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Managing Athlete Perfectionism in Sport

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Submitted in accordance with the requirements for the degree of

Doctor of Philosophy

York St John University, York,

UK

School of Science, Technology and Health

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The candidate confirms that the work submitted is their own, except where work which has formed part of jointly authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

The work in Chapter 2 of the thesis has appeared in publication as follows:

Watson, D. R., Hill, A. P., & Madigan, D. J. (2021). Perfectionism and attitudes toward sport psychology support and mental health support in athletes. *Journal of Clinical Sport Psychology*, 17(1), 11-26.

I was responsible for leading the project and principally responsible for study design, all data collection, literature search, analysing the data, and writing of the introductions, methods, results, and discussions. In addition, I was the lead correspondent with the Chair of the Research Ethics Sub-Committee at York St John University. The contribution of the other authors was conceiving the project ideas, conceptualisation, support and guidance for analyses, and editorial work, providing feedback on several drafts of the manuscript and responses to the reviewers.

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I was responsible for leading the project and principally responsible for study design, all data collection, literature search, analysing the data, and writing of the introductions, methods, results, and discussions. In addition, I was the lead correspondent with the Chair of the Research Ethics Sub-Committee at York St John University. The contribution of the other authors was conceiving the project ideas, conceptualisation, support and guidance for

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I was responsible for leading the projects and principally responsible for study designs, all data collection, literature searches, analysis of the data, and writing of the introductions, methods, results, and discussions. In addition, I was the lead correspondent with the Chair of the Research Ethics Sub-Committee at York St John University. The contribution of the other authors was conceiving the project ideas, conceptualisation, support and guidance for analyses, and editorial work, providing feedback on several drafts of the manuscript and responses to the reviewers.

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Abstract

Perfectionism has been found to contribute to negative performance and well-being outcomes for athletes. However, there is little research on how sport psychology practitioners can support athletes with perfectionism. The broad aim of this thesis was to examine the relationship between perfectionism and mental health support and test novel ways of reducing perfectionism in sport. To achieve this aim, four empirical studies were conducted. The first study adopted a cross-sectional, survey-based design and found that athletes with higher levels of some dimensions of trait perfectionism had more negative attitudes towards seeking help for both sport psychology support and mental health support. The second study adopted a single-subject multiple baseline design and found that while a psychological skills training intervention was beneficial for pre-competitive emotions and performance satisfaction, it was not effective at reducing perfectionism cognitions in athletes. The third study adopted another single-subject multiple baseline design, this time testing three different cognitive-behavioural approaches (Cognitive Behaviour Therapy, Acceptance and Commitment Therapy, and Rational Emotive Behaviour Therapy) and found support for all three in reducing perfectionism cognitions with Acceptance and Commitment Therapy providing the largest benefits. With these findings as impetus, the fourth study examined the effectiveness of an online Acceptance and Commitment Therapy-based intervention for reducing trait perfectionism, perfectionism cognitions, and negative pre-competition emotions. The findings suggest that online Acceptance and Commitment Therapy-based interventions are a viable and effective way to reduce perfectionism. Collectively, the thesis provides support for cognitive-behavioural approaches in reducing trait and perfectionism cognitions in athletes. In addition, the thesis demonstrates the complex nature of perfectionism, with practitioners urged to adapt their practice when working with perfectionistic athletes.

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Chapter 1 Overview of Perfectionism

1.1 Introduction

The demands of sport can be relentless. Sport often requires athletes to do almost anything possible in order to achieve success. And success, for some, only comes when they obsess over every single detail. There is also a sense in sport that doing just enough isn't enough. There needs to be blood, sweat, and tears in order to get to the highest echelons and, only then, will sport celebrate the athlete and their achievements. Many athletes push and push until there is physically and psychologically nothing left. The pressure and stress can often be overwhelming and can be too much for some athletes to manage.

Pressure is ubiquitous across all levels of sport. For athletes, there are several sources of pressure, including the coach. Having a good relationship with a coach is crucial in managing stress. It is also well documented that coaches are often the key ingredient for athletes to be successful (Jowett, 2017). The role of the coach is to provide a space for athletes to learn and grow. The coach can inspire, motivate, and enthuse. Creating conditions so athletes can achieve their goals. For example, coaches can provide pressure training so athletes can perform better in such environments (see Low et al., 2022). However, coaches can also create undue stress and pressure, which can negatively impact athletes.

A second source of pressure is from teammates and supporters. Athletes are often evaluated based on their performance levels with every detail being scrutinised and analysed, which is very typical of teammates and supporters. This analysis means that athletes need to achieve perfection to satisfy these external expectations and reduce the pressure teammates and supporters apply. To perform perfectly, athletes' set unrealistic goals to meet or exceed these expectations. However, when athletes are not able to achieve their unrealistically high

goals, they can become overly self-critical of themselves (Hill et al., 2018). The pursuit of the perfect performance can lead athletes in becoming obsessed and consumed, not only negatively affecting their performance but also their well-being.

A third source of pressure is from parents and family members. Parents play a significant role in the development of athletes and their experiences of sport (Knight et al., 2010). But for some parents, rather than fulfilling these roles in a supportive manner, they do so in a debilitating one (Holt & Knight, 2014). Excessive pressure from parents may lead some athletes to develop more perfectionistic tendencies (Fleming et al., 2022). In addition, athletes, who perceive their parents to expect them to perform perfectly, often are concerned with making mistakes and fear evaluation (Dunn et al., 2020). As such, parents may impact negatively on both athlete performance and well-being.

Given these pressures, it is understandable that many athletes respond by becoming extremely perfectionistic. Obsessing and being excessive are defining features of perfectionism. When athletes are perfectionistic, they engage in constant pursuit of unrealistically high goals. This engagement in unrealistically high goals can seem desirable. However, they push themselves so hard that they will also overwork and overtrain, leading to burnout (Madigan et al., 2015). Athletes with higher levels of perfectionism, can also focus solely on outcomes and performing perfectly to the detriment of their personal development. Not only does this negatively affect how they perform but also their mental health (Flett & Hewitt, 2014).

It is perhaps unsurprising then that psychological problems are increasing. It is thought that as many as two in four athletes currently suffer with a mental health issue (Foskett & Longstaff, 2018). Athletes with higher levels of perfectionism are more likely to suffer with a range of complex issues including eating disorders (e.g., Donti et al., 2021) and depression (e.g., Jensen et al., 2018). In addition, athletes commonly report high levels of

pre-competition anxiety (Freire et al., 2020) and pre-competition worry (e.g., Dunn et al., 2020). In sum, perfectionism plays a negative role in both athletic performance and mental health.

Sport is perfectionistic. Athletes are applauded and praised for obsessing and working tirelessly. So, as athletes are exposed to greater amounts of internal and external pressures to be perfect, it should not be a surprise that those with higher levels of perfectionism often struggle with their mental health. What might be a surprise is that there is little known about what types of support might be best suited for athletes with higher levels of perfectionism. So, despite some believing that perfectionism offers performance benefits, its underlying theme of harm means that it is something that requires management in order to safeguard athlete's mental health. This state of affairs provides the backdrop and motivation for the current thesis and the aim of developing effective interventions to support perfectionistic athletes in sport.

1.2 Multidimensional perfectionism

Hewitt et al. (2017) recently described perfectionism as a multifaceted personality style based on 30 years of theorizing, researching, and working in clinical practice. They argue perfectionism is not simply a striving to meet high expectations, but involves the requirement of, the expression of, and thoughts of perfection. This is an apt description of modern multidimensional perfectionism. This means perfectionism not only considers personal perfectionism (i.e., personal standards) it also provides a broad view of interpersonal perfectionism (i.e., "other people expect me to be perfect"). To understand multidimensional perfectionism means to understand the different aspects and dimensions that can affect someone.

There are numerous researchers that have recently shown support for multidimensional perfectionism. For example, in a recent review of the multidimensional

perfectionism research, Smith et al. (2021) indicated that perfectionism is complex. In addition, it is multifaceted and involves personal and interpersonal traits that are best conceptualized and measured from a multidimensional perspective (see Hewitt et al., 2003; Stoeber & Damian, 2014). There are different aspects that affect everyone at different times, in different contexts or situations. It evolves over time, with the environment and social interactions playing an important role in this evolution. These interactions might include parental relationships, forming new friends, meeting new teachers or lecturers, and working under different coaches (Hewitt & Flett, 2020). So, it should therefore be examined, researched, and comprehended through a multidimensional lens.

There are clear benefits of understanding perfectionism through a multidimensional lens. Firstly, it offers a wider, a more detailed, and a broader understanding of someone's perfectionism (Flett & Hewitt, 2020). Secondly, multidimensional perfectionism can be measured using domain-specific measures, which capture varying levels of perfectionism across different domains (e.g., sport, work, school; Stoeber & Madigan, 2016). Finally, multidimensional perfectionism provides a degree (e.g., higher or lower) of perfectionism that someone may be experiencing towards a particular dimension of perfectionism in a particular domain. This final benefit of multidimensional perfectionism is important, especially when designing interventions to reduce negative dimensions of perfectionism (see Kothari et al., 2019). These benefits, overall, are important given the complexity of perfectionism.

Importantly for the current thesis, using multidimensional perfectionism gains a broader and deeper understanding of the participants perfectionism. In particular, the different challenges and difficulties that they might be experiencing due to their perfectionism. In addition, it highlights the specific dimensions responsible for any difficulties that someone may be experiencing. While some athletes may experience

difficulties due to their own expectations other might experience difficulties due to perceiving perfectionism from others. Finally, a multidimensional perfectionism approach allows interventions to target and reduce specific perfectionism dimensions (Flett & Hewitt, 2008). The next section discusses perfectionism outside of sport.

