, and (b) whether to have some rest or no rest

between each attempt at the skill. Regarding frequency and length of training, short and frequent practice leads to enhanced retention and transfer of skill compared with long and infrequent sessions (Schmidt & Lee, 2020). For example, one-hour training sessions every day may be preferable to two-hour practices every second day.

Regarding the time between each attempt at a skill within a training session, coaches can use massed or distributed schedules. **Massed practice** involves short or non-existent rest periods. A distributed schedule has relatively long rest periods between trials (e.g., athletes spend equal or more time resting than practising). The type of task influences which schedule a coach might select. If athletes are learning a continuous skill, then optimal learning arises from distributed practice where they can rest between trials. When athletes are practicing discrete skills, however, massed practice appears preferable to distributed practice for learning and retention. For example, dancing, swimming, and skiing benefit from a distributed schedule, whereas golf, archery, and baseball benefit from massed practice (Haibach et al., 2018). Discrete tasks have clear gaps between attempts where athletes can recover, whereas continuous tasks can be fatiguing without rest periods between trials (Haibach et al., 2018).

OVERLEARNING

Many people chant that individuals need to practise for 10,000 hours or 10 years to become elite athletes. The mantra of 10,000 hours emerged from a misunderstanding of Ericsson's (2020) research on deliberate practice. Despite Ericsson arguing that the proclamation of 10,000 hours and 10 years is a misinterpretation of his work, it is correct that it takes a lot of deliberate practice over a sustained period of time to become an elite performer or an expert in most domains of life. Deliberate practice involves training in a systematic fashion, working towards clear goals focused on improving weaknesses, seeking feedback to assess progress, and securing the guidance of an expert coach (Ericsson, 2020). Although deliberate practice improves skill level, it does not guarantee a successful sporting career because other factors also play a role, such as athletes' genetic make-up and their social environment (Macnamara et al., 2016). Nevertheless, an athlete is unlikely to become elite without a healthy slice of deliberate practice.

Often, however, coaches do not aim to produce experts, but instead help athletes achieve some level of performance over a discrete period of time. For example, coaches may have a group of athletes for one season. Other coaches may aim to help athletes achieve a specific standard of performance for a competition, an exam, or a grading test, such as in martial arts, gymnastics, or dance. In these situations, coaches can consider the value of overlearning, or having athletes continue practising after they have reached the desired level of performance. Athletes and coaches sometimes believe that more is better when learning skills. Overlearning is effective, but there is a point of diminishing returns (Magill & Anderson, 2020). With the experience of working with many athletes, coaches develop a sense for how much extra practice is worthwhile.

WHOLE VERSUS PART PRACTICE

Complexity and organization

Another relevant issue for coaches is whether to get athletes to practise the whole skill at once or to focus on different parts separately. If a skill overwhelms an individual or has some danger, then part practice is an effective starting point (Magill & Anderson, 2020). One way to resolve the issue is to consider the skill's level of complexity and organization.

- *Complexity* refers to the number of parts to the skill. Highly complex tasks have many component parts, and examples include figure skating routines, the Olympic weightlifting lifts, and the pole vault. Low-complexity skills have few component parts, and examples are darts, a bench press, and shooting. Complexity does not equate to difficulty. Expertise in darts and shooting, for example, still requires much training and mentoring.
- ***Organization*** describes the relationships among a skill's components. Skills with high levels of organization have interdependent components. The way athletes perform one component influences the way they execute other parts. For example, the way cricket batters move their feet influences the type of shots they can perform when they hit the ball. In skills with low levels

of organization the components are relatively independent of each other, such as in a gymnastic floor routine.

Understanding a skill's complexity and organization can help coaches decide how to instruct athletes in their practice. Coaches can get athletes to practise the whole skill if it has high levels of organization but low complexity (e.g., a bench press). Alternatively, they might ask athletes to practice parts of the skill if it has low levels of organization but high complexity (e.g., gymnastic floor routine, Magill & Anderson, 2020). Although these suggestions seem straightforward, coaches may have difficulty categorizing skills according to complexity and organization. Further, the complexity and organization of a skill is relative and varies across athletes (Haibach et al., 2018). For example, a skilled and experienced athlete may find a skill less complex than a learner. Getting to know athletes, their training histories, and their goals for a practice session can help coaches decide between whole and part practice.

Types of part practice

If part practice is desired, coaches can select from a number of strategies, as illustrated in Table 9.2. The type of part practice the coach selects depends on the task being performed, the athlete, and the objective of skill learning. For example, **fractionization** is suitable for skills where the different parts can be performed independently (e.g., arms and legs in swimming), but not when they influence each other (e.g., left arm and right arm in swimming). As another example, the various types of *segmentation* or part practice listed in Table 9.2 can be achieved in either a forward progression (part 1, part 2, part 3) or a backward direction (part 3, part 2, part 1). A backward direction is effective when accuracy is needed at the end of the movement, such as a basketball layup, whereas a forward progression is useful in tasks where each part contributes equally, such as a gymnastic floor routine (Haibach et al., 2018). As a third example, **simplification** is a useful approach to ensure that the demands of the skill are matched to the learner's capabilities or needs. Jugglers, for instance, may start with small bean bags before moving to other objects that place their safety at risk, such as knives. Coaches frequently develop drills that simplify a skill so that athletes can focus

