

Enhancing Self-Compassion in Athletes: A feasibility study of an online self-compassion program for athlete mindfulness, anxiety and performance

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Abstract

The nature of sport competition involves athletes being compared and ranked based on athletic ability, with athletes invariably confronted by potential threat of subjective and objective failure within their sport context. Given this circumstance and the extraordinary amount of pressure athletes often experience, developing an ability to be kind towards oneself in the face of perceived failure could be an important part of sport training. This study evaluated the feasibility and preliminary efficacy of a 4-week self-guided online self-compassion program for athletes. Eighty competitive athletes who participate in time-based sports were recruited from sport organizations and randomly assigned to either a 4-week self-compassion program or a wait-list control. Participants in both groups completed pre- and post-study self-report measures of self-compassion, mindfulness, general anxiety, sport-related anxiety, and perceived sport performance. Objective athletic performance was obtained through performance logs. Results indicated that the self-compassion program was of interest to sport organizations and athletes. However, attrition was high and there were challenges with program adherence. Linear mixed model analyses revealed that relative to the wait-list control, participants in the self-compassion group demonstrated significantly greater improvement in overall levels of self-compassion, the self-compassion element of common humanity, and the mindfulness facet Observe. No significant differences between the groups were found for measures of anxiety and perceived and objective sport performance. Factors influencing compliance with online self-compassion programs such as participant readiness and fears of self-compassion are explored. Program efficacy, study limitations, and directions for future research are also discussed. While the self-compassion program is feasible, challenges in program adherence need to be addressed in future studies. Future research should continue formulating the concept of self-compassion in sport to reflect the needs and interests of athletes, consider including several formats and methods of program delivery, add a motivational component to address barriers to participation and program adherence, and work in collaboration with sport coaches and teams.

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Introduction

Sport and performance psychology are often understood by studying the subjective experiences of athletes, given the general premise that athletic success involves not only the development of physical skills, but also the development of mental capacities and cognitive processes, such as emotion management, concentration and control (Brown & Fletcher, 2017). Mindfulness training, which involves the cultivation of nonjudgmental awareness of present moment experiences, has received recent attention as a technique that can enhance elite athletic performance by improving emotion regulation processes and attentional skills (Carraça et al., 2018). Self-compassion has also gained increased attention, with research indicating that cultivating a more accepting and unconditional kindness toward oneself promotes overall psychological health and well-being in diverse populations (Gerber et al., 2015; Gunnell et al., 2017; Hall et al., 2013). This unwavering self-kindness may be particularly useful when facing what an athlete perceives as personal defeat or failure. These experiences of failure are uniquely defined by the individual and may not be related to objective results or outcomes of sport or competition (Maehr & Nicholls, 1980; McAuley, 1985). This study acknowledges that failure is subjective and conceptualizes failure throughout the text as an individual's *perceived lack of success*, rather than a failure to achieve objective performance outcomes. In athletes who experience negative emotions following a perceived setback or failure in sport, being able to regulate these emotions could be an important part of improving athlete well-being and performance.

The principle aim of the current study was to determine if it is feasible to administer a brief, online, self-guided self-compassion training program to athletes. A feasibility study of this nature could help inform the design of future large scale randomized controlled studies of online self-compassion interventions for athletes by generating data on ease of recruitment, retention rates, study compliance, and program engagement. Efficacy of the self-compassion program was of secondary interest. For this secondary aim, the study sought to determine if the online self-compassion intervention fared better than a wait-list control condition in enhancing levels of self-compassion and mindfulness, decreasing levels of general and sport-related anxiety, and enhancing perceptions of athletic performance.

Personal Motivations

My interest in this research stems from my own experiences in competitive sport. As a competitive athlete, I have felt the pressures of competition and experienced multiple setbacks. I became interested in exploring how some of these setbacks made me feel frustrated, defeated, and disappointed, while other sport challenges left me feeling excited, determined, and resilient. I became interested in how my own perspectives and reactions to these obstacles influenced my mental health and found value in enhancing my internal dialogue when faced with sport-related challenges. I have come to view my own well-being as an important factor influencing my overall enjoyment and perseverance in sport and became interested in how my athletic performance might also be influenced by these internal reactions to sport setbacks.

Literature Review

The review of the literature begins by describing some of the important mental skills underlying peak athlete experience and performance. Theories about the optimal mental states and experiences of athletes are presented, and the potential connections between athlete experience, performance and self-compassion are explored. The key concepts of mindfulness and self-compassion are then described, and details about the similarities and differences between mindfulness and self-compassion skills and practices are identified. Research involving mindfulness and self-compassion training in the general population as well as in athlete-specific populations are presented throughout this review. Previous research focusing on the feasibility and efficacy of self-compassion training studies for athlete well-being and performance is also discussed.

Sport Psychology and Performance Research

Optimal performance is characterized as a dynamic process rather than a single state, which can be experienced physically, socially, and mentally (Smrdu, 2015). It is generally understood that it takes more than physical ability to compete at an elite level sport, and sport psychology researchers are fascinated in uncovering the psychological drives involved in athletic success. Several researchers have theorized about the underlying factors that could unlock optimal mental states in athletes and help them achieve enhanced performance. Both optimal athlete experiences and peak athletic performance have emerged as important areas of research and practice in sport psychology. In reviewing the literature on sport psychology, Aoyagi et al. (2012) described two different areas of focus within the field: performance enhancement and therapy. These foci outline the work of sport psychology practitioners and are important to

consider. The element of performance is what makes the sport psychology field particularly unique from parallel domains of psychology or kinesiology. Here, sport psychologists often outline more targeted goals than psychologists who focus on general well-being and may outline specific performance-related objectives in therapy (Aoyagi et al., 2012). This might include working towards quicker speeds or better mental functioning in order to increase or enhance sport performance. An emphasis on both mental health and performance is important when working with athletes and understanding the relationship between optimal athlete experiences and optimal athletic performance are crucial to this field of study. This research acknowledges the importance of objective performance in athlete populations and within the field of sport psychology and explores the potential relationship between athlete experience and performance.

The optimal mental state sometimes accompanied by physical activity, often described as *flow*, involves an intense and energized state of full concentration and involvement in one's actions as they unfold, where individuals are said to operate at full capacity (Nakamura & Csikszentmihalyi, 2009). Here, athletes are fully enthralled in the physical, mental and environmental aspects of their sport, and experience no distinction between themselves and the activity they are engaging in. They experience thoughts, feelings, and actions in unison, and can respond to their environment without hesitation (Nakamura & Csikszentmihalyi, 2009). Flow is described as an optimal mental state, which is experienced by athletes as enjoyable and intrinsically rewarding (Jackson, 1996). Promoting flow has become an important part of athlete training, because this is where athletes are found to experience optimal mental states as well as achieve positive performance outcomes (Jackson, et al., 2001; Jackson & Csikszentmihalyi, 1999; Jackson & Roberts, 1992; Swann, et al., 2016). Although optimal athletic *performance* is differentiated from optimal athlete *experience*, flow research has shown that peak experience and performance are interrelated (Jackson et al., 2001; Jackson & Roberts, 1992; Kaufman, et al., 2018; Landhäußer & Keller, 2012; Stavrou, et al., 2007).

Jackson (1995) contends that plans and preparation, confidence and positive attitude, physical preparation and readiness, optimal arousal pre-competition, and motivation facilitate flow states among athletes. Physical unpreparedness, non-optimal environmental/situational conditions, negative thinking or attitude, inappropriate focus and issues with precompetitive preparation are further identified as factors that impede these flow states (Jackson, 1995). Krane and Williams (2006) similarly studied this optimal mental and physical state and found that

optimal athletic performance is often accompanied by feelings of confidence, expectations for success, energized and relaxed sensations, concentration, focus, optimistic attitudes and thoughts about performance and determination. Athletes have reported that *focus* and *thoughts and/or emotions* are the most common factors underlying flow states (Swann et al., 2012). Sport psychology practitioners have integrated this knowledge about flow states into their practice, and often focus on helping athletes identify the mental and emotional states that are most beneficial to their experience and sport performance (Harmison, 2006).

Other theories of peak performance include Hanin's (1997, 2000) Individual Zones of Optimal Functioning (IZOF) model, which contends that athletes experience a range of positive and negative thoughts, emotions, experiences, and physiological states, which can either impede or enhance athletic performance. Hanin (2000) described the implications of positive and negative emotions on sport performance and suggested that the intensity of an athlete's unique emotional experiences can either facilitate or hinder sport performance. Athlete experiences of anxiety for example can be either beneficial or detrimental, depending on the subjective interpretation of whether this anxiety is low, moderate or high. Perceptions of either high anxiety or debilitating anxiety have been associated with poorer sport performance (Hanin, 1978, 1986, 1989; Mellalieu et al., 2003; Neil et al., 2012). Research on the IZOF model suggests that when athletes are in their individualized optimal zones, they are more likely to experience superior performance (Annesi, 1998; Robazza et al., 2000; Robazza et al., 2004).

Positive affect emerges as a clear theme in the literature regarding flow states, the IZOF model, and optimal athlete performance in general. McCarthy (2011) highlighted the utility of positive emotions in sport and the indirect but integral impact positive emotions have on athletic success. Emotions can influence certain subcomponents of performance such as perception, attentiveness, memory, and decision-making ability (Brosch et al., 2013), which in turn, impact athlete performance (McCarthy, 2011). Kucharski et al. (2018) found that emotion regulation approaches used by athletes pre-competition included meaning making strategies (e.g., visualize oneself performing well) and behavioural strategies (e.g. listening to music), while approaches used post-competition were largely comprised of meaning-making strategies (e.g., reflecting on areas of weakness). Athletes also tended to use emotional regulatory strategies that they believed would improve their athletic performance (Lane et al., 2011). Researchers suggest that it is not enough to simply be aware of emotion regulation strategies, and that it is necessary for athletes

to learn about how and when to employ appropriate emotion regulation approaches (Kucharski et al., 2018). There is a need for athletes to develop an awareness of emotions, and ways of managing emotional reactions. Training programs that teach athletes about emotional regulation strategies and ideas about how to apply these techniques could be useful in facilitating optimal performance states and enhancing athlete well-being.

Perceptual training, pre-performance routines, self-talk, relaxation, feedback, attentional focus manipulation, and imagery have been identified as some of the most useful psychological strategies used with competitive athletes (Brown & Fletcher, 2017). Mindfulness and self-compassion training have also been gaining increased traction in the sport psychology literature (Awamleh et al., 2014; De Petrillo et al., 2009; Mosewich, et al., 2013; Thompson et al., 2011), and have been offered as potential tools for athletes to use in managing their emotions in sport.

Mindfulness

Bishop (2004) broadly defines mindfulness as an open awareness and acceptance of present thoughts, feelings, and sensations, and describes its self-regulating and experiential qualities. Most conceptualizations of mindfulness involve attention and awareness to present-moment experiences, and typically offer certain psychological characteristics which describe how this awareness can be practiced (Williams, 2010). Mindfulness is said to involve sustaining attention to present experiences, acknowledging changing thoughts and feelings, switching attention from one focus to another, inhibiting the elaborative processing of thoughts and emotions, and adopting curiosity, openness, and acceptance of these thoughts and emotions (Bishop, 2004). Mindfulness is conceptualized as both an individual disposition (i.e., trait mindfulness) that reflects individual differences in capacity to be mindful in daily life, and as a state (i.e., “state mindfulness”), that refers to the extent to which one is experiencing non-judgemental, present moment awareness at any given moment (Germer et al., 2005).

Research on mindfulness has shown several advantages of mindfulness training, such as improving emotional regulation and interpersonal relationships, decreasing emotional reactivity, and increasing response flexibility (Davis et al., 2011). Studies on the intrapersonal effects of mindfulness have shown decreases in rumination, disengagement (Corcoran et al., 2010), negative affect, depressive symptoms (Chambers et al., 2008), anxiety symptoms (Hoffman et al., 2010), reactivity (Goldin & Gross, 2010), and distraction (Cahn & Polich, 2009), and

increases in positive emotions (Erisman & Roemer, 2010), working memory (Jha et al., 2010), cognitive flexibility, and attentional functioning (Moore & Malinowski, 2009).

Mindfulness Research in Athletes

Athletes have reported that mindfulness training enhances psychological flexibility (Caracca et al., 2018), and improves self-control, ability to relax, concentration, and confidence (Amemiya et al., 2019). Maintaining facilitative levels of anxiety is an important part of enhancing athlete experiences and performance. In a study conducted by Scott-Hamilton and Schutte (2016), competitive athletes who maintained a high adherence to a mindfulness training intervention were found to experience a decrease in sport anxiety. Other researchers have demonstrated the benefits of mindfulness training on anxiety management and propose mindfulness practice as a useful intervention method for athletes (De Petrillo et al., 2009; Gardner & Moore, 2004; Gross et al., 2018; Ojaghi et al., 2013; Solberg et al., 2000; Thompson et al., 2011). Mindfulness training is thought to alter athlete perceptions and result in less detrimental experiences of anxiety during sport or competition (Scott-Hamilton & Schutte, 2016). Mindfulness in athletes has been associated with decreased pessimism (Scott-Hamilton et al., 2016) and emotion regulation difficulties (Josefsson et al., 2019).

Aherne et al. (2011) studied the effects of a six-week mindfulness training program for competitive athletes and found large increases in participant flow scores, suggesting that developing mindfulness can help foster elements of peak athlete experience. Mindfulness training has also been found to promote flow experiences in cyclists (Scott-Hamilton et al., 2016), soccer players (Caracca et al., 2018), swimmers, and golfers (Bernier et al., 2009). In addition to promoting optimal athlete experiences, research by Josefsson et al. (2019) found that increasing sport-specific mindfulness created more positive self-assessments of athletic performance. Athletes who participated in a mindfulness intervention perceived their performances more positively than those completing psychological skills training (Josefsson et al., 2019), suggesting that developing mindfulness skills enhance athletes' subjective interpretation of their sport performance. Research on a mindfulness-based soccer program similarly found that scores on self-reported performance increased post-program (Carraca et al., 2018).

The connection between mindfulness training and enhanced athlete performance has been explained by its associated improvements in cognitive processing, including attentional and

working memory skills (Carraca et al., 2018). Attentional skills involve directing focus to certain stimuli while maintaining an awareness of other competing or background stimuli (Gardner & Moore, 2012). In this way, enhancing mindfulness could allow athletes to improve concentration and expand awareness, such as focusing on one's individual movements as well as the position of teammates for example. Mindfulness training is also thought to alter athlete perceptions of challenges in sport, allowing them to maintain a higher sense of control over themselves and their environments (Carraca et al., 2018). In this sense, practicing mindfulness may allow athletes to feel more in control of their attention, thoughts, and emotions, and facilitate greater activity in the other aspects of their sport. This is described as an efficiency in allocating cognitive resources during sport, allowing athletes to utilize cognitive skills such as processing, remembering, or focusing in an effective way. Improved efficiency in cognitive resource allocation has been associated with improved sport performance (Hatfield et al., 2004). In a meta-analytic review of mindfulness and performance outcomes in sports, Buhlmayer et al. (2017) found that mindfulness interventions enhanced performance in precision sports, such as shooting or dart throwing. While links between mindfulness and athlete perceptions of performance have been made, little is known about the association between mindfulness and objective measures of athletic performance, such as technique or skill.

With evidence supporting the beneficial effects of mindfulness training on both athlete well-being and performance, sport psychology practitioners have begun to integrate mindfulness training in their work with athletes. Mindfulness-based interventions, such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) are among the most common approaches used with athletes, with sport-specific interventions such as Mindfulness-Acceptance Commitment (MAC) program(s) and Mindfulness Sport Performance Enhancement (MSPE) program(s) increasingly being adopted and integrated into sport psychology practice (Carraca et al., 2018).

Self-Compassion

Self-compassion involves being connected and aware of one's own suffering and responding to personal inadequacies and challenges openly and with kindness (Neff, 2003a). Neff (2003a) described self-compassion as comprised of three components:

- (a) self-kindness—extending kindness and understanding to oneself rather than harsh judgment and self-criticism, (b) common humanity—seeing one's experiences as part

of the larger human experience rather than seeing them as separating and isolating, and (c) mindfulness—holding one’s painful thoughts and feelings in balanced awareness rather than over-identifying with them (p. 89).

Self-compassion is described as a broad aspect of the self that has unique qualities and characteristics, which can be further distinguishing from other self-concepts like self-esteem and self-criticism. Self-compassion is often compared to self-esteem, with both constructs thought to be related to positive self-regard, increased self-worth, and positive self-attitudes (Neff, 2011). The evaluative aspect of self-esteem is thought to differentiate this concept however, with self-esteem involving an evaluation of worthiness, or an identification of superiority or inferiority of the self in relation to others (Neff, 2011). This means that self-esteem is comparative in nature and involves rating oneself against others based on one’s perceived excellence or inadequacy. Self-compassion does not involve this self-inflation of evaluation of self-image, and alternatively aims to evoke a self-kindness, similar to the compassion that an individual would typically offer to others, if they were experiencing the same personal challenges (Neff, 2011). Self-compassion involves an internal self-soothing, which fosters feelings of security and safety, while self-esteem is more externally driven, requiring social comparisons of superiority or inferiority in eliciting feelings of self-confidence (Neff, 2011). Barnard and Curry (2011) described the opposing nature of self-criticism to self-compassion, with self-criticism involving a self-judgment and over-identification with experiences, problems, or emotions. Self-compassion has shown to have effects that are different than other self-concept constructs, highlighting a uniqueness in its underlying physiological systems (Gilbert, 2009).

Similarities and Differences between Mindfulness and Self-Compassion

Mindfulness and self-compassion have their roots in Buddhist philosophy, and are concepts which often overlap, draw upon each other, or occur in sequence. Both mindfulness and self-compassion involve reflecting on painful emotions or experiences with openness and acceptance (Neff & Dahm, 2015), and promote nonjudgement of experiences, perspective taking (Neff, 2003a), resiliency, and overall well-being (Baer et al., 2012; Brown & Ryan, 2003; Neely et al., 2009). Mindfulness is a core component of self-compassion, and it is generally understood that one must first be aware of painful experiences before one can initiate a kind and compassionate response to these experiences (Neff & Dahm, 2015). For this reason, self-compassion programs often integrate some element of mindfulness training. While some

programs aim to enhance both mindfulness and self-compassion by integrating both practices in their training exercises, other programs explicitly target self-compassion, and only the awareness component of mindfulness training.

Although research suggests that mindfulness practice may promote or cultivate self-compassion and vice versa, the two constructs have shown to have distinct features (Dahm et al., 2015; Shapiro et al., 2005; Shapiro et al., 2007). Mindfulness generally refers to an awareness of present-moment experiences, while self-compassion is something that is usually initiated or practiced in more distressing situations or circumstances (Dahm et al., 2015). In this way, the mindfulness aspect of self-compassion involves being aware of the negative thoughts or feelings that are being experienced (Neff & Dahm, 2015). While mindfulness is a way of relating to and understanding our internal experiences, self-compassion is described as a way of relating to and exploring oneself (Neff & Dahm, 2015).

Baer et al. (2012) examined the differential effects of mindfulness and self-compassion on well-being in meditators and non-meditators, and found that while both measures are important, self-compassion was a stronger predictor of psychological well-being than mindfulness. This suggests that while both constructs may overlap, they have fundamentally different functions. This idea is further highlighted in research conducted by Dahm et al. (2015), who examined the relationship between mindfulness and self-compassion with severity of post-traumatic stress disorder symptoms and disability. Self-compassion and mindfulness were found to influence symptom severity and functional disability in different ways, suggesting that while these concepts overlap, they are primarily independent from one another (Dahm et al., 2015). Makadi and Koszycki (2020) reported that self-compassion was a more robust predictor of illness severity than mindfulness in patients with social anxiety disorder. These researchers also found that self-compassion was an important mediating variable in the relationship between mindfulness and anxiety severity, whereas the mediating role of mindfulness in the relationship between self-compassion and anxiety severity was largely not significant (Makadi & Koszycki, 2020). It is therefore important to conceptualize mindfulness and self-compassion as related but separate concepts which have unique characteristics and processes.

Self-Compassion and Psychological Well-Being

Self-compassion has been associated with several psychological benefits. Summarizing key findings in a review of research, Barnard and Curry (2011) found links between self-

compassion and well-being, with low levels of self-compassion associated with negative affect, anxiety, depression, rumination, thought suppression, thought avoidance, procrastination, and perfectionism. High levels of self-compassion were associated with positive affect, emotional intelligence, emotional regulation, perceived competence, perceived efficacy, agreeableness, well-being, life satisfaction and happiness. Links between self-compassion and psychological resiliency have also been reported in the literature, suggesting that self-compassion may serve a protective function in the development of psychopathology (Trompetter et al., 2017).

