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When I is replaced by WE, illness becomes Wellness:
The psychology of college student-athlete injury

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Shipherd is an Associate Professor and Performance Psychology Program Coordinator in the Department of Health and Kinesiology, having joined the faculty at TAMUK in 2016. She is also owner and lead Mental Performance Consultant at Next Level Mind Consulting, and provides mental training services to individual athletes, teams, and coaches in South Texas. Her research focuses on enhancing self-efficacy, sport injury prevention and rehabilitation, and effective practices for learning and instruction in sport and exercise psychology. Shipherd is co-editor of the text *High Impact Teaching for Sport and Exercise Psychology Educators* and is presently working on a follow-up text.

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Introduction

Take a moment to ponder these questions: Can psychological factors or attributes cause injury? Can an injury be a positive experience, resulting in beneficial outcomes?

Collegiate student-athletes are considered to be a distinct population and therefore face unique stressors and pressures, such as time management, sleep, nutrition, performance pressures, athletic identity, coaches, and injuries (Kimball & Freysinger, 2003; Wilson & Pritchard, 2005). Student-athlete mental health has been identified as the number one priority for athletes in all National Collegiate Athletic Association (NCAA) divisions (NCAA, 2020). Mental health and psychological well-being play a pivotal role in both injury occurrence and injury rehabilitation. Individuals who experience stress, anxiety, depression, eating disorders, or abuse alcohol are at an increased risk of injury (Brewer & Redmond, 2017). Injury is often perceived as negative by athletes, which can result in athletes experiencing higher levels of emotional distress and decreased mental health following an injury. These responses can contribute to a more difficult or drawn out injury rehabilitation experience for the athlete.

Thus, the purpose of this presentation is to outline the role that several key aspects of psychological well-being play in injury occurrence and rehabilitation, and identify how practitioners can reduce college student-athletes injury risk and improve their injury rehabilitation experience.

Psychological Factors and Athletic Injury

It is first important to understand the role psychology plays in injury. In many sports, injury is to be expected at some point in an athlete's career. An injury is a trauma to the body that results in at least temporary, but sometimes permanent physical disability and inhibition of motor function. This trauma should be serious enough to cause the individual to miss practice or competition, or to substantially modify participation for at least one day (Johnson et al., 2005). Injuries can be caused by biomechanical factors, such as muscle fatigue or faulty movement execution, environmental factors, such as facility conditions or equipment failure, and also psychosocial factors, such as self-efficacy or stress (Brewer & Redmond, 2017).

The stress and injury model developed by Williams and Andersen in 1988 is the most commonly cited model in sport psychology for examining and predicting athletic injury (e.g., Johnson et al., 2005; Maddison & Prapavessis, 2005). The stress and injury model depicts an individual's risk for injury when placed in a potentially stressful situation. The three major psychological

risk factors in the model are: coping resources, personality factors, and history of stressors. Coping resources, which can be personal or environmental resources, can directly affect the stress response or moderate the relationship between stress and injury. For example, findings from multiple studies found that for many athletes experiencing high levels of stress, those with few coping resources were the most at-risk for suffering an injury (Hardy et al., 1991; Petrie, 1993). Research has also found various personality factors can also moderate the stress and injury relationship by influencing how an athlete appraises and responds to stressors (e.g., Sibold et al., 2011). More recent research also suggests that certain personality factors may be associated with increased risk taking behaviors (Akehurst & Oliver, 2014). Finally, athletes with a history of major stressful events, minor daily hassles, and previous injuries are also at an increased risk of injury. Therefore, an individual with these risk factors is more likely to appraise the situation as stressful, resulting in physiological or attentional changes that increases their level of risk for sustaining an injury (Williams & Andersen, 1998). These physiological and attentional changes include disrupted coordination and flexibility, decreased detection of environmental cues, increased muscle tension, a suppressed immune system, disrupted tissue-repair process, compromised sleep, or altered self-care behavior. Thus, we can then think of these physiological or attentional changes as contributing to, or causing an athletic injury. So the psychological factors do not directly “cause” an injury so to speak, but they have an indirect effect.