Table 9.2 Types of part practice (based on Haibach et al., 2018)

Type	***Explanation***
Fractionization	Involves separating parts of a skill that are typically executed at the same time. Useful when the parts can be performed independently of each other. For example, swim coaches can have separate drills for the arms and legs.
Segmentation	Involves practising parts that can be separated along time, for example a dance routine. Coaches can reconnect the parts according to: • Part-whole practice: The parts are practiced separately before they are all are gathered into the whole skill again. • Progressive part practice: The first part is practised alone and then the second part alone, before both parts are practised together. The whole skill is achieved by progressively practising larger versions of the task. • Repetitive part practice: The first part is practised alone and then the first and second parts are practised together before the third part is added to the first and second.
Simplification	Involves simplifying a skill by: • Reducing difficulty (e.g., juggling bean bags before knives) • Reducing attentional demands (e.g., providing physical assistance during movement) • Adjusting the speed of a movement • Adding auditory cues to guide movement (e.g., using a metronome) • Having a series of skill progressions (e.g., in softball, practicing hitting a stationary ball before a moving ball) • Using simulators and virtual reality
Attention Cueing	Involves directing the athlete's attention to specific parts of the whole skill, such as focusing on head position when making a tackle in rugby

on particular aspects of the movement or their games, such as when tennis coaches feed balls to the same place on the court so their athletes can practise one specific shot. As a final part practice technique, *attention cueing* directs a learner's focus to a specific component of the movement. Although learners may be performing the whole skill, their attention is directed to the one aspect they wish to improve.

Whole-part-whole practice

The two approaches, whole versus part, are not mutually exclusive. Coaches can use a whole-part-whole approach. Athletes begin by practising the whole skill to gain a mental map of the movement or to identify areas of weakness. Then they focus on specific parts before practising the whole skill again. The whole-part-whole approach allows athletes to practise individual skills and learn how the different parts of the movements relate to each other (Schmidt & Lee, 2020).

MENTAL PRACTICE

As discussed in Chapter 8, imagery involves the mental creation of people, events, or things from memory rather than physical stimuli. Much research reveals imagery enhances skill learning (Simonsmeier et al., 2020). Although people vary in their imagery abilities, they still benefit from using the strategy. Coaches help athletes with imagery by showing them ways to use the technique before, during, and after training or competition. Readers may find details in Chapter 8 helpful for learning how to use imagery.

The previous sections on the ways to vary, distribute, and structure skill learning can help Coach Sweets decide how to assist the players to get the most from their skill practice. As a bonus, he may also find that misbehaviour among the players decreases because he keeps them busy and productive during training. In addition to structuring training so that his players learn football skills, Sweets also realized he could get better at giving them useful feedback.

FEEDBACK

TYPES OF FEEDBACK

Feedback involves the information that results from performing a task. For example, spectators roaring in delight as a home-town favourite attains a new world record at the Olympics is one type of feedback, as is the internal sensory information golfers feel when they produce the perfect shot. As illustrated in Figure 9.1, performers

use feedback to help them adjust movement and develop their skill. There are several types of feedback:

- **Intrinsic feedback**: The information that normally occurs as a consequence of movement and that can arise from either inside or outside the athlete's body. Typically, athletes receive intrinsic feedback without assistance. For example, in the pole vault, athletes can see the bar remaining undisturbed and can feel the air being expelled from their chests as they hit the mat.
- **Extrinsic feedback**: Information from an outside source that is not an inherent consequence of the movement, such as verbal comments provided by a coach. Another example of extrinsic feedback includes spectators' reactions to athletes' performances. Extrinsic feedback includes **knowledge of results** and **knowledge of performance**.
    - Knowledge of results informs performers about their movements in relation to their intended goals. For example, the position of a golf ball in relation to the flag signals to golfers how close they were to holing the shot. Knowledge of results assists athletes in many situations, such as when novices do not know how to interpret their intrinsic feedback.
    - Knowledge of performance refers to information about the quality of the movement, such as the rhythm, efficacy, or aesthetic appeal. For example, a dancesport instructor may tell a couple their routine flowed well with one move melding seamlessly into the next. The instructor may provide more information about technique, such as body position and footwork.
- **Kinematic feedback**: Information about the distance, speed, acceleration, or other movement dimensions of skill execution, such as when baseball pitchers learn the speed of their throw.

Coaches give athletes extrinsic feedback for several reasons (Magill & Anderson, 2020), such as to help improve athletes' performance, motivation, effort, persistence, confidence, and skill level at the sport. Another reason coaches give extrinsic feedback is to change behaviour, such as informing players about how their actions affect people around them. To illustrate, if Coach Sweets helps Seeley realize that his words and actions upset Angela, and that his behaviour

may cause her to leave the team, then Seeley might stop hurting her. To achieve these aims, coaches may benefit from considering the following ideas (Magill & Anderson, 2020; Schmidt & Lee, 2020).

PROVIDING EXTRINSIC FEEDBACK

Extrinsic feedback may not be needed in each situation. Generally, there is a greater need for coaches to provide extrinsic feedback for complex skills and inexperienced athletes than simple tasks and experienced performers (Magill & Anderson, 2020). Self-aware and talented athletes may not always gain additional information from extrinsic feedback beyond what they learn from intrinsic feedback. In addition, providing information after every attempt may encourage athletes to depend on extrinsic feedback rather than engage in their own reflection, which could inhibit their learning. Identifying the purpose of supplying extrinsic feedback can help coaches decide if giving the information to athletes will be useful. For example, providing feedback to inexperienced athletes might help them develop a cognitive map of the skill they are learning. Feedback may also assist athletes to become aware of the relevant intrinsic cues they can use to evaluate their own performance.