Those who are self-compassionate are said to maintain constructive self-attitudes which promote positive growth and an overall sense of well-being (Gerber et al., 2015; Gunnell, 2017; Hall et al., 2013; Neff, 2003b). Neff et al. (2007) explored the relationship between self-compassion and psychological well-being among graduate students who participated in a two-chair dialogue intervention. Participants engaged in an intrapersonal conversation, voicing and responding to their own self-criticisms. Those who experienced an increase in self-compassion following the intervention experienced improvements in other areas of mental health, including increased social connectedness and decreased self-criticism, depression, rumination, thought suppression, and anxiety (Neff et al., 2007). The self-soothing nature of self-compassion, which evokes feelings of safety, security, and emotional calmness, are also thought to be involved in promoting this general sense of well-being (Gilbert, 2005).

Self-Compassion Research in Athlete Populations

Researchers have identified self-compassion as a useful practice for athletes who struggle with body image concerns. In conducting semi-structured interviews with women athletes, Eke et al. (2019) found that body self-compassion (i.e., having confidence in one's body, becoming aware of negative body evaluations, and then developing compassionate attitudes towards the body) allowed athletes to feel confident in their sport-related abilities, appreciate the functionality of their bodies, and engage in less social comparisons. Participants reported increased confidence, which extended to perceptions of enhanced performance as they learned and cultivated body self-compassion (Eke et al., 2019). Athletes reported that the more self-compassionate they were towards themselves and their bodies, the more positive emotions they experienced, and the better they performed in their sport.

Research conducted by Voelker et al. (2020) evaluated the effects of the *Bodies in Motion* program, which incorporates cognitive dissonance and self-compassion in promoting

positive body image in female athletes. Qualitative analysis of program feedback indicated that participants experienced increased awareness in their body, themselves, their sport, and society, increased acceptance and appreciation for themselves and their bodies, and enhanced skills in maintaining positive self-images and attitudes. Mosewich et al. (2011) identified self-compassion as a useful skill for female athletes, with self-compassion correlating positively with pride and shame-free guilt, and negatively with shame, body consciousness, fear of failure, and fear of negative evaluation (Mosewich et al., 2011). Self-compassionate female athletes were found to display less social physique anxiety in response to physical evaluation or observation (Mosewich et al., 2011). Given the high prevalence of body image concerns and eating pathology among athletes (Anderson et al., 2012; Harriger et al., 2014), self-compassion focused interventions show promising effects for athlete body image concerns.

In order to understand how self-compassion develops in athletes, Ingstrup et al. (2017) conducted interviews with highly self-compassionate athletes. Emerging themes in study findings included the role of parents, self-awareness, peers, siblings, coaches, and sport psychologists in self-compassion development. Parents fostered self-compassion in athletes by helping them acquire the capacity for positive self-talk and perspective taking in the face of challenging experiences and offering support and other forms of guidance. On an individual level, participants felt that reflecting on their past experiences and challenges helped them develop greater self-compassion. Furthermore, participants reported that observing self-compassionate behaviors among teammates, having supportive and encouraging coaches, and seeing sport psychologists who promoted positive self-talk, contributed to self-compassion development (Ingstrup et al., 2017). In a study of team sport competitive athletes conducted by Crozier et al. (2019), perception of teammate's self-compassion correlated with athletes' self-rated self-compassion. This finding suggests that when self-compassion is perceived as *normal* in a team environment, athletes are more willing to adopt self-compassionate attitudes in sport. Overall, these studies highlight the importance of others, such as those in athletes support systems (e.g., friends, parents, coaches, mental health and performance consultants) in helping athletes develop more kind and forgiving attitudes within the context of sport.

Amemiya and Sakairi (2020) assessed differences between male and female athletes on levels of mindfulness and self-compassion and found that female athletes generally had lower levels of trait mindfulness and self-compassion than males. Further, among female athletes, self-

compassion was a mediating variable in the negative association between trait mindfulness and burnout. This association was not found in male athletes. In contrast, Crozier et al. (2019) found no gender differences on levels of self-compassion among athletes. It should be noted that research on self-compassion in male athletes is limited and available studies report mixed results on the psychological effects of self-compassion. A survey conducted by Fontana et al. (2017) noted that male athletes who were compassionate towards *others* perceived their team environment as more supportive and accepting, whereas being compassionate towards the *self* was found to be unrelated to sport climate experiences. Fontana et al. (2017) suggested that self-compassion may not have emerged as a key element in a motivational climate because male athletes might find it more difficult to be compassionate towards themselves than to their teammates and coaches. Research by Wasyliw and Clairo (2018) suggested that team sports may foster self-compassion among male athletes, and found that male athletes maintained higher levels of self-compassion than men who did not play sports. Wasyliw and Clairo (2018) suggested that team membership fosters a self-compassionate attitude, and this is independent of the endorsement of masculine norms and a willingness to seek out psychological help.

Links between self-compassion and eudaimonic well-being, which emphasizes the role of growth, human potential, and self-actualization in wellness, have been noted in the literature (Ryff, 1989, 1995). Self-compassionate athletes have been found to display higher levels of wellness according to Ryff's (1995) six-factor model of eudaimonic well-being, as well as increased autonomy, environmental mastery, personal growth, positive relatedness, purpose in life, and self-acceptance (Ferguson et al., 2014). Self-compassionate female athletes have been found to think more positively and respond in more adaptive ways following difficult situations in sport (Reis et al., 2015), and are generally found to maintain more positive attitudes, take responsibility for their actions, and persevere when faced with difficult situations in sport (Ferguson et al., 2014).

Mosewich et al. (2019) studied the role of self-compassion in the stress process during competition. Self-compassion was found to be predictive of higher control appraisals, with athletes high in self-compassion perceiving greater control during stressful situations in sport. Furthermore, study results indicated a negative relationship between self-compassion and negative affect, indicating that athletes who are self-compassionate are better able to manage negative emotions. Self-compassion has also been associated with decreased sport-related

anxiety in athletes (Huysmans & Clement, 2017; Mosewich et al., 2011). These findings suggest that self-compassion could be a useful tool to help athletes develop more adaptive emotion coping strategies when facing stressful situations during sport training or competition. Effective emotion coping is thought to contribute to higher goal progress in sport, suggesting that athletes who are able to acknowledge and manage negative emotions that come up during sport could perform better during training or competition (Mosewich et al., 2019).

A week-long self-compassion training program, consisting of one psychoeducation session and five self-compassion writing tasks, was found to increase levels of self-compassion and lower levels of self-criticism, rumination, and concern over mistakes in self-critical female athletes (Mosewich et al., 2013). Awamleh et al. (2014) similarly found increases in levels of mindfulness and self-compassion in female athletes following a 12-week mental skills training program that included self-talk, goal setting, imagery, and relaxation exercises. Athlete-specific self-compassion training methods are in their early stages of development. These programs seem to focus on developing skills and techniques in self-talk, goal setting, goal attainment, imagery, visualization, relaxation, and self-compassionate reflection, and generally aim to foster an understanding of common humanity, self-kindness, and mindfulness (Awamleh et al. 2014; Mosewich et al., 2013).

Resistance to Self-Compassion in Sport

Huysman and Clement (2017) suggested that fostering self-compassion in athletes may be more complex than in other populations and outlined potential biases in self-reported self-compassion levels. Although there is solid evidence that self-compassion has positive benefits for athletes, some athletes feel that self-criticism is a necessary element of athletic success (Ferguson et al., 2014). In a study exploring the narratives of women athletes, self-compassion was associated with negative consequences in sport, such as reduced motivation in sport and increased complacency with mediocre performance (Sutherland et al., 2014). Sport culture might contribute to this fear of and resistance to self-compassion because of the emphasis on mental toughness, physical and/or emotional sacrifice, infallibility, and selflessness as necessary elements of athletic success (Coulter et al., 2015). Furthermore, Huysmans and Clement (2017) suggested that sport culture may be particularly relevant in explaining resistance to positive self-attitudes and self-compassion in male football players, and attribute this resistance to the sex of these athletes and the aggressiveness of their sport.

Self-Compassion and Performance

While most self-compassion research has focused on its associated cognitive implications and benefits, some studies have begun to establish relationships between self-compassion and goals, motivation, and achievement (Barnard & Curry, 2011). Neff et al. (2005) distinguished mastery-based goals from performance-based goals, and found that university students who are self-compassionate maintained mastery orientations towards learning. This suggests that self-compassionate individuals are driven by an internal interest or curiosity and attribute their perceived successes and failures as a reflection of individual effort rather than personal character (Neff et al., 2005). University students who are self-compassionate were also found to be more emotionally affected by whether their goals are personally meaningful, rather than the amount of progress made toward goal attainment (Hope et al., 2014). This suggests that self-compassionate individuals are more interested and invested in *pursuing* personally meaningful goals than they are in *achieving* these goals. Self-compassion has also been linked with higher levels of confidence in one's abilities and less fear of failure, performance-related anxiety, and fluctuation in negative affect and self-worth evaluations when goals are not attained (Hope et al., 2014; Neff et al., 2005). In this way, self-compassion is considered an adaptive and useful response while working towards personal goals.

Moeini et al. (2019) studied the effects of self-compassion training on nursing students' perception of self-efficacy in clinical performance. Results indicated that self-compassion training led to increased feelings of self-efficacy, including perceived enhancement in assessing and diagnosing patients. No research to my knowledge has identified links between self-compassion and objective measurements of goal attainment, success or performance in athletes.

Self-Compassion and Athletic Performance

Self-compassion is thought to facilitate adaptive coping with challenging circumstances, making it particularly relevant for competitive athletes who regularly engage in high-stress sport situations. Barczak and Eklund (2018) found that athletes with high levels of self-compassion perceived their athletic performances more positively and reported less task-oriented and disengagement-oriented coping, less external motivation, and increased internal motivation towards participating in their sport. These findings suggest that self-compassionate athletes utilize adaptive coping strategies when facing stressful situations in sport and are more likely to be intrinsically motivated in their sport participation. Research conducted by Killham et al.

(2018) similarly found that self-compassion was an important element in evaluating individual athletic performance. In their study, components of perceived athletic performance were evaluated, and positively perceived performances were found to be related to self-compassion (Killham et al., 2018).

In addition to enhancing athlete perceptions of performance, emerging research has begun to explore the physiological correlates of self-compassion, and the potential connection between self-compassion and objective athletic performance. Ceccarelli et al. (2019) studied the physiological responding of athletes at baseline, during a stress induction which involved recalling sport failure, and again during a recovery period. Results indicated that self-compassion predicted less physiological reactivity during recall of sport failure. The authors concluded that self-compassion enhances parasympathetic nervous system activity, allowing athletes to remain calm, both physically and psychologically, when encountering stressful situations in sport. Further supporting the link between the physiological and psychological aspects of self-compassion, Kim et al. (2020) found that practicing self-compassion decreased activation of neural networks associated with threat, whereas practicing self-criticism enhanced activation of these networks.

In addition to preliminary research demonstrating possible neurobiological correlates of self-compassion in athletes, it is interesting to consider the potential physical performance benefits that could come from self-compassion training. Large gaps in the literature exist in relation to self-compassion and objective measures of performance, and assessing performance as a dynamic construct has been identified as an important area of investigation in future research (Ceccarelli et al., 2019; Killham et al., 2018; Kim et al., 2020; Mosewich et al., 2019). Given the link between self-compassion and emotion regulation, self-compassion could be a useful skill for athletes not only for their well-being, but also for their objective athletic performance.

Present Study

Considering the potential relationship between self-compassion, anxiety, and performance, as well as growing research evidence that self-compassion and mindfulness training can enhance well-being and resilience in diverse populations, the overarching aims of this study were to assess the feasibility of an online self-compassion training program for athletes, and obtain preliminary data on the program's efficacy relative to a wait list control in

improving well-being and perceived and actual athletic performance. Mosewich et al. (2019) have recommended next steps in research and practice in integrating self-compassion in sport. For example, they propose that research should evaluate different intervention modalities, length of intervention, accessibility, and timing of self-compassion training (e.g., during practice, pre- or post-competition). The authors also emphasize a need for establishing normative data in understanding self-compassion at a state level as well as using research measures that incorporate athlete behavior or physiology. State self-compassion refers to the psychological or physiological experiences of self-compassion, representing a self-compassionate reaction within a specific moment. This research study addresses some of these recommendations by evaluating the feasibility and acceptability of a brief online self-compassion program that incorporates different strategies to enhance self-compassion (i.e., video, writing reflection, meditation), and evaluating the potential efficacy of the online, self-guided program on both subjective and objective performance measures.

Online psychological interventions have increasingly become a popular modality in the mental health and wellness field (Andersson et al., 2005; Beiwinkel et al., 2017; Griffiths et al., 2006). There is solid preliminary evidence that online mindfulness-based interventions can improve well-being and reduce stress, anxiety, and depression in diverse populations (e.g. Mak et al., 2017; Spijkerman et al., 2017), and increase levels of mindfulness and self-compassion (Danilewitz et al., 2018). Internet-based programs offer several advantages beyond face-to-face mental health and wellness programs. An online program can reach a large audience of athletes in a cost-effective manner and is accessible in most environments or settings. Online programs can be available to participants 24/7, making them flexible for athletes who have other life or training commitments. Having the self-compassion training program online also addresses privacy concerns and maintains participant anonymity. No studies to my knowledge have evaluated an online self-compassion intervention for athletes. Therefore, this research makes a novel contribution to the sport psychology literature.

Research Objectives and Hypotheses

1. To determine if it is feasible to administer an online self-compassion training program to athletes. Specifically, the study evaluated ease of recruitment, program adherence, and completion of follow-up assessments.

2. To obtain preliminary data on whether the online self-compassion training program increases levels of self-compassion and mindfulness. It was hypothesized that participants assigned to the self-compassion training program would report increased levels of self-compassion and mindfulness post-study relative to participants in the wait-list control condition.
3. To determine whether the online self-compassion training program reduces levels of general anxiety and sports-related anxiety. It was hypothesized that participants assigned to the self-compassion training program would report decreased levels of general and sports-related anxiety post-study compared to those assigned to the wait-list control condition.
4. To determine whether the online self-compassion training program influences perceived and actual athletic performance. It was hypothesized that participants assigned to the self-compassion training program would report better perceived and actual athletic performance post-study relative to participants in the wait-list control condition.

Methodology

Study Design

The study was a two-arm, parallel design, prospective feasibility trial comparing the online self-compassion training program versus a wait list control. The study was approved by the Office of Research Ethics and Integrity of the University of Ottawa (Ethics certificate # S-09-19-4742).

Participants

Participants were recruited from university sport teams, external sport leagues, and other sport organizations, including community centers, gym facilities, other organized fitness groups. Those over the age of 16, who were currently competing in individual, time-based sports (i.e., running, swimming, biking, rowing) were invited to take part in the study. To be eligible, participants must have been actively training or participating in their sport at the time of recruitment. Individuals who were not training or participating in some form of individual, time-based sport were excluded from the study.

Procedure

Individuals who expressed interest in the study were contacted by the investigator and given further information about the nature and requirements of the study. All participants were emailed eligibility and consent forms. Once eligibility was determined and consent forms were

completed, participants were redirected to a link to complete the self-report study questionnaires online. The study questionnaire included demographic information as well as measures of mindfulness, self-compassion, general anxiety, sport-related anxiety, perceived athletic performance, and actual athletic performance. Once baseline measures were obtained, a computer randomization program (Urbaniak & Plous, 2013) was used to randomize participants on a 1:1 basis to either the self-compassion training program or the wait-list control group. After the 4-week period, participants in both groups completed the same self-report questionnaires.

Measures

Demographics

Information about the participants age, gender, ethnicity, participation in sport, and level of competitiveness were collected.

Feasibility Outcomes

Feasibility outcomes included ease of recruitment, compliance with the self-compassion program, and completion of post-study questionnaires.

Mindfulness

The 15-item version of the Five-Facet Mindfulness Questionnaire (FFMQ-15) (Baer et al., 2012) was used to assess dispositional mindfulness. The FFMQ-15 is an abbreviated version of the 39-item FFMQ (Baer et al., 2006). This scale assesses five facets of mindfulness including Observing, Describing (Describe), Acting with Awareness, Non-Judging of Inner Experience (Non-judging), and Non-Reactivity of Inner Experience (Non-reactivity). The facet Observe involves attentiveness to internal experiences while Describe involves the ability to express or explain these experiences. The facet Act with Awareness measures one's ability to engage fully in present moment experiences. The facet Nonjudging involves remaining objective and accepting thoughts or emotions that arise and the facet Non-Reactivity includes allowing thoughts and emotions to pass without becoming consumed with or overwhelmed by them (Baer et al., 2006). Items are rated on 5-point Likert scale (1 = *never or very rarely true* to 5 = *very often or always true*), with higher scores indicating higher levels of dispositional mindfulness. The 15-item FFMQ correlates well with the 39-item FFMQ, and has been found to have good psychometric properties, including adequate internal consistency and convergent validity (Gu et al., 2016). The scale is also sensitive to change. The internal consistency in the current sample was good for Acting with Awareness (Cronbach's $\alpha = .79$), Observing (Cronbach's $\alpha = .80$) and

non-reactivity (Cronbach's $\alpha = .85$), and excellent for Describing (Cronbach's $\alpha = .90$) and Non-judging (Cronbach's $\alpha = .92$) facets.

Self-Compassion

The Self-Compassion Scale-Athlete Version (Short form) (SCS-AV-SF) (Killham et al., 2018), was used to measure athlete self-compassion in sport specific contexts. This is a modified version of Neff (2003b) Self-Compassion Scale (Short Form) (SCS-SF), which measures dispositional levels of self-compassion. The SCS-AV has the same intent and structure of Neff's SCS (2003b) but specifies self-compassion in oneself as an athlete and in sport. This scale consists of 12-items, with items rated on a 5-point Likert scale (1= *almost never* to 5= *almost always*). Higher scores on the SCS-AV-SF indicate higher levels of self-compassion. Killham et al. (2018) reported that the scale has a high internal consistency and a high-test retest reliability. The internal consistency of the SCS in the current sample was excellent (Cronbach's $\alpha = .93$).

General Anxiety

The anxiety subscale of the Depression, Anxiety and Stress Scale (DASS) (Lovibond & Lovibond, 1995) was used to measure levels of anxiety over the previous week. The subscale includes 7-items that measure autonomic arousal, skeletal muscular reactions, situational anxiety, and subjective experiences of anxiety. Respondents are asked to rate items using a 4-point Likert scale (0 = *did not apply to me at all* to 3 = *applied to me very much or most of the time*), with higher scores indicating higher levels of anxiety. The DASS-21 is a valid and reliable measure of depression, anxiety and stress, measuring features that are unique to each of these subscales in clinical and nonclinical groups (Antony et al., 1998; Henry & Crawford, 2005). The anxiety subscale has shown construct validity and high internal consistency (Nieuwenhuijsen et al., 2003). Internal consistency in the current sample was good (Cronbach's $\alpha = .88$).

Sport-Related Anxiety

The Sport Anxiety Scale-2 (SAS-2) (Smith et al., 2006) is a 15-item scale that measures athletes' cognitive and somatic trait anxiety in their sport performance in a competitive setting. The scale includes Somatic Anxiety, Worry and Concentration Disruption subscales. Somatic Anxiety items aim to measure physical anxiety symptoms such as shaky muscles or tenseness in the body. The Worry subscale reflects more cognitive anxiety symptoms, including thoughts about letting others down or that one will play badly for example. Concentration Disruption items focus on challenges related to attention or focus. Individuals are asked to indicate how

much certain experiences apply to them on a Likert scale ranging from 1 (*not at all*) to 4 (*very much*) before or while competing in their sport. Smith et al. (2006) found that the SAS-2 has a high internal consistency (.91) and test-retest reliability. The internal consistency in this sample was excellent for the Somatic Anxiety (Cronbach's $\alpha = .90$), Worry (Cronbach's $\alpha = .94$) and Concentration Disruption (Cronbach's $\alpha = .92$) subscales.

Perceived Athletic Performance

Participants responded to two survey questions regarding the internal evaluations of their sport performance during training and competition. One question asked about their perception of their sport performance in general, and the other asked about their sport performance over the last 2-weeks. Responses range from 1 (*poor*) to 5 (*excellent*).