1.3 Perfectionism outside of sport

1.3.1 Models of multidimensional perfectionism

Two multidimensional models of perfectionism have significantly contributed to understanding of perfectionism. Frost et al. (1990) and Hewitt and Flett (1991) independently developed and conceptualized multidimensional perfectionism. The two models have significantly contributed to both practice (how perfectionism is managed and treated) and research on perfectionism. These two models are still fundamental to almost all of the research in perfectionism to this day (Smith et al., 2022). Both models are critically discussed below because of the influence on existing work and the thesis.

The first major model of perfectionism was developed by Frost et al. (1990) and incorporated six dimensions of perfectionism. Four reflect intrapersonal qualities: (a) Personal Standards which reflects striving for high standards; (b) Concern over Mistakes which reflects fear about making mistakes and overly critical self-evaluations; (c) Doubts about Actions which reflects a tendency towards an uncertainty about doing things correctly; and (d) Organization which reflects the need for organisation, order, and precision. Two reflect interpersonal qualities: (e) Parental Expectations which reflects the perceptions that parents expect perfection from them, and (f) Parental Criticism which reflects the perceptions that parents are critical when expectations are not received.

The development of these six dimensions stemmed from the early research of perfectionism (e.g., setting excessively high personal standards; Pacht, 1984). But importantly, Frost et al. (1990) emphasized that these standards are accompanied by

tendencies for overly critical evaluations of one's behaviour. This behaviour is expressed in being overly concerned about mistakes. In addition, Frost and colleagues also pointed out that parents play an important role, with perfectionists placing considerable value on parental evaluation and expectation. Finally, perfectionists are known to overemphasize order, precision, and neatness.

The second major model of perfectionism, and arguably the most complete theoretical model, is Hewitt and Flett's (1991) multidimensional model of perfectionism. Similar to Frost et al.'s (1990) model, Hewitt and Flett's (1991) model also includes both interpersonal and intrapersonal dimensions of perfectionism. However, Hewitt and Flett (1991) developed this model further by adopting psychodynamic and interpersonal models of human behaviour (e.g., Greenwald & Brekler, 1985). Furthermore, while Hewitt and Flett (1991) acknowledged that the self-imposed pursuit of perfection is a core feature of the construct, they also argued that interpersonal components are crucial to perfectionism. This model differentiates three forms of perfectionism: Self-Oriented Perfectionism (SOP), Socially Prescribed Perfectionism (SPP), and Other-Oriented Perfectionism (OOP).

According to Hewitt and Flett (1991), each of the three dimensions have different and unique features. SOP entails setting and pursuing exceedingly high personal standards and engaging in harsh self-critical evaluations if they fail to meet their expectations. People with high levels of SOP are consumed with the need to be perfect, and often display rigid thinking. They hold stringent and inappropriately negative appraisals of their own performance and overgeneralise failure to the self (Hewitt et al., 2017). They often experience self-blame and self-criticism, which leads to a range of problematic outcomes including psychological distress. This outcome is repeatedly the case when they are evaluating themselves in the light of their standards.

In contrast to SOP, SPP is the rigid belief that other individuals set unrealistically high expectations for them (Hewitt & Flett, 1991). In addition, people higher in SPP have the belief that they are constantly being evaluated. This evaluation can come from specific people (e.g., coaches and parents) or more globally (e.g., society). Ultimately, people higher in SPP just want to be accepted and belong. This need to be accepted and belong brings with it a desire to try and please people, to gain approval, and be seen as perfect. This interpersonal aspect of perfectionism means that people are often left being helpless and hopeless, with judgement and evaluation from others being out of their control.

In comparison to SOP and SPP, OOP is imposing perfectionistic standards on other people. Unlike SOP and SPP which directs perfectionism towards the self, OOP direct it to other people. People higher in OOP require other people to be perfect. They set standards unrealistically high for other people, meaning that others don't achieve these standards. They too are overly critical of others when these standards are not met. Subsequently, when others do not adhere to their rigid expectations, they are likely to react angrily (Hewitt et al., 2018). In addition, people higher in OOP often feel superior to other people.

1.3.2 Perfectionistic strivings and perfectionistic concerns

Researchers can combine these different models and dimensions of perfectionism to study it, which provides a more in-depth and inclusive understanding of perfectionism. The higher order model, also referred to as the two-factor model of perfectionism (Stoeber & Otto, 2006), includes two higher order dimensions: Perfectionistic Strivings (PS) and Perfectionistic Concerns (PC). These two broad dimensions of perfectionism are inclusive of different sub-dimensions of perfectionism that are commonly examined as proxies of PS (e.g., Striving for Perfection, Personal Standards, and SOP) and PC (e.g., Concerns Over Mistakes, Negative Reactions to Imperfection, and SPP). PS capture the excessively high personal standards and a self-oriented striving for perfection. Whereas PC captures the overly

critical evaluations, negative reactions to imperfection, and discrepancy between one's personal standards and performance. Importantly, the two dimensions of perfectionism do not include all sub-dimensions of perfectionism (e.g., OOP). However, the two dimensions have been researched extensively both outside (Stoeber, 2018) and inside of sport (Madigan et al., 2019).

Just as there are differences in opinions when it comes to defining perfectionism, differences in opinion continue when it comes to PS. Specifically, researchers keenly debate whether PS is beneficial or not. Two researchers in particular suggests that PS can in fact be healthy, positive, and functional. Stoeber and Otto (2006) described PS as being associated with positive characteristics (e.g., life satisfaction). However, this positive association is strongly contested by many researchers (e.g., Flett et al., 2022). As an example, in response, it is often highlighted that PS may be a risk factor for negative outcomes such as eating disorders (see Egan et al., 2011). In many ways, PS highlights the complex nature of perfectionism.

There are little differences in opinions in regards to PC. In fact, most researchers are in agreement that PC is only ever associated with negative outcomes (see Flett & Hewitt, 2020). PC is about being concerned over making mistakes, a fear of negative social evaluation, feelings of discrepancy between one's expectations and performance, and negative reactions to imperfection (Gotwals et al., 2012). PC is measured using several subdimensions of perfectionism measures, including Concern Over Mistakes (Frost et al., 1990), Discrepancy (Slaney et al., 2001), Doubts About Actions (Frost et al., 1990), need for approval (Hill et al., 1997), Parental Expectations, and Parental Pressure (Frost et al., 1990). PC is related to distress (Shannon et al., 2018) and other psychological problems (e.g., anxiety and depression; Flett & Hewitt, 2020).

There are several benefits in using the higher order model of perfectionism. Firstly, it allows us to differentiate between the varying dimensions used to examine an athlete's level of perfectionism (Stoeber & Otto, 2006). This can be useful when recruiting participants that may have higher levels of certain dimensions of perfectionism. Secondly, using the higher order model of perfectionism allows us to examine and understand the general (e.g., PC) and discreet (e.g., SPP) features of perfectionism (Stoebar & Otto, 2006). Finally, using the higher order model of perfectionism allows us to better understand the role of each dimension of perfectionism for athlete performance and well-being. Using the higher order model of perfectionism is also widely supported in the research which shows they can consistently be differentiated (Hill et al., 2018).

1.3.3 Perfectionism cognitions

There is also a cognitive component of perfectionism – perfectionism cognitions. These are automatic, ruminative thoughts and images about the need to be perfect. They reflect an underlying discrepancy between the actual self and the ideal self, which leads to automatic thoughts that reflect perfectionistic themes (see Flett et al., 1998). Those that are higher in trait perfectionism are thought to have more frequent perfectionism cognitions (Hewitt et al., 2017). Perfectionism cognitions are thought to be more of a state-like manifestation of perfectionism. This state-like manifestation of perfectionism means that this aspect of perfectionism is more dynamic and can change depending on situations. Despite this, perfectionism cognitions represent a stable feature of a perfectionist's mental experience (Flett et al., 1998).

Perfectionism cognitions first featured in Flett et al.'s (1998) comprehensive model of perfectionistic behaviour (CMPB). The CMPB was developed based on psychodynamic and interpersonal models of personality, clinical experiences, and psychometrics (Hewitt et al., 2017). The CMPB outlined that perfectionism can operate at different levels. These levels

include a trait level (e.g., multidimensional perfectionism), an interpersonal level (e.g., perfectionistic self-presentation), and finally an intrapersonal level (e.g., perfectionism cognitions). Perfectionism Cognitions Theory (PCT; Flett et al., 2015, 2018) is a theoretical model that provides a conceptual framework to explain and understand the cognitive mechanisms, processes, and consequences that are related to perfectionism (Flett et al., 2018).

Perfectionism cognitions provides information on the frequency of perfectionistic thoughts and images (Flett et al., 1998). This information can be used by researchers and practitioners to help design and develop interventions. Perfectionism cognitions are also important for the thesis as they may be more susceptible to change than trait perfectionism (e.g., Donachie & Hill, 2020). In addition, perfectionism cognitions are also highly related to negative emotions in athletes (Donachie et al., 2018; 2019). As such, designing and developing interventions to reduce perfectionism cognitions, as well as trait perfectionism, may provide initial short-term relief for athletes from its negative consequences (e.g., negative emotions).

1.3.4 Effects of perfectionism outside of sport

A number of general reviews have taken place in this area. These are now presented so to provide a basis for considering the effects of perfectionism in sport. The first meta-analysis of perfectionism was conducted by Stoeber and Otto (2006). This particular review outlined the approaches, evidence, and challenges in perfectionism. In the review, Stoeber and Otto (2006) wanted to outline the positive elements of perfectionism, with specific focus on the dimensional approach (e.g., PS and PC) and the group-based approach (e.g., healthy and unhealthy perfectionists). Their aim was to examine if PS is associated with positive characteristics and if healthy perfectionists show higher levels of positive characteristics compared to unhealthy perfectionists and non-perfectionists. The impetus for the review

stemmed from Hamachek (1978), who suggested that there are two forms of perfectionism, a positive form labelled 'normal perfectionism' and a negative form labelled 'neurotic perfectionism'.