Of the three antecedents in the model, history of stressors continues to be the most researched. Numerous studies have found a strong association between athletic injury occurrence and severity with major negative life events, such as death of a family member or breaking up with a significant other (Johnson & Ivarsson, 2011; Sibold et al., 2011). Studies have also found athletes with previous injuries are more at risk for injury (e.g., van Mechelen et al., 1996). Some research has found athletes who return to sport following an injury may not be psychologically ready to return, experiencing increased anxiety, depression, or decreased confidence upon their return (Yang et al., 2014). Previous injury also appears to increase an athlete’s own perception of injury risk (Short et al., 2004), as well as their beliefs about playing through pain and injury (Shipherd, 2010). Thus, research suggests that previous injuries can put an athlete at risk for another injury (Short et al., 2004; van Mechelen et al., 1996). However, a more recent body of research has found previous injuries can result in significant growth and positive outcomes (e.g., stress related growth) following the injury (Booth et al., 2018; Wadey et al., 2011).

Can Stress be Good?

Stress is often viewed as negative and has frequently been associated with negative outcomes for both physical and mental health (Crum et al., 2011; Lewandowski et al., 2014). However, there is also substantial evidence that stress can yield positive outcomes, including health improvements and increased performance, among others (Crum et al., 2011; Jones et al., 2009). For example, Fay and Sonnentag (2002) found increases in stress at work resulted in employees taking more personal initiative. When experiencing stress, employees engaged in proactive behaviors to acquire skills necessary to solve problems and meet demands. Thus, while often perceived as negative, stress can also improve both physical and mental functioning and performance.

This idea that stress can be beneficial can be traced back to Selye’s early research on stress. Selye (1950) proposed the first theory of physiological response to stressors, called general adaptation syndrome. Selye viewed stress as a necessary biological response, but one that can be harmful if prolonged. He later extended the idea to include that stress could either result in positive (eustress) or negative (distress) outcomes depending on how one interpreted or appraised the physiological experience (1983). Lazarus and Folkman (1984) expanded on this idea of interpretation in the transactional theory of stress and coping in which stress is viewed as a complex interaction between a person and their environment over time in which how one appraises the situation and one’s resources to cope with the situation largely determines the outcomes experiences. For example, appraising a stressor as a challenge as opposed to a threat, and determining that one has the resources to cope with the stressor can result in the experience of eustress.

More recent research suggest that beliefs about the nature of stress (e.g., stress mindset) also play a large role in the extent to which one experiences either beneficial or detrimental outcomes of stress (Crum et al., 2013). Someone who believes the nature of stress is detrimental will likely experience more negative consequences, as compared to someone who believes stress can yield



positive outcomes and views obstacles or stressors as merely a challenge, rather than a threat (Crum et al., 2013, 2017). While the concepts of eustress or distress and stress mindsets are distinct constructs, research has found they share some similarities. Studies have provided evidence that stress mindset also impacts one's perception or appraisal of a stressor. For example, a stress-is-enhancing mindset has been found to be associated with challenge appraisals, which can result in eustress (Kilby & Sherman, 2016). Further, Park and colleagues (2018) examined middle school students and found that for those students who held a stress-is-enhancing mindset, the negative relationship between negative life events and perceived distress was weakened.

College students in the United States experience high levels of stress and have been found to view stress as more debilitating than enhancing (Jamieson et al., 2016). College student-athletes in particular deal with multiple stressors throughout their college career within their sport and also outside of their sport (Wilson & Pritchard, 2005). Previous research found that for some individuals, sports can be an outlet to alleviate stress, however, for others sport can be a stressor itself (Kimball & Freysinger, 2003). For student-athletes, research has found the accumulation of stressors from their roles as both students and athletes is often perceived as debilitating (van Raalte & Posther, 2019). If the athlete believes their stress is harmful and does not manage their stress properly the stress can cause more anxiety, lead to decreased motivation (Garinger et al., 2018), has been linked to an increase in burnout symptoms (Shipherd, Avery et al., 2023), and also increases their risk of incurring a sport injury (Ivarsson et al., 2017).