Objective Athletic Performance

Pre-test measures of objective athletic performance were calculated based on the participant's recall of their average speed in their given sport over the past month. All participants were asked to keep a performance log that documented their performance times over the course of the study. Participants were asked to record their performance times directly after their sport practices and competitions. Given the competitive nature of the athletes eligible to participate in this research study, the researchers suspect that recording performance times is already a standard practice for the prospective participants, and that this was not the primary focus for those participating. Post-test measures of objective performance were calculated based on these self-reported logs, which included information about participant average speed or pace throughout the 4-week program.

Self-Compassion Training Program

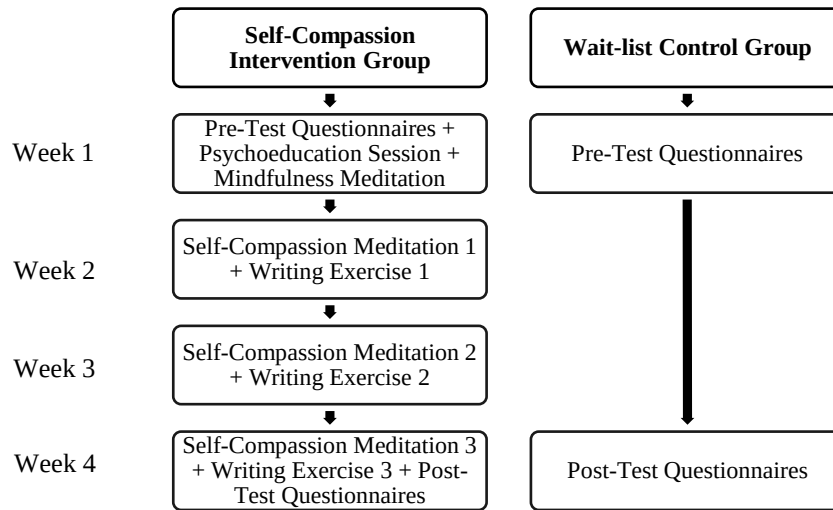
The online self-compassion training program lasted 4 weeks (see Figure 1). The program included a 15-minute psychoeducation video that was developed by the study investigator. The video covered the following topics: an overview of the concept of self-compassion, the benefits of self-compassion on well-being, the benefits of self-compassion in sport, and use of self-compassion practices as a tool to regulate emotions, sharpen attention, and facilitate flow states in athletes. Practical ideas about how to employ self-compassion in sport were also discussed. The contents of the video were informed by Neff's (2003a & 2003b) conceptualization of self-compassion and was further adapted to reflect situations that athletes might encounter during

sport or competition. Participants were asked to complete one survey item to verify whether they watched the psychoeducation session.

Each week, participants were emailed an audio-recording of a 10-minute guided meditation, which they were encouraged to practice every day. These meditations were freely available online and produced by mindfulness institutes (Breathworks Mindfulness, 2017; Mindful Vancouver, 2016) and meditation teachers (Germer, 2017; Salzberg, 2015) (see Appendix). In week 1, the meditation practice focused on breathing and present moment awareness of bodily sensations. In weeks 2, 3 and 4, participants practiced self-compassion meditations that focused on cultivating acceptance towards the self with openness, kindness, and understanding. The study investigator was in contact with participants each week to determine how often they engaged in the weekly meditation practices.

Figure 1

Study design



Participants were also asked to complete self-compassionate writing tasks at weeks two, three and four. The self-compassionate writing tasks involved different self-reflective exercises which allowed athletes to employ self-compassion within the context of their sport and competition (see Appendix). This included reflecting on any negative experiences or perceived failure within an individual's sport context, acknowledging one's internal reaction to this experience, and identifying other responses that elicit more self-compassionate attitudes in response to negative sport events or experiences. These exercises were inspired by those in Neff and Germer's (2018) *Mindful Self-Compassion Workbook* and were adapted to reflect athlete

specific contexts. Writing exercises were delivered via Survey Monkey, where writing responses were recorded. These recordings allowed the researchers to keep track of the participant's progress and measure treatment compliance. The post-test questionnaire for the self-compassion training group additionally included a question asking about participant experiences throughout the self-compassion training program (i.e., what they liked, disliked, or found challenging).

Wait-list Control Group

Participants assigned to wait-list control group were asked to complete performance logs during the 4-week wait period. They were given the link to the self-compassion program after they completed the post-study questionnaires.

Data Analysis

Data was analyzed using SPSS (version 27). A windsorizing approach was used to address skewness in post-test Total SAS scores, and square root transformations were used to transform outlying responses in pre and post-test DASS-AS scores and SAS Concentration Disruption scores to ensure normality in the data. Differences between the study groups on demographic and baseline variables were assessed with t-tests and chi-square tests. Feasibility outcomes (e.g., number of participants who consented to participate, program completion rate, homework compliance, satisfaction with the training program) were calculated using descriptive statistics with 95% Confidence Intervals (CIs). Participants who completed all four modules of the self-compassion training program were considered program completers. T-tests and chi-square tests were used to compare program completers and non-completers on demographic and baseline variables. McNemar test was used to determine if compliance with the study requirements (e.g. meditation practice, submission of performance logs) changed over the 4-week study period.

Linear mixed models were used to compare the study groups on measures of self-compassion, mindfulness, general anxiety, sport-related anxiety, perceived athletic ability, perceived athletic performance and actual athletics. Time (pre- and post-test) and Group (self-compassion versus wait-list control) were factors in the model. Linear mixed models use all available data and can accommodate missing values without the need for imputation, which is known to cause bias (Ayilara et al., 2019; Kang, 2013). The models were estimated using Restricted Maximum Likelihood (REML), with an unstructured symmetry covariance structure to account for correlations among the repeated measures. The main interest in these analyses was

whether the Group x Time interaction was statistically significant. A significant interaction would suggest superiority of the self-compassion training program over the wait-list control condition. For significant interactions, post-hoc tests were performed to examine within- and between-group differences. Within- and between-group effect sizes (Cohen's d) were also calculated. Calculation of within-group effect sizes accounted for correlations between pre- and post-test measures. Unlike p values which determine whether findings are due to chance, an effect size reveals if the effect of an intervention is meaningful and is independent of sample size (Sullivan & Feinn, 2012). According to convention (Cohen, 1992), $d = 0.20$ represents a small effect, $d = 0.50$ a moderate effect and $d = 0.80$ a large effect. Effects sizes < 0.20 indicate that intervention effects are not meaningful. Bivariate correlation analyses were used to investigate associations between self-compassion training compliance and pre to post-test changes in study measures. Significance was established at $p < 0.05$ for all analyses.

Results

Study results are divided into two sections – the first section presents results of the study's feasibility outcomes (i.e., study recruitment and enrollment, training compliance, and participant feedback); the second section reports results of the efficacy analysis.

Recruitment & Study Enrollment

Recruitment occurred over the course of six months, from December 2019 to May 2020. Recruitment emails were sent to 818 organizations. Of these, 718 (87.7%) did not reply to the emails and 67 (8.2%) declined to share information with their athletes because the club/organization was no longer operating (either due to club closures or COVID-19) ($n = 38$), the age of athletes was under 16 years ($n = 23$), and poor timing in their training schedule if they were approaching final competitions ($n = 6$). Thirty-three organizations (4%) agreed to forward study information to their athletes and 153 athletes accessed the study link. Individuals were excluded because they were less than 16 years old ($n = 7$), were not participating in a time-based sport ($n = 2$) or were not currently training or participating in a time-based sport (i.e., practicing less than twice a month) ($n = 1$). Ninety-two athletes were eligible to participate and provided written informed consent. Of these, 12 (13.04%) did not complete the pre-test questionnaires and were excluded from the study. Thus 80 athletes were randomized to either the self-compassion training group ($n = 40$) or wait-list control condition ($n = 40$).

Participant Characteristics and Sport Participation

Table 1 provides participant demographic characteristics and previous experience with mindfulness and self-compassion for the study groups. The age range of participants was 16-62 years ($M = 36.35$, $SD = 13.49$). The sample was mostly female (68.8%) and Caucasian (87.5%). Fifty-four percent of participants were married or living as married (53.8%) and the majority had some post-secondary education or completed a post-secondary degree (41.3%). Around half of the participants reported that they had practiced mindfulness meditation in the past (51.2%). Similarly, half of the participants reported that they were somewhat familiar with the concept of self-compassion (51.2%), however most had not engaged in self-compassion practices (68.8%).

Table 2 provides information about participant sport involvement across the study groups. Two-thirds of the sample reported participation in multiple time-based sports. Sport participation included running (71.3%), biking (35%), swimming (33.8%), rowing (15%), skiing (6.3%), speedskating (1.3%), sledding (1.3%) and/or other time-based sports (2.5%). Participants indicated that they participated or trained in their sport(s) every day or nearly every day (92.5%), and competed in these sports once every few months (32.5%), once a week or more (23.8%) or a few times a year (21.3%).

There was no significant difference between the study groups with respect to age ($t(78) = -1.06$, $p = .29$), ethnicity, ($\chi^2 [3, N = 80] = 2.46$, $p = .48$), marital status ($\chi^2 [2, N = 80] = 2.75$, $p = .25$), educational level ($\chi^2 [5, N = 80] = 3.21$, $p = .67$), or participation in running ($\chi^2 [1, N = 80] = 0.61$, $p = .81$), biking ($\chi^2 [1, N = 80] = 0.22$, $p = .64$), swimming ($\chi^2 [1, N = 80] = 0.06$, $p = .81$), rowing ($\chi^2 [1, N = 80] = 0.39$, $p = .53$), speed skating ($\chi^2 [1, N = 80] = 1.01$, $p = .31$), skiing ($\chi^2 [1, N = 80] = 0.21$, $p = .64$), or sledding ($\chi^2 [1, N = 80] = 1.01$, $p = .31$). Further the groups did not differ significantly on previous experience with mindfulness ($\chi^2 [1, N = 80] = 1.25$, $p = .26$), familiarity with the concept of self-compassion ($\chi^2 [4, N = 80] = 6.72$, $p = .15$), and experience practicing self-compassion ($\chi^2 [1, N = 80] = 0.52$, $p = .47$). However, there was a significant difference between the groups on gender distribution ($\chi^2 [1, N = 80] = 7.04$, $p = .008$), with males over-represented in the wait-list control group. There was also a significant difference between the groups on frequency of competition ($\chi^2 [5, N = 80] = 13.08$, $p = .02$), with more participants in the self-compassion group competing once every few months and more participants in the wait-list control group competing a few times a year. Therefore, gender and frequency of competition variables were included as covariates in the linear mixed models.

Table 1*Participant characteristics*

	Self-Compassion (<i>n</i> = 40)	Wait-List Control (<i>n</i> = 40)
Age, mean, (<i>SD</i>)	34.75 (13.40)	37.95 (13.56)
Gender		
Female	33 (82.5%)	22 (55%)
Male	7 (17.5%)	18 (45%)
Race/Ethnicity		
White/Caucasian	36 (90%)	34 (85%)
Asian	2 (5%)	4 (10%)
Mixed Race	2 (5%)	1 (2.5%)
Other	0	1 (2.5%)
Education		
Some high school	5 (12.5%)	3 (7.5%)
High school	3 (7.5%)	5 (12.5%)
Some post-secondary	5 (12.5%)	5 (12.5%)
Postsecondary certificate, diploma or degree	15 (37.5%)	18 (45%)
Master's degree or doctorate	8 (20%)	8 (20%)
Medical or professional degree	4 (10%)	1 (2.5%)
Marital status		
Never married	18 (45%)	12 (30%)
Married or living as married	20 (50%)	23 (57.5%)
Divorced or separated	2 (5%)	5 (12.5%)
Previous meditation experience		
Yes	23 (57.5%)	18 (45%)
No	17 (42.5%)	22 (55%)
Familiarity with Self Compassion		
Extremely familiar	2 (5%)	1 (2.5%)
Very familiar	10 (25%)	3 (7.5%)
Somewhat familiar	20 (50%)	21 (52.5%)
Not so familiar	7 (17.5%)	12 (30%)
Not at all familiar	1 (2.5%)	3 (7.5%)
Previous Self Compassion Practices		
Yes	14 (35%)	11 (27.5%)
No	26 (65%)	29 (72.5%)

Note. *SD* = Standard Deviation.

Table 2*Sport Participation*

	Self-Compassion (<i>n</i> = 40)	Wait-List Control (<i>n</i> = 40)
Type of Sport(s)		

Running	29 (72.5%)	28 (70%)
Biking	13 (32.5%)	15 (37.5%)
Swimming	15 (37.5%)	13 (32.5%)
Rowing	5 (12.5%)	7 (17.5%)
Speedskating	1 (2.5%)	0
Skiing	3 (7.5%)	2 (5%)
Sledding	1 (2.5%)	0
Other	0	2 (5%)
Frequency of sport participation		
Every day or nearly every day	37 (92.5%)	37 (92.5%)
Once or twice a week	3 (7.5%)	3 (7.5%)
Frequency of sport competition		
Once a week or more	8 (20%)	11 (27.5%)
A few times a month	9 (22.5%)	4 (10%)
Once every few months	17 (42.5%)	6 (22.5%)
A few times a year	4 (10%)	13 (32.5%)
Once a year	2 (5%)	1 (2.5%)
Other	0	2 (5%)

Study Compliance

Table 3 provides descriptive statistics for the compliance measures. Of the participants who completed the pre-test questionnaires and who were randomized to the self-compassion group, 11 (27.5%) did not start the program, 4 (10%) completed one module, 3 (7.5%) completed two modules, 6 (15%) completed three modules, and 17 (42.5%) completed all four modules. Program completers and non-completers did not differ on age ($t(38) = -.15, p = .88$), gender distribution ($\chi^2 [1, N = 40] = 3.09, p = .08$), ethnicity ($\chi^2 [2, N = 40] = 2.32, p = .31$), marital status ($\chi^2 [2, N = 40] = .93, p = .63$), education level ($\chi^2 [5, N = 40] = 5.96, p = .31$), frequency of training ($\chi^2 [1, N = 40] = .769, p = .38$), frequency of competition ($\chi^2 [4, N = 40] = 1.75, p = .78$), previous experience with mindfulness ($\chi^2 [1, N = 40] = .63, p = .43$), familiarity with the concept of self-compassion ($\chi^2 [4, N = 40] = 1.83, p = .77$), and experience practicing self-compassion ($\chi^2 [1, N = 40] = .50, p = .48$). T-tests revealed that task completion at week four was related to higher pre-test scores on the FFMQ facet Describe, $M = 10.00$ ($SD = 2.49$) for task completers and $M = 8.37$ ($SD = 2.29$) for task non-completers; $t(38) = -2.15, p = .04$. Task completion was unrelated to all other pre-test subscale scores and baseline perceptions of two week or general athletic performance.

For participants randomized to the self-compassion group, compliance with the weekly task decreased significantly over time, with 72.5% of participants completing this task at week

one and 52.5% at week four ($p = .02$). Compliance with the meditation practice was suboptimal across the four weeks, with 32.5% of participants reporting they mediated at week one and only 12.5% at week four. McNemar tests indicated a significant decrease in meditation practice from week one to four ($p = .02$) and week two to four ($p = .002$). The total number of meditation practice varied from 0 to 24 times ($M = 4.50$, $SD = 6.74$). Only five participants engaged in an ongoing meditation practice during the 4-week program, with an average practice of 15.80 times ($SD = 6.69$).

Compliance with completing the performance logs decreased significantly between week one and four for both the self-compassion ($p = .04$) and wait-list control ($p = .001$) group. For the control group, this decrease was also notable between week three and four ($p < .001$). Submission of the performance logs did not differ between the groups at week one [$\chi^2 (1, N = 80) = 0.05$, $p = .82$], week two [$\chi^2 (1, N = 80) = 0.05$, $p = .82$], week three [$\chi^2 (1, N = 80) = 0.82$, $p = .37$], or week four [$\chi^2 (1, N = 80) = 2.81$, $p = .09$].

Post-test assessments were completed by 50% ($n = 20$) of participants assigned to the self-compassion group and 45% ($n = 18$) of participants assigned to the wait-list control group; this difference was not statistically significant [$\chi^2 (1, N = 80) = 0.20$, $p = .65$]. Completion of post-test assessments varied according to previous engagement with self-compassion practice(s) [$\chi^2 (1, N = 80) = 3.97$, $p = .05$], with those indicating previous experience with self-compassion more often being post-test completers. No other demographic or baseline variables were related to completion of post-test assessments.

While 50% of participants in the self-compassion program dropped out of the study at some point, only two participants provided reasons for their withdrawal; this included not having enough time to participate ($n = 1$) and difficulties being self-compassionate ($n = 1$).

Table 3

Proportion of study materials completed in self-compassion and wait-list control groups by week

Time	Self-compassion ($n = 40$)			Wait-list control ($n = 40$)
	Weekly Module	Meditation	Performance Log	Performance Log
Week 1	29 (72.5%)	13 (32.5%)	18 (45%)	19 (47.5%)
Week 2	23 (57.5%)	15 (37.5%)	18 (45%)	19 (47.5%)

Week 3	23 (57.5%)	11 (27.5%)	15 (37.5%)	19 (47.5%)
Week 4	21 (52.5%)	5 (12.5%)	11 (27.5%)	5 (12.5%)

Note. Weekly module includes self-compassion educational video in week 1, and self-compassionate writing tasks in weeks 2-4. Meditations consisted of a body scan meditation in week 1, and self-compassion focused meditations through weeks 2-4. Performance logs were weekly sport performance reports, including information about performance distances and times throughout the previous week.

Feedback and Acceptability of the Self-Compassion Training Program

Participants in the self-compassion group were asked open-ended questions about their experiences with the program. Responses were obtained from 20 participants. As shown in Table 4, the most frequently reported benefits were changed attitude or mindset and increased self-awareness and self-reflection. Participants indicating a changed attitude or mindset reported that it was “hard to be negative” following the program, that they had “taken the pressure off” themselves, or that it became “easier to put things in perspective and to feel encouraged about the gains [they] had made rather than focus on what still needs to be done”. Those reporting increased awareness said that the program allowed them to realize that they “have a hard time complimenting [themselves] and allowing [themselves] to be imperfect” and “how unnecessarily hard [they are on themselves] in their sport”. Other benefits included improved athletic training or performance, decreased anxiety, better sleep, and increased or enhanced focus. In terms of design or content of the self-compassion program, over half of the participants provided positive feedback about the program, while 30% provided feedback on aspects of the program they disliked.

Table 4

Analysis of post-test feedback

	<i>N</i> = 20	%
Reported benefits from study participation		
Changed attitude or mindset; increased positivity, putting less pressure on oneself, increased acceptance of injury	8	40%
Increased self-awareness/self-reflection	7	35%
Improved athletic training/performance	3	15%
Better sleep	2	10%
Increased or enhanced focus	2	10%
Decreased anxiety	2	10%
Feedback on study design or content of self-compassion program		

Liked some aspect of meditations; found it relaxing, enjoyed meditation practice	7	35%
Liked writing exercises	3	15%
Liked video	1	5%
Disliked some aspect of meditation; voice, length, frequency	5	25%
Disliked performance measure or log	1	5%

Efficacy

Table 5 displays the estimated marginal means ($\pm$ standard errors) for pre- and post-test measures, as well as the estimated mean change from pre-to-post-test (with 95% confidence intervals) for the self-compassion and wait-list control groups. Table 6 summarizes results of the linear mixed model analyses. Table 7 includes between- and within- group effect sizes (Cohen's d).

Mindfulness

A significant Group x Time interaction was found for the FFMQ facet Observe ($p = .027$); post-hoc tests showed that this interaction was driven by significant increases in Observing scores for participants in the self-compassion group (estimated marginal mean increase = 1.52, $p = .001$), but not the wait-list control condition (estimated marginal mean increase = 0.15, $p = .72$). Examination of post-test FFMQ Observe scores revealed no difference between the groups (estimated mean difference = 0.70, $p = .28$), although there was a small effect favoring the self-compassion group (Cohen's $d = 0.24$). Although no significant Group x Time interactions were found for the other FFMQ facets, the Time main effect was significant for the facet Describe ($p = .02$), indicating that both groups improved on this facet from pre- to post-test. Inspection of within-group effect sizes showed that the magnitude of change was larger for the self-compassion group (Cohen's $d = 0.43$) than the wait-list control (Cohen's $d = 0.25$).

