RESILIENCE AND GROWTH MINDSET IN SPORT AND PHYSICAL ACTIVITY

This chapter is excerpted from

*Positive Psychology in Sport and Physical Activity: An Introduction*

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Introduction

Sport and many physical activities (PA) are renowned for being designed to extend the adaptive efforts and capacities required of participants and engagement in these activities has been recognised as a facilitator of adaptation and resilience in individuals (Heffernon & Boniwell, 2011). However, some situations in sport and PA can be perceived as threatening or harmful (e.g. injury, making a weight, dehumanising culture, defeat, deselection or an unrelenting win at all costs ethos) and may require considerable resiliency and resourcefulness (Kavanagh & Brady, 2014; Sagar, Laval-lee, & Spray, 2009; Theberge, 2008). Recent research has shown that experiences of stress and adversity in sport and life have the potential to be rich developmental opportunities if they are carefully managed (Collins & McNamara, 2012; Sarkar, Fletcher, & Brown, 2015). Whether in elite sport, school, the park or the gym, resilience has particular value for understanding how participants may withstand or bounce back or even thrive when facing the inevitable challenges associated with the physical, mental and social demands of their activity as well as in life.

This chapter outlines the key concepts associated with fixed and growth mindsets and the consequences of holding such beliefs for resilience. This chapter frames the discussion using key resilience concepts proposed by Yates, Tyrell, and Masten (2015). Examples are used to illustrate how having a particular mindset across sport and physical activity–related situations can yield quite divergent responses to our experiences of adversity, challenges, failure and success, with stark consequences for resilience and also for learning, motivation and well-being. Considerations for practice are presented to be applicable for a range of contexts in sport and
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PA. Techniques and interventions to support the development of growth mindset and resilience are offered, and recommendations are presented for future research and practice.

Introduction to the concept of resilience

Psychological resilience is defined in various ways relating in some way to how a person withstands and/or responds to pressure. At a broad level, Masten, Best, and Garmezy (1990, p.436) define resilience as ‘the process of, capacity for or outcome of successful adaptation despite challenging or threatening circumstances’, and focusing on a capacity account, Heffernon and Boniwell (2011, p. 115) define resilience as ‘the flexibility in response to changing situational demands, and the ability to bounce back from negative emotional experiences’. In the sport literature, Fletcher and Sarkar (2016) distinguish between robust resilience (maintaining well-being and performance) and rebound resilience (regaining well-being and performance).

Resilience is best viewed as a complex process when the person’s dynamic adaptive systems (developed within the person, through their relationships and their environment) work effectively to maintain or restore the person’s competence and functioning (Masten, 2007). One of the fundamental adaptive systems underlying resilient adaptation relates to mastery-motivational systems (Yates, Egeland, & Sroufe, 2003). Dweck’s mindset theory contributes to our understanding of mastery-motivational adaptation and as such it has particular value because it can aid understanding about the important constructs and mechanisms related to resilience. Importantly, when viewed as a process we are invited to recognise, we can develop resilience intentionally through particular activities as well as through reflecting on one’s
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accumulating life experiences.

Particular personal characteristics and skills have been recognised as assets facilitating the resiliency process such as, realistic optimism, conscientiousness, extra-version, empathy, confidence, self-esteem, connecting with others, emotional and arousal regulation, attentional control, accurate causal analysis, problem-solving skills and self-awareness (Jackson & Watkin, 2004; Fletcher & Sarkar, 2016; Yates & Masten, 2004). In stressful situations, positive emotions contribute to the ability to achieve effective emotion regulation (e.g. more rapid recovery of indices of cardiovascular and negative emotional arousal), and positive emotions also help by supporting the finding of constructive meaning from the adversity (Tugade & Fredrickson, 2004). These processes reflect how positive emotions help in the moment by encouraging a broader thinking which contributes to problem-solving and over time, this contributes to the person’s personal resources by expanding his or her thought action-repertoire (Fredrickson, 2001).