Once coaches identify the reason for giving extrinsic feedback, they then face the decision about what information to deliver. For instance, information about features that athletes can control provides them with ways to improve their skills, as opposed to those aspects over which they have no control. Athletes will sometimes be unaware of what is and is not controllable and may benefit when coaches inform them of this difference. Furthermore, research reveals that feedback that includes both information about the movement and strategies for improving the skill is more helpful than just describing the action (Haibach et al., 2018).

Considering the stages of learning discussed earlier may help coaches make decisions about what feedback to deliver. When first learning a movement, athletes benefit from feedback about the fundamental aspects of the skill. In cricket batting, for example, such information might include the positioning of the head and feet and the alignment of the bat in relation to the legs. Once learners are proficient and consistent in the fundamental aspects of a movement, then feedback about other aspects may help them adapt the

skill to suit different circumstances. For example, feedback about how much force is needed to hit the ball and the angle of the bat may help cricketers control where they direct the ball to avoid the fielders.

To avoid overloading athletes with too much feedback, coaches might provide summary feedback in which information about each attempt is delivered after a specified number of trials (possibly along with strategies for improvement). Compared with feedback provided after every attempt, summary information leads to poorer performance within a single practice but better retention of learning at a later testing session. Learners may become dependent on continuous feedback, whereas summary information may encourage them to engage in self-evaluation, which is then compared with the summary material the coach provides (Schmidt & Lee, 2020).

LEARNING FROM CONSEQUENCES

In the early twentieth century, a psychology student named Edward Thorndike studied how quickly cats could learn to get out of a box and obtain food by pressing a lever that opened a door. Thorndike proposed the **law of effect**: behaviours followed by positive consequences are likely to reoccur, whereas those leading to negative outcomes are less likely to happen again (Thorndike, 1927). The law triggered a rich line of research, and has informed coaching and learning in sport. Following Thorndike, Burrhus Frederic Skinner (1953) developed the theory of **operant conditioning**, becoming one of the world's most influential psychologists. Sport psychology practitioners and coaches have used operant conditioning principles to help athletes learn a range of physical, social, and psychological skills (Heward, 1978).

Operant conditioning states that behaviour is influenced by its consequences. For example, a basketball player will adhere to a consistent pre-shot routine if it is associated with increased free-throw performance. Although Skinner and other behaviourists do not deny that feelings and thoughts exist, they argue these are not needed to explain learning and behaviour. To illustrate, psychologists do not need concepts such as self-confidence or attention to explain why the basketball player adheres to a pre-shot routine. Instead, adherence results from positive consequences (improved

performance). To help understand operant conditioning, it is useful to consider the consequences and antecedents of behaviour.

CONSEQUENCES

Types of consequences

Consequences can (a) be positive or negative; and (b) result in something being given to or taken away from the athlete. These two dimensions lead to the following types of consequences:

- **Positive reinforcement**: The frequency of a behaviour increases when athletes experience positive consequences. For example, athletes praised by the coach for being early to training will continue turning up prior to the start time.
- **Negative reinforcement**: The frequency of an action also increases when negative consequences are removed. For example, athletes will turn up early for training to avoid the coach's criticisms for being late.
- **Extinction**: The frequency of a behaviour decreases, and it eventually stops, when no longer connected to any type of reinforcement. For example, athletes may stop being early for training because the coach no longer praises them for being early or chastises them for being late.
- **Positive punishment**: The frequency of an action decreases when paired with negative consequences. For example, athletes may avoid being late to training because doing so results in criticism from the coach.
- **Negative punishment**: The frequency of a behaviour decreases when positive consequences are removed. For example, athletes may stop being early for training because the coach no longer praises them.

To remember the differences among the types of consequences, people can remind themselves that reinforcement increases the frequency of behaviour, regardless of whether it is positive or negative. Punishment, again regardless of whether it is positive or negative, decreases the frequency of behaviour. Finally, there is a subtle difference between extinction and negative punishment. During

extinction there is no connection between the behaviour and the reinforcement: the athlete does not receive reinforcement under any condition. In negative punishment, however, valued consequences are removed.

Reinforcement schedules

If Coach Sweets wants to make effective use of reinforcement and punishment, he needs to consider how often to reward and penalize the players. Reinforcement schedules describe the patterns and frequencies of reinforcement, and they are associated with different rates of learning (Murphy & Lupfer, 2014). Types of reinforcement schedules include the following:

- **Continuous reinforcement schedules**: Coaches reinforce the athlete's behaviour each time it occurs. For example, every time a soccer team gets the ball into the opposition's goal, they are rewarded by getting a point added to their score.
- **Intermittent (or partial) reinforcement schedules**: Only a proportion of the behaviour's occurrences are reinforced. For example, many people buy lottery tickets each week, but they only occasionally win a prize. Partial reinforcement may be undertaken according to (a) ratio or interval schedules, and (b) fixed or variable schedules.
    - **Ratio schedule**: A specific percentage of occurrences are reinforced (e.g., a coach might offer feedback after every tenth attempt at a skill).
    - **Interval schedule**: There is a specified length of time between each occurrence of reinforcement (e.g., a coach might wait for five minutes before offering a new round of feedback).
    - **Fixed schedules**: Reinforcement is offered after a particular number of the behaviour's occurrences or time period. For example, the coach might always wait five minutes or for each tenth attempt before offering new feedback.
    - **Variable schedule**: The time period or number of the behaviour's occurrences varies randomly around an average.