Self-Compassion

A significant Group x Time interaction was found for the Common Humanity subscale of the SCS-AV ($p = .015$) and the total SCS-AV score ($p = .04$). Post-hoc tests revealed a significant difference between the self-compassion and wait-list control groups on post-test Common Humanity subscale scores (estimated mean difference = 0.80, $p = .01$), with a moderate effect size favoring the SC group (Cohen's $d = 0.58$). Within-group changes pre to post-test were similar for the self-compassion (estimated mean difference = 0.39, $p = .07$) and wait-list control (estimated mean difference = -0.39, $p = .09$) groups, however. For the SCS-AV

total score, post-hoc tests revealed that this interaction was driven by significant increases in SCS-AV total scores for participants in the self-compassion group (estimated marginal mean increase = 0.53, $p < .001$), but not the wait-list control group (estimated marginal mean increase = 0.14, $p = .30$). Within-group effect sizes were moderate for the self-compassion group and negligible for the wait-list control. At post-test, there was a trend for total SCS-AV scores to be higher in the self-compassion group (estimated mean difference = 0.38, $p = .08$); the between-group effect size was moderate, suggesting the difference was meaningful.

No significant Group x Time interactions emerged for the Self-Kindness, Self-Judgment, Isolation, Mindfulness or Over-Identified subscales of the SCS-AV. However, the Time main effects were significant for these subscales (p 's range from .048 to .001), suggesting both groups experienced changes in these dimensions of self-compassion over time. Inspection of within-group effects sizes in the self-compassion group showed that pre-to-post-test changes were moderately large for the subscales Self-Kindness, Isolation, Mindfulness and Overidentification and small for the subscale Self-Judge. For the wait-list control group, pre-to-post-test changes were small for the subscales Isolation and Overidentification and negligible for the other SCS-AV subscales.

Variable	Pre-test				Post-test				Change in mean	
	SC (<i>n</i> = 40)		WLC (<i>n</i> =40)		SC (<i>n</i> =20)		WLC (<i>n</i> =18)		SC	WLC
	Mean (<i>SE</i>)	95% CI	Mean (<i>SE</i>)	95% CI	Mean (<i>SE</i>)	95% CI	Mean (<i>SE</i>)	95% CI		
FFMQ										
Observing	9.69 (.36)	8.98;10.40	10.35 (.36)	9.59; 11.07	11.21 (.44)	10.33; 12.09	10.50 (.46)	9.59; 11.42	1.52	.153
Describing	9.27 (3.80)	8.52; 10.03	9.85 (.38)	9.09; 10.61	10.21 (.52)	9.17;11.24	10.44 (.54)	9.360; 11.51	.93	.58
Awareness	8.93 (.31)	8.31;9.55	8.94 (3.1)	8.32;9.57	9.51 (.47)	8.56;10.46	9.38 (.49)	8.39;10.36	.58	.43
Non-Judging	9.32 (.44)	8.44;10.19	10.11 (.44)	9.23;10.99	9.73 (.54)	8.67;10.81	10.14 (.55)	9.03;11.25	.42	.03
Non-Reactivity	9.09 (.38)	8.34;9.85	9.40 (.38)	8.64;10.16	10.26 (.51)	9.22;11.29	9.47 (.54)	8.38;10.55	1.17	.06
SCS-AV										
Total Self-Compassion	3.00 (.13)	2.74;3.25	3.01 (.13)	2.75;3.26	3.53 (.15)	3.24;3.82	3.15 (.15)	2.84;3.45	.53	.14
Self-Kindness	2.89 (.14)	2.60;3.17	2.99 (.15)	2.70;3.28	3.49 (.19)	3.11;3.88	3.22 (.20)	2.81;3.88	.60	.23
Self-Judgment	3.18 (.18)	2.82;3.55	3.34 (.18)	2.98;3.71	2.73 (.21)	2.31;3.15	3.16 (.22)	2.71;3.60	- 0.45	- 0.18
Common Humanity	3.17 (.16)	2.85;3.48	3.13 (.16)	2.81;3.45	3.55 (.22)	3.12;3.98	2.75 (.23)	2.29;3.20	.38	- 0.38
Isolation	3.04 (.19)	2.67;3.41	3.03 (.19)	2.65;3.40	2.38 (.20)	1.98;2.78	2.70 (.21)	2.28;3.11	- 0.66	- 0.33
Mindfulness	3.44 (.13)	3.18;3.69	3.44 (.13)	3.18;3.70	3.99 (.16)	3.68;4.30	3.59 (.16)	3.26;3.92	.55	.15
Over-Identification	3.04 (.19)	2.67;3.41	3.03 (.19)	2.65;3.40	2.38 (.20)	1.98;2.78	2.70 (.21)	2.28;3.11	- 0.66	- 0.33
DASS-AS										

Total DASS-AS	2.92 (.22)	2.47;3.36	2.72 (.22)	2.28;3.17	2.61 (.261)	2.08;3.13	1.97 (.27)	1.43;2.51	-.31	-.75
SAS										
Total SAS	33.77 (1.54)	30.71;36.84	32.72 (1.55)	29.64;35.80	28.60 (1.58)	25.43;31.78	30.72 (1.64)	27.43;34.02	-5.17	-2.00
Somatic Anxiety	12.16 (.60)	10.96;13.36	11.98 (.61)	10.77;13.19	10.32 (.74)	8.84;11.80	11.18 (.77)	9.64;12.72	-1.84	-.80
Worry	13.164 (.70)	11.78;14.55	12.37 (.70)	10.98;13.76	10.95 (.79)	9.36;12.55	11.95 (.83)	10.29;13.61	-2.21	-.42
Concentration Disruption	2.86 (.08)	2.70;3.03	2.85 (.08)	2.68;3.01	2.69 (.09)	2.50;2.88	2.79 (.10)	2.60;2.99	-.18	-.06
Subjective Performance										
2 Week Performance	2.98 (.16)	2.65;3.30	3.17 (.17)	2.84;3.51	3.54 (.21)	3.12;3.96	3.31 (.22)	2.87;3.75	.56	.13
General Performance	3.73 (.14)	3.46;4.00	3.56 (.14)	3.29;3.84	3.60 (.13)	3.35;3.86	3.71 (.13)	3.45;3.98	-.12	.15

Note: SC = self-compassion group, WLC = wait-list control, *SE* = standard error, *CI* = confidence interval, FFMQ = Five Facet Mindfulness Questionnaire, SCS-AV = Self-Compassion Scale-Athlete Version, DASS-AS = Depression, Anxiety and Stress Scale-Anxiety Subscale, SAS = Sport Anxiety Scale.

Table 6*Summary results of linear mixed model analyses*

Variable	Group		Time		Group x Time	
	<i>F(df)</i>	<i>p-value</i>	<i>F(df)</i>	<i>p-value</i>	<i>F(df)</i>	<i>p-value</i>
FFMQ						
Observing	0.00 (1, 73)	.96	7.89 (1, 41)	.008**	5.25 (1, 41)	.027*
Describing	0.49 (1, 75)	.49	5.89 (1, 37)	.02*	0.31 (1, 37)	.58
Awareness	0.01 (1, 63)	.91	2.99 (1, 37)	.09	0.06 (1, 37)	.80
Non-Judging	0.88 (1, 78)	.35	0.48 (1, 39)	.49	0.35 (1, 39)	.56
Non-Reactivity	0.19 (1, 68)	.66	2.92 (1, 40)	.10	2.34 (1, 40)	.13
SCS-AV						
Total Self-Compassion	1.09 (1, 75)	.30	13.52 (1, 41)	.001***	4.62 (1, 41)	.04*
Self-Kindness	0.16 (1, 76)	.69	9.79 (1, 42)	.003**	1.94 (1, 42)	.17
Self-Judgment	1.47 (1, 66)	.23	4.14 (1, 44)	.048*	0.72 (1, 44)	.40
Common Humanity	3.27 (1, 68)	.08	0.00 (1, 40)	1.00	6.51 (1, 40)	.015*
Isolation	0.10 (1, 79)	.75	11.74 (1, 43)	.001***	2.15 (1, 43)	.15
Mindfulness	1.35 (1, 59)	.25	8.31 (1, 43)	.006**	2.73 (1, 43)	.11
Over-Identified	0.36 (1, 79)	.55	13.84 (1, 45)	.001***	1.50 (1, 45)	.23
DASS-AS	1.68 (1, 80)	.20	11.66 (1, 40)	.001***	2.01 (1, 40)	.16
SAS						
Total SAS	0.07 (1, 77)	.79	11.50 (1, 46)	.001***	2.23 (1, 46)	.14
Somatic Anxiety	0.16 (1, 73)	.69	6.98 (1, 42)	.01**	1.07 (1, 42)	.30
Worry	0.01 (1, 78)	.91	5.64 (1, 45)	.02*	2.60 (1, 45)	.11
Concentration Disruption	0.13 (1, 74)	.72	4.07 (1, 40)	.05*	1.10 (1, 40)	.30
Subjective Performance						
2 Week Performance	0.01 (1, 65)	.94	5.51 (1, 41)	.02*	2.07 (1, 41)	.16
General Performance	0.02 (1, 73)	.88	0.03 (1, 46)	.87	2.90 (1, 74)	.10
Objective Performance						
Pace	1.42 (1, 25)	.24	1.44 (4, 8)	.31	1.99 (4, 8)	.19

Note. FFMQ = Five Facet Mindfulness Questionnaire, SCS-AV = Self-Compassion Scale-Athlete Version, DASS-AS = Depression, Anxiety and Stress Scale-Anxiety Subscale, SAS = Sport Anxiety Scale. * $p < .05$. ** $p < .01$. *** $p < .001$.

Self-Reported General Anxiety

No significant Group x Time interaction was found for total DASS-AS scores. A significant main effect of Time was found ($p < .001$), suggesting both groups improved on this measure from pre to post-test. It is interesting to note however that the within-group effect size was larger for the wait-list control group (Cohen's $d = 0.63$) than the self-compassion group (Cohen's $d = 0.27$).

Table 7

Within- and between-group effect sizes (Cohen's d) for study measures

Measure	Within Group Effect Size		Between Group Effect Size
	Self Compassion	Wait-list Control	
FFMQ			
Observing	0.63	0.07	0.24
Describing	0.43	0.25	0.07
Awareness	0.22	0.16	0.04
Non-Judging	0.16	0.01	0.12
Non-Reactivity	0.49	0.03	0.24
SCS-AV			
Total Self-Compassion	0.70	0.18	0.41
Self-Kindness	0.53	0.19	0.22
Self-Judgment	0.39	0.15	0.31
Common Humanity	0.32	0.30	0.58
Isolation	0.55	0.21	0.21
Mindfulness	0.50	0.13	0.40
Over-Identified	0.72	0.36	0.25
DASS-AS	0.27	0.63	0.38
SAS			
Total SAS	0.56	0.21	0.21
Somatic Anxiety	0.44	0.19	0.18
Worry	0.50	0.09	0.20
Concentration	0.35	0.12	0.18
Disruption			
Subjective Performance			
2 Week Performance	0.42	0.10	0.17
General Performance	0.17	0.08	0.13
Objective Performance			
Week 1	0.21	0.15	0.35
Week 2	0.17	0.18	0.38

Week 3	0.41	0.15	0.41
Week 4	0.26	0.19	0.60

Note: FFMQ = Five Facet Mindfulness Questionnaire, SCS-AV = Self-Compassion Scale-Athlete Version, DASS-AS = Depression, Anxiety and Stress Scale-Anxiety Subscale, SAS = Sport Anxiety Scale. Objective performance within-group effect sizes are calculated from baseline performance.

Sport-Related Anxiety

There were no significant Group x Time interactions for measures of sport-related anxiety (p 's range from .11 to .30). However, the Time main effect was significant for the Somatic Anxiety, Worry and Concentration Disruption subscales of the SAS as well as for the SAS-Total score (p 's range from .05 to $< .001$), suggesting both groups showed improvement on these measures from pre- to-post-test. For the self-compassion group, the magnitude of pre-to-post-test improvement was meaningful for all measures, with moderate effect sizes found for the Total SAS score and Worry subscale score, and small effect sizes found for the Somatic Anxiety and Concentration Disruption subscales. For the wait-list control group, the magnitude of change from pre-to-post-test was meaningful but small for the SAS-Total score, but negligible for the subscale scores.

Perceived and Objective Athletic Performance

The Group x Time interaction was not significant for participant perceptions of their two-week performance and general performance ($p = .16$). A main effect of Time was observed for participants perceived two-week performance however ($p = .10$), with both the self-compassion and wait-list control group reporting enhancement in their previous two-week performance at post-test. For the self-compassion training group, the magnitude of change was small but meaningful, whereas the effect size was negligible for the wait-list control. Nevertheless, the between-group effect size at post-test was negligible for this measure. No significant Group x Time interaction ($p = .19$) was found for participant objective performance. The Time main effect was also not significant ($p = .87$), indicating that overall, participants did not improve on this measure.

Table 8 provides information about the participant mean pace in training program and control groups, with standard error and 95% confidence intervals. There was no significant Group x Time interaction ($p = .19$) or Time main effect ($p = .31$) for pace in training. Pace in

training increased from pre-test to week four for both the self-compassion group (estimated mean difference = 4.22) and the control group (estimated mean difference = 1.17), but not significantly. The difference in pace in training between the self-compassion and wait-list control groups at week four was not statistically significant (estimated mean difference = 8.38), however inspection of the effect size suggests that the magnitude of the group difference was meaningful and moderately large for the self-compassion group (Cohen's $d = 0.60$).

Self-Compassion Training Completion and Changes in Study Measures

Bivariate correlation analysis revealed that meditation practice was significantly related to pre to post-test changes in DASS-AS scores ($p = .03$). There were no other significant associations related to training task completion or meditation compliance. Table 9 provides the correlation coefficients for pre to post-test changes in subscale and total scores.

Table 8

Objective athlete performance means from baseline through week 4 (estimated marginal means, 95% confidence intervals)

Time	Self-Compassion Program		Control Group	
	Mean (<i>SE</i>)	95% CI	Mean (<i>SE</i>)	95% CI
Baseline	11.31 (3.20)	4.94;17.69	5.98 (3.26)	-.516;12.47
Week 1	13.56 (4.02)	5.22;21.90	7.31 (4.09)	-1.16;15.778
Week 2	13.44 (3.93)	5.21;21.67	6.99 (4.00)	-1.37;15.35
Week 3	15.57 (4.70)	5.81;25.33	7.47 (4.77)	-2.42;17.36
Week 4	15.53 (4.55)	5.76;25.30	7.15 (4.63)	-2.77;17.07

Note: *SE* = Standard Error, CI = Confidence Intervals.

Table 9

Correlations between frequency of meditation practice and task completion and pre to post-test changes in study measures

	Frequency of meditation	Frequency of task completion
FFMQ		
Observe	0.16	0.42
Describe	0.00	0.18
Act with Awareness	0.03	-0.02
Nonjudge	0.70	0.23
Non-reactivity	0.05	-0.12
SCS-AV		
Total Self-Compassion	0.19	0.26
Self-Kindness	0.33	0.37
Self-Judgment	0.14	- 0.20
Common Humanity	0.37	0.09
Isolation	- 0.07	- 0.07
Mindfulness	0.28	-0.03
Over-Identified	0.18	- 0.40
DASS-AS Score	-0.47*	-0.21
SAS		
Total SAS	0.07	-.031
Somatic Anxiety	-0.34	-0.37
Worry	0.07	0.28
Concentration	0.15	-0.11

Note: FFMQ = Five Facet Mindfulness Questionnaire; SCS-AV = Self Compassion Scale-Athlete Version; DASS-AS = Depression, Anxiety and Stress Scale-Anxiety Subscale, SAS = Sport Anxiety Scale. Correlations are reported in Pearson's *r*. Change scores are post-test subscale scores subtracted by pre-test subscale scores, indicating the direction and amount of change in subscale and total scores following the self-compassion training program. * $p < .05$.

** $p < .01$. *** $p < .001$.

Discussion

The present study examined the feasibility and preliminary efficacy of an online self-compassion training program for athletes. Results showed that while athletes and sport

organizations were interested in an online self-compassion training program, there were challenges with program adherence. Findings also provide preliminary evidence that self-compassion training can enhance dispositional self-compassion and the mindfulness skill *observing* in athletes.

Feasibility

Feasibility targets for recruitment and enrollment were achieved. Eighty-seven athletes consented to participate in the study, with 80 completing baseline measures. Participants were recruited over a 6-month period, indicating that interest in the online self-compassion program was high. Although emailing organizations was an effective way of reaching potential study participants, it is notable that 87.7% of organizations did not reply to the recruitment email, and only 4% agreed to inform athletes of the study. Data about the effectiveness of various recruitment methods, total recruitment efforts, and response rates are largely unavailable in studies of self-compassion and mindfulness programs. In an in-person mindfulness-based training study for incarcerated young men, 31% of approached participants expressed interest in the study, 26% started the mindfulness training, and 12% completed the program (Simpson et al., 2019). Recruitment for an online-mindfulness program, which occurred through posted mail letters, achieved an 8.7% response rate (Zernicke et al., 2013). It is difficult to compare this recruitment data to the current research because of differences in recruitment strategies. Despite this, findings suggest that there are challenges in recruiting participants in self-compassion training programs. Furthermore, when comparing mail and email recruitment strategies, Murphy et al. (2020) found higher response rates from individuals with mail-based recruitment (5.5%) than email-based recruitment (1%). These findings suggest that contacting potential participants directly may be a more effective recruitment strategy than email recruitment to organizations, which may or may not distribute recruitment flyers to their members.

Although there was interest in the study, study compliance and task completion were less than optimal. The overall attrition rate in this study was high, with over 50% of participants failing to complete post-test study questionnaires. The high attrition rate in the self-compassion group is not unique when compared to other self-guided online self-compassion and mindfulness training programs, however. For example, Halamova et al. (2018) reported that 54% of participants dropped out of their 2-week online self-compassion and self-protection training program. Similarly, in a 6-week online self-compassion training program, 46% of participants

prematurely dropped out of the program (Finlay-Jones, 2016). Another study reported that only 24.7% of study participants completed all online self-compassion training resources over the course of one month (Mitchell et al., 2018). Thus, the program completion rate in the current study is in line with other online self-guided self-compassion training studies. No significant group differences were found for study completion rates and completion of post-test questionnaires, suggesting that there was nothing inherent about the exercises, practices, or procedures of the self-compassion program that led participants to drop out of the program. The similar drop-out rates suggest that low compliance may be typical in research of online self-guided self-compassion programs.

Only two participants in the self-compassion program provided reasons for withdrawing from the study. This is unfortunate as receiving feedback from participants could have helped identify problems with the program and areas for improvement. One participant reported that they did not have enough time to complete the exercises and the other stated that they were not able to be self-compassionate. This latter explanation is interesting in light of previous findings that some individuals experience discomfort with self-compassion practices (Mitchell et al., 2018). Gilbert et al. (2011) have noted that individuals fear and resist self-compassion because they associate self-compassion with negative attributes and consequences, such as weakness, rejection from others, lowering one's standards, and complacency. Athletes often have difficulty adopting a kind and forgiving stance towards themselves (Ceccarelli et al., 2019; Ferguson et al., 2014; Killham et al., 2018; Mosewich et al., 2014; Sutherland et al., 2014), and are inclined to believe that self-compassion can lead to complacency or accepting mediocrity in sport (Mosewich et al., 2019). Although it is impossible to conclude that resistance to self-compassion contributed to the high attrition rate in the current sample, it is conceivable that athletes who hold negative beliefs about self-compassion are at greater risk of dropping out of self-compassion training programs.

Not all athletes are fearful of or resistant to self-compassion. Wilson et al. (2020) conducted semi-structured interviews with elite female athletes to assess their perspectives of self-compassion and mental toughness. Findings revealed that athletes perceived a level of compatibility between self-compassion and mental toughness and identified a need for maintaining a delicate balance between self-kindness and self-criticism in sport. This was coined as a *zipper effect*, which involves switching back and forth from mentally tough, self-critical, and

emotionally avoidant mindsets, to self-kind and emotionally attentive mindsets. Both states of mind were perceived as important and helpful by athletes in the study.

Wilson et al. (2020) also found that the approach athletes utilize is situation dependent. During training or competition, athletes use mental toughness to persevere through difficulties and remain focused, and self-compassion when moving forward despite sport challenges or difficulties. Participants viewed self-compassion as necessary in bouncing back from sport-related challenges and felt that their ability to be mindfully aware, present, and objective contributed to their ability to be both mentally tough and self-compassionate. This research offers insight into athlete perceptions of self-compassion and mindfulness in sport that is contrary to the narrative that has been understood in athlete populations, which often highlights a strong resistance to self-compassionate responses altogether. The findings also suggest that it is not about identifying which mental state is *more helpful* to athletes, but rather determining how to uphold constructive self-criticism alongside self-compassion in a way that is useful to athletes and enables them to enhance their well-being and sport-performance.