The review included 35 studies spanning from 1993 to 2005. The samples from the studies were either students or from the community. Fifteen studies used a dimensional approach, and 20 studies used a group-based approach. Six studies were in favour of the notion that PS are related to positive characteristics (e.g., Parker & Stumpf, 1995; Stumpf & Parker, 2000; Suddarth & Slaney, 2001), and 12 studies were in favour of the notion that healthy perfectionists show higher levels of positive characteristics (e.g., Ashby & Bruner, 2005; Ashby & Kottman, 1996; Dickinson & Ashby, 2005). PS was related to higher levels of conscientiousness, extraversion, endurance, positive affect, satisfaction with life, active coping styles, and achievement, and to lower levels of external control and suicidal ideation.

The review proposed that perfectionism may be healthy. Stoeber and Otto (2006) outlined how it can lead to positive outcomes for people. However, it is important to highlight that the majority of studies included in this review were conducted in the 1990s. At that time, multidimensional perfectionism was still in its infancy and therefore so was the understanding of the consequences of each dimension of perfectionism. The research in perfectionism is continually growing. Given that this particular review was conducted 16 years ago, it is important to consider what more recent reviews of the consequences of perfectionism advise.

A second meta-analysis examined perfectionism and burnout (Hill & Curran, 2016). Hill and Curran (2016) reviewed research across different domains (e.g., work, sport, and education) and contexts. The review included 43 studies with nearly 10000 participants, between 1990 to 2014. The review also included 663 effect sizes capturing the relationship between perfectionism and burnout. Perfectionism was assessed using self-report measures.

The aim of the review was to examine the relationship between PS and PC on burnout and to examine whether the relationship differed depending on the domain.

The results suggested that PS displayed a small negative relationship with overall burnout, reduced personal accomplishment, depersonalization, and a non-significant relationship with exhaustion. Whereas PC displayed a medium-to-large positive relationship with overall burnout and medium positive relationships with all symptoms of burnout. Furthermore, there were differences between domains (e.g., PC were more problematic in terms of overall burnout and depersonalization in work). There are several explanations offered as to why some domains increased aspects of burnout. For example, personal control and social support might exist to a lesser degree in work than the other domains.

A third meta-analysis investigated the relationship between perfectionism and psychopathology (Limburg et al., 2016). Limburg et al. examined the relationships between psychopathology outcomes (e.g., clinical diagnoses of depression, anxiety disorders, obsessive-compulsive disorder, and eating disorders) and each perfectionism dimension (e.g., PS and PC). The review included 284 studies and over 57,000 participants, up to 2016. The review also included over 2,000 effect sizes capturing perfectionism and psychopathology. Perfectionism was assessed using self-report measures, which classified the two higher order dimensions - PS and PC. The aim of the review was to understand the impact of perfectionism on psychopathology.

In the findings, there was evidence that perfectionism was related to a range of extremely problematic disorders. More specifically, PS and PC were both significantly related to suicidal ideation and general psychological distress. PS was significantly related to anorexia nervosa, anxiety, depressive symptoms, and a range of eating disorders. However, PC was related to all psychopathology and symptoms of these disorders (with the exception of anorexia nervosa). These findings explain that perfectionism plays a key role in the context

of various psychological disorders, their symptoms, and outcomes related to psychopathology.

A fourth meta-analysis examined perfectionism and suicide (Smith et al., 2018). Smith et al. (2018) examined the relationship between perfectionism, suicide ideation and attempted suicide. The review included 45 studies in over 11,000 participants, between 1987 and 2015. Perfectionism was assessed using self-report measures from sub-dimensions of PS (e.g., SOP) and PC (e.g., SPP). The aim of the review was to better understand the impact of perfectionism on suicide ideation. Up to this point, there is little clarification of the impact that perfectionism can have because of notable between-study inconsistencies, underpowered studies, and uncertainty about whether perfectionism confers risk for suicide.

There was evidence in the findings that PS and PC displayed small to moderate positive associations with suicide ideation. In addition, SPP predicted longitudinal increases in suicide ideation. Moreover, PC, Parental Criticism, and Parental Expectations displayed small, positive associations with suicide attempts. These findings suggest that perfectionism plays an important role in suicide. What is of particular interest, is the relationship PS has with suicide, too. Given the debate surrounding its role in health, well-being, and performance.

The fifth and final meta-analysis examined perfectionism and academic achievement (Madigan, 2019). Madigan (2019) reviewed research that has examined the relationship between perfectionism and academic achievement. The review included 37 studies and nearly 9000 participants, between 1990 to 2018. The majority of the studies adopted a cross-sectional design ($n = 36$). Perfectionism was measured using self-report measures. Academic achievement included grade point average, exam performance, and grades. Studies included primary, secondary and tertiary levels of education. Participants included both males and females.

The results of the meta-analysis revealed that PS potentially aided academic achievement in students and PC potentially hindering it. After controlling for the overlap between PS and PC, PS showed a significant small-to-medium positive relationship with academic achievement. However, as expected PC showed a significant small negative relationship with academic achievement. In regards to gender, female students have been shown to report higher levels of perfectionism than male student. Specifically, female students may be more likely to have higher levels of PC (e.g., Rice et al., 2015).

In summary, the meta-analyses that have been outlined indicate that perfectionism can be engrained in all aspects of life. It is shown to be related to psychopathology, burnout, suicide, and academic achievement. Typically, PC is more destructive than its PS counterpart. However, the results also indicate that PS tends to be complex and ambiguous (Hill et al., 2018). Some of the findings suggest that SOP can help with students' academic achievement (Madigan, 2019) but also indicates clear problems, too (e.g., suicide ideation; Smith et al., 2018). Whereas PC is constantly and consistently shown to be problematic.

1.3.5 Effects of perfectionism cognitions outside of sport

In regard to perfectionism cognitions, in support of the CMPB, there is evidence that perfectionism cognitions are related to both PS and PC. For example, Besser et al. (2004) found that following negative feedback, students with higher levels of SOP (a dimension of PS) reported dissatisfaction, rumination, and irrational task importance. In addition, Macedo et al. (2017) found that higher levels of PC resulted in more frequent perfectionism cognitions over time. These higher levels in turn were associated with higher levels of rumination and catastrophizing. Here, perfectionism is a vulnerability factor for cognitive and affective reactions to failure.

Perfectionism cognitions have also been found to be positively related to several harmful emotions. For example, Flett et al. (2004) found that more frequent perfectionism

cognitions were positively related to an increased sensitivity to anxiety. Research has found that perfectionism cognitions are related to a range of other negative outcomes and thinking patterns. For example, people with more frequent perfectionism cognitions are thought to engage in more self-criticism and self-blame (e.g., Flett et al., 2002). In addition, research has also shown how more frequent perfectionism cognitions are related to more problematic consequences (e.g., guilt, sadness, and worry; Flett et al., 1998). Importantly, perfectionism cognitions clearly play a salient role in the psychological distress that those with higher levels of perfectionism experience.

Experiencing more frequent perfectionism cognitions may also be related to types of coping mechanisms. For example, Rudolph et al. (2007) found that higher scores for perfectionism cognitions and SPP were positively related to maladaptive emotion regulation strategies. In addition, Flett et al. (2007) found that perfectionism cognitions were related to a lack of management and psychological inflexibility. These studies demonstrate a problematic theme, whereby more frequent perfectionism cognitions are related to issues in coping and may make effective coping more difficult.

Recently, research has begun to understand whether situational demands activate more frequent perfectionism cognitions. For example, in a sample of university students, Prestele and Altstötter-Gleich (2019) found that more demanding situations do indeed change the frequency of perfectionism cognitions over time. They also found variations in mood and arousal that were indicative of changes in perfectionism cognitions. In addition, Prestele et al. (2020) found perfectionism concerns cognitions mediated the effects of PS and PC on distress. As the pressure to perform increased so did more frequent perfectionism cognitions and more distress.

In summary, trait perfectionism plays a significant role in the development of perfectionism cognitions. However, unlike trait perfectionism, perfectionism cognitions are a

reactive aspect of perfectionism, which can be influenced by reactions to situations (Macedo et al., 2017). In addition, the results of the aforementioned studies indicate that the frequency of perfectionism cognitions may actually increase due to demanding situations (Prestele & Altstötter-Gleich, 2019). Therefore, perfectionism cognitions can affect one's ability to control emotions, and is linked to heightened anxiety and distress (Prestele et al., 2020). Here, perfectionism cognitions provide a fuller understanding of the effects of perfectionism.

1.4 Perfectionism inside of sport

1.4.1 Models of multidimensional perfectionism inside of sport

When measuring perfectionism in sport, researchers have used and adapted Frost et al.'s (1990) model of perfectionism. However, measuring perfectionism as a generic personality trait does not provide specific and contextual information (Stoeber & Madigan, 2016). Therefore, researchers argued that these global measures of perfectionism should be domain-specific because there are certain areas of a person's life in which perfectionism is likely to manifest such as sport (e.g., Dunn et al., 2002; McArdle, 2010; Stoeber & Stoeber, 2009). Sport is particularly distinct because it is played alongside and against others. Based on this premise, two sport specific versions were developed (i.e., the Sport Multidimensional Perfectionism Scale; SMPS; Dunn et al., 2002).

The first sport specific measure was the SMPS (Dunn et al., 2002). The SMPS was a sport-specific version of the Frost Multidimensional Perfectionism Scale (F-MPS; Frost et al., 1990). The SMPS was modelled on the latent structure of the F-MPS, in part due to the F-MPS's prevalent use in the literature at that time (Coen & Ogles, 1993; Frost & Henderson, 1991; Gould et al., 1996). Up until the development of the SMPS, research inside of sport tended to treat the dimensions of perfectionism separately (Frost & Henderson, 1991), rather than simultaneously. There are four dimensions to the SMPS: Perceived Parental Pressure, Personal Standards, Concern Over Mistakes, and Perceived Coach Pressure. The decision to

exclude all items relating to Doubts About Actions and Organisation dimensions was due to the athletes' perceptions of the instrument's face validity (Dunn et al., 2002).