Continuous reinforcement, when compared with partial reinforcement, leads to quicker learning because it is easier to perceive the connection between behaviour and its consequences. Behaviour, however, extinguishes more rapidly after continuous reinforcement is halted compared with a partial schedule because it is easier to perceive that the connection between action and consequence no longer exists. Behaviour is learned more slowly on partial rather than continuous reinforcement schedules but is also more resistant to extinction (especially if the schedules are variable). Similarly, ratio schedules are associated with quicker learning than interval ones, and fixed regimes outperform variable systems. Based on these observations, one way that sport psychology practitioners and coaches can implement reinforcement is to initially adopt a continuous reinforcement schedule, until behaviour change has been established, and then gradually shift to a variable regime (Murphy & Lupfer, 2014).

ANTECEDENTS

An antecedent, or a **discriminative stimulus**, is an event, object, person, or situation signalling that a specific behaviour will result in certain consequences. For example, the presence of stern officials indicates to athletes that they will be penalized for unsporting behaviour. Discriminative stimuli influence much behaviour in sport. For example, successful skill execution often relies on athletes learning to identify and interpret environmental cues and then produce the correct response to achieve their goal. Cricket batters may select what shot they will play (behaviour) based on cues they obtain from the bowler's action before the ball is released (discriminative stimuli). When antecedents regulate behaviour, the action has come under stimulus control. For example, highly skilled athletes often respond automatically without conscious thought to environmental discriminative cues.

The referee's watchful gaze may be enough to stop some football players from engaging in foul play, illustrating **operant generalization**. In operant generalization, a behaviour (obeying the rules) occurs with new antecedents (a referee the player has not seen before) that are similar to an original one (an official who penalized

the player in a past game). In contrast, other players may test each referee they encounter to assess how much bending of the rules they can achieve, an example of **operant discrimination**. In operant discrimination a specific behaviour (e.g., obeying the rules) will occur with one antecedent stimulus but not with another, albeit similar, one (the player will obey the rules with one referee, but break them with another official).

APPLICATIONS OF OPERANT CONDITIONING

Shaping, or the **method of successive approximation**, involves reinforcing successive approximations of a final behaviour and can speed up the learning process. For example, a cricket batter might not be moving her feet enough when playing her shots. With shaping, a coach will reinforce the athlete as she shows increased flexibility to adjust her footwork and will withhold reinforcement when she regresses, until only the correct adjustment is demonstrated.

Chaining is used to develop a sequence of behaviours by reinforcing each one with the chance to perform the next action. In a figure skating or dance routine, for example, an instructor might allow the athletes to start working on the next component of the routine once they have reached a level of proficiency in the previous one.

Self-regulation involves athletes applying the principles of operant conditioning to change and modify their own behaviour. The following example illustrates how athletes might engage in self-regulation.

- *Specify the behaviour to be changed*. A golfer may realize his practice sessions are too haphazard and lack sufficient direction for him to obtain optimal benefits. As a result, he identifies a behavioural target to achieve, such as, "80 per cent of the time spent in skills training will be focused on improving those shots at which I am poor".
- *Collect baseline data*. The golfer then keeps a record of how he spends his skills training time and of the shots he played in each competition round. Over time he starts to identify that he tends to spend large portions of his skills training focused

on his favourite shots and the ones that were going well in his previous competition. This baseline data confirms to the golfer he needs to spend more time on shots that are not going well in competition.

- *Identify the antecedents and consequences*. Regarding antecedents, the golfer realizes that he does not spend enough time planning his skills training or reviewing his previous competition rounds to identify his current strengths and weaknesses. With respect to consequences, he also notices that he enters rounds hoping that he will avoid having to play shots for which he lacks confidence. Such thoughts are associated with increased anxiety and beliefs about being underprepared.
- *Develop a plan to modify the antecedents and consequences*. To alter the antecedents, the golfer structures his day so that he reviews his last several rounds and recent training records before he leaves his house to go to training, so he can produce a written plan for his next skill session. He also keeps a record of his skills training during the practice session. To alter the consequences the golfer institutes a token economy. He places Monopoly money in a jar after each skills training session in which he spends at least 80 per cent of the time focused on his weakest shots. The money represents what he will allow himself to spend on his other passions. As well as this token economy, the golfer keeps a record of his training and competitive performance over time, along with his anxiety levels, negative thoughts, and confidence prior to competitive rounds.
- *Implement the programme and continue keeping records*. Self-regulation programmes sometimes need to be modified once implemented because they are not always tailored well enough to athletes' needs. Also, athletes and their circumstances change. Maybe, for example, the golfer realizes that he is not putting enough Monopoly money in the jar to keep him motivated, and so he increases the amount.

The above example contains the typical elements involved in a self-regulation programme: planning, objective setting, design, implementation, and evaluation. The example also reveals that effective programmes are tailored to the athletes' needs and circumstances.