Further research is needed to explore athlete perspectives of self-compassion and how this may influence acceptability of self-compassion interventions and predict compliance with program tasks (e.g., self-compassion meditations) and attrition. Additionally, it would be of interest to determine if athletes have more difficulty being self-compassionate than people in the general population. The current literature on self-compassion in sport suggests that researchers and professionals involved in mental coaching may need to focus on how they can meaningfully communicate the concept of self-compassion to athletes. This may involve addressing any misconceptions athletes have about self-compassion and explaining self-compassion in ways that are contextually relevant and credible to athlete populations (Mosewich et al., 2019). Furthermore, developing self-compassion practices that are more appealing to sport culture could bolster training material adherence and study completion rates.

Examination of compliance with the self-compassion techniques indicated that participants were most compliant with the weekly tasks, which included a self-compassion education session in week 1 and self-compassionate writing exercises in weeks 2-4. Participants were least compliant with the self-compassion meditations. Adherence with the self-compassion educational video was good, with 72.5% of participants completing this training activity. This adherence rate is higher than that reported by Mitchell et al. (2018), who found that 46% of

participants in their self-guided compassion study completed the self-compassion introductory video (Mitchell et al., 2018). One participant in this study provided feedback that they enjoyed the self-compassion training video, which could explain higher rates of completion. To enhance compliance and athlete interest and engagement with the self-compassion video, future research might consider using an interactive online platform that incorporates tasks, checks for participant understanding and knowledge of self-compassion, or reflective questions. It would also be worthwhile for future studies to include rating scales to assess participant satisfaction with the length and content of the training video. This data would be useful to refine the video and enhance its relevance and interest for athletes.

Some participants mentioned enjoying the writing exercises in the feedback they provided, which may account for the better compliance with this specific self-compassion practice. Other studies have utilized self-compassion reflective writing exercises and similarly found moderate levels of adherence (Sherman et al., 2019; Wong & Mak, 2016; Ziemer et al., 2019). Since writing tasks had the highest percentage of training adherence in this study, future research may want to emphasize this exercise in self-compassion training. Self-compassion can be cultivated in many ways and identifying exercises and practices that resonate the most with an individual athlete would likely yield greater benefits and improve program compliance. Indeed, personalized training generally yields higher program adherence and success in training implementation (Beatty & Binnion, 2016).

Participant feedback revealed conflicting views about experiences with the meditation practices, and as noted earlier, compliance with the self-compassion meditations was poor. Poor compliance with meditation practice has been reported in studies of in-person (Capobianco et al., 2018; Lang et al., 2019; Malboeuf-Hurtubise et al., 2016) and online (Danielwitz et al., 2018; Moore et al., 2020) mindfulness interventions in diverse populations. In a study of attitudes towards meditation, Sears et al. (2011) identified cognitive and physical difficulties, time-investment, lack of motivation, and doubts about meditation efficacy as potential barriers to practicing meditation. Lang et al. (2019) suggested that motivation to meditate could be enhanced by including brief motivational strategies to help participants identify goals, barriers, and ways to overcome challenges that are sometimes encountered during meditation practices. Although barriers towards meditation and ideas about minimizing potential challenges were discussed in the self-compassion educational video used in the current study, a more explicit

focus on this may have improved compliance. Additional research is needed to identify factors that contribute to compliance with a regular meditation practice in athletes.

Performance log completion was similar in both the self-compassion training and wait-list control group and decreased significantly over the four-week period. Some reasons for this could be lack of time, motivation, or convenience. Participants were asked to document their training and competition distances and times, and report this to the study researcher by email at the end of each week. Though participants were likely already recording this information for their own training purposes, having to report this information in a weekly email may have been perceived as a burden by some participants. Research supports the utility of objective measures of athlete performance, however (Saw et al., 2016). Performance logs can provide researchers and sport trainers with relevant information to create optimal environments, training programs, and interventions that support athletes. It is possible that developing a reporting method that was more convenient and user friendly could have increased performance log completion rates in this study. Future research might consider accessing training statistics recorded by sport coaches or organizations, or using a smartphone app with a built-in tracking tool to monitor and record athlete performance.

Efficacy of the online self-compassion training program

Participants in the self-compassion training group displayed significantly greater pre-to-post-test increases in dispositional self-compassion relative to those in the wait-list control group. This finding indicates that the training program was successful in targeting and enhancing self-compassion. Post-test total SCS scores tended to be higher in the self-compassion group, with an effect size of 0.41. This effect size is somewhat smaller than the effect size of 0.79 reported by Mosewich et al. (2013) in their study of a week-long in-person self-compassion intervention versus an attention control in athletes. The larger effect found by Mosewich et al. (2013) might be due to the in-person modality and intensity of their program. Controlled studies of online self-compassion programs in non-athlete populations have also observed stronger intervention effects for self-compassion ratings than the current study did (Erikson et al., 2018; Krieger et al., 2019). However, these studies evaluated programs of a longer duration (i.e., 6-weeks and 8-weeks), which may account for the more robust findings. Nonetheless, the significant findings from this study confirm prior research that self-compassion can be enhanced following a brief training program (Held et al., 2018; Mosewich et al., 2013; Smeets et al.,

2014). The self-compassion exercises that were incorporated in the self-compassion program were selected to allow participants to pause, reflect deeply, and engage with the concept of self-compassion in general as well as in the context of their sport. The observed increase in self-compassion could be due to the psychoeducation session, weekly writing tasks, meditations, or some combination of the self-compassion training materials. Dismantling studies would help elucidate what specific elements of the training program contributed to the enhancement of self-compassion.

Examinations of the specific SCS subscales revealed that participants in the self-compassion group displayed significantly greater pre to-post-test increases in *Common humanity* relative to the wait-list control. Post-test scores were significantly higher in the self-compassion group, with the magnitude of difference being in the moderate range. This finding aligns with results of a meta-analysis of randomized controlled trials of online and in-person self-compassion interventions, which similarly found moderate effect sizes for common humanity following self-compassion training (Ferrari et al., 2019). Significant enhancements in common humanity scores suggest that self-compassion training enabled participants to see their emotional suffering and sport failure as part of the experience of being a competitive athlete, rather than as an isolating experience. The experience of common humanity among athletes has been studied by Wilson et al. (2020), who found that recognizing common humanity within a sport context normalized the experiences of athlete suffering in sport. Participants in Wilson et al.'s (2020) study reported that they found personal acceptance and strength from this shared experience of difficulty in sport. It seems that understanding and acknowledging common humanity in sport may evoke a sense of empowerment for athletes.

In contrast to common humanity, the self-compassion program had no advantage over the wait-list control in enhancing the self-compassion elements of *Self-kindness* and *Mindfulness*. Both groups improved over time and post-test scores were not significantly different. Neff (2003a) argues that although the three elements of self-compassion are distinct, they are connected in that strengthening one element enhances the others. Research by Dreisoerner et al. (2020) found that interventions that explicitly target common humanity also enhance levels of self-kindness and mindfulness. This study confirms that self-compassion training produces meaningful increases in elements of compassionate responding, with effect sizes ranging from .32 (*Common humanity*) to .53 (*Self-kindness*), and decreases in elements of uncompassionate

responding, with effect sizes ranging from .39 (*Self-judgment*) to 0.72 (*Over-identification*). Nonetheless, the lack of significant interactions between Time and Group on most SCS subscales makes it difficult to ascertain whether the observed effects on elements of self-compassion are attributed to intervention effects or to extraneous factors such as the passage of time, involvement in the study, and regression to the mean.

The majority of participants who provided study feedback indicated that they received positive outcomes from the self-compassion program, and many of the benefits described by participants can be attributed to significant enhancements in self-compassion. Participants reported shifts to more positive and supportive perspectives and self-talk, an increased ability to remove unnecessary pressure, an acceptance of perceived imperfections and injury, and decreased feelings of inadequacy in response to perceived flaws. Together, these benefits suggest that participants were engaging in positive cognitive reappraisals, which involve altering perspectives about stressful situations and reframing these situations more positively (Allen & Leary, 2010). Given the feedback regarding changes in attitude or mindset, it is plausible that the self-compassion program reduced levels of self-criticism. Indeed, reduced self-criticism has been reported in participants who completed self-compassion (Krieger et al., 2016; Krieger et al., 2019) and mindfulness-based (Halamova, et al., 2018; Ondrejko et al., 2020) interventions.

Results revealed that overall, the self-compassion program was not significantly better than the wait-list control in enhancing mindfulness skills. This is not an entirely surprising finding considering the program focused on self-compassion and not mindfulness training. Although the Group by Time interaction was significant for the FFMQ facet *Observing*, post-test group differences were not statistically significant. Despite this, a small but meaningful effect was found in favor of the self-compassion program in participant *Observing*. The significant time effect for the FFMQ facet *Describing* indicated that overall, both groups improved on this facet over time. While the magnitude of change was somewhat larger for the self-compassion group, post-test group effects were negligible. No significant effects were found for the FFMQ facets *Acting with Awareness*, *Non-judging* and *Non-reactivity*. Nevertheless, it is worth noting that for the FFMQ facet *Non-reactivity*, the magnitude of pre-to-post change was stronger for the self-compassion group, with the effect size being meaningful, albeit small, in favor of the self-compassion program. Despite the lack of robust findings for mindfulness skills, the self-compassion program appears to have some subtle effects on specific mindfulness skills. The

stronger effect of the self-compassion program on the facet *Observing* is consistent with results of prior research that showed this skill is more easily learned than other mindfulness skills (Nyklicek & Kuijpers, 2008). It may be that the duration and intensity of the online program used in this study was insufficient to produce stronger effects for other facets of mindfulness.

The self-compassion program did not fare better than the wait-list control in reducing sport anxiety and overall anxiety, as measured by the anxiety subscale of the DASS. The lack of efficacy of self-compassion training on anxiety measures contrasts with another study which found that self-compassion may buffer the experience of somatic anxiety in athletes (Huysmans & Clement, 2017). Self-compassion training has also been found to reduce anxiety in individuals employed in high stress professional such as medicine (Bohlinger et al., 2014; Luo et al., 2019; Moeini et al., 2019), the performing arts (Lavery-Thompson, 2018), law enforcement (Papazoglou et al., 2019), and firefighting (Kaurin et al., 2018). Although group differences in sport-related anxiety were not significant, small between-group effects favoring the self-compassion group emerged for the Total SAS score and the SAS *Worry* subscale. While this finding is encouraging, the somewhat larger magnitude of pre-to-post change in DASS anxiety scores in the control group was unexpected and at present this finding is difficult to explain. Clearly, more research is needed to examine the benefits of an online self-compassion training program on emotional well-being in athletes. Interestingly, Huysman and Clement (2017) identified the mindfulness component of self-compassion as an important factor that contributed to decreased sport anxiety in their sample of athletes. They posit that the cultivation of mindfulness fosters greater acceptance of stressful situations in sport and this reduces adverse emotional reactions. A plausible explanation for the lack of significant effect of the self-compassion program on anxiety measures in this study was that the program did not produce sufficient change in the mindfulness element of self-compassion. Poor compliance with the meditation practices likely contributed to the weak effect of the program on mindfulness and self-rated anxiety.

There was no significant benefit of the self-compassion program on perceived or objective athletic performance. Participants in both groups perceived their performance more positively over the course of the study, and post-test effect sizes were negligible. No significant change over time was detected for objective measures of performance, although examination of effect sizes showed that participants in the wait-list control group had quicker mean paces over

the four-week study period. The non-significant findings for perceived athlete performance differs from other research that showed a positive effect of self-compassion training on perceived performance (Eke et al., 2019; Killham et al., 2018). Further, this finding is inconsistent with the feedback participants gave about their experience with the self-compassion program. For example, some participants reported improved athletic performance, describing success in recent competitions, and an enhanced ability to reach new goals and train with increased ease. This aligns with research conducted by Killham et al. (2018), which found that those with higher levels of self-compassion perceived their athletic performance(s) more positively. Similarly, Eke et al. (2019) showed that athletes who maintain body self-compassion perceived their sport performances more positively. Killham et al. (2018) argue that enhancements in perceived performance could be linked to the development of *balanced awareness* due to self-compassion training. Engaging in balanced awareness is thought to allow athletes to perceive themselves and their performances more realistically, with less self-criticism and judgment. It is possible that there was not enough emphasis on cultivating balanced awareness in the current online program, and that focusing on this element of self-compassion may have produced stronger results.

Although the current study could not demonstrate an effect of the self-compassion program on objective performance (i.e., athlete pace), existing research underscores the link between well-being and performance (Gardner & Moore, 2007, 2012; Reardon et al., 2019; Schinke et al., 2018), and the potential for self-compassion training to enhance athletic performance (Ceccarelli et al., 2019; Eke et al., 2019; Killham et al., 2018). No self-compassion studies to my knowledge have utilized objective performance measures with athletes. Although the benefits of mindfulness training in athletes is well researched, most studies have focused on subjective performance evaluations of athletes, coaches or other sport experts. In a study of an in-person Mindful Sport Performance Enhancement (MSPE) program with runners, significant performance enhancement was reported one-year post-program, but not immediately following mindfulness training (Thompson et al., 2011). This research suggests that athletes may require more time to cultivate and use mindfulness or self-compassion skills to observe performance improvements or effects. Future research should consider including longer follow up assessments to ascertain if self-compassion training impacts performance and other variables over a longer period of time. This would provide additional information about the length of time required for

self-compassion and mindfulness skills to be internalized, practiced, and developed, and influence objective performance.

Though pace differences between the groups were not considered significant, effect sizes favored the wait-list control group who reported quicker paces on average over the four-week study period. It is possible that self-compassion has no impact on athlete performance, or that those engaging in the training program started to place less importance on objective outcomes for the duration of the study. Many factors could have influenced athlete pace over the four-week period, including differences between the groups in the type of training participants were engaging in, amount of training they were completing, injury, or type or frequency of coaching received. Other internal (e.g., personal motivation, current life circumstances or stresses) and external (e.g., social supports, cultural influences) factors could have also impacted sport performance. Study attrition could have further influenced these results, given the vastly different average paces reported in different sports. For example, those participating in biking would have significantly quicker paces than those who were reporting swimming pace. Depending on the sport practiced by participants who dropped out of the study, mean paces could have changed greatly between the groups. Furthermore, compliance with the performance logs significantly decreased at week four, with only 12.5% of participants completing the logs in the wait-list control group compared to 27.5% in the self-compassion training group. The amount of missing data makes it difficult to understand how self-compassion training impacted objective athletic performance. Difficulties in interpreting these findings are further exacerbated by the lack of published research in this area.

Limitations

Several study limitations should be noted. First, while targeting sport organizations was sufficient, it introduced some limitations to recruitment as study enrolment was reliant on these organizations to forward study information to their athlete members. Future research should consider strategies that facilitate direct contact with individual athletes, which may improve enrollment rates and reduce reliance on organizations. Using social media platforms like Facebook and Twitter could be considered a potential recruitment strategy in future research.

Second, compliance with the study intervention, completion of post-test questionnaires, and attrition were problematic. The considerable drop-out rate likely compromised the study's power to detect stronger effects for the self-compassion program. Although online interventions

have many advantages, poor compliance and high attrition is not unusual. Poor training adherence is especially evident for online interventions that are completely self-guided such as the one used in this study. Other self-guided online self-compassion programs have reported similar drop-out rates and non-compliance (Finlay-Jones, 2016; Halamova et al., 2018; Mitchell et al., 2018). Future studies should consider implementing strategies to improve compliance and retention. Possible strategies include frequent email reminders (Lippmann et al., 2019), use of live video or phone training sessions (Flynn et al., 2020; Tkatch et al., 2017; Yang et al., 2019), providing tips on how to effectively use training or practice materials (Cavanagh et al., 2013), use of online interaction platforms for participants to share and discuss their experiences (Yang et al., 2019; Zernicke et al., 2013), and compensating participants for completing post-study questionnaires (Zautra et al., 2012).

Third, it is possible that the duration and intensity of the online program was insufficient to yield more robust effects. Research has shown that training programs that last seven to eight weeks are more effective in enhancing levels of mindfulness (Lippmann et al., 2019), while increased frequency of training improves outcome in athletes (Mosewich et al., 2013). Research is needed to determine the optimal duration and intensity of online self-compassion training for athletes.

Fourth, participants in the wait-list condition reported benefits as well, including increased self-compassion, reduced anxiety, and enhanced perception of performance. This improvement may be due to the passage of time, regression to the mean, or other factors that were not accounted for in the study. For example, it is possible that control participants engaged in other self-growth practices that contributed to improvement in study measures. Unfortunately, this study did not monitor the use of other activities participants used to improve well-being and sport performance. Careful monitoring of other mental-skills training practices athletes engage in should be included in future studies of online self-compassion programs.

Fifth, accuracy in calculating pace introduced an important bias in the study and reduces confidence in results. There was a diversity in participant training objectives and approaches, with some participants engaging in more maintenance driven training programs and others in programs with specific training outcomes. Pace was calculated in terms of distance and time, and did not take other elements such as level of resistance or type of training (e.g., recovery, interval, endurance) into account. Additionally, pace was vastly different based on the type of sport(s)

participants engaged in. In order to enhance the validity of performance measures, future research should consider developing and using performance logs that are sport-specific.

Sixth, the COVID-19 pandemic is important external factor to consider when interpreting findings from this study. Recruitment took place between December 2019 and May 2020, with non-essential businesses and public facilities closing operation in mid-March across Canada. The impact of COVID-19 on usual training and competition schedules restricted opportunities for participants to engage in certain time-based sports. Those who continued training likely engaged in maintenance training rather than preparatory training for competition. This is important to mention, as this could have influenced the frequency, intensity, and type of training participants engaged in.

Finally, although this was a feasibility study, the sample was predominately Caucasian. Mosewich et al. (2019) highlight the importance of recruiting culturally diverse samples to gain a deeper understanding of self-compassion in sport and to increase generalizability of findings. It should also be noted that participants in the current study already had an interest in mindfulness and self-compassion practices. Thus, participants likely self-selected themselves into the study, introducing an additional bias and limiting generalizability of study findings.

Implications and Future Directions

This study supports the development of effective emotion coping strategies in sport, which can be an important part of helping athletes cultivate healthy attitudes and behaviours. Despite efforts to increase awareness and acceptance, mental health stigma persists and prevents people from seeking out and continuing mental health treatment (Corrigan, 2004). This stigma is thought to be even more prominent among athletes, who face a unique set of emotional, physical, and environmental stressors that make them more susceptible to experiencing psychological distress. This includes high pressure situations in sport, where athletes are subject to scrutiny from their coaches, teammates, fans, and themselves (Anshel et al., 1990). Athletes are also expected to have a certain level of mental toughness, and often believe that their emotional struggles are a sign of weakness (Bauman, 2015). Many athletes feel that any imperfection makes them less valuable, and fear that this may lead to negative evaluations by their coaches, teammates, and other competitors (Gulliver et al., 2012). Athletes who experience performance failure are especially vulnerable to developing mental health problems (Rice et al., 2016). In times of distress or discomfort, self-compassion has been shown to significantly enhance

individual well-being, and self-compassion research in athlete populations can enhance the quality of interventions that support athletes in maintaining good mental health. Determining the role of self-compassion in alleviating some of the emotional distress elicited by sports competition can enhance athlete training programs and provide athletes with the intrapersonal skills necessary to recover from perceived failure in sport more quickly and productively. With literature suggesting that self-compassion may be useful in controlling and managing emotions when faced with difficult situations (Diedrich et al., 2016; Inwood & Ferrari, 2018), it is important that future research uncover the ways in which self-compassion training may further benefit athlete well-being.

This study aimed to bridge the competing philosophical perspectives of performance enhancement and athlete well-being that are apparent in sport psychology literature and practice. While both schools of thought are concerned with the welfare of athletes, emphasis on one area over another can impede the ability of sport psychology practitioners to provide effective services to their clients (Roberts et al., 2016). Omitting either performance enhancement or athlete well-being from training can be problematic, and practitioners must be flexible in adjusting to the demands and needs of their athlete clients. By focusing on how mindfulness and self-compassion might influence or effect sport outcomes or objective performance, this study intended to explore the connections between performance enhancement and well-being research streams in sport psychology.