Gotwals and Dunn (2009) later argued that the SMPS underrepresents multidimensional perfectionism, because it does not contain Organisation or Doubts About Actions (dimensions of perfectionism that were in the original F-MPS (Frost et al., 1990)). This omission has been previously acknowledged as a limitation by Dunn et al. (2002). Therefore, Gotwals and Dunn (2009) developed the SMPS-2, which is a six-dimension (e.g., Personal Standards, Concerns Over Mistakes, Parental Criticism, Parental Expectations, Doubts About Actions, and Organisation) measure of perfectionism in sport. At the time, it was hoped that the SMPS-2 would provide a fuller representation of perfection in athletes than its predecessor. Gotwals and Dunn (2009) found strong evidence (e.g., test-retest reliability) for the inclusion of the Organisation and Doubts About Actions dimensions, forming the new SMPS-2.

In capturing the domain-specific nature of perfectionism in sport, the SMPS-2 provided a thorough account of sport specific perfectionism. The SMPS-2 consists of 42-items rated on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Participants indicate to what degree each statement characterized their attitudes in their sport. The SMPS-2 captures six dimensions of perfectionism – Personal Standards (7 items; “It is important to me that I be thoroughly competent in everything I do in my sport”), Concern Over Mistakes (8 items; “If I fail in competition, I feel like a failure as a person”), Perceived Parental Pressure (9 items; “Only outstanding performance during competition is good enough in my family”), Perceived Coach Pressure (6 items; “I feel like I can never quite live up to my coach's standards”), Doubts About Actions (6 items; “Prior to competition, I rarely feel satisfied with my training”), and Organization (6 items; “I have and follow a pre-competitive

routine”). The SMPS-2 was validated on student-athletes in Canada across a range of team sports (e.g., football, basketball, ice-hockey).

The SMPS-2 offers insight into an athlete’s perfectionism from multiple different perspectives. It contains important dimensions (e.g., parental pressure) that allow researchers to better understand ways to support athletes. And importantly, it is domain-specific, which provides a better account of the nature of sport as a domain (Stoeber & Madigan, 2016).

However, there are some issues to mention. As Stoeber and Madigan (2016) have highlighted, one Personal Standards item more likely measures contingent self-worth rather than personal standards. Secondly, again highlighted by Stoeber and Madigan (2016), there are some inconsistencies regarding training and competition as described in several items. These inconsistencies may change the meaning of the item to the athlete, undermining the reliability and validity the measure.

The most recent addition is the Performance Perfectionism Scale for Sport (PPS-S; Hill et al., 2016). Hill and colleagues adapted the Hewitt and Flett’s (1991) model of perfectionism in developing this sport specific instrument. The PPS-S (Hill et al., 2016) is a valid and reliable measure in youth sport. The PPS-S operates at a specific and contextual level compared to that of the original Hewitt and Flett (1991) model of perfectionism. The PPS-S is based on Hewitt and Flett’s (1991) model of perfectionism, therefore includes SOP, SPP, and OOP.

Before the inception of the PPS-S, researchers would adapt the original Hewitt and Flett Multidimensional Perfectionism Scale (HF-MPS) to sport contexts. The major strength of the HF-MPS is that it is grounded in theory and based on the extensive work of two leading clinicians. Despite researchers adapting the items in the HF-MPS to meet the needs of the sport context, there is still strong support for its predictive ability (see Jowett et al., 2016, for a review). For example, SOP has been found to have both desirable and undesirable

features for athletes (Hill et al., 2014). However, adapting items in this way can be problematic as it may change the items and their loading (i.e., they do not load properly onto their subscales) and may not capture perfectionism in sport. It was because of this issue, that Hill and colleagues developed the PPS-S.

The PPS-S contains 12 items rated on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree). Participants indicate to what degree each statement characterized their attitudes in their sport. The PPS-S captures three dimensions of perfectionism – SOP (4 items; “I am tough on myself when I do not perform perfectly”), SPP (4 items; “People always expect more, no matter how well I perform”), and OOP (4 items; “I criticize people when they do not perform perfectly”). The PPS-S was validated on a range of individual and team youth sports from the from the United Kingdom.

Despite some cross-loading of items between SOP and SPP, the factor structure of the PPS-S is suggested to be sound and reliable (Madigan, 2023). Furthermore, the PPS-S can be used by researchers to develop the two higher order dimensions – PS and PC. Here, Madigan (2023) suggests using SOP and SPP. However, Madigan (2023) does also go on to describe how researchers should take caution when using the PPS-S as it has yet to be evaluated across large samples. To this end, the PPS-S offers a reliable and valid measure of perfectionism in sport, with sufficient evidence for its effectiveness in performance settings.

The dimensions of the PPS-S were examined against the SMPS-2 (an established domain specific measure) to identify the construct validity. There was evidence of construct validity, reliability, and factor structure in the PPS-S. Specifically, SOP was found to be related to both Personal Standards and Concerns Over Mistakes from the SMPS-2. SOP is therefore considered to be both motivating but also a vulnerability factor for athletes (Flett & Hewitt, 2005). In addition, SPP was characterized by both Concerns Over Mistakes and external pressure from the SMPS-2 but was better predicted by Coach Pressure than Parental

Pressure. Finally, OOP was positively related to all of the dimensions of the SPMS-2. These findings highlight the complex nature of OOP.

When measuring perfectionism in sport, researchers have also used the Multidimensional Inventory of Perfectionism in Sport (MIPS; Stoeber et al., 2006). The MIPS is a combination of F-MPS and HF-MPS (Madigan, 2023). The MIPS is also a reliable and valid measure of perfectionism in sport. It too is a domain level measure of perfectionism rather than a global one. It focusses on the specific elements of sport and performance, exploring individual differences in sport. The MIPS has been used to investigate the relationships between perfectionism and various outcomes in sport (e.g., competitive anxiety; Stoeber et al., 2007).

The MIPS contains 26 items rated on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Participants indicate to what degree each statement characterized their attitudes in their sport. The MIPS captures four dimensions of perfectionism – Striving for Perfection (5 items; “I strive to be as perfect as possible”), Negative Reactions to Imperfection (5 items; “I feel extremely stressed if everything does not go perfectly”), Parental Pressure to be Perfect (8 items; “My parents expect my performance to be perfect”), and Coach Pressure to be Perfect (8 items; “My coach expects my performance to be perfect”). The MIPS was validated on athletes from a range of sports and based in United Kingdom.

The structure of the MIPS was assessed using confirmatory factor analysis (CFA). CFA determined that the model was an adequate fit for the data and that the four dimensions showed strong reliability. Furthermore, the items loaded appropriately to each of the respective dimensions. The MIPS has acceptable factorial validity and therefore may be used as a measure of perfectionism in sport. Previous research has primarily used the Striving for Perfection and Negative Reactions to Imperfection subscales.

In summary, there are a wide variety of measures that can be used to assess and measure trait perfectionism. All of the measures that have been discussed in this section measure perfectionism through a multidimensional lens. As described, there are more benefits of measuring and assessing perfectionism as multidimensional (e.g., broader understanding of perfectionism; Madigan, 2023). Despite this view, there are of course problems in some of the measures (e.g., some cross loading of items; Madigan, 2023). However, these issues are reduced and subsided when they are brought together to measure perfectionism. Combining these measures sufficiently captures both PS and PC.

1.4.2 Effects of perfectionism inside of sport

The research on perfectionism inside of sport is continually growing. To date, there have been three reviews and meta-analyses conducted on the effects of perfectionism in sport. Stoeber (2011) provided the first review in sport in which he examined if PS and PC were related to adaptive and/or maladaptive consequences. The review included 16 studies that had previously examined relationships with either performance, motivation, and or emotions. The aim of the review was to outline the benefits of PS towards these important outcomes. Stoeber (2011) argued that perfectionism has different and unique patterns of relationships with performance, motivation, and emotions. These relationships are often ambivalent with both adaptive and maladaptive characteristics.

The findings of this review indicated that PC was positively related to maladaptive motivation (e.g., fear of failure, ego orientation, mastery avoidance) and emotions (e.g., negative affect, anxiety, and anger), and unrelated to athletic performance. In comparison, PS were more ambiguous and related to a mix of motivation (e.g., task and ego orientation) and emotions (e.g., positive and negative affect). The review did not provide discussion on the relationship between PS and performance. It was concluded that higher PC are clearly maladaptive, whereas PS may be associated with striving for excellence (Stoeber, 2011).

Based on this review, there are several important considerations for future research. Firstly, there needs to be more information about potential mediators and moderators of the relationships that PS and PC show with key variables in sports. This information is essential as it will help to illustrate the causes and consequences of perfectionism (specifically PS and PC). Secondly, there is little research on the longitudinal impact of PS and PC on performance, motivation, and emotions. Whilst it is argued here that PS can be facilitative for athlete performance, the long-term impact of PS is unknown. Finally, research has failed to examine the impact of perfectionism in team cohesion and performance.

The second review of the research in sport came one year later. Gotwals et al. (2012) examined whether PS were adaptive in sport or not. This review included 31 studies on perfectionism in athletes. The purpose of this review was to systematically examine the degree to which PS in athletes are associated with adaptive versus maladaptive characteristics. Gotwals et al. (2012) did this by using more than 200 bivariate correlations, which were systematically documented, categorized, and quantitatively analysed. However, part of this analysis technique was to use partialling (separating and controlling the overlap between PS and PC).