GUIDELINES WHEN USING OPERANT CONDITIONING

- *Identify effective reinforcements*. In sport, coaches can reinforce athletes using social gestures, such as praise, smiles, and applause, or using sport-related consequences, such as extra game time, practice opportunities, or instruction. Creativity and discernment assist coaches in selecting suitable reinforcements because athletes vary in what they perceive as being helpful and motivating. Some athletes may appreciate a pat on the back, whereas others may not. Coaches who get to know their athletes' likes and dislikes will be able to identify effective reinforcement.
- *Be systematic in using reinforcement*. A systematic approach ensures that coaches use reinforcement effectively rather than haphazardly. For example, coaches who praise athletes for everything may find that their players become desensitized and eventually ignore any words of encouragement. As suggested above, a useful strategy is to reinforce frequently when athletes are first learning a skill or attempting to modify their behaviour, and then less often over time as athletes become proficient at the movement or action. In addition, athletes may find successful skill execution satisfying in itself, so the need to provide additional reinforcement may become superfluous.
- *Reinforce a variety of behaviours.* Coaches can use operant conditioning principles to assist a variety of behavioural changes, not just those related to skill acquisition. Reinforcing effort, for example, may help athletes persevere when they do not achieve their goals or they perform below expectations. Coaches may also reinforce prosocial behaviours, along with instances of teamwork and cooperation.
- *Reinforce a behaviour immediately where possible.* Research has generally revealed that immediate reinforcement has a stronger effect than when it is delayed. People, however, can imagine future events and can remember their behaviour, so delayed reinforcement may still be effective when it is not possible to give it to athletes immediately.
- *Use punishment sparingly*. Punishment is effective at decreasing the frequency of behaviour, but it does so through fear (Smith, 2015). Excessive punishment may breed a fear of failure and

hesitancy in athletes. Fear of failure may be associated with anxiety, making mistakes, and poor performance. Punishment may also weaken the coach–athlete relationship.

CONCLUSION

The material presented above may help Coach Sweets with the two issues he raised with Daisy. The sections on stages of skill learning, practice organization, and provision of feedback may help him structure training so that the players engage in focused, progressive, and deliberate skill development. In addition, such focused behaviour may reduce the difficulties with player management that Lance had in the first training session. The material on operant conditioning may also help him to manage misbehaviour as well as promote prosocial behaviour among the team. More generally, the material covered in this chapter, along with the two previous ones, has provided some insights into the contributions psychologists can make to enhancing athletes' experiences in sport. Chapter 7 demonstrated how practitioners can assist groups to function effectively. Chapter 8 revealed ways in which sport psychology practitioners can help individual athletes improve their mental skills. This chapter has focused on how sport psychology consultants may assist coaches with physical skill development and behaviour modification. As discussed at the start of the book, sport psychology is an applied science focused on helping people improve themselves, enhance their performance, and gain more enjoyment, satisfaction and happiness from an activity that is strongly valued in society.

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GLOSSARY

Achievement motivation: An individual's drive to strive for success, to overcome failure or obstacles, and to experience pride in goal attainment.
Agreeableness: A five-factor model personality dimension referring to the extent to which a person is cooperative and compassionate towards others.
Amotivation: The lack of motivation towards an activity.
Anxiety: The perception of threat, accompanied by worry, nervousness, and apprehension.
Arousal: An athlete's level of mental, physical, and behavioural activity or excitation that ranges from low to high and varies from moment to moment.
Athlete Apperception Technique: A projective test consisting of a series of ambiguous sporting illustrations that are given to athletes, who then describe what they see in the scenes.
Attribution: An athlete's perceived cause of an event.
Audience: The presence of other people who are attending to, and evaluating, an athlete's performance of a task.
Audience effects: The influence that an audience has on an athlete's psychological state, behaviour, and performance.
Band aid psychology: When sport psychology practitioners apply quick-fix solutions to help athletes. Often only offers short-term help.
Behavioural observations: An approach to collecting information by observing athletes in the sporting context.
Biofeedback: Interventions in which people learn to monitor and control bodily functions.

Biological approach: An approach to explaining the influence that genes and physiological factors have on personality and behaviour.
Blocked practice: A practice regime during which athletes repeat one drill or skill variation.
Case study: An in-depth examination of a single person, event, group, or organization.
Chaining: A learning strategy athletes use to develop a sequence of behaviours that involves reinforcing successful performance of an action with the opportunity to perform the next action in the series.
Coaching Behaviour Assessment System: A behaviour observation tool designed to help people collect information about a coach's behaviour.
Coactive teams: Individuals compete side by side with limited interaction (e.g., double scull canoeing).
Cognitive and behavioural strategies: The psychological skills and strategies athletes use when competing.
Cognitive anxiety: The mental aspect of anxiety. The worries, doubts, and concerns athletes have about performance or other issues and events.
Cohesion: The degree to which a group of athletes work together in pursuit of their goals and member satisfaction.
Cohort study (longitudinal study): Research in which investigators follow participants over time, measuring the same variables on multiple occasions.
Collective efficacy: A group's shared belief in its combined resources to undertake actions to achieve a task.
Competition: A social process in which rewards are distributed unequally based on people's performance in comparison to others participating in the same event.
Competition plan: A routine athletes have for structuring their build-up to an event, how they will play during the competition, or both.
Competitive State Anxiety Inventory-2: A questionnaire measuring cognitive anxiety, somatic anxiety, and self-confidence.
Complexity (skill learning): Refers to the number of parts to a skill. Highly complex skills have many parts.