Understanding the role of self-compassion in athlete experiences and performance provides further information about the utility of self-compassion training interventions for athletes. With increased evidence supporting the potential benefits of self-compassion in sport (Ferguson et al., 2014; Fontana et al., 2017; Huysman & Clement, 2017; Killham et al., 2018; Mosewich et al., 2011; Reis et al., 2015), sport psychologists and mental training consultants may find it appropriate to integrate self-compassion training into their work with athletes.

This pilot study explored the feasibility and potential benefits of a brief, self-guided, online self-compassion program for athletes. Although overall findings were disappointing, this study highlights important challenges with evaluating self-guided programs that can be addressed in future research. Future investigation of self-compassion training should consider different training modalities that work best for athletes. For example, research in medically ill patients has shown that synchronous online instructor-facilitated mindfulness interventions fares

better than a self-guided online psychoeducation program (Cavalera et al., 2019) and waitlist control (Zernick et al., 2013). This suggests that developers of online individual programs should consider including real-time interactions with program instructors. Similarly, a systematic review of online mindfulness intervention studies in diverse samples concluded that real-time group videoconferencing is moderately more effective than self-guided mindfulness training and at least as effective as in-person training (Moulton-Perkins et al., 2020). In an uncontrolled feasibility study of a group-based, therapist-directed, online self-compassion intervention for cancer survivors, large pre-to-post study effects were noted for several study measures (Campo et al., 2017). Presumably, an online group-based self-compassion program for athletes that includes contact with an instructor and opportunity for sharing among group members might fare better than a purely self-guided intervention. A fruitful line of research is to directly compare different modalities of self-compassion training (e.g., face-to-face, online with instructor, online self-guided) in athlete populations.

Finally, while this study used time as an objective measure of athletic performance, future studies might evaluate other elements of athletic skill in sports where speed is not a principal measure of athletic ranking or ability. This would allow researchers to study a wider range of athletes who compete in different types of sports.

Conclusion

To conclude, this study suggests that an online self-guided self-compassion program is of interest to athletes. However, a number of feasibility issues emerged that will need to be addressed in future research of this program. Participants who were randomized to the self-compassion program provided positive feedback about the benefits of the program, including enhanced positivity and self-awareness. The program significantly increased self-compassion, which is the key target of self-compassion training. Although the intervention was not superior to the wait-list control in improving other study measures, small but meaning effects were noted for some facets of mindfulness and sport-related worry and a larger and suitably powered study might reveal more robust effects.

References

- Aherne, C., Moran, A. P., & Lonsdale, C. (2011). The effect of mindfulness training on athletes' flow: An initial investigation. *Sport Psychologist*, 25(2), 177-189.
<https://doi.org/10.1123/tsp.25.2.177>
- Allen, A. B., & Leary, M.R. (2010). Self-compassion, stress and coping. *Social and Personality Psychology Compass*, 4(2), 107–118. <https://doi.org/10.1111/j.1751-9004.2009.00246.x>
- Amemiya, R., Kim, E., Inagaki, K., & Sakairi, Y. (2019). Mindfulness and psychological competitive abilities promotes the mental health of athletes. *Supotsu Shinrigaku Kenkyu Japanese Journal of Sport Psychology*, 46(2), 67-80. <https://doi.org/10.1007/s12671-017-0711-4>
- Amemiya, R., Sakairi, Y. (2020). The role of self-compassion in athlete mindfulness and burnout: Examination of the effects of gender differences. *Personality and Individual Differences*, 166. <https://doi.org/10.1016/j.paid.2020.110167>
- Andersson, G., Bergstrom, J., Hollandare, F., Carlbring, P., Kaldor V., & Ekselius, L. (2005). Internet-based self-help for depression: Randomised controlled trial. *British Journal of Psychiatry*, 187, 456–461. <https://doi.org/10.1192/bjp.187.5.456>
- Annesi, J. J. (1998). Applications of the Individual Zones of Optimal Functioning model for the multimodal treatment of precompetitive anxiety. *The Sport Psychologist*, 12, 300-316. <https://doi.org/10.1123/tsp.12.3.300>
- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. *Psychological Assessment*, 10(2), 176-181.
<https://doi.org/10.1037/1040-3590.10.2.176>
- Anshel, M. H., Gregory, W. L., & Kaczmarek, M. (1990). The effectiveness of a stress training program in coping with criticism in sport: A test of the COPE model. *Journal of Sport Behavior*, 13(4), 194.
- Aoyagi, M. W., Portenga, S. T., Poczwardowski, A., Cohen, A. B., & Statler, T. (2012). Reflections and directions: The profession of sport psychology past, present, and future. *Professional Psychology: Research and Practice*, 43(1), 32. <https://doi.org/10.1037/a0025676>
- Awamleh, A., Mansi, T., & Ermeley, Z. (2014). The Effect of Mental Training Skills Program on

- Self-Compassion and Mindfulness. *Asian Social Science*, 10 (18), 1911-2017.
<https://doi.org/10.5539/ass.v10n18p90>
- Barczak, N., Eklund, R. C. (2018). The moderating effect of self-compassion on relationships between performance and subsequent coping and motivation. *International Journal of Sport and Exercise Psychology*. <https://doi.org/10.1080/1612197X.2018.1511620>
- Barnard, L. K., & Curry, J. F. (2011). Self-compassion: Conceptualizations, correlates, & interventions. *Review of General Psychology*, 15(4), 289-303.
<https://doi.org/10.1037/a0025754>
- Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mindfulness and perceived stress in a mindfulness-based stress reduction program. *Journal of Clinical Psychology*, 68(7), 755-765. <https://doi.org/10.1002/jclp.21865>
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27–45.
<https://doi.org/10.1177/1073191105283504>
- Baker, D. A., Caswell, H. L., & Eccles, F. J. R. (2019). Self-compassion and depression, anxiety, and resilience in adults with epilepsy. *Epilepsy & Behavior*, 90, 154-161.
<https://doi.org/10.1016/j.yebeh.2018.11.025>
- Bauman, N. J. (2015). The stigma of mental health in athletes: are mental toughness and mental health seen as contradictory in elite sport? *Br J Sports Medicine*, 50(3), 135-136.
<https://doi.org/10.1136/bjsports-2015-095570>
- Beatty, L., & Binnion, C. (2016). A systematic review of predictors of, and reasons for, adherence to online psychological interventions. *International Journal of Behavioral Medicine*, 23(6), 776-794. <https://doi.org/10.1007/s12529-016-9556-9>
- Beiwinkel T, Eißing T, Telle NT, Siegmund-Schultze E, & Rössler, W. (2017). Effectiveness of a Web-Based Intervention in Reducing Depression and Sickness Absence: Randomized Controlled Trial. *J Med Internet Res*, 19(6) 213. <https://doi.org/10.2196/jmir.6546>
- Bernier, M., Thienot, E., Codron, R., & Fournier, J. F. (2009). Mindfulness and acceptance approaches in sport performance. *Journal of Clinical Sports Psychology*, 4, 320-333.
- Bishop, S. R. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241. <https://doi.org/10.1093/clipsy/bph077>
- Bohlinger, A. I., Wahlig, J. L., & Trudeau-Hern, S. (2014). Teaching self-compassion to

- decrease performance anxiety in clinicians. In R. A. Bean, S. D. Davis & M. P. Davey (Eds.), *Clinical supervision activities for increasing competence and self-awareness; clinical supervision activities for increasing competence and self-awareness* (pp. 61-65, Chapter xv, 336 Pages) John Wiley & Sons, Inc., Hoboken, NJ. Retrieved from <https://search-proquest.com.proxy.bib.uottawa.ca/docview/1699504533?accountid=14701>
- Breathworks Mindfulness. (2017). Meditation 8: Kindness to Self, Using Phrases [Audio recorded meditation]. <https://soundcloud.com/breathworks-mindfulness/kindness-to-self-using-phrases>
- Brosch, T., Scherer, K. R., Grandjean, D., & Sander, D. (2013). The impact of emotion on perception, attention, memory, and decision-making. *Swiss Med Weekly* 143, 1–10. <https://doi.org/10.4414/smw.2013.13786>
- Brown, D. J., & Fletcher, D. (2017). Effects of psychological and psychosocial interventions on sport performance: A meta-analysis. *Sports Medicine*, 47(1), 77-99. <https://doi.org/10.1007/s40279-016-0552-7>
- Brown, K.W., & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822–848. <https://doi.org/10.1037/0022-3514.84.4.822>
- Buhrman, M., Faltenhag, S., Strom, L., & Andersson, G. (2004). Controlled trial of Internet-based treatment with telephone support for chronic back pain. *Pain*, 111, 368–377. <https://doi.org/10.1016/j.pain.2004.07.021>
- Cahn, B. R., & Polich, J. (2009). Meditation (Vipassana) and the P3a event-related brain potential. *International Journal of Psychophysiology*, 72, 51– 60. <https://doi.org/10.1016/j.ijpsycho.2008.03.013>
- Campo, R. A., Bluth, K., Santacroce, S. J., Knapik, S., Tan, J., Gold, S., Philips, K., Gaylord, S., & Asher, G. N. (2017). A mindful self-compassion videoconference intervention for nationally recruited posttreatment young adult cancer survivors: Feasibility, acceptability, and psychosocial outcomes. *Supportive Care in Cancer*, 25(6), 1759-1768. <https://doi.org/10.1007/s00520-017-3586-y>
- Capobianco, L., Reeves, D., Morrison, A. P., & Wells, A. (2018). Group metacognitive therapy

- vs. Mindfulness meditation therapy in a transdiagnostic patient sample: A randomised feasibility trial. *Psychiatry Research*, 259, 554-561. <https://doi.org/10.1016/j.psychres.2017.11.045>
- Carlbring, P., Furmark, T., Steczko, J., Ekselius, L., & Andersson, G. (2006). An open study of Internet-based bibliotherapy with minimal therapist contact via e-mail for social phobia. *Clinical Psychologist*, 10, 30–38. <https://doi.org/10.1080/13284200500378662>
- Carraça, B., Serpa, S., Palmi, J., & Rosado, A. (2018). Enhance sport performance of elite athletes: The mindfulness-based interventions. *Cuadernos De Psicología Del Deporte*, 18(2), 79-109.
- Carraça, B., Serpa, S., Rosado, A., & Palmi, J. (2018). The mindfulness- based soccer program (MBSoccerP): Effects on elite athletes. *Cuadernos De Psicología Del Deporte*, 18(3), 62-85.
- Cavalera, C., Rovaris, M., Mendozzi, L., Pugnetti, L., Garegnani, M., Castelnuovo, G., Molinari, E., & Pagnini, F. (2019). Online meditation training for people with multiple sclerosis: A randomized controlled trial. *Multiple Sclerosis Journal*, 25(4), 610–617. <https://doi.org/10.1177/1352458518761187>
- Cavanagh, K., Strauss, C., Cicconi, F., Griffiths, N., Wyper, A., & Jones, F. (2013). A randomised controlled trial of a brief online mindfulness-based intervention. *Behaviour Research and Therapy*, 51(9), 573. <https://doi.org/10.1016/j.brat.2013.06.003>
- Ceccarelli, L. A., Giuliano, R. J., Glazebrook, C. M., & Strachan, S. M. (2019). Self-Compassion and Psycho-Physiological Recovery From Recalled Sport Failure. *Frontiers in psychology*, 10, 1564. <https://doi.org/10.3389/fpsyg.2019.01564>
- Chambers, R., Lo, B. C. Y., & Allen, N. B. (2008). The impact of intensive mindfulness training on attentional control, cognitive style, and affect. *Cognitive Therapy and Research*, 32, 303–322. <https://doi.org/10.1007/s10608-007-9119-0>
- Christensen, H., Griffiths, K. M., & Korten, A. (2002). Web-based cognitive behavior therapy: Analysis of site usage and changes in depression and anxiety scores. *Journal of Medical Internet Research*, 4(1), e3. <https://doi.org/10.2196/jmir.4.1.e3>
- Corcoran, K. M., Farb, N., Anderson, A., & Segal, Z. V. (2010). Mindfulness and emotion

- regulation: Outcomes and possible mediating mechanisms. In A. M. Kring & D. M. Sloan (Eds.), *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment* (pp. 339-355, Chapter xv, 461 Pages) The Guilford Press, New York, NY.
- Corrigan, P. (2004). How Stigma Interferes with Mental Health Care. *American Psychologist*, 58(7), 614-625. <https://doi.org/10.1037/0003-066X.59.7.614>
- Coulter, T. J., Mallett, C. J., & Singer, J. A. (2015). A subculture of mental toughness in an Australian Football League club. *Psychology of Sport and Exercise*, 22, 98-114. <https://doi.org/10.1016/j.psychsport.2015.06.007>
- Dahm, K. A., Meyer, E. C., Neff, K. D., Kimbrel, N. A., Gulliver, S. B., & Morissette, S. B. (2015). Mindfulness, self-compassion, posttraumatic stress disorder symptoms, and functional disability in U.S. Iraq and Afghanistan war veterans. *Journal of Traumatic Stress*, 28(5), 460-464. <https://doi.org/10.1002/jts.22045>
- Danielwitz, M., Koszycki, D., Maclean, H., Sanchez-Campos, M., Gonsalves, C., Archibald, D., & Bradwejn, J. (2018). Feasibility and effectiveness of an online mindfulness meditation program for medical students. *Canadian Medical Education Journal*, 9(4), e15.
- Davis, D., Hayes, J., & Hilsenroth, M. J. (2011). What Are the Benefits of Mindfulness? A Practice Review of Psychotherapy-Related Research. *Psychotherapy*, 48(2), 198-208. <https://doi.org/10.1037/a0022062>
- De Petrillo, L.A., Kaufman, K.A., Glass, C.R., & Arnkoff, D.B. (2009). Mindfulness for long distance runners: An open trial using Mindful Sport Performance Enhancement (MSPE). *Journal of Clinical Sport Psychology*, 4, 357-376. <https://doi.org/10.1123/jcsp.3.4.357>
- Diedrich, A., Hofmann, S. G., Cuijpers, P., & Berking, M. (2016). Self-compassion enhances the efficacy of explicit cognitive reappraisal as an emotion regulation strategy in individuals with major depressive disorder. *Behaviour Research and Therapy*, 82, 1-10. <https://doi.org/10.1016/j.brat.2016.04.003>
- Dreisoerner, A., Junker, N. M., & Van Dick, R. (2020). The relationship among the components of self-compassion: A pilot study using a compassionate writing intervention to enhance self-kindness, common humanity, and mindfulness. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-being*. Advance online publication. <https://doi.org/10.1007/s10902-019-00217-4>
- Droit-Volet, S., & Heros, J. (2017). Time judgments as a function of mindfulness meditation,

- anxiety, and mindfulness awareness. *Mindfulness*, 8(2), 266-275.
<https://doi.org/10.1007/s12671-016-0597-6>
- Duarte, C., Pinto-Gouveia, J., & Stubbs, R. J. (2017). Compassionate attention and regulation of eating behaviour: a pilot study of a brief low-intensity intervention for binge eating. *Clinical Psychological Psychotherapy*, 14(6). <https://doi.org/10.1002/cpp.2094>
- Eke, A., Adam, M., Kowalski, K., & Ferguson, L. (2019). Narratives of adolescent women athletes' body self-compassion, performance and emotional well-being. *Qualitative Research in Sport, Exercise and Health*, 12(2), 175-191.
<https://doi.org/10.1080/2159676X.2019.1628805>
- Eriksson, T., Germundsjö, L., Åström, E., & Rönnlund, M. (2018). Mindful self-compassion training reduces stress and burnout symptoms among practicing psychologists: A randomized controlled trial of a brief web-based intervention. *Frontiers in Psychology*, 9, 10. <https://doi.org/10.3389/fpsyg.2018.02340>
- Erisman, S. M., & Roemer, L. (2010). A preliminary investigation of the effects of experimentally induced mindfulness on emotional responding to film clips. *Emotion*, 10, 72– 82. <https://doi.org/10.1037/a0017162>
- Ferguson, L., Kowalski, K. C., Mack, D. E., & Sabiston, A. M. (2014). Exploring self-compassion and eudaimonic well-being in young women athletes. *Journal of Sport & Exercise Psychology*, 36(2), 203-216. <https://doi.org/10.1123/jsep.2013-0096>
- Ferrari, M., Hunt, C., Harrysunker, A., Abbott, M. J., Beath, A. P., & Einstein, D. A. (2019). Self-compassion interventions and psychosocial outcomes: a meta-analysis of RCT's. *Mindfulness*, 10(8), 1455-1473. <https://doi.org/10.1007/s12671-019-01134-6>
- Finlay-Jones, A., Kane, R., & Rees, C. (2017). Self-compassion online: A pilot study of an Internet-based self-compassion cultivation program for psychology trainees. *Journal of Clinical Psychology*, 73, 797-816. <https://doi.org/10.1002/jclp.22375>
- Flynn, S., Hastings, R. P., Burke, C., Howes, S., Yona, L., Weiss, J. A., & Bailey, T. (2020). Online mindfulness stress intervention for family carers of children and adults with intellectual disabilities: Feasibility randomized controlled trial. *Mindfulness*, 11(9), 2161-2175. <https://doi.org/10.1007/s12671-020-01436-0>
- Fontana, S., Fry, D., & Cramer, E. (2017). Exploring the Relationship Between Athletes'

- Perceptions of the Motivational Climate to Their Compassion, Self-Compassion, Shame, and Pride in Adult Recreational Sport. *Measurement in Physical Education and Exercise Science*, 21(2), 101–111. <https://doi.org/10.1080/1091367X.2017.1278698>
- Frostadottir, A. D., & Dorjee, D. (2019). Effects of Mindfulness Based Cognitive Therapy (MBCT) and Compassion Focused Therapy (CFT) on symptom change, mindfulness, self-compassion, and rumination in clients with depression, anxiety, and stress. *Frontiers in Psychology*, 10, <https://doi.org/10.3389/fpsyg.2019.01099>
- Gardner, F. L., & Moore, Z. E. (2004). A mindfulness-acceptance-commitment-based approach to athletic performance enhancement: Theoretical considerations. *Behavior Therapy*, 35(4), 707–723. [https://doi.org/10.1016/S0005-7894\(04\)80016-9](https://doi.org/10.1016/S0005-7894(04)80016-9)
- Gardner, F. L., & Moore, Z. E. (2012). Mindfulness and acceptance models in sport psychology: A decade of basic and applied scientific advancements. *Canadian Psychology Psychologie Canadienne*, 53(4), 309–318. <https://doi.org/10.1037/a0030220>
- Gardner, F. L., & Moore, Z. E. (2007). *The psychology of enhancing human performance: The Mindfulness acceptance-commitment (MAC) approach*. New York, NY: Springer
- Gerber, Z., Tolmacz, R., & Doron, Y. (2015). Self-compassion and forms of concern for others. *Personality and Individual Differences*, 86, 394–400. <https://doi.org/10.1016/j.paid.2015.06.052>
- Germer, C. (2017). Self-Compassion Break [Audio recorded meditation]. <https://chrisgermer.com/wp-content/uploads/2017/04/Self-Compassion-Break-13-min.mp3>
- Germer, C. K., Siegel, R. D., & Fulton, P. R. (2005). *Mindfulness and psychotherapy*. New York, NY US: Guilford Press.
- Gilbert, P., Catarino, F., Duarte, C., Matos, M., Kolts, R., Stubbs, J., & Basran, J. (2017). The development of compassionate engagement and action scales for self and others. *Journal of Compassionate Healthcare*, 4. <https://doi.org/10.1186/s40639-017-0033-3>
- Gilbert, P. (2005). Compassion and cruelty: a biopsychosocial approach. In P. Gilbert (Ed.), *Compassion: Conceptualisations, research and use in psychotherapy* (pp. 9–74). London: Routledge.
- Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: Development of