Crust and Clough (2011) suggest that the inevitable setbacks and failures that naturally occur in sport and high-investment activities should be the source of growth through reflective learning and development. Naturally occurring life events and artificially generated challenging times can both offer unique developmental opportunities if they are carefully supported and cultivated for growth (Collins & McNamara, 2012). Fletcher and Sarkar (2016) present a helpful way of identifying environments that may be more or less conducive to cultivating resilience through their 2 × 2 challenge-support matrix (Figure 8.1). A facilitative environment is characterised by an appropriate amount of support over time for the level of challenge presented, and it is proposed that most resilience is developed in this
environment. Importantly, these environments should not be framed by rigid or static boundaries but consciously cultivated and adapted to meet the particular needs of participants in the given context at the time.

**FIGURE 8.1** A challenge-support matrix for describing environments which may influence the development of resilience

*Source: Adapted from Fletcher and Sarkar (2016)*

**Mindsets – contemporary research and key findings**

The concept of *mindset* is acknowledged by many leading positive psychologists as making an important contribution toward understanding human achievement behaviors (Biswas-Diener, 2010; Heffern & Boniwell, 2011). Stanford University Professor
Carol Dweck describes a person’s mindset as the implicit beliefs about the stability or malleability of personal attributes and behaviors (Dweck, 1999). Implicit beliefs about ability form a crucial element of many other major motivation theories (Li & Lee, 2004). Beliefs about ability and how to achieve success, in turn, can have stark consequences for a person’s resilience as well as their aspirations, motivation, the learning strategies they adopt and the enjoyment and satisfaction they experience, both in the short term and long term (Dweck & Leggett, 1988; Dweck, 2006; Yeager & Dweck, 2012). A good example of how beliefs influence our achievements is reflected in how, once the myth of the four-minute mile had been broken, a flurry of other runners also soon achieved that feat.

Research supports the existence of two distinct frameworks of implicit belief viewpoints known as entity or incremental self-theories (Dweck, 1999). In achievement situations, people are presented as theorists with tacit alignment to one of these positions. Entity theorists (those with a fixed mindset) believe that their ability and attributes are largely innate and relatively stable over time regardless of environment or personal factors. By contrast, incremental theorists (those with a growth mind- set) believe that their ability and attributes are relatively malleable and can be developed through both contextual factors such as the environment and feedback, and personal factors such as learning and effort (Dweck, 2006; Jowett & Spray, 2013).

Findings across diverse contexts show repeated distinctions and adaptive or maladaptive consequences associated with fixed and growth mindset beliefs about the malleability or static nature of many personal attributes such as intelligence, personality, parenting, musicality, artistic ability, mathematical or linguistic ability, relationships, sporting ability, social skills and creativity.
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(Dweck, 2017).

Existing research in sport and PA settings have found that a growth mindset predicts or is positively associated with positive affect, higher self-efficacy and enjoyment of physical activity, skill acquisition, performance, task orientation, interest and persistence (Biddle, Wang, Chatzisarantis, & Spray, 2003; Jourden, Bandura, & Banfield, 1991; Kasimatis, Miller, & Marcussen, 1996; Van Yperen & Duda, 1999).

Research in sport settings has found the coexistence of fixed and growth mind-sets, as well as different antecedents of acquirable and stable abilities which stemmed from personal factors and also from layers of socio-cultural factors within the sport environment (Jowett & Spray, 2013; Slater, Spray, & Smith, 2012). Olympic hopefuls noted that to be successful an element of talent is preferable; however, all placed more emphasis on the need to work hard through practice and learning to acquire the physical and psychological attributes needed for success (Jowett & Spray, 2013). These aspirant athletes also found ways of reframing setbacks such as injury or deselection, and they held the view that the ‘adversity was teaching them the vital skills and attributes needed for their psychological development within the sport’ (ibid, p. 152).

Though they recognised the malleable nature of many sport abilities and the capacity to build on talent, Olympic hopefuls also identified the fixed nature of some sport abilities based on physiological factors (e.g. fast twitch fibers in sprinters) (ibid). Research with cricket coaches and players showed how people can hold different mindset-related beliefs about different aspects of the game, with both groups believing that technical and physical attributes were malleable but that psychological and
tactical skills were far less amenable to change (Frith & Sykes, 2016). Chase, Galli, Myers, and Machida (2008) examined the mindset beliefs of high school coaches and found that whilst most coaching abilities were viewed as learned rather than innate, game strategy ability was considered more innate than learned. These findings support the coexistence of entity and incremental beliefs and that particular sport/coaching abilities may be viewed as more or less malleable, according to the sport and context. Such findings have implications for how coaches and teachers may approach designing developmental opportunities.