The review found evidence that PS is only slightly more adaptive in sport than maladaptive. However, when the correlations between PS and PC were controlled, they found strong evidence for the adaptiveness of PS in sport. This construct is often referred to as residual or “pure” PS. Both analyses also produced evidence that PS are, in some instances, neutral or maladaptive. Adaptive characteristics included conscientiousness, active coping, and positive affect. Whereas maladaptive characteristics included neuroticism, avoidant coping, and negative affect (Stoeber & Otto, 2006).

The review highlights the ambiguous nature of PS, even when the relationship with PC is controlled. It seems to suggest that there is in fact more contextual, individual, and

situational considerations. Of note, there is also some disagreement in regards to what constitutes adaptive and maladaptive characteristics. Despite Gotwals et al. (2012) suggesting that there is adequate representation from the characteristics in the review, there is still some discrepancy surrounding this issue. In fact, Gotwals et al. (2012) excluded some characteristics as there was disagreement surrounding them.

Hill et al. (2018) have provided the most up to date account of perfectionism in sport. Hill et al. (2018) examined the relationship of PS and PC on motivation, emotion/well-being, and performance. The review included 52 studies of perfectionism in different sports and levels of participation and spanned 26 years of research (from 1990 to 2016). Participants were from a wide range of sports and included both male and female athletes. PS and PC were found to have divergent relationships with a range of outcomes. In this regard, PS was found to be ambiguous in relation to motivation (e.g., task and ego orientation) and emotions (e.g., positive and negative affect), but positively related to performance. By contrast, PC was related to maladaptive motivation (e.g., fear of failure and mastery avoidance) and emotions (e.g., anxiety and anger) and unrelated to performance. This review included 52 studies of perfectionism in sport.

The review found that PS was related to a mix of maladaptive and adaptive motivation and emotion/well-being outcomes. Furthermore, PS had a small-to-medium relationship with performance. This particular finding is echoed in previous findings on PS (Gotwals et al., 2012; Stoeber, 2011). The findings on PS in this review provide a more complex picture than previous research of the effects of PS for athlete's motivation, emotion/well-being, and performance. Previously, it has been suggested that PS can be healthy (Stoeber, 2011). The findings here suggest that this is not necessarily the case.

The findings for PC are similar to previous findings (Gotwals et al., 2012; Stoeber, 2011). Hill et al. (2018) found that PC displayed a small-to-medium relationship with

maladaptive motivation and emotion/well-being and were unrelated to performance.

Furthermore, PC displayed a medium positive relationship with performance approach goals, performance avoidance goals, and mastery avoidance goals. In addition, PC displayed a small-to-medium positive relationship with negative affect, a medium positive relationship with somatic anxiety and worry, and a medium-to-large positive relationship with trait anxiety. PC paints a stark picture for athletes and will only lead to problematic outcomes.

1.4.3 Effects of perfectionism cognitions inside of sport

There is far less research examining the impact of perfectionism cognitions inside compared to outside of sport. A recent review has summarised the impact of perfectionism cognitions on athlete performance and well-being. Donachie et al. (2023) reviewed research examining perfectionism cognitions in sport and discussed the findings of six studies. As Donachie et al. (2023) note, the six studies have all demonstrated the important role perfectionism cognitions play for athletes in sport. In addition, the six studies suggest that perfectionism cognitions mediate trait perfectionism and a range of performance and well-being outcomes (e.g., burnout, pre-competition emotions, and motivational climates).

The first of the six studies suggest that the environment may contribute to a higher frequency of perfectionism cognitions. For example, Appleton et al. (2011) investigated the influence of parent and coach climates upon athletes' perfectionism cognitions. In a sample of elite youth athletes from individual and team sports, parent initiated motivational climate was a significant predictor of athletes' levels of perfectionism cognitions. In addition, both mothers and fathers played a significant role in athletes having more or less perfectionistic thoughts. Parents and coaches who disapprove of mistakes may contribute to a higher frequency of perfectionistic thinking in athletes.

The second study suggested that more frequent perfectionism cognitions may predict athlete burnout. Hill and Appleton (2011) examined the relationship between perfectionism

cognitions and symptoms of athlete burnout. They used a sample of male youth and adult rugby union players. They found that the perfectionism cognitions displayed a significant positive relationship with a reduced sense of athletic accomplishment and emotional and physical exhaustion. Perfectionism cognitions are likely to be detrimental to athletes' motivation and performance. There is growing support for more frequent perfectionism cognitions being attributed to negative emotions, too.

The next two studies outlined the relationship between perfectionism cognitions and pre-competition emotions. For example, Donachie et al. (2018; 2019) found that athletes who had frequent perfectionism cognitions also experienced more negative emotions (e.g., anxiety and anger). In the first of the two studies, Donachie et al. (2018), using a cross-sectional research design, found that perfectionism cognitions did not predict positive emotions in athletes. In the second of the two studies, Donachie et al. (2019), using a longitudinal research design, found that perfectionism cognitions mediated the relationship between SOP, SPP and pre-competition emotions over time. This finding highlights the negative impact that over thinking can have when seeking perfection. Therefore, frequent perfectionism cognitions may undermine performance and well-being.

The fifth study found evidence for the link between frequent perfectionism cognitions and burnout for coaches. Hassmén et al. (2020) found that more frequent perfectionism cognitions predicted exhaustion (a dimension of burnout). The relationship remained after demographic (e.g., gender, age) and work factors (level of coaching, hours of work) were considered. This study demonstrates how frequent perfectionism cognitions do not just affect athletes, but coaches too. In addition, the findings of the study outline how perfectionism cognitions fuel burnout and affects all coaches, regardless of age, gender, and level. The findings provide further evidence of the negative impacts frequent perfectionism cognitions can have on health and well-being.

In the final study, Crowell and Madigan (2021) also examined perfectionism cognitions and burnout. Using a longitudinal research design, they found that increased frequency of perfectionism concerns cognitions predicted a reduced sense of accomplishment and devaluation (dimensions of burnout). In addition, athletes are more vulnerable to burnout if they have an increased frequency of perfectionism cognitions over time. This example yet again demonstrates the complex nature of perfectionism and perfectionism cognitions. In particular, athletes may be more vulnerable to burnout if they experience perfectionistic thoughts over time.

In summary, thoughts of perfectionistic themes (e.g., “I should be perfect”) can serve the purpose of motivating an individual, but perfectionism cognitions form a sense of internal pressure, serve the purpose of self-punishment, self-belittling, and harsh self-criticism (Flett et al., 1998). These frequent perfectionism cognitions are related to higher levels of perfectionism, and can be a vulnerability factor, including psychological processes and other emotional experiences (e.g., pre-competition emotions) in athletes (Donachie & Hill, 2020). Therefore, it is important to understand how to reduce the frequency of these thoughts and images. The next section will begin to look at interventions that aim to reduce perfectionism.

1.5 Interventions

Given the negative effects of perfectionism (specifically PC), it is unsurprising to see research aiming to reduce it. Interventions have primarily been underpinned by a cognitive-behavioural approach (e.g., Mindfulness). Interventions have also been delivered through different modes of delivery. Studies have varied from face-to-face, online, group-based, brief, and self-guided. All have seen some success, with strong support for the efficacy of these modes of delivery in reducing perfectionism. The majority of research that has aimed to reduce perfectionism has been conducted outside of sport.

1.5.1 Interventions outside of sport

There are four recent reviews of the research outside of sport. Firstly, Lloyd et al. (2015) examined the evidence for psychological interventions targeting perfectionism in individuals with psychiatric disorders associated with perfectionism and/or elevated perfectionism. The review included eight studies between 2007 and 2013. The studies were a mix of one-to-one CBT (n = 4), self-help (n = 2), online (n = 1), and group-based (n = 1). Interventions varied in the number of sessions delivered, ranging between eight and 14 sessions. All participants had elevated levels of perfectionism, and experienced either depression or anxiety, eating disorders, or obsessive-compulsive symptoms.

The review found that that Personal Standards and Concern over Mistakes subscales (all dimensions of PC) had large pooled effect sizes for mean changes for pre- to post-intervention (they did not examine post-intervention differences). In addition, there was also a large pooled effect size from pre- to post-intervention for SOP (a dimension of PS). Finally, there was a medium pooled effect size for changes in SPP from pre- to post-intervention. Medium pooled effect sizes were found for changes in symptoms of anxiety and depression. These are all important findings and provides strong evidence for cognitive-behavioural approaches in reducing perfectionism.

In the next review, Suh et al. (2019) compared face-to-face to online interventions that targeted perfectionism. This review, which was an extension to that of Lloyd et al.'s (2015) review, evaluated the effectiveness of Randomized Control Trials (RCTs) that were aimed at reducing perfectionism and associated symptoms of depression and anxiety. The review included 10 studies between 2007 and 2018. Three studies tested online delivery modality, and seven studies tested face-to-face delivery modality. Participants either had elevated levels of perfectionism, or self-reported distress due to perfectionism. All of the interventions were underpinned by a cognitive-behavioural approach.

In comparing the control group versus the intervention group at the post intervention phase, the findings of the review outlined the benefits of interventions in general at reducing perfectionism and its associated consequences. Moreover, there was no statistical difference between face-to-face and online modalities. The intervention conditions (as opposed to the control group) was more effective at decreasing both PS and PC. From pre- to post-interventions, there was a significant medium effect size for both PS and PC. Furthermore, these findings were the same for depression and anxiety. This review outlines the comparable benefits of interventions that target perfectionism and its associated consequences (e.g., anxiety and depression).

In the next review, Robinson and Wade (2021) examined interventions that targeted perfectionism fuelled eating disorders. Perfectionism is a risk factor for anxiety and depression, but also for disordered eating. The review included 15 studies between 2008 to 2020. The studies consisted of eight RCTs, five case series, one qualitative assessment, and one non-randomized controlled comparison. Self-guided treatments accounted for one-third ($n = 5$) of the programmes whilst two-thirds ($n = 10$) were guided by a clinician or researcher. All studies provided CBT as the main cognitive-behavioural approach as the basis of the intervention.