- three self-report measures. (2011). *Psychology and Psychotherapy Theory, Research and Practice*, 84(3), 239–255. <https://doi.org/10.1348/147608310X526511>
- Gilbert, P., & Procter, S. (2006). Compassionate Mind Training for People with High Shame and Self-Criticism: Overview and Pilot Study of a Group Therapy Approach. *Clinical Psychology and Psychiatry*, 13, 353–379. <https://doi.org/10.1002/cpp.507>
- Goldin, P. R., & Gross, J. J. (2010). Effects of mindfulness-based stress-reduction (MBSR) on emotion regulation in social anxiety disorder. *Emotion*, 10, 83–91. doi:10.1037/a001844
- Griffiths, F., Lindenmeyer, A., Powell, J., Lowe, P., & Thorogood, M. (2006). Why are health care interventions delivered over the Internet? A systematic review of the published literature. *Journal of Medical Internet Research*, 8(2), e11. <https://doi.org/10.2196/jmir.8.2.e10>
- Gross, M., Moore, Z. E., Gardner, F. L., Wolanin, A. T., Pess, R., & Marks, D. R. (2018). An empirical examination comparing the Mindfulness-Acceptance-Commitment approach and Psychological Skills Training for the mental health and sport performance of female student athletes, *International Journal of Sport and Exercise Psychology*. <https://doi.org/10.1080/1612197X.2016.1250802>.
- Gu, J., Strauss, C., Crane, C., Barnhofer, T., Karl, A., Cavanagh, K., & Kuyken, W. (2016). Examining the factor structure of the 39-item and 15-item versions of the Five Facet Mindfulness Questionnaire before and after mindfulness-based cognitive therapy for people with recurrent depression. *Psychological assessment*, 28(7), 791. <https://doi.org/10.1037/pas0000263>
- Gulliver, A., Griffiths, M. K., Christensen, H. (2012). Barriers and facilitators to mental health help-seeking for young elite athletes: a qualitative study. *BMC Psychiatry*, 12(157). <https://doi.org/10.1186/1471-244X-12-157>
- Gunnell, K. E., Mosewich, A. D., McEwen, C. E., Eklund, R. C., & Crocker, P. R. E. (2017). Don't be so hard on yourself! changes in self-compassion during the first year of university are associated with changes in well-being. *Personality and Individual Differences*, 107, 43–48. <https://doi.org/10.1016/j.paid.2016.11.032>
- Halamova, J., Kanovsky, M., Jurkova, V., & Kupeli, N. (2018). Effect of a short-term online

- version of a mindfulness-based intervention on self-criticism and self-compassion in a nonclinical sample. *Studia Psychologica*, 60, 259-273.
<https://doi.org/10.21909/sp.2018.04.766>
- Hall, C. W., Row, K. A., Wuensch, K. L., & Godley, K. R. (2013). The role of self-compassion in physical and psychological well-being. *The Journal of Psychology*, 147(4), 311-323.
<https://doi.org/10.1080/00223980.2012.693138>
- Hanin, Y. L. (1978). A study of anxiety in sports. In W. Straub (Ed.), *Sport psychology: An analysis of athlete behavior* (pp. 236–249). Ithaca, NY: Movement Publications.
- Hanin, Y. L. (1997). Emotions and athletic performance: Individual zones of optimal functioning model. *European Yearbook of Sport Psychology*, 1, 29–72
- Hanin, Y. L. (2000). Individual Zones of Optimal Functioning (IZOF) Model: Emotion-performance relationship in sport. In Y. L. Hanin (Ed.), *Emotions in sport* (pp. 65-89). Champaign, IL, US: Human Kinetics.
- Hanin, Y. L. (1989). Interpersonal and intragroup anxiety in sports. In D. Hackfort & C. D. Spielberger (Eds.), *Anxiety in sports: An international perspective* (pp. 19–28). New York, NY: Hemisphere.
- Hanin, Y. L. (1986). State-trait anxiety research on sports in USSR. In C. D. Spielberger & R. Díaz Guerrero (Eds.), *Cross-cultural anxiety* (vol. 3, pp. 45–64). Washington, DC: Hemisphere.
- Harmison, R. J. (2006). Peak performance in sport: Identifying ideal performance states and developing athletes' psychological skills. *Professional Psychology: Research and Practice*, 37(3), 233-243. <https://doi.org/10.1037/0735-7028.37.3.233>
- Harwood, E. M., & Kocovski, N. L. (2017). Self-compassion induction reduces anticipatory anxiety among socially anxious students. *Mindfulness*, 8, 1544-1551.
<https://doi.org/10.1007/s12671-017-0721-2>
- Hatfield, B. D., Haufler, A. J., Hung, T., & Spalding, T. W. (2004). Encelphalographic studies of skilled psychomotor performance. *Journal of Clinical Neuropsychology*, 21, 144–156.
<https://doi.org/10.1097/00004691-200405000-00003>
- Haukaas, R. B., Gjerde, I. B., Varting, G., Hallan, H. E., & Solem, S. (2018). A randomized

- controlled trial comparing the attention training technique and mindful self-compassion for students with symptoms of depression and anxiety. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.00827>
- Held, P., Owens, G. P., Thomas, E. A., White, B. A., & Anderson, S. E. (2018). A pilot study of brief self-compassion training with individuals in substance use disorder treatment. *Traumatology*, 24, 219-227. <https://doi.org/10.1037/trm0000146>
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 44(2), 227-239. <https://doi.org/10.1348/014466505X29657>
- Hollis-Walker, L., & Colosimo, K. (2010). Mindfulness, self-compassion and happiness in non-meditators: A theoretical and empirical examination. *Personality and Individual Differences*, 50(2), 222-227. <https://doi.org/10.1016/j.paid.2010.09.033>
- Hope, N., Koestner, R., & Milyavskaya, M. (2014). The role of self-compassion in goal pursuit and well-being among university freshmen. *Self Identity*, 13(5), 579-593. <https://doi.org/10.1080/15298868.2014.889032>
- Hoffman, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78, 169 –183. <https://doi.org/10.1037/a0018555>
- Huysmans, Z., & Clement, D. (2017). A Preliminary Exploration of the Application of Self-Compassion Within the Context of Sport Injury. *Journal of Sport & Exercise Psychology*, 39(1), 56-66. <https://doi.org/10.1123/jsep.2016-0144>
- Inwood, E., & Ferrari, M. (2018). Mechanisms of Change in the Relationship Between Self-Compassion, Emotion Regulation and Mental Health: A Systematic Review. *Applied Psychology: Health and Well-being*. <https://doi.org/10.1111/aphw.12127>
- Jackson, S. A. (1995). Factors influencing the occurrence of flow state in elite athletes. *Journal of Applied Sport Psychology*, 7(2), 138-166. <https://doi.org/10.1080/10413209508406962>
- Jackson, S. A. (1996). Toward a Conceptual Understanding of the Flow Experience in Elite Athletes. *Research Quarterly for Exercise and Sport*, 67 (1), 76-90. <https://doi.org/10.1080/02701367.1996.10607928>
- Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in sports: The keys to optimal experiences*

- and performances*. Champaign, IL, US: Human Kinetics Books.
- Jackson, S. A., & Roberts, G.C. (1992). Positive performance states of athletes: Toward a conceptual understanding of peak performance. *The Sport Psychologist*, 6, 156-171.
- Jackson, S. A., Thomas, P. R., Marsh, H. W., & Smethurst, C. J. (2001). Relationships between Flow, Self-Concept, Psychological Skills and Performance. *Journal of Applied Sport Psychology*, 13 (2), 129-153. <https://doi.org/10.1080/104132001753149865>
- Jha, A. P., Stanley, E. A., Kiyonaga, A., Wong, L., & Gelfand, L. (2010). Examining the protective effects of mindfulness training on working memory capacity and affective experience. *Emotion*, 10, 54 – 64. <https://doi.org/10.1037/a0018438>
- John, S., Verma, S. K., & Khanna, G. (2011). The effect of mindfulness meditation on HPA-axis in pre-competition stress in sports performance of elite shooters. *National Journal of Integrated Research in Medicine*, 2, 15–21.
- Josefsson, T., Ivarsson, A., Gustafsson, H., Stenling, A., Lindwall, M., Tornberg, R., & Böröy, J. (2019). Effects of Mindfulness-Acceptance-Commitment (MAC) on Sport-Specific Dispositional Mindfulness, Emotion Regulation, and Self-Rated Athletic Performance in a Multiple-Sport Population. *Mindfulness*, 10, 1518-1529. <https://doi.org/10.1007/s12671-019-01098-7>
- Joy, S. D. S. (2014). Meditation for Anxiety, Depression and Pain. *The American Journal of Nursing*, 114(4), 58. <https://doi.org/10.1097/01.NAJ.0000445692.57498.0a>
- Kaufman, K. A., Glass, C. R., & Pineau, T. R. (2018). *Mindful sport performance enhancement: Mental training for athletes and coaches*. Washington, DC, US: American Psychological Association. <https://doi.org/10.1037/0000048-000>
- Kaurin, A., Schönfelder, S., & Wessa, M. (2018). Self-compassion buffers the link between self-criticism and depression in trauma-exposed firefighters. *Journal of Counseling Psychology*, 65(4), 453. <https://doi.org/10.1037/cou0000275>
- Kenardy, J., McCafferty, K., & Rosa, V. (2006). Internet-delivered indicated prevention for anxiety disorders: Six-month follow-up. *Clinical Psychologist*, 10, 39–42. <https://doi.org/10.1080/13284200500378746>
- Killham, M. E., Mosewich, A. D., Mack, D. E., Gunnell, K. E., & Ferguson, L. J. (2018). Women athletes' self-compassion, self-criticism, and perceived sport performance. *Sport, Exercise, and Performance Psychology*, 7(3), 297-307. <https://doi.org/10.1037/>

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- Kim, J. J., Parker, S. L., Doty, J. R., Cunningham, R., Gilbert, P., & Kirby, J. N. (2020). Neurophysiological and behavioural markers of compassion. *Scientific reports*, 10(1), 6789. <https://doi.org/10.1038/s41598-020-63846-3>
- Kingsbury, E. (2009). The relationship between empathy and mindfulness: Understanding the role of self-compassion. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 70(5-B), 3175.
- Kirschner, H., Kuyken, W., Wright, K., Roberts, H., Brejcha, C., & Karl, A. (2019). Soothing your heart and feeling connected: A new experimental paradigm to study the benefits of self-compassion. *Clinical Psychological Science*, 7, 545-565. <https://doi.org/10.1177/2167702618812438>
- Körner, A., Coroiu, A., Copeland, L., Gomez-Garibello, C., Albani, C., Zenger, M., & Brähler, E. (2015). The Role of Self-Compassion in Buffering Symptoms of Depression in the General Population. *PLoS ONE*, 10(10), 1–14. <https://doi.org/10.1371/journal.pone.0136598>
- Krane, V., & Williams, J. M. (2006). Psychological Characteristics of Peak Performance. In J. M. Williams (Ed.), *Applied Sport Psychology: Personal Growth to Peak Performance* (pp. 207-227).
- Krieger, T., Altenstein, D., Baettig, I., Doerig, N., & Holtforth, M. G. (2013). Self-compassion in depression: associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy*, 44(3) 501-513. <https://doi.org/10.1016/j.beth.2013.04.004>
- Krieger, T., Martig, D. S., Van Den Brink, E., & Berger, T. (2016). Working on self-compassion online: A proof of concept and feasibility study. *Internet Interventions*, 6, 64–70. <https://doi.org/10.1016/j.invent.2016.10.001>
- Krieger, T., Reber, F., Von Glutz, B., Urech, A., Moser, C. T., Schulz, A., & Berger, T. (2019). An internet-based compassion-focused intervention for increased self-criticism: a randomized controlled trial. *Behavior Therapy*, 50(2), 430–445. <https://doi.org/10.1016/j.beth.2018.08.003>
- Kucharski, B., Strating, M. A., Ahluwalia Cameron, A., & Pascual-Leone, A. (2018).

- Complexity of emotion regulation strategies in changing contexts: A study of varsity athletes. *Journal of Contextual Behavioral Science*, 10, 85-91.
<https://doi.org/10.1016/j.jcbs.2018.09.002>
- Landhäuser, A., & Keller, J. (2012). Flow and its affective, cognitive, and performance-related consequences. In S. Engeser (Ed.), *Advances in flow research* (pp. 65–86). New York: Springer.
- Lang, A. J., Malaktaris, A. L., Casmar, P., Baca, S. A., Golshan, S., Harrison, T., & Negi, L. (2019). Compassion meditation for posttraumatic stress disorder in veterans: A randomized proof of concept study. *Journal of Traumatic Stress*,
<https://doi.org/10.1002/jts.22397>
- Lane, M. A., Beedie, C. J., Devonport, T. J., & Stanley, D. M. (2011). Instrumental emotion regulation in sport: relationships between beliefs about emotion and emotion regulation strategies used by athletes. *Scandinavian Journal of Medicine & Science in Sports*, 21(6), 445-451. <https://doi.org/10.1111/j.1600-0838.2011.01364.x>
- Lavery-Thompson, T. (2018). *Effects of mindfulness-based stress reduction on flow state and self-compassion during music practice* [Master's thesis]. ProQuest Dissertations & Theses Global.
- Lippmann, M., Laudel, H., Heinzle, M., & Narciss, S. (2019). Relating instructional design components to the effectiveness of internet-based mindfulness interventions: A critical interpretive synthesis. *Journal of Medical Internet Research*, 21(11), 15.
<https://doi.org.proxy.bib.uottawa.ca/10.2196/12497>
- Lobato, J. (2012). The actor-oriented transfer perspective and its contributions to educational research and practice. *Educational Psychologist*, 47(3), 232–247.
<https://doi.org/10.1080/00461520.2012.693353>
- Lopez, A., Sanderman, R., Ranchor, A. V., & Schroevers, M. J. (2018). Compassion for others and self-compassion: Levels, correlates, and relationship with psychological well-being. *Mindfulness*, 9(1), 325-331. <https://doi.org/10.1007/s12671-017-0777-z>
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33, 335– 343. [https://doi.org/10.1016/0005-7967\(94\)00075-u](https://doi.org/10.1016/0005-7967(94)00075-u)

- Luo, Y., Meng, R., Li, J., Lui, B., Cao, X., & Ge, W. (2019). Self-compassion may reduce anxiety and depression in nursing students: A pathway through perceived stress. *Public Health*, 174, 1-10. <https://doi.org/10.1016/j.puhe.2019.05.015>
- Maehr, M. L., & Nicholls, J. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross cultural psychology*, 3, 221 – 267.
- Mak, W. W., Chio, F. H., Chan, A. T., Lui, W. W., & Wu, E. K. (2017). The efficacy of internet-based mindfulness training and cognitive-behavioral training with telephone support in the enhancement of mental health among college students and young working adults: randomized controlled trial. *Journal of medical Internet research*, 19(3), e84. <https://doi.org/10.2196/jmir.6737>
- Malboeuf-Hurtubise, C., Achille, M., Muise, L., Beaugard-Lacroix, R., Vadnais, M., & Lacourse, É. (2016). A Mindfulness-Based Meditation Pilot Study: Lessons Learned on Acceptability and Feasibility in Adolescents with Cancer. *Journal of Child and Family Studies*, 25(4), 1168-1177. <https://doi.org/10.1007/s10826-015-0299-z>
- Makadi, E., & Koszycki, D. (2020). Exploring connections between self-compassion, mindfulness, and social anxiety. *Mindfulness*, 11(2), 480-492. <https://doi.org/10.1007/s12671-019-01270-z>
- Matos, M., Duarte, C., Duarte, J., Pinto-Gouveia, J., Petrocchi, N., Basran, J., & Gilbert, P. (2017). Psychological and physiological effects of compassionate mind training: A pilot randomised controlled study. *Mindfulness*, 8(6), 1699-1712. <https://doi.org/10.1007/s12671-017-0745-7>
- McAuley, E. (1985). Success and causality in sport: The influence of perception. *Journal of Sport Psychology*, 7, 13 – 22. <https://doi.org/10.1123/jsp.7.1.13>
- McCarthy, P. J. (2011). Positive emotion in sport performance: Current status and future directions. *International Review of Sport and Exercise Psychology*, 4(1), 50-69. <https://doi.org/10.1080/1750984X.2011.560955>
- Mellalieu, S. D., Hanton, S., & Jones, G. (2003). Emotional labeling and competitive anxiety in preparation and competition. *The Sport Psychologist*, 17, 157–174. <https://doi.org/10.1123/tsp.17.2.157>
- Mindful Vancouver. (2016). *Self-Compassion Meditation* [Audio recorded meditation]. <https://soundcloud.com/mindfulvancouver/self-compassion-meditation>

- Mitchell, A. D., Whittingham, K., Steindl, S., & Kirby, J. (2018). Feasibility and acceptability of a brief online self-compassion intervention for mothers of infants. *Archives of Women's Mental Health, 21*(5), 553–561. <https://doi.org/10.1007/s00737-018-0829-y>
- Moeini, M., Sarikhani-Khorrami, E., & Ghamarani, A. (2019). The effects of self-compassion education on the self-efficacy of the clinical performance of nursing students. *Iranian Journal of Nursing and Midwifery Research, 24*(6), 469-471. https://doi.org/10.4103/ijnmr.IJNMR_77_18
- Moore, S., Barbour, R., Ngo, H., Sinclair, C., Chambers, R., Auret, K., Hassed, C., & Playford, D. (2020). Determining the feasibility and effectiveness of brief online mindfulness training for rural medical students: a pilot study. *BMC Medical Education, 20*, 1-12. <https://doi.org/10.1186/s12909-020-02015-6>
- Moore, A., & Malinowski, P. (2009). Meditation, mindfulness and cognitive flexibility. *Consciousness and Cognition, 18*, 176 –186. <https://doi.org/10.1016/j.concog.2008.12.008>
- Mosewich, A. D., Crocker, P. R. E., & Kowalski, K. C. (2014). Managing injury and other setbacks in sport: Experiences of (and resources for) high performance women athletes. *Qualitative Research in Sport, Exercise and Health, 6*, 182–204. <https://doi.org/10.1080/2159676X.2013.766810>
- Mosewich, A., Crocker, P., Kowalski, K., & Delongis, A. (2013). Applying self-compassion in sport: an intervention with women athletes. *Journal of Sport & Exercise Psychology, 35*(5), 514-524. <https://doi.org/10.1123/jsep.35.5.51>
- Mosewich, A. D., Ferguson, J. L., McHugh, T. F., & Kowalski, K. C. (2019). Enhancing capacity: Integrating self-compassion in sport. *Journal of Sport Psychology in Action, 10*(4), 235–243. <https://doi.org/10.1080/21520704.2018.1557774>
- Mosewich, A. D., Kowalski, K. C., Sabiston, C. M., Sedgwick, W. A., & Tracy, J. L. (2011). Self-compassion: A potential resource for young women athletes. *Journal of Sport & Exercise Psychology, 33*(1), 103. <https://doi.org/10.1123/jsep.33.1.103>
- Mosewich, A. D., Sabiston, C. M., Kowalski, K. C., Gaudreau, P., & Crocker, P. R. E. (2019). Self-compassion in the stress process in women athletes. *The Sport Psychologist, 33*, 23-34. <https://doi.org/10.1123/tsp.2017-0094>
- Moulton-Perkins, A., Moulton, D., Cavanagh, K., Jozavi, A., & Strauss, C. (2020). Systematic

- review of mindfulness-based cognitive therapy and mindfulness-based stress reduction via group videoconferencing: Feasibility, acceptability, safety, and efficacy. *Journal of Psychotherapy Integration*. <http://dx.doi.org.proxy.bib.uottawa.ca/10.1037/int0000216>
- Muris, P., Meesters, C., Pierik, A., & De Kock, B. (2016). Good for the self: Self-compassion and other self-related constructs in relation to symptoms of anxiety and depression in non-clinical youths. *Journal of Child and Family Studies*, 25, 607-617.
<https://doi.org/10.1007/s10826-015-0235-2>
- Murphy, C. C., Craddock Lee, S., J., Geiger, A. M., Cox, J. V., Ahn, C., Nair, R., & Celette, S. S. (2020). A randomized trial of mail and email recruitment strategies for a physician survey on clinical trial accrual. *BMC Medical Research Methodology*, 20, 1-7.
<https://doi.org/10.1186/s12874-020-01014-x>
- Nakamura, J., & Csikszentmihalyi, M. (2009). The Concept of Flow. In Snyder, C. R., & Lopez, S. J. Oxford handbook of positive psychology. Oxford university press, USA 89-105.
- Neely, M. E., Schallert, D. L., Mohammed, S. S., Roberts, R. M., & Chen, Y. (2009). *Self kindness when facing stress: The role of self-compassion, goal regulation, and support in college students' well-being*. *Motivation and Emotion*, 33(1), 88–97.
<https://doi.org/10.1007/s11031-008-9119-8>.
- Neff, K. D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, 2, 85-101. <https://doi.org/10.1080/15298860309032>
- Neff, K. D. (2011). Self-compassion, self-esteem, and well-being. *Social and Personality Psychology Compass*, 5, 1–12. <https://doi.org/10.1111/j.1751-9004.2010.00330.x>
- Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2, 223-250. <https://doi.org/10.1080/15298860309027>
- Neff K. D., & Dahm K.A. (2015) Self-Compassion: What It Is, What It Does, and How It Relates to Mindfulness. In: Ostafin B., Robinson M., Meier B. (eds) *Handbook of Mindfulness and Self-Regulation*. Springer, New York, NY
- Neff, K., & Germer, C. (2018). *The Mindful Self-Compassion Workbook: A proven way to accept yourself, build inner strength and thrive*. Guilford Press.
- Neff, K. D., Hsieh, Y., & Dejjitterat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity*, 4(3), 263-287.
<https://doi.org/10.1080/13576500444000317>

- Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality*, 41(1), 139-154.
<https://doi.org/10.1016/j.jrp.2006.03.004>
- Neff, D. K., & Pommier, E. (2013) The Relationship between Self-compassion and Other-focused Concern among College Undergraduates, Community Adults, and Practicing Meditators. *Self and Identity*, 12, 2, 160-176.
<https://doi.org/10.1080/15298868.2011.649546>
- Neil, R., Wilson, K., Mellalieu, S. D., Hanton, S., & Taylor, J. (2012). Competitive anxiety intensity and interpretation: A two-study investigation into their relationship with performance. *International Journal of Sport & Exercise Psychology*, 10, 96–111.
<https://doi.org/10.1080/1612197X.2012.645134>
- Nieuwenhuijsen, K., De Boer, A. G. E. M., Verbeek, J. H. A. M., Blonk, R. W. B., & Van Dijk, F. J. H. (2003). The Depression Anxiety Stress Scales (DASS): detecting anxiety disorder and depression in employees absent from work because of mental health problems. *Occupational and Environmental Medicine* 60, 77- 82. https://doi.org/10.1136/oem.60.suppl_1.i77
- Nilsson, H., Kazemi, A., & Alexander, Gerianne M. (2016). Reconciling and Thematizing Definitions of Mindfulness: The Big Five of Mindfulness. *Review of General Psychology*, 20 (2), 183-193. <https://doi.org/10.1037/gpr0000074>
- Nyklicek, I., & Kuijpers, K. F. (2008). Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: is increased mindfulness indeed the mechanism? *Annals of Behavioral Medicine*, 35, 331–340.
<https://doi.org/10.1007/s12160-008-9030-2>
- Ojaghi, A., Gholizade, H., & Mirheidari, L. (2013). The effect of mindfulness techniques training on anxiety and sport performance among table tennis players. *Life Science Journal*, 10, 225–230.
- Ondrejškova, N., Halamova, J., & Strnadelova, B. (2020). Effect of the intervention mindfulness based compassionate living on the level of self-criticism and self-compassion. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*.
<https://doi.org/10.1007/s12144-020-00799-w>
- Papazoglou, K., Russo, C., & Johnson, O. (2019). Police self-compassion. In L. Galiana, & N.