Chase (2010) proposed that coach education and leadership training should focus on helping coaches and leaders develop a growth mindset about their leadership abilities rather than trying to find an elusive formula for leadership. Similarly, Wang and Koh (2006) recommended that for effective physical education (PE) teaching, pre-service training for PE teachers should include information about the importance of PE for promoting autonomy, mastery climate and incremental beliefs. Based on a review of literature and with the aim of facilitating positive motivational, behavioral and affective outcomes for young participants, Vella, Cliff, Okely, Weintraub and Robinson (2014) proposed a model of instructional strategies to promote incremental beliefs in youth sport based on six key areas of theoretical development, that is, focus on effort and persistence, appropriate challenge, value of failure, perceptions of success, promotion of learning and high expectations.

Drawing from basic mindset ideas (Dweck, 1999) and using generalised physical ability as an example, an adolescent exhibiting an entity belief (fixed mindset) about physical ability holds the belief that it is a relatively static ability with little or no propensity for growth and so s/he perceives they have limited
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control over developing this aspect of the self. This may result in the view that investing effort is futile (if physical ability cannot be changed) and instead s/he might accept that they have a set level of ability. This may impact on motivation and behavior in challenging achievement situations such as a PE lesson or competition (which s/he may not enjoy) as s/he may not try so hard or give up easily and ignore feedback opportunities because trying is pointless. Instead s/he may focus on trying to coast, which may require avoiding challenges, criticism and situations which may expose or threaten perceived physical competence. The limited meaningful engagement in the session and with feedback and information may reduce learning opportunities which may, in turn, affect competency development which may be used to confirm a lack of ability.

By comparison, an adolescent adopting an incremental belief (growth mindset) about physical ability believes it is a malleable attribute which fosters motivation and behavioral tendencies characterised by commitment to goals, persistence in the face of obstacles, pursuing challenges, identifying effort as necessary to the path of mastery, embracing feedback, learning from criticism and finding inspiration from the success of others (Dweck, 2017). The development of a growth mindset fosters a more constructive attitude toward practice, learning and making mistakes which are conducive to developing and maintaining resilience (Jowett & Spray, 2013). When participants are encouraged to view important abilities as those that can be developed over time with effort, appropriate strategies and support, they are more likely to be resilient when they encounter tough challenges in that setting (Yeager & Dweck, 2012).

In an experimental test of mindset theory in sport, Spray, Wang, Biddle, Chatzisarantis, and Warburton (2006) found that whilst
incremental beliefs supported mindset theorisation, there seemed to be less evidence for the maladaptive effects of entity beliefs. They proposed in some conditions (e.g. when coexisting high incremental beliefs offset the effect) entity beliefs are not universally maladaptive, and may for some people, in some contexts, lead to adaptive outcomes.

A concern associated with mindset theory is that its ideas are applied too rigidly and so it is important to appreciate the following points:

- Mindset theory is not stating ‘everyone can be anything’ because there are many factors that contribute to someone realizing their potential in sport and physical activity; however, without a growth mindset, achieving one’s potential is less likely (Frith & Sykes, 2016, p. 51).
- Findings from sport research show that people can hold both types of belief and that these can be evoked in different ways by personal or environmental factors (Slater et al., 2012; Jowett & Spray, 2013).
- **False growth mindset** is a relatively new phenomenon, and Dweck (2017) relates it to misunderstandings about mindset theory in four key areas:
  - mindset is wrongly self-ascribed as if it is an enduring trait rather than a process of believing and acting in a manner consistent with a growth mindset;
  - the assumption that it is all about effort and praising effort – when actually it is about appreciating the process involving hard work, trying new strategies and seeking input from others. Also problematic is praising effort as a consolation when there is no learning, when it’s more important to find out why there was no learning;
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- suggesting that ‘anyone can do anything’ without also framing this and helping them to gain the skills and resources to progress towards their goal;
- labelling someone (especially children) as having a fixed (or a growth) mindset and blaming this for their lack of learning or engagement.

Research from neuroscience about the brain’s plasticity has provided evidence for the value of engaging in challenging learning activities for its impact on brain activity and adaptation, and this has been highly effective at supporting engagement with ideas about mindsets through initiatives such as Brainology (Dweck, 2017). The brain’s capacity for development can also become a focus for intentional shaping and various activities such as mindfulness and cognitive reframing, and other mental skills have been found to be effective in inducing changes in the brain and enhancing resilience (Davidson & Schuyler, 2015).