This review tested both between and within group differences. That is, comparing both the control group vs the intervention group (between) and pre vs post change in the intervention group only (within). The findings of the review suggest that interventions were effective in reducing perfectionism and disordered eating, with large effect sizes. In addition, there was moderate effect sizes for anxiety and depression. Furthermore, perfectionism intervention cohorts experienced significantly greater reductions in perfectionism and disordered eating compared to comparison groups. However, there was no significant difference in symptoms of depression and anxiety when compared to control condition

cohorts. It may be that perfectionism plays a far greater role in eating disorders than it does for anxiety and depression (Limburg et al., 2017).

The last review of the intervention literature was by Galloway et al. (2022). In this most recent review, Galloway et al. (2022) examined the efficacy of self-help and face-to-face CBT for perfectionism to reduce perfectionism and anxiety, depression, and eating disorders. The review contained 15 studies between 2007 to 2020. A total of 912 participants were involved across the fifteen studies. Intervention duration varied between three and 10 weeks containing between three and 13 modules. The majority of the interventions used online delivery (63%) with a self-help method (75%).

In comparing the control group versus the intervention group at the post intervention phase, the findings of the review suggest that there was a medium effect size for Personal Standards (a dimension of PS) and a large effect size for Concerns Over Mistakes (a dimension of PC). The findings also supported the previous review (Robinson & Wade, 2021) in that there was a medium effect size for symptoms of eating disorders. Finally, there was a medium effect size for depression and a small to medium effect size for anxiety. Face-to-face interventions showed larger effect sizes for Concerns Over Mistakes (a dimension of PC) than self-help interventions.

1.5.2 Interventions inside of sport

The research inside of sport is still very much in its infancy. To date, four studies have tested the effectiveness of cognitive-behavioural based interventions on perfectionism. Interventions have varied between mindfulness, self-compassion, and a self-guided Cognitive Behaviour Therapy workbook. Findings to date have been encouraging, with evidence for reducing aspects of perfectionism (e.g., Parental Criticism). Participants in these studies have been from a variety of sports (e.g., golf, archery, football) with a mix of both female ($n = 49$)

and male ($n = 33$) athletes. There has been both control groups ($n = 2$) and RCT ($n = 2$) research designs used.

The first two studies were a series of studies. In the first, Kaufman et al. (2009) assessed how Mindful Sport Performance Enhancement (MSPE) affected flow states, performance, and psychological characteristics in archers and golfers. The MSPE intervention contained sessions on body scanning, mindful yoga, mindful breathing, and sitting meditation. The intervention lasted for 4 weeks, with one session a week lasting between 2.5 to 3 hours. Using a pretest-posttest research design to test the difference between-groups, both the archers and golfers became more perfectionistic, with Parental Expectations increasing from pre- to post-intervention. Kaufman et al. (2009) suggest that this may be because the participants are trying to learn these skills perfectly. However, they did find positive changes for state flow and self-confidence, which are associated with perfectionism (Frost & Henderson, 1991).

In a follow up to the Kaufman et al. (2009) study, De Petrillo et al. (2009) again examined the effectiveness of the 4-week long, MSPE intervention. This time participants, who were recreational long-distance runners, and received the same intervention as the first study. This time the findings were more supportive of changes in perfectionism. Again, using a pretest-posttest research design to test the difference within-groups, both Personal Standards (a dimension of PS) and Parental Criticism (a dimension of PC) significantly decreased from pre- to post-intervention. Secondly, worry also significantly decreased from pre- to post-intervention. The results show greater support for the effectiveness of MSPE in targeting and reducing perfectionism. Mindfulness may help reduce the desire to achieve perfection because the individual can more easily acknowledge being imperfect.

In the third intervention study in sport, Mosewich et al. (2013) examined the efficacy of self-compassion on negative cognitive states, including perfectionism. Using a RCT

research design, 25 female student-athletes were randomly assigned to an intervention group or a control group. The self-compassion intervention consisted of psycho-education and writing modules (e.g., common-humanity, self-kindness, and mindfulness), over 7-days. They found rumination, self-criticism, and Concerns Over Mistakes all significantly decreased for the intervention group compared to the control group. These were all significant again at the 4-week follow up. The results suggest that athletes who engage in a self-compassionate mindset are able to cope with difficult events more effectively and be kinder to themselves when they are not perfect.

The last and most recent study inside of sport is by Donachie and Hill (2020). In this study, Donachie and Hill (2020) examined the effectiveness of a self-help book for perfectionism. Using a RCT research design, one hundred and fifteen football players (male = 44, female = 71), were randomly allocated to an intervention group or a control group. The self-help book (Antony & Swinson, 2009) consists of 16 chapters and 53 exercises. It is comprised of four sections addressing the following topics: identifying perfectionism and the way it manifests; changing perfectionistic thoughts; changing perfectionistic behaviours; and strategies to manage perfectionism. They found significant interaction effects for SPP, perfectionism cognitions, and some negative pre-competition emotions (e.g., anxiety, anger, and dejection). The results suggest that self-help books may be useful for reducing perfectionism among athletes.

To summarise, the research has highlighted several important recommendations when delivering an intervention to reduce perfectionism. Firstly, interventions can be delivered both face-to-face and online. There does not seem to be too much benefit in delivering one way over the other (Suh et al., 2019). Secondly, reducing perfectionism cognitions seems more achievable and realistic than reducing trait perfectionism (Donachie et al., 2023). Finally, the small number of studies inside of sport is confounded by the fact only two have

RCT designs. In sum, the research has demonstrated the positive impact of cognitive-behavioural approaches in reducing perfectionism, as well as its negative consequences (Donachie & Hill, 2020).

1.6 Rationale of this thesis

The research that has been discussed demonstrates several reasons for the research that underpins this thesis. Firstly, there is an important need to support athletes for both performance and their mental health. Perfectionistic athletes are clearly prone to many performance and mental health related issues (Hill et al., 2018). Therefore, safeguarding this vulnerable group of athletes is crucial. However, despite the urgency and requirement to protect perfectionistic athletes, there is very little known about what the best and most effective intervention is for a Sport and Exercise Psychologist to use.

Secondly, the impact of perfectionism on problematic attitudes towards help-seeking is unknown. These attitudes may also affect the therapeutic relationship and intervention outcomes. Outside of sport, it is clearer as to how these attitudes may affect outcomes (e.g., Shannon et al., 2018). As far as the intervention effectiveness, this may well be undermined by stigma associated with seeking help. Therefore, it is important to better understand if this exists. This new understanding can then inform the interventions (e.g., adapting such intervention to help perfectionistic athletes overcome negative attitudes).

Thirdly, the research designs of interventions in sport typically lacks rigour. Only Mosewich et al. (2013) and Donachie and Hill (2020) have used an RCT research design. Kaufman et al. (2009) and De Petrillo et al. (2009) used a pretest-posttest research design to test the differences between the two groups. More research using rigorous RCT research designs are required to better understand the effectiveness of any intervention for perfectionism. In addition, more research is required to test the ecological validity of the interventions. To do this, research may consider using single-case research designs, which

expose athletes to conditions similar to what they would experience in the real world (Holleman et al., 2020).

Fourthly, interventions that have been delivered in sport are not representative of the full range of what Sport and Exercise Psychologists are able to deliver. For example, Sport and Exercise Psychologists typically use cognitive-behavioural approaches to support athletes (Turner, 2023). Such interventions may include Psychological Skills Training (PST), Acceptance and Commitment Therapy (ACT), Cognitive Behaviour Therapy (CBT), and Rational Emotive Behaviour Therapy (REBT). The research up to now has used either mindfulness-based interventions (Kaufman et al., 2009; De Petrillo et al., 2009), a compassion-based intervention delivered over 7-days (Mosewich et al., 2013), or a CBT-based workbook (Donachie & Hill, 2020). There is considerable scope to examine the effectiveness of alternative and complementary approaches with view to identifying the most effective ones.

1.7 Aims of this thesis

Based on the previous chapter and overview, the broad aim of the thesis is to extend research in perfectionism by examining different cognitive-behavioural approaches in reducing and managing perfectionism in athletes. To answer this broad aim, four studies were conducted.

In line with this broad aim, study one of this thesis adopts a cross-sectional design to examine (i) whether perfectionism predicts attitudes towards sport psychology support and (ii) whether perfectionism predicts attitudes towards mental health support in collegiate athletes.

The second study of this thesis adopts a single-subject multiple baseline design, with one group, to examine (i) whether PST can reduce perfectionism cognitions and (ii) whether PST can manage some of the negative consequences of perfectionism (e.g., cognitive

appraisals, pre-competition emotions, and performance satisfaction) in perfectionistic athletes.

The third study of this thesis also adopts a single-subject multiple baseline design, this time with three groups, to examine (i) the most effective cognitive-behavioural approach in reducing perfectionism cognitions and (ii) whether any of the cognitive-behavioural approaches can manage the negative consequences of perfectionism in perfectionistic athletes.

Finally, the fourth study of this thesis adopts an experimental, randomised control design that (i) evaluates the effectiveness of an online, self-help ACT-based intervention in reducing perfectionism, perfectionism cognitions, and negative pre-competition emotions in athletes with elevated levels of perfectionism.