- Sansó (Eds.), *The power of compassion; the power of compassion* (pp. 285-296, Chapter xvi, 387 Pages) Nova Science Publishers, Hauppauge, NY.
- Reardon, C. L., Hainline, B., Aron, C. M., Baron, D., Baum, A. L., Bindra, A., Budgett, R., Campriani, N., Castaldelli-Maia, J. M., Currie, A., Derevensky, J. L., Glick, I. D., Gorczynski, P., Gouttebauge, V., Grandner, M. A., Han, D. H., McDuff, D., Mountjoy, M., Polat, A., Purcell, R., Putukian, M., ... Engebretsen, L. (2019). Mental health in elite athletes: International Olympic Committee consensus statement. *British Journal of Sports Medicine* (53), 667-699. <https://doi.org/10.1136/bjsports-2019-100715>
- Perez-Blasco, J., Vigeur, O., & Roderigo, M. (2013). Effects of a mindfulness-based intervention on psychological distress, well-being and maternal self-efficacy in breast-feeding mothers: results of a pilot study. *Archives of Women's Mental Health*, 16(3), 227-236. <https://doi.org/10.1007/s00737-013-0337-z>
- Reis, N. A., Kowalski, K. C., Ferguson, L. J., Sabiston, C. M., Sedgwick, W. A., & Crocker, P. R. E. (2015). Self-compassion and women athletes' responses to emotionally difficult sport situations: An evaluation of a brief induction. *Psychology of Sport & Exercise*, 16(3), 18-25. <https://doi.org/10.1016/j.psychsport.2014.08.011>
- Rice, S., Purcell, R., Silva, S., Mawren, D., McGorry, P., & Parker, A. (2016). The mental health of elite athletes: A narrative systematic review. *Sports Medicine*, 46(9), 1333-1353. <https://doi.org/10.1007/s40279-016-0492-2>
- Robazza, C., Bortoli, L., & Nougier, V. (2000). Performance emotions in an elite archer: a case study. *Journal of Sport Behavior*, 23, 144-163.
- Robazza, C., Pellizzari, M., & Hanin, Y. (2004). Emotion self-regulation and athletic performance: an application of the IZOF model. *Psychology of Sport and Exercise*, 5, 379-404. [https://doi.org/10.1016/S1469-0292\(03\)00034-7](https://doi.org/10.1016/S1469-0292(03)00034-7)
- Roberts, C., Faull, A., & Tod, D. (2016). Blurred lines: Performance Enhancement, Common Mental Disorders and Referral in the U.K. Athletic Population. *Frontiers in Psychology*, 7, 1-13. <https://doi.org/10.3389/fpsyg.2016.01067>
- Rose, A., McIntyre, R., & Rimes, K. A. (2018). Compassion-focused intervention for highly self-critical individuals: Pilot study. *Behavioural and Cognitive Psychotherapy*, 46(5), 583-600. <https://doi.org/10.1017/S135246581800036X>
- Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of

- psychological well-being. *Journal of Personality and Social Psychology*, 57, 1069–1081.
<https://doi.org/10.1037/0022-3514.57.6.1069>
- Ryff, C.D. (1995). Psychological well-being in adult life. *Current Directions in Psychological Science*, 4, 99–104. <https://doi.org/10.1111/1467-8721.ep10772395>
- Salzberg, Sharon. (2015). Body Scan Meditation [Audio recorded meditation].
<https://soundcloud.com/sharonsalzberg/body-scan-meditation>
- Saw, N. E., Main, L. C., & Gastin, P. B. (2016). Monitoring the athlete training response: Subjective self-reported measures trump commonly used objective measures: A systematic review. *British Journal of Sports Medicine*, 50(5), 281.
<https://doi.org/10.1136/bjsports-2015-094758>
- Schinke, R. J., Stambulova, N. B., Si, G., & Moore, Z. (2018). International society of sport psychology position stand: Athletes' mental health, performance, and development. *International Journal of Sport and Exercise Psychology*, 16, 622-639.
<https://doi.org/10.1080/1612197X.2017.1295557>
- Scott-Hamilton, J., & Schutte, N. S. (2016). The Role of Adherence in the Effects of a Mindfulness Intervention for Competitive Athletes: Changes in Mindfulness, Flow, Pessimism, and Anxiety. *Journal of Clinical Sport Psychology*, 10(2), 99–117.
<https://doi.org/10.1123/jcsp.2015-0020>
- Scott-Hamilton, J., Schutte, N. S., & Brown, R. F. (2016). Effects of a mindfulness intervention on Sports-Anxiety, pessimism, and flow in competitive cyclists. *Applied Psychology: Health and Well-Being*, 8(1), 85-103. <https://doi.org/10.1111/aphw.12063>
- Sears, S. R., Kraus, S., Carlough, K., & Treat, E. (2011). Perceived benefits and doubts of participants in a weekly meditation study. *Mindfulness*, 2(3), 167-174.
<https://doi.org/10.1007/s12671-011-0055-4>
- Shapira, L. B., & Mongrain, M. (2010). The benefits of self-compassion and optimism exercises for individuals vulnerable to depression. *The Journal of Positive Psychology*, 5(5), 377-389. <https://doi.org/10.1080/17439760.2010.516763>
- Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, 12, 164-176. <https://doi.org/10.1037/1072-5245.12.2.164>
- Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects

- of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, 1(2), 105-115.
<https://doi.org/10.1037/1931-3918.1.2.105>
- Sherman, K. A., Roper, T., & Kilby, C. J. (2019). Enhancing self-compassion in individuals with visible skin conditions: Randomised pilot of the 'My changed body' self-compassion writing intervention. *Health Psychology and Behavioral Medicine*, 7(1), 62-77.
<https://doi.org/10.1080/21642850.2019.1587298>
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with big five personality and attachment style. *The Journal of Positive Psychology*, 1, 61–71. <https://doi.org/10.1080/17439760500510833>
- Simpson, S., Wyke, S., Mercer, W. S. (2019). Adaptation of a Mindfulness-Based Intervention for Incarcerated Young Men: a Feasibility Study. *Mindfulness*, 10, 1268-1578.
<https://doi.org/10.1007/s12671-018-1076-z>
- Smeets, E., Neff, K., Alberts, H., & Peters, M. (2014). Meeting suffering with kindness: Effects of a brief self-compassion intervention for female college students. *Journal of Clinical Psychology*, 70(9), 794-807. <https://doi.org/10.1002/jclp.22076>
- Smith, R. E., Smoll, F. L., Grossbard, J., Cumming, S. (2006). Measurement of multidimensional sport performance anxiety in children and adults: the sport anxiety scale-2. *Journal of Sport & Exercise Psychology*, 28 (4), 479-501. <https://doi.org/10.1123/jsep.28.4.479>
- Smith, R. E., Smoll, F. L., & Schutz, R. W. (1990). Measurement and correlates of sport specific cognitive and somatic trait anxiety: The Sport Anxiety Scale. *Anxiety Research*, 2, 263–280. <https://doi.org/10.1080/08917779008248733>.
- Smrdu, M. (2015). First-Person Experience of Optimal Sport Competition Performance of Elite Team Athletes. *Kinesiology*, 47(2), 169-178.
- Solberg, E. E. (1996). The effect of meditation on shooting performance. *Br J Sports Med*, 30(4), 342–6. <https://doi.org/10.1136/bjism.30.4.342>
- Solberg, E. E., Ingjer, F., Holen, A., Sundgot-Borgen, J., Nilsson, S., & Holme, I. (2000). Stress reactivity to and recovery from a standardised exercise bout: A study of 31 runners practising relaxation techniques. *British Journal of Sports Medicine*, 34, 268–272.
<https://doi.org/10.1136/bjism.34.4.268>

- Spijkerman, M. P. J., Pots, W. T. M., & Bohlmeijer, E. T. (2016). Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials. *Clinical psychology review*, 45, 102-114.
<https://doi.org/10.1016/j.cpr.2016.03.009>
- Stavrou, A. N., Zervas, Y., Karteroliotis, K., & Jackson, S. A. (2007). Flow Experience and Athletes' Performance with Reference to the Orthogonal Model of Flow. *The Sport Psychologist*, 21, 438-457. <https://doi.org/10.1123/tsp.21.4.438>
- Stefan, S., & Hofmann, S. G. (2019). Integrating metta into CBT: How loving kindness and compassion meditation can enhance CBT for treating anxiety and depression. *Clinical Psychology in Europe*, 1(3), 160-167. <https://doi.org/10.32872/cpe.v1i3.32941>
- Stinson, C., Curl, E. D., Hale, G., Knight, S., Pipkins, C., Hall, I., White, K., Thompspon, N., & Wright, C. (2020). Mindfulness meditation and anxiety in nursing students. *Nursing Education Perspectives*, 41(4), 244-245.
<https://doi.org/10.1097/01.NEP.0000000000000635>
- Swann, C., Keegan, R., Crust, L., & Piggott, D. (2016). Psychological states underlying excellent performance in golfers; "Letting it happen" vs. "making it happen". *Psychology of Sport and Exercise*, 23, 101-113. <https://doi.org/10.1016/j.psychsport.2015.10.008>
- Swann, C., Keegan, R. J., Piggott, D., & Crust, L. (2012). A systematic review of the experience, occurrence, and controllability of flow states in elite sport. *Psychology of Sport and Exercise*, 13(6), 807-819. <https://doi.org/10.1016/j.psychsport.2012.05.006>
- Subedi, B. S. (2004). Emerging trends of research on transfer of learning. *International Education Journal*, 5(4), 591-599.
- Sutherland, L. M., Kowalski, K. C., Ferguson, L. J., Sabiston, C. M., Sedgwick, W. A., & Crocker, P. R. E. (2014). Narratives of young women athletes' experiences of emotional pain and self-compassion. *Qualitative Research in Sport, Exercise and Health*, 6, 499-516. <https://doi.org/10.1080/2159676X.2014.888587>.
- Takahashi, T., Sugiyama, F., Kikai, T., Kawashima, I., Guan, S., Oguchi, M., Uchida, T., & Kumano, H. (2019). Changes in depression and anxiety through mindfulness group therapy in Japan: The role of mindfulness and self-compassion as possible mediators. *BioPsychoSocial Medicine*, 13. <https://doi.org/10.1186/s13030-019-0145-4>
- Thompson, R. W., Kaufman, K. A., DePetrillo, L. A., Glass, C. R., & Arnkoff, D. B. (2011).

- One year follow-up of Mindful Sport Performance Enhancement (MSPE) with archers, golfers, and runners. *Journal of Clinical Sport Psychology*, 5, 99-116. <https://doi.org/10.1123/jcsp.5.2.99>
- Tkatch, R., Bazarko, D., Musich, S., Wu, L., MacLeod, S., Keown, K., Hawkins, K., & Wicker, E. (2017). A pilot online mindfulness intervention to decrease caregiver burden and improve psychological well-being. *Journal of Evidence - Based Complementary & Alternative Medicine*, 22(4), 736-743. <https://doi.org/10.1177/2156587217737204>
- Totzeck, C., Teismann, T., Hofmann, S. G., Von Brachel, R., Pflug, V., Wannemüller, A., & Margraf, J. (2020). Loving-kindness meditation promotes mental health in university students. *Mindfulness*. <https://doi.org/10.1007/s12671-020-01375-w>
- Trompetter, H., Kleine, R., & Bohlmeijer, E. (2017). Why Does Positive Mental Health Buffer Against Psychopathology? An Exploratory Study on Self-Compassion as a Resilience Mechanism and Adaptive Emotion Regulation Strategy. *Cognitive Therapy and Research*, 41(3), 459-468. <https://doi.org/10.1007/s10608-016-9774-0>
- Urbaniak, G. C., & Plous, S. (2013). *Research Randomizer* (Version 4.0) [Computer Software]. Retrieved from <https://www.randomizer.org>
- Voelker, D. K., Petrie, T. A. Huang, Q., Chanrdan, A. (2019). Bodies in motion: an empirical evaluation of a program to support positive body image in female collegiate athletes. *Body Image*, 28, 149-158. <https://doi.org/10.1016/j.bodyim.2019.01.008>
- Wasylikiw, L., & Clairo, J. (2018). Help seeking in men: When masculinity and self-compassion collide. *Psychology of Men & Masculinity*, 19(2), 234-242. <https://doi.org/10.1037/men0000086>
- Wertz, R. T. (1995). Intention to treat: Once randomized, always analyzed. *Clinical Aphasiology*, 23, 57-64.
- Williams, J. A. (2010). *What is mindfulness? Buddhist and contemporary scientific perspectives* [Master's thesis]. ProQuest Dissertations and Theses Global.
- Wilson, D., Bennett, E. V., Mosewich, A. D., Faulkner, G. E., & Crocker, P. R. E. (2020). "The zipper effect": Exploring the interrelationship of mental toughness and self-compassion among Canadian elite women athletes. *Psychology of Sport and Exercise*, 40, 61-70. <https://doi.org/10.1016/j.psychsport.2018.09.006>
- Wong, C. C. Y., & Mak, W. W. S. (2016). Writing can heal: Effects of self-compassion writing

- among Hong Kong Chinese college students. *Asian American Journal of Psychology*, 7(1), 74-82. <https://doi.org/10.1037/aap0000041>
- Yang, M., Jia, G., Sun, S., Ye, C., Zhang, R., & Yu, X. (2019). Effects of an online mindfulness intervention focusing on attention monitoring and acceptance in pregnant women: A randomized controlled trial. *Journal of Midwifery & Women's Health*, 64(1), 68-77. <https://doi.org/10.1111/jmwh.12944>
- Zautra, A. J., Davis, M. C., Reich, J. W., Sturgeon, J. A., Arewasikporn, A., & Tennen, H. (2012). Phone-based interventions with automated mindfulness and mastery messages improve the daily functioning for depressed middle-aged community residents. *Journal of Psychotherapy Integration*, 22(3), 206-228. <https://doi.org/10.1037/a0029573>
- Zeidan, F., Gordon, N. S., Merchant, J., & Goolkasian, P. (2010). The effects of brief mindfulness meditation training on experimentally induced pain. *The Journal of Pain*, 11(3), 199-209. <https://doi.org/10.1016/j.jpain.2009.07.015>
- Zernicke, K. A., Campbell, T. S., Specia, M., McCabe-Ruff, K., Flowers, S., Dirkse, D. A., & Carlson, L. E. (2013). The eCALM trial-eTherapy for cancer applying mindfulness: Online mindfulness-based cancer recovery program for underserved individuals living with cancer in Alberta: Protocol development for a randomized wait-list controlled clinical trial. *BMC Complementary and Alternative Medicine*, 13, 34. <https://doi.org/10.1186/1472-6882-13-34>
- Zhang, C. Q., Si, G., & Duan Y. (2016). The effects of mindfulness training on beginners' skill acquisition in dart throwing: a randomized controlled trial. *Psychology of Sport and Exercise*, 22, 279-85. <https://doi.org/10.1016/j.psychsport.2015.09.005>
- Ziemer, K. S., Lamphere, B. R., Raque-Bogdan, T. L., & Schmidt, C. K. (2019). A Randomized Controlled Study of Writing Interventions on College Women's Positive Body Image. *Mindfulness*, 10(1). <https://doi.org/10.1007/s12671-018-0947-7>
- Zhu, L., Yao, J., Wang, J., Wu, L., Gao, Y., Xie, J., Liu, A., Ranchor, A. V., & Schroevers, M. J. (2019). The predictive role of self-compassion in cancer patients' symptoms of depression, anxiety, and fatigue: A longitudinal study. *Psycho-Oncology*, 28, 1918-1925. <https://doi.org/10.1002/pon.5174>

Appendix

Self-Compassion Psychoeducational Video

https://www.youtube.com/watch?v=ZdP_kfhQXnc&feature=youtu.be

Self-Reflective Self-Compassion Writing Exercises

Week 2

1. List 10 things that you really like or appreciate about yourself within the context of your sport (e.g., *"I am dedicated to training"*)
2. How does it feel to compliment yourself?

Reflect: It can feel unfamiliar or uncomfortable to celebrate ourselves. When did you last think about and recognize the things that you like about yourself? Can you acknowledge these positive traits and qualities that you have, enjoy them, and really take them in? Self-compassion involves self-kindness and appreciation, and it can be helpful to remind yourself of your strengths and value, not only when you are feeling good about yourself and your athletic ability or performance, but also when you face setbacks and challenges in sport.

Week 3

1. Think about the things that you criticize yourself about in sport. Write down the negative things you say to yourself when feeling inadequate during your sport practice or competition (e.g., *"I will never achieve my goals"*)
2. Take a look at what you have written above. Rewrite these self-critical statements in a more kind, supportive and understanding way (e.g., *"I didn't get my intended outcome today, but that doesn't mean I should stop pursuing my goals"*).

Reflect: As you engage in your sport, notice when you are being harsh and self-critical. Think about how you can reframe the language that you use internally, so that you can be more kind and understanding of your imperfections. Make some room for your compassionate voice. Remember, that no one is perfect. Can you accept both the good and the bad aspects or qualities of yourself?

Week 4

Think about a recent time during your sport participation where you felt inadequate, incompetent or weak in sport.

1. Write a note from the compassionate part of yourself to the part of yourself that is struggling. What does the kind and understanding part of yourself have to say about this event or situation?

Reflect: How might your experiences with sport-related challenges be different if you reacted to yourself with compassion? Often, we are more critical of ourselves than we are of other people, but this isn't necessarily helpful or productive. Responding to yourself in a more encouraging and supportive way could enhance your wellbeing and allow you to bounce back from sport and other challenges more effectively.

Meditations

Week 1

<https://soundcloud.com/sharonsalzberg/body-scan-meditation>

Week 2

<https://soundcloud.com/mindfulvancouver/self-compassion-meditation>

Week 3

<https://chrisgermer.com/wp-content/uploads/2017/04/Self-Compassion-Break-13-min.mp3>

Week 4

<https://soundcloud.com/breathworks-mindfulness/kindness-to-self-using-phrases>