In addition to how one appraises a stressor, research has also found one's beliefs about the nature of stress (e.g., stress mindset) play a large role in the extent to which one experiences these beneficial outcomes of stress (Crum et al., 2013). For example, Crum and colleagues (2017) put individuals through an acute stressful situation and found that those individuals who had a stress-is-enhancing mindset were more receptive to feedback and experienced moderate cortisol reactivity in comparison to those who had a stress-is-debilitating mindset. A stress-is-enhancing mindset has also been found to correspond with weakened relationships between adverse life events, perceived distress and lack of control (Park et al., 2018), fewer symptoms of burnout (Shipherd, Avery et al., 2023), as well as increase engagement and performance when expecting a heavy workload (Casper et al., 2017). More recently, researchers have begun looking at the concepts of stress mindset and stressor appraisals in conjunction with one another. Thus, the stress optimization model (Crum et al., 2020) was developed to highlight the importance of both stress mindset and stress appraisal in influencing individuals' use of coping strategies and resulting outcomes.

Sport Injury Related Growth

Stress mindset has also been found to play a role in athletic injury. For example, one of my former undergraduate students, Sarah Gomez, conducted a study examining the relationship between stress mindset and previous injury in college student-athletes. This study was conducted during COVID, so a total of 178 student-athletes who had experienced at least one sport injury during their athletic career that caused them to substantially modify or miss their sport participation for a minimum of four weeks participated in this online survey. Participants reported a variety of different types of injuries, from sprains to bone breaks, concussions, and torn muscles and ligaments. However, in this study there was no statistically significant correlation between stress mindset and previous injury (Gomez et al., 2023), suggesting that the role stress mindset plays in injury risk needs to be better understood. However, we suggested that stress mindset may play a larger role in injury rehabilitation outcomes.

More recent studies have found injuries can result in significant growth and positive outcomes (e.g., stress related growth) following the injury (Booth et al., 2018; Wadey et al., 2011). In other words, for some athletes, injury can be a positive experience. This concept specifically has been termed sport injury related growth (SIRG; Roy-Davis et al., 2017). Specifically, athletes have been found to experience personal growth, psychologically-based performance enhancement, and both physical and technical development following an injury (Udry et al., 1997). Personal growth include gaining a deeper appreciation for sport involvement, developing interests outside of sport, or becoming a better person outside of sport by expanding one's social network or spending more time with loved ones. Psychologically-based performance enhancement refers to improved mental toughness, increased tactical awareness, improved commitment to training, or enhanced motivation. Finally, physical and technical development includes improved technique, increased physical strength, or improved body awareness (e.g., better understanding of one's physical limits).

My recent research has focused on better understanding how some athletes can experience positive consequences following an injury, and identifying how practitioners can aid athletes in having a more positive injury experience. In a more recent project with students, my team examined the relationship between stress mindset and SIRG in 106 college student-athletes who had experienced a sport injury during the previous year. As there is not presently a measure of sport injury related growth, participants in our study completed demographic information, injury information, a measure of stress mindset, as well as the Stress Related Growth Scale (SRGS; Park et al., 1996; Roesch et al., 2004) via Qualtrics. The SRGS is a 29 item Likert-type scale measuring perceived growth following a stressor, which in our case, we asked participants to consider their most recent sport injury. We found statistically significant positive correlations between stress mindset and all three dimensions of the SRGS – mature thinking, affective growth, and religious growth. Specifically, individuals with a stress-is-enhancing mindset reported higher levels of SIRG following an injury (Shipherd, Duncan et al., 2023a).

In another study, we qualitatively explored the beliefs and experiences of stress and growth in athletes who sustained a severe sport injury within the past year (Shipherd, Duncan et al., 2023b). We used maximum variation sampling to identify participants from the previous correlational study with a high degree of SIRG and a stress-is-enhancing mindset and also those with a stress-is-debilitating mindset and a low degree of SIRG. Semi-structured interviews were conducted with six college student-athletes at the conclusion of their injury rehabilitation. We observed differences in growth, coping resources, and injury appraisal between injured athletes with differing stress mindsets. Specifically, athletes with a stress-is-enhancing mindset reported more coping resources, appraised their injury as a challenge or opportunity, and experienced personal growth and psychological performance enhancement. Athletes with a stress-is-debilitating mindset reported social pressure and appraised their injury as threatening, but acknowledged experiencing physical and technical growth. These findings support existing research (Galli & Reel, 2012; Salim et al., 2015) that injured athletes foster SIRG by utilizing positive reframing and receiving emotional support from their support network. Further, these findings suggest that stress mindset may influence the strategies used by athletes following an injury that may influence SIRG.