Chapter 2 Perfectionism and Attitudes Towards Sport Psychology Support and Mental Health Support in Student Athletes

In chapter one, an overview of perfectionism was provided, along with the models of perfectionism, as well as an overview of the research that has tried to intervene both outside of sport and inside. In addition, the rationale of the thesis was described, along with the aims of the thesis. Chapter two provides an in-depth account of an empirical study that examined whether perfectionism (specifically PS and PC) predicted attitudes towards sport psychology support and mental health support. The purpose of this study was to identify whether attitudes towards help-seeking needs to be more carefully considered by Sport and Exercise Psychologists prior to designing interventions for perfectionistic athletes. Therefore, the aim of this study was to better understand the relationship between multidimensional perfectionism and attitudes towards help-seeking, and in what ways different dimensions of perfectionism related to aspects of support for mental health and performance support. This study was considered an important first step prior to designing and evaluating interventions.

2.1 Attitudes towards sport psychology support

Athletes require help from many professionals to support their participation and efforts to fulfil their potential. The support can be related to their performance but also related to their mental health. However, because sport is characterized by a culture that celebrates mental toughness and fortitude, some athletes may actually be less likely to seek support when it is needed (Bauman, 2016). This possibility may partly explain evidence that indicates the percentage of athletes who suffer from mental health problems is higher than that of the general population (e.g., Foskett & Longstaff, 2018). Identifying factors that

predict help-seeking is therefore important to assist all athletes not only with optimizing performance but also in maintaining their mental health.

In the same way that most athletes can benefit from better physical, technical, and tactical coaching, most athletes will benefit from the support of a sport psychologist. However, whether an athlete chooses to use the services provided by a sport psychologist will be influenced by their attitudes towards the service and the service provider (Anderson et al., 2004). Attitudes are an evaluation of an object, person, or concept and are generally positive or negative (Fazio & Petty, 2008; Hepler & Albarracín, 2013). In addition, attitudes help define how people behave in certain situations (Pickens, 2005). Attitudes towards sport psychology support have been studied by the assessment of four different factors (e.g., the Sport Psychology Attitudes-Revised questionnaire; SPA-R; Martin et al., 1997; Martin et al., 2002).

Stigma tolerance is defined as apprehension for fear of being stigmatized by others as having psychological problems. In sport, athletes, who may be experiencing a psychological problem, fear judgement from others. This may include coaches, teammates, and parents. This fear prevents them seeking help for their psychological problem and disclosing it to others. This is likely to be a common feature with perfectionism, as those with higher levels of perfectionism are fearful of what people think of them (e.g., Flett et al., 2004).

Confidence in a sport psychology consultation is defined as the belief in the positive effects of sport psychology. How confident an athlete is towards a sport psychologist and their services will depend on a number of factors. Their level of confidence will dictate how ready and able they are to discuss their psychological problem. They may also need to show a strong level of confidence to commit time and availability to the services provided. People with higher levels of perfectionism may have more unstable levels of confidence (i.e., situation dependant) (Jowett et al., 2021).

Personal openness is defined as a willingness to practice sport psychology skills. An athlete who is willing to practice these skills and adhere to the support that is on offer will again depend on a number of factors. Athletes who do indeed practice these skills will likely be more open to being helped by a sport psychologist. People with higher levels of perfectionism may do anything possible to be perfect (Hall et al., 2012). This may include being more open to help in order to achieve this image.

Cultural preference is defined as a preference towards a sport psychologist who is ethnically and racially similar. This dimension measures the degree to which athletes identify with their own culture. An athlete who receives support from someone who is not the same ethnicity, race, or culture may be more closed off. In addition, they may feel less confident and be less willing to practice these skills. Previous research has found that some athletes prefer counsellors who are ethnically and racially similar to themselves (e.g., Anshel, 1990).

More positive attitudes are signalled by higher confidence in a sport psychology consultation and personal openness and lower stigma tolerance and cultural preference. Whereas more negative attitudes signalled by the reverse (Martin et al., 2002). Martin et al. (2002) had suggested that using the SPA-R could help practitioners determine whether athletes choose to learn psychological skills or not. The SPA-R may also determine how receptive to sport psychology they might be. When attitudes are most positive, they can play an important role in whether an athlete changes or improves their behaviour.

Research examining athletes' general attitudes towards seeking support was recently systematically reviewed by Castaldelli-Maia et al. (2019). Based on 52 studies, Castaldelli-Maia and colleagues concluded that low mental health literacy, negative past experiences with mental health treatment-seeking, busy schedules, and hypermasculinity are the main factors associated with negative general attitudes towards seeking support among athletes. The studies focusing specifically on attitudes towards sport psychology support found some

evidence that attitudes can differ in regards to a range of factors (e.g., gender, age, sports type, nationality, and culture; Anderson et al., 2004; Martin, 2005; Martin et al., 2004).

Interestingly, within this review there is also evidence that athlete help-seeking preferences depend on the sport psychology provider. For example, the characteristics of the sport psychologist (e.g., previous athletic experience) and program delivery methods have an impact on the effectiveness of sport psychology service (Ponnusamy & Grove, 2014). Furthermore, delivering the intervention through face-to-face delivery can impact on the engagement of the athlete. This study focused on Asian athletes, meaning there may be difficulty in generalizing the findings beyond this sample. However, effective delivery of sport psychology services requires the consideration of numerous personal, interpersonal, and situational factors.

Importantly for the current study, there was evidence that personality characteristics play a key role in the attitudes that are formed with conscientiousness, neuroticism, and openness all predicting more positive attitudes towards sport psychology support (Ong & Harwood, 2018). These personality characteristics, some of which have been previously found to be related to aspects of perfectionism (Stoeber et al., 2009), need to be considered when sport psychologists are designing interventions. With this review in mind, it will be important for stakeholders (e.g., parents and coaches) to be sympathetic to the athletes' preferences towards a sport psychologist (e.g., a similar age to the athlete and the same gender) therefore minimising the barriers to help.

2.2 Attitudes towards mental health support

Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to his or her community (World Health Organization, 2018). The importance of safeguarding mental health in sport is becoming increasingly recognized. The

International Olympic Committee (IOC) recently published a consensus statement on this issue. Here they call for a greater understanding of mental health issues in sport and improved support for all those taking part (Reardon et al., 2019). Attitudes towards mental health support refer to the evaluation people make about services, service providers, and the overall notion of receiving help with their mental health (Choudhry et al., 2016).

Similar to sport psychology support, attitudes towards help-seeking for mental health support comprise of three different factors with positive and negative attitudes signalled in the same way (Mackenzie et al., 2004). Indifference to stigma is defined as concern about what important others will think if they sought professional help for psychological problems. This has a similar function to attitudes towards sport psychology, where athletes will fear judgement from significant others. Help-seeking propensity is defined as being willing and able to seek professional help. As with sport psychology support, the willingness to seek help will depend on a number of factors, such as the level of confidence towards the mental health support/provider. Psychological openness is defined as the level of openness to acknowledge psychological problems and the possibility of professional help. This level of openness will depend on the degree of acknowledgement that the athlete is willing to allow.

The review conducted by Castaldelli-Maia et al. (2019) also included studies that focused specifically on attitudes towards mental health support. Generally, the finding of these studies mirrors those for attitudes towards sport psychology support linking attitudes towards mental health support with a range of demographic, social and personal characteristics. Notably, there was also evidence that athletes may exhibit more negative attitudes towards mental health support than non-athletes. For example, both Watson (2005) and Barnard (2016) found that collegiate athletes reported less willingness to seek mental health treatment than non-athletes.

The factors outlined in this review suggest that athletes are at risk of mental health symptoms and disorders. For example, athletes often live near sites where they train, live away from families, and have coaches who continually push and demand for improvements. These are also several unexpected events that athletes are expected to cope with (e.g., injury; Gucciardi, 2020). With all of these expected and unexpected factors in mind, it is no surprise that two in four athletes suffer with their mental health (Foskett & Longstaff, 2018) and provides further credence to support athletes with their mental health. As such, athletes and collegiate athletes are a group that may especially benefit from a better understanding of factors that predict negative attitudes towards help-seeking.

Importantly, the review offers hope in the form of short interventions. These interventions were brief and aimed to increase awareness towards mental health and reduce the overall barriers to accessing help. For example, Kern et al. (2017) delivered an educational overview of mental health, provided two videos highlighting former student-athletes' struggles with mental illnesses, and facilitated a discussion with the athletes in the videos. They found significant increases in the participants' knowledge of mental health and attitudes towards help-seeking. Despite the study not using a strong research design (e.g., not randomizing participants), there are still important findings that suggest specially designed interventions can be successful at reducing certain barriers that athletes may have.

2.3 Perfectionism and help-seeking

In order to successfully support perfectionistic athletes, there is a need to know more about the way perfectionism might influence help-seeking attitudes towards sport psychology support and mental health support. It is possible, for example, that some dimensions of perfectionism may be disruptive and impede athletes' help-seeking via their attitudes. Higher levels of PC are related to a desire to hide flaws, a fear of disapproval, and a fear of negative evaluation (Shafique et al., 2017). Furthermore, athletes with higher levels of PC have poorer

coping skills and lower subjective well-being (Jowett et al., 2013). Perfectionism is a debilitating construct that can be seen in cognitive, presentational, and or behavioural mechanisms, and these are directly rooted in an athletes' attitude towards help-seeking.

With this in mind, athletes with higher levels of PC may fear being judged negatively if they seek help for mental health. By contrast, the same desire for concealment does not seem evident for PS. In addition, because athletes with higher levels of PS may do anything possible to achieve perfection (Stoll et al., 2008), they may be more open to seeking help when needed, at least if they perceive that it will facilitate better performance. Consequently, the relationship between perfectionism and attitudes towards help-seeking may be more complex with both problematic (PC) and less problematic dimensions (PS).

This complex relationship between perfectionism and attitudes towards help-seeking continues. There is also an example of help-seeking issues in athletes with eating disorders. For example, Martin et al. (2020) found that athletes with eating disorders are less inclined to seek help due to heightened stigma. In this study, collegiate athletes were randomly assigned to either a control group or an intervention group, with the latter receiving a 75-minute mental health literacy and stigma reduction intervention. This consisted of videos, workshops, and role play activities. They found support for increasing athlete awareness and education through specific help-seeking interventions. Again, this example demonstrates that athletes with higher levels of PC may be fearful of judgement from others if they seek help.