There are a number of ways that mindsets may serve to enhance or compromise resilience, and drawing on core constructs central to understanding resilience proposed by Yates et al. (2015) we describe some key ideas as follows:

- Having a growth mindset is likely to be an important protective factor supporting resilience if the person believes that s/he can develop resilience. Conversely, believing that resilience is a relatively stable trait not amenable to much meaningful development may be a vulnerability moderator of resilience in times of stress if one perceives him/herself to be lacking this trait.
- A growth mindset is closely linked to resilience through the central theme of facilitating competence and adaptivity. A
growth mindset supports adaptivity because it reflects the belief that the person can develop competency and thus it encourages effortful engagement and openness to learning which, in turn, increases exposure to opportunities to participate and gain information about the quality and nature of one’s performance.

- Competence and adaptivity are further achieved via a growth mindset through helping the person see challenges, setbacks and failures as problems to be solved rather than as evidence of incompetence and a signal to give up or withdraw (Molden & Dweck, 2006). Compared to those with a fixed mindset, those with a growth mindset coped more effectively with setbacks and were more likely to attribute failures to flexible factors within their control (e.g. low effort or attention), rather than more global judgements of ability (Hong, Chiu, Dweck, Lin, & Wan, 1999). Similarly, when responding to failure, those with growth mindset orientations were less defensive and were more proactive in using effective strategies (Blackwell, Trzesniewski, & Dweck, 2007).

- Adopting a growth mindset is likely to support the development of particular personal and interpersonal assets such as self-awareness, realistic optimism, problem-solving and accurate causal analysis developed through experience and knowledge gained by actively pursuing self-referenced improvement goals for learning. Through reflection the person is likely to have a good sense of themselves, the situation and their progress in relation to goals and attributions at the time.

- In situations that are characterised by uncertainty, criticism or failure, a fixed mindset may become a risk factor or a
source of vulnerability since, to preserve an image of oneself as talented or competent performers, the person may ignore discrepant or unfavourable feedback or remove him-or herself from situations in which s/he might fail or risk looking incompetent. This may encourage a self-imposed ‘comfort zone’ (i.e. a stagnant or comfortable personal development environment) through which they trigger a causation of experiencing less challenge and adaptation, thereby gaining less learning-related information, with implications for future goal-setting and perceived ability judgements.

- Linked to the assets of self-awareness, realistic optimism and a belief in the value of effort in overcoming challenges, those with a growth mindset are less likely to be thrown off course by setbacks and because they are more likely to reframe the situation by viewing it as offering something developmentally meaningful, see the situation as a challenge and persist (Jowett & Spray, 2013).

- Intentionally viewing a stressful situation as a challenge (as opposed to a threat) may be a helpful protective strategy adopted to overcome a particular setback and may also encourage more positive emotions associated with constructively framed goals and attributions about the challenge.

- In achievement situations, a risk factor for those with fixed mindsets concerns how goals may relate to proving ability and achieving validation in the present. By comparison, the way those with growth mindsets frame goals may be viewed as an asset because they focus on improving abilities for the future and can thus encourage the person to be more patient linked to a meaningful self-referenced development
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goal (Sevinver, Kluge, & Oettingen, 2014).

FIGURE 8.2 Characteristic beliefs and behaviours associated with a fixed or growth mindset linked to key concepts in learning and development in sport and physical activity

Source: Adapted from Brady and Hughes (2013)
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Techniques and interventions to support resilience through a growth mindsets

Jackson and Watkin (2004) distinguish between strategies that build enduring protective resources and those that are real-time resilience or ‘fast skills’ to use during stressful situations. What follows in Table 8.1 are some suggestions for activities to support the development of enduring and also the real time resilience and growth mindset beliefs.

**TABLE 8.1 Strategies for promoting growth mindset, adaptation and resilience in sport and physical activity**

1. Develop self-awareness of mindsets because recognizing it in yourself is an important first step in appreciating that we all have tendencies to adopt different mindset-related behaviors in particular situations. Identifying when and why you tend to be growth or fixed mindset oriented can be very helpful for getting a realistic appreciation about the prevalence of fixed mindset mentalities in us all.