Improving the Injury Experience

So what can we do for those student-athletes who hold a stress-is-debilitating mindset? Research has established that it is possible to manipulate perception of stress, stress mindset, appraisal of obstacles, or the experience of stress through intervention (Crum et al., 2013; Jamieson et al., 2012, 2016, 2018a, 2018b). Stress mindset intervention studies have also found that when participants stress mindsets or view of stress change, they experience greater physiological, psychological, and performance-related outcomes following the intervention (e.g., Crum et al., 2013, 2017; Jamieson et al., 2016). For example, a study my team conducted found that a brief video-based stress mindset intervention effectively improved stress mindset and decreased burnout symptoms in college student-athletes (Shipherd, Hahn et al., 2023). In this study, 59 Division I and Division II college student-athletes completed basic demographic information, and measures of stress mindset and athletic burnout via Qualtrics before being randomized to either an experimental or control group. Those in the control group viewed a brief video on clouds, while those in the experimental group viewed a brief video on how stress can be beneficial. Both groups were then asked several questions to reflect on the content they viewed before being emailed links to complete the measures of stress mindset and athletic burnout 24 hours later and again three weeks later. Statistically significant differences were found between the two groups, where the experimental group improved in stress mindset and reported experiencing fewer athletic burnout symptoms 24 hours and three weeks after the intervention.

Given stress mindset interventions are brief and cost-effective, this may be a more practical and accessible option to facilitate positive outcomes in a college student-athlete population. With the relationship my research has established between stress mindset and sport injury related growth, one of the next steps is to explore the impact of a brief stress mindset intervention on positive outcomes, such as sport injury related growth, in injured college student-athletes. Facilitating a more positive injury experience for college student-athletes can aid in reducing mental ill-health following an injury and reduce an athlete's risk of future injury as well.

Practitioners should be aware of these differences in beliefs and experiences with stress and growth when working with injured athletes and may need to be more proactive in facilitating the development of more effective strategies in athletes with a stress-is-debilitating

mindset. In addition to promoting a stress-is-enhancing mindset, what else can practitioners do with injured athletes to promote a more positive injury experience? Research on SIRG has found that encouraging self-reflection, especially emphasizing gratitude, following an injury can promote SIRG (Salim & Wadey, 2021). Practitioners can also encourage the injured athlete to maximize their free time, for example encouraging them to focus on academics or explore different career paths. Finally, multiple studies have found strengthening social relationships, including having an emotional outlet to disclose thoughts/feelings with others can also foster SIRG (Barnes et al., 2021; Salim et al., 2016; Salim & Wadey, 2018).

However, a word of caution regarding social support in injured athletes. In one study I conducted with colleagues (Shipherd, Coumbe-Lilley et al., 2023), we qualitatively explored how the sources of self-efficacy, a construct similar to confidence, fluctuated throughout rehabilitation and how injured college student-athletes selected and weighed the sources of self-efficacy information throughout injury rehabilitation. Nine male Division II collegiate athletes were interviewed multiple times throughout their injury rehabilitation and we found that social support from others, such as teammates, coaches, or family, was reported to simultaneously impact self-efficacy positively and negatively. Participants spoke of how their social support team provided tangible (e.g., driving the athlete to physical therapy), emotional (e.g., listening), and motivational (e.g., telling them they were capable) support. However, participants also noted how their social support team negatively impacted their self-efficacy during their injury rehabilitation by pressuring them to return to their sport faster or minimizing their pain or injury. Therefore, social support during injury rehabilitation can be beneficial, but social support providers should be very mindful of their words and behaviors toward injured athletes to ensure they are not having a negative impact on the injured athlete's rehabilitation or injury outcomes.

Thus, there are several major conclusions here. First, I hope you now have an improved understanding of the role that mental health and psychological well-being play in both injury occurrence and injury rehabilitation. Secondly, individual's beliefs about the nature of stress, including their view of and appraisal of injury, play a large role in the extent to which they experience either beneficial or detrimental outcomes of stress. Next, stress mindset plays a role in facilitating sport injury related growth. Finally, these findings from research in this area, including my own, can be used to improve the injury experience of college student-athletes.





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