Confidence: Athletes' beliefs they have the resources to achieve success.
Conscientiousness: A five-factor personality dimension referring to the degree to which a person is organized, diligent, and scrupulous.
Contextual interference: The impairment of learning that results from practising variations of a skill in the same training session.
Continuous reinforcement schedule: Behaviour is reinforced after every occurrence.
Controlling event: The extent to which external rewards (e.g., trophies) are controlling people's participation in an activity.
Cross-sectional study: Research in which investigators measure variables in a group of people on one occasion.
Defence mechanism: A strategy, often unconscious, people use to deny, change, or modify reality to cope with anxiety.
Discriminative stimuli: An event, object, person, or situation signalling that a specific behaviour will result in a particular consequence.
Distributed practice: Either (a) athletes focus on multiple skill variations in a single training session and the drill order may be random, or (b) when there are relatively long rest periods between skill execution attempts within a single training session.
Ego: From Freud's theory, the aspect of personality that negotiates the satisfaction of the id's impulses with the constraints of the external world.
Ego orientation: A goal orientation in which athletes define success through demonstrating superior ability over others.
Eros: According to Freud, a person's drive for life, love, and sex.
Exercise psychology: The study of the interactions among people's thoughts, feelings, behaviours, and environments in exercise-related settings.
Experiment: A type of research study in which investigators manipulate one factor (independent variable) to examine its influence on another factor (dependent variable).
External imagery: An imagery perspective that occurs when athletes imagine themselves performing as if they were viewing themselves on a television.
External regulation: When athletes participate in a sport for rewards imposed by externally defined goals.

Extinction: The frequency of behaviour decreases and eventually stops occurring because it is no longer connected with reinforcement.
Extraversion: A personality characteristic in which individuals like to be the centre of attention, prefer to be in social situations, and focus less on themselves and more on external events and stimuli.
Extrinsic feedback: Feedback from an outside source that is not an inherent consequence of a movement, such as verbal comments a coach or spectator provides.
Extrinsic motivation: The drive to participate in an activity for a tangible or intangible reward not inherent to a task.
Feedback: Information about an athlete's performance of a task.
Five-factor personality model: A theory that suggests that the various personality traits can be categorized within one of five dimensions: extraversion, agreeableness, conscientiousness, neuroticism, or openness to experience.
Fixed reinforcement schedules: Reinforcement occurs after a specified time period (e.g., every 5 minutes) or after a certain number of trials (e.g., every tenth trial).
Fractionalization: A part practice strategy for skill learning in which different subtasks are performed simultaneously. Each subtask is practiced separately before being brought together.
Goal: A specific standard of performance or outcome that an athlete tries to achieve.
Goal involvement: The goals that athletes are focused on achieving in a specific situation at a particular time.
Goal setting: An intervention in which athletes decide what target they want to achieve, how they can attain those objectives, and the time by which they will have completed them.
Group: Two or more individuals who interact, typically with a common goal.
Groupthink: A type of interaction displayed by group members when trying to minimize conflict and reach a consensus without testing and evaluating ideas.
Home advantage: Refers to the tendency for athletes and teams to obtain better results playing at home rather than away.
Hot hand effect: The notion that after a run of success a player is more likely to succeed with their next play or game than if they have a series of failures.

Humanistic approach: An approach to personality in which people are believed to be basically good and striving for personal fulfilment.
Hypothesis: A researcher's expected outcome of a study.
Iceberg profile: Morgan's mental health model in which athletes report higher vigour but lower depression, anger, fatigue, confusion, and tension compared with the general population.
Id: From Freud's theory, the aspect of personality that contains primitive desires and seeks satisfaction of erotic or aggressive desires.
Ideal Performance State: The profile of mental and physical states that allow athletes to perform to their potential.
Identified regulation: Athletes participate in a sport because they identify with the activity's purpose and values.
Imagery: A mental process involving multisensory experiences in the absence of actual perception.
Independent team: Individuals compete separately (e.g., gymnastics).
Informational event: The extent to which external rewards (e.g., trophies) inform people about their level of competence at the activity.
Integrated regulation: When athletes participate in a sport because doing so is coherent with their goals, lifestyle, and sense of identity.
Interactive team: Individuals continuously interact with each other throughout a contest (e.g., soccer, volleyball).
Intermittent (or partial) reinforcement schedule: Occurs when only a proportion of an action's occurrences are reinforced.
Internal imagery: An imagery perspective that occurs when athletes imagine themselves performing as if they were looking through their own eyes.
Inter-rater reliability: The degree to which different observers score the same behaviour in the same way.
Interval reinforcement schedule: There is a specified length of time between reinforcement.
Intrinsic feedback: Feedback that occurs as a consequence of movement and can arise from either outside or inside the athlete's body.
Intrinsic motivation: The desire to participate in an activity for the inherent task satisfaction gained.
Introjected regulation: When athletes control their own behaviour through self-reward and punishment.