2. Recognizing the coexistence of entity and incremental beliefs about different physical, psychological, technical and tactical aspects of athletic and coaching performance, consider identifying what aspects of performance are viewed as most and least amenable to change. See Frith and Sykes (2016) The Growth Mindset Coaching Kit for a range of great resources to help promote growth mindset potential.

3. Raise self-awareness and provide access to information about; mindsets, resilience as a process that can be developed, brain plasticity and potential to adapt in response to learning challenges and training to develop
personal skills to support resilience. Consider using Dweck’s (2006, 2017) Brainology resources and also access the brain scan images showing how learned skills result in changed brain morphology and activity patterns e.g. as demonstrated with musicians and taxi drivers. Maybe engagement with particular sports or physical activities are also associated with particular areas of brain activity and development.

4. Promote engagement in activities that support brain activity associated with resilience e.g. mindfulness and cognitive reframing.

5. Hone the mental skills needed to deal with negative emotions and stressors in the moment through the 3D activity- Distract Distance Dispute. These support resilience by shifting thinking away from the adverse event (distracting), metaphorically stepping back from the immediacy of a stressful situation or event to gain perspective (distancing), and then using a more balanced frame of mind to use reflective self-questioning about the adverse event and finding alternative ways of viewing the situation (disputing).

6. Identify context appropriate activities through which to promote positive emotions to a, buffer/offset the impact of negative stressors, b, to encourage better problem-solving and creativity and c, for problem-setting and the design of activities that offer the right amount and sequence of stretch for adaptation and support.

7. Develop your own bank of evidence, by reflecting on times when you have overcome a difficult period, bounced back from a tough or pressured situation.

8. Acknowledge and praise the efforts of yourself and others
to stretch themselves through trying new or more challenging strategies.
9. To develop a growth mindset achievement climate use Vella et al.’s (2014) model of instructional strategies i.e. focus on effort and persistence; appropriate challenge; value of failure; perceptions of success, promote learning and high expectations.
10. Emphasize the importance of self-referenced learning goals rather than outcome goals.
11. Encourage opportunities to reflect on experiences to make learning and progress visible and acknowledged.
12. Encourage participants to share ideas, learn from others, seek social support and also become problem-setters as well as problem-solvers.
13. Practitioners to model desired behaviors including being aware of how language and behaviors will convey beliefs about mindset, adaptation and resilience.
14. Carefully consider the ways in which challenge is cultivated and support is provided (particularly when things seem tough) with a view to creating a suitably flexible facilitative environment

Notwithstanding the risk of oversimplifying the vast array of rigorous and sometimes complex and contentious evidence bases for mindset research, sometimes it is helpful to have a seemingly simple aide memoire to hand. So as a helpful resource drawn from mindset-based research, Figure 8.2 illustrates some of the distinctions proposed to characterize fixed and growth mindset responses in achievement contexts such as in sport and PA.
Conclusion

Research examining how perceptions of resilience may be constrained or enabled by athletes, exercisers and coaches and trainers with particular mindset orientations may provide valuable insights for context-specific interventions. Similarly, following the example of Dweck and her colleagues, rigorously examining the impact of various mindset interventions on adaptive behaviors and well-being are important avenues for future research in sport and PA. Specific areas ripe for inquiry include examining how coaches'/trainers’ beliefs about ability and about resilience affect their own coaching behaviors and well-being and the experience and well-being of their participants. There is potential also to examine the dyadic and collective contagion effect associated with mindset and resilience beliefs between various leader-followers and also in peer groups among practitioners and athletes/exercisers.

What we believe is possible for us to achieve in any particular life domain has considerable influence on how we think, feel and act in the present, how we interpret the past and how we may form ideas about our possible futures. Believing one is capable of developing in a particular activity may encourage greater investment and connectedness with the activity and its community, more openness to learning, more enjoyment and heightened adherence. In addition, in the face of setbacks and adversity, believing in one’s abilities may be reflected in greater resilience through focused problem-solving, persistence, effective adaptation and also seeing the adversity as meaningful. Given the potential impact of mindsets to either broaden or constrain a person’s beliefs about ability, with consequences for adaptive behavior and the development of resilience, it is
imperative that as practitioners in sport and physical activity we consider how to model and facilitate growth mindset behaviors and suitably challenging and supportive environments.