Introversion: A personality characteristic in which individuals are less outgoing, focus more on their own thoughts and feelings, and prefer small social groups than extraverted people.
Kineaesthetic sense: The feeling of movement.
Kinematic feedback: Provides information about the distance, speed, acceleration, or other movement dimensions of a skill execution.
Kinesiology: The study of human movement.
Knowledge of performance: Feedback about the quality of a movement, such as the rhythm, efficiency, or aesthetic appeal.
Knowledge of results: Feedback that informs performers about their movements relative to their intended goals.
Law of effect: Behaviours followed by positive consequences are more likely to reoccur, whereas those accompanied with negative outcomes are less likely to be repeated.
Leader: Someone who influences a team or a player towards goal achievement.
Learned helplessness: The belief that a person has no control over negative events.
Life skills: The cognitive, emotional, social, or behavioural abilities allowing people to cope with the demands of their lives.
Locus of control: The perceived location of an event's cause; either internal or external to an athlete.
Longitudinal study (cohort study): Research during which investigators follow a group of people over time, measuring the same variables on multiple occasions.
Massed practice: A practice session in which the amount of rest between skill attempts is short or non-existent.
Mastery experience: A source of self-efficacy that derives from having previously attempted a task.
Mental Health Model: Morgan's iceberg profile in which athletes report higher vigour but lower depression, anger, fatigue, confusion, and tension compared with the general population.
Meta-analysis: A study in which investigators use statistical procedures to combine the results from existing research to assess the amount of a variable (e.g., anxiety levels) or a relationship between variables (e.g., the effect of a relaxation technique on anxiety).
Method of successive approximation (or shaping): In skill learning, the reinforcing of successive approximations of a desired behaviour until only the required action is reinforced.

Modelling: Within social learning theory, modelling occurs when athletes learn by watching how another person acts and then imitating them.
Moderator: A variable that influences the strength of a relationship between two other variables. For example, people's motivation to learn a sport influences the relationship between the amount of time they spent practising and their level of improvement.
Mood state: A right-now feeling that can change from moment to moment.
Motivation: The force that impels people towards a goal, and includes the direction and intensity of an athlete's behaviour.
Motivational climate: Describes the collection of goals and values emphasized by leaders and significant others in an athlete's social environment.
Motive to achieve success: A personality factor reflecting how much a person focuses on the positive consequences of achieving a goal.
Motive to avoid failure: A personality trait reflecting how much a person focuses on the negative consequences of failing to achieve a goal.
Negative punishment: The frequency of a behaviour decreases because positive consequences are removed.
Negative reinforcement: The frequency of a behaviour increases because negative consequences are removed.
NEO Personality Inventory-Revised: A standardized questionnaire measuring each of the dimensions in the five-factor personality model.
Neuroticism: A personality characteristic associated with being moody, anxious, rigid, touchy, restless, aggressive, and a tendency to experience psychological distress.
Objective competitive situation: The actual competitive situation in which an athlete has to compete.
Openness to experience: A five-factor personality model dimension referring to an appreciation for the arts, emotions, adventures, unusual ideas, imagination, curiosity, and various experiences.
Operant conditioning: A theory suggesting that the consequences of behaviour influence the frequency with which those actions will be repeated in the future.
Operant discrimination: A behaviour that occurs with one antecedent stimulus, but not with another (even if similar).

Operant generalization: When behaviours occur after new discriminative stimuli that are similar to an original stimulus.
Organization (skill learning): Refers to the relationships among the components of a skill. The components are interdependent in highly organized skills.
Outcome goals (in goal setting): A standard of achievement based on a social comparison (e.g., winning a competition).
Overlearning: Athletes continue to practise a skill after achieving a specified standard of proficiency.
Part practice: A part practice strategy for tasks consisting of a series of sub-movement. Athletes practice each component of a task before adding the next movement to the chain.
Partial (or intermittent) reinforcement schedule: Only a proportion of an action's occurrences are reinforced.
Participant motivation: The reasons athletes give for playing a sport.
Perceived competence: People's perceptions about their levels of skill at a task.
Perceived situational competitiveness: The extent to which a person interprets an event as being competitive.
Performance approach goal: Goals that reflect athletes' desires to do well relative to others (people are motived to play to win).
Performance avoidance goal: Goals that reflect athletes' desires to avoid doing poorly compared with others (people play to avoid losing).
Performance goal (in goal setting): A goal identifying a standard of achievement independent of other people (e.g., running 100 metres in less than 10 seconds).
Personality: The blend of characteristics (thoughts, feelings, and behaviours) that make individuals unique and consistent across time.
Person-centred therapy: An approach to therapy in which psychologists help clients develop self-awareness and solutions to their challenges within a supportive relationship.
Positive punishment: The frequency of a behaviour decreases because it is accompanied with negative consequences.
Positive reinforcement: The frequency of a behaviour increases when followed by positive consequences.
Pre-performance routine: An established and practised set of thoughts and behaviours that athletes carry out before performing to help them achieve a positive and focused mindset.

Process goal (in goal setting): Details behaviours athletes will focus on during performance.
Profile of Mood States: A standardized questionnaire measuring a person's moods, including vigour, anger, depression, confusion, fatigue, and tension.
Projective test: A personality measuring tool in which people are asked to respond to ambiguous stimuli, such as pictures or inkblots.
Psychodynamic theory: A view that explains personality in terms of the interplay among an individual's conscious beliefs, unconscious forces, and environment.
Psychological momentum: A change in an athlete's thoughts, feelings, physical states, or behaviour that influences performance or outcomes, typically triggered by an event.
Psychological skills training programmes: An intervention package in which sport psychology practitioners use psychological methods to develop characteristics associated with enhanced performance.
Psychology: The study of the interactions among thoughts, feelings, behaviour, and environment.
Qualitative study: Research in which words, texts, videos, sounds etc. form the basis of the data collected.
Quantitative study: Research in which numbers form the basis of the data collected.
Ratio reinforcement schedule: A specific percentage of a behaviour's occurrences are reinforced.
Reactive teams: Individuals respond to their teammates' actions, but not always at the same time (e.g., the softball catcher, pitcher, fielder, and person hold base).
Refocusing plan: Strategies athletes use when they need to regain control and their focus during a competitive event.
Reliability: The extent to which a measure is consistent across time, people, or items (in a questionnaire).
Research: Systematic investigation into some phenomenon to create knowledge, establish facts, and reach new conclusions.
Ringelmann effect: As group size increases, individual members become less productive.
Science: A way of learning about the world through systematic and controlled observation and experience.

Scientific method: A series of steps underpinning science, consisting of (a) developing a question, (b) stating a hypothesis, (c) collecting data, and (d) analyzing results.
Scientist-practitioner: A sport psychology practitioner who relies on scientific evidence when working with athletes and coaches.
Scientist–practitioner model: A model of sport psychology practitioner training in which trainees are given a grounding in the scientific method so that science and practice inform and guide each other.
Self-confidence: Athletes' perceptions about their abilities to achieve success or a standard of performance.
Self-efficacy: Athletes' beliefs they can execute the behaviours needed to produce desired outcomes.
Self-handicapping: A strategy in which athletes reduce their effort on a task so they can avoid attributing failure to a lack of ability.
Self-regulation: People's ability to monitor and manage their emotions, thoughts, and behaviours to produce desired outcomes.
Self-serving attribution bias: People tend to attribute positive events to internal causes and negative events to external causes.
Self-talk: Statements individuals say to themselves, either out loud or in their minds.
Shaping (or method of successive approximation): In skill learning, the reinforcing of successive approximations of a final behaviour until only the desired action is rewarded.
Simplification (skill learning): A part practice strategy in which the complexity of a skill is reduced.
Social-cognitive approach: An approach that suggests personality emerges from the way people organize information, make decisions, and evaluate consequences.
Social cohesion: The degree to which individuals like being part of a group and enjoy each other's company.
Social facilitation: The tendency for an audience to elicit an individual's dominant response when performing a task. Performance typically increases for simple and well-learned tasks but decreases for complex and novel skills.
Social Learning Theory: A theory suggesting that people do not need to be rewarded or punished directly to learn suitable and unsuitable behaviour, but can acquire knowledge by watching others. The theory argues that most behaviour is learned through modelling.

Social loafing: Individuals exert less effort to achieve a goal when working in groups than when alone.
Social orientation: A person's tendency to approach social situations either positively (with self-assurance and enthusiasm) or negatively (with anxiety and apprehension).
Somatic anxiety: Athletes' perceptions of their physiological arousal.
Sport confidence: Athletes' beliefs about their ability to be successful in sport.
Sport psychology: The study of the interactions among people's thoughts, feelings, behaviours, and environments in sport settings.
Sport science (or sport and exercise science): The application of scientific principles and techniques to improve people's sporting (and exercise) performances or experiences.
Standardized questionnaire: A questionnaire that presents the same questions to test takers who respond in uniform ways.
State anxiety: Athletes' right-now, moment-to-moment perceptions of threat and accompanying worries, nervousness, and apprehension.
State self-confidence: Athletes' moment-to-moment beliefs about their ability to succeed in the current situation.
States: Right-now ways of thinking, feeling, or behaving that may change on a moment-by-moment basis.
Stress: The perceived imbalance between the requirements of a task and the athlete's capability to meet those demands, where failure to cope carries negative consequences.
Subjective competitive situation: An athlete's interpretation of the objective competitive situation.
Superego: Freud's aspect of personality that reflects how people have internalized the values they learned from their parents and society.
Task cohesion: An achievement goal orientation in which athletes define success through self-improvement.
Team cohesion: The propensity of a sports team to stay together when striving for their objectives and athlete satisfaction.
Thantos: Within Freud's theory, the drive for death and aggression.
Thematic Apperception Test: A projective test in which people are given black and white illustrations of people in ambiguous situations.
Theory: A set of related facts that explains a phenomenon of interest.

Trait: A relatively consistent and enduring aspect of personality and behaviour.
Trait anxiety: Individual's predispositions to perceive situations as threatening and to respond with high levels of anxiety.
Trait approach: An approach that explains personality in terms of traits.
Trait competitiveness: A person's tendency to compete against others in an activity.
Trait self-confidence: Athletes' general perceptions regarding their abilities to achieve success.
Transformational leaders: Charismatic individuals who inspire followers to extraordinary outcomes through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.
Validity: The degree to which psychological measurement tools assess what they are designed to measure.
Variable reinforcement schedule: The time period or number of occurrences between reinforcements varies randomly around an average.
Verbal persuasion: A source of self-efficacy that involves athletes being told they can perform a task by themselves or with others.
Vicarious experience: A source of self-efficacy that involves athletes watching models performing a task.

SUBJECT INDEX