2.3.1 Perfectionism and attitudes towards sport psychology support

To date, no studies have examined perfectionism and attitudes towards sport psychology support in athletes. However, a number of studies have been conducted that have found perfectionism to be related to attitudes towards other things in sport such as doping (using banned substances to enhance athletic performance). For example, in a sample of university athletes, Madigan et al. (2019), found that PC to be positively related to favourable

attitudes towards doping and PS to be unrelated. The findings suggest that it is external pressure to avoid negative social evaluations that directly influences maladaptive behaviours, driven by extreme pressure to be perfect (Flett & Hewitt, 2016). This may be the same for other attitudes with dimensions of perfectionism related to more positive attitudes towards anything that may help them succeed.

In a more recent study, this time with Chinese athletes, Wang et al. (2020) examined the relationship between perfectionism and attitudes towards doping. They found that PC positively predicted attitudes towards doping with PS negatively predicting attitudes toward doping. They also found that controlled motivation positively predicted attitudes towards doping. Motivation can be seen to underpin perfectionism (in particular PC) and can influence certain choices due being concerned about mistakes and negative reactions. It is evident here that perfectionism (in particular PC) is extremely influential in forming more negative attitudes towards help-seeking.

2.3.2 Perfectionism and attitudes towards mental health support

There are also currently no studies that have examined perfectionism and attitudes towards mental health support in sport. However, there is a wealth of research in education that has examined perfectionism and attitudes towards mental health support. For example, among university students, Shannon et al. (2018) found that SPP (an indicator of PC) predicted negative perceptions of stigma by others whereas SOP (an indicator of PS) positively predicted self-stigma. In this study, they also found that self-presentation perfectionism (i.e., needing to appear perfect) was related to stigma and an unfavourable mental illness attitude. Perfectionistic athletes desire to remain perfect and to be seen as being perfect directly informs their attitudes towards help-seeking.

In a more recent study of university students and within the community, Dang et al. (2020) found that SPP (an indicator of PC) was significantly related to higher levels of stigma

and lower levels of openness towards help-seeking for mental health support. However, SOP (an indicator of PS) was significantly related to higher confidence in mental health professionals. Moreover, they also found that self-presentation perfectionism was related to negative help-seeking behaviours. It is clear from the findings of this study that people with higher levels of perfectionism are more anxious about being helped. It also seems that concealing concerns is a common behaviour associated with perfectionism.

These negative behaviours (along with their preference to hide their imperfections) can interfere with their ability to seek and obtain help, out of fear of what others will think. A further explanation for this is that students who have higher levels of perfectionism, along with more facets of self-presentation perfectionism, may encounter a need to conceal their flaws and imperfections. Self-concealment represents a major barrier in help-seeking (Cramer, 1999), fuelling negative attitudes. These findings provide evidence for a link between PS and PC with attitudes towards help-seeking and are suggestive of a similar link in collegiate athletes.

2.4 Purpose of study one

Taken together, these studies suggest that PC may have the potential to contribute towards more negative attitudes towards help-seeking. This is because perfectionism may give rise to a win-at-all-costs mentality (Flett & Hewitt, 2016) that is more likely to result in what is referred to as “dark striving”. Perfectionistic athletes, (with specifically higher levels of PC) through fear of being judged or being seen as imperfect, will do anything possible to maintain this image of ‘perfection’. To them, seeking help will invalidate this image. Against this background, the aim of the present study was to provide the first examination of whether perfectionism predicts attitudes towards sport psychology support and mental health support in collegiate athletes. Based on the arguments articulated above, it was hypothesized that PS would predict positive attitudes towards sport psychology support and mental health support

(H1) and that PC would predict negative attitudes towards both sport psychology support and mental health support (H2).

2.5 Method

2.5.1 Participants

A sample of 166 collegiate athletes (51 females, 115 males) was recruited from universities in the United Kingdom to participate in the present study. The participants' mean age was 21.3 years ($SD = 3.2$; range = 18 to 35) and trained an average of 7.5 hours per week ($SD = 5.1$). Participants were involved in a range of sports including individual (e.g., climbing, archery and powerlifting) and team sports (e.g., football, rowing, and hockey), and competed at recreational ($n = 34$), regional ($n = 43$), national ($n = 61$), and international ($n = 28$) levels.

2.5.2 Procedure

The study was approved by the university ethics committee. Participants were recruited via advertisement and email. Informed consent was obtained from all participants. A paper-and-pencil questionnaire was distributed by the lead author and completed at athletes' training venues. Questionnaires took approximately 10 minutes to complete.

2.5.3 Measures

2.5.3.1 Trait perfectionism

To measure trait perfectionism six subscales from three multidimensional measures of perfectionism in sport: the SMPS-2 (Gotwals & Dunn, 2009), the MIPS (Stoeber et al., 2007) and the PPS-S (Hill et al., 2016) were used. Following the recommendations of Stoeber and Madigan (2016), to measure PS (a) the SMPS-2 subscale capturing Personal Standards (7 items; e.g., "I have extremely high goals for myself in my sport"), (b) the MIPS subscale capturing Striving for Perfection (5 items; e.g., "I strive to be as perfect as possible") and (c) the PPS-S subscale capturing SOP (4 items; e.g., "I put pressure on myself to perform

perfectly”) were used. To measure PC, (a) the SMPS-2 subscale capturing Concerns Over Mistakes (8 items; e.g., “People will probably think less of me if I make mistakes in competition”), (b) the MIPS subscale capturing Negative Reactions to Imperfection (5 items; e.g., “I feel extremely stressed if everything does not go perfectly”) and (c) the PPS-S subscale capturing SPP (4 items; e.g., “People always expect more, no matter how well I perform”) were used. The SMPS-2 and the MIPS had a response format of 1 (*strongly disagree*) to 5 (*strongly agree*) and for the PPS-S had a response format of 1 (*strongly disagree*) to 7 (*strongly agree*). All three instruments have previous evidence of reliability and validity (e.g., Cronbach’s alphas > .70; Hill et al., 2016; Madigan et al., 2016; Dunn et al., 2016).

2.5.3.2 Attitudes towards sport psychology support

To measure attitudes towards sport psychology support, the SPA-R (Martin et al., 1997; Martin et al., 2002) was used. The SPA-R includes 25 items and four subscales: (a) Confidence (8 items; e.g., “A sport psychology consultant can help athletes improve their mental toughness”), (b) Cultural Preference (4 items; e.g., “I respect the opinions of people of my own culture more so than those of people of another culture”), (c) Stigma Tolerance (7 items; e.g., “I would not go to a sport psychology consultant because my teammates would harass me”), (d) Personal Openness (6 items; e.g., “There are certain problems, which should not be discussed outside one's immediate family”). The SPA-R has a response format of 1 (*strongly disagree*) to 7 (*strongly agree*) and has been shown to be a reliable and valid measure with previous Cronbach’s alphas ranging between .61 to .84 (Ong & Harwood, 2018).

2.5.3.3 Attitudes towards mental health support

To measure attitudes towards mental health support the Inventory of Attitudes Toward Seeking Mental Health Services (IASMHS; Mackenzie et al., 2004) was used. The

IASMHS includes 24 items and three subscales: (a) Psychological Openness (8 items; e.g., “There are certain problems which should not be discussed outside of one’s immediate family”), (b) Help-Seeking Propensity (8 items; e.g., “I would have a very good idea of what to do and who to talk to if I decided to seek professional help for psychological problems”), (c) Indifference to Stigma (8 items; e.g., “I would not want my significant other, spouse, partner, etc., to know if I was suffering from psychological problems”). The IASMHS has a response format from 0 (*disagree*) to 4 (*agree*) and has been shown to be a reliable and valid measure with previous Cronbach’s alphas ranging between .76 to .82 (Wahto et al., 2016).

2.5.4 Data screening

First, the data was inspected for missing values. Because very few item responses were missing ($i = 3$), missing responses were replaced with the mean of the item responses of the corresponding scale (Graham et al., 2003). Next, Cronbach’s alphas were computed for all variables, which were all satisfactory (see Table 1). Finally, following recommendations by Tabachnick and Fidell (2007), data were screened for univariate and multivariate outliers. No outliers were found.

2.6 Results

2.6.1 Internal reliabilities, descriptive statistics and bivariate correlations

Internal reliabilities, descriptive statistics, and bivariate correlations are displayed in Table 1. All instruments displayed adequate levels of internal reliability (Cronbach’s alphas $> .70$). PS showed significant positive correlations with personal openness towards mental health support, stigma to mental health support, confidence in sport psychology support and personal openness to sport psychology support. By contrast, PC showed significant negative correlations with personal openness to mental health support, stigma to mental health support, cultural preference to sport psychology support, stigma to sport psychology support

and personal openness to sport psychology support. PS and PC also had a significant positive correlation with each other.

2.6.2 Multiple regression analyses

Two sets of multiple regression analyses were conducted to examine what degree perfectionism scores predicted attitudes towards sport psychology support and mental health support in athletes. In the first set of regressions, the subscales measuring attitudes towards sport psychology support were the dependent variables and PS and PC were entered simultaneously as predictors. In the second set of regressions, the subscales measuring attitudes towards mental health support were the dependent variables and PS and PC were entered simultaneously as predictors. The results of these analyses are reported in Table 2 and summarized below.

2.6.2.1 Attitudes towards sport psychology support

Confidence: PS positively predicted confidence in sport psychology support ($\beta = .252, p = .015$) whereas PC did not predict confidence in sport psychology support ($\beta = -.038, p = .710$). In total, 5% of the variance of the model was explained by perfectionism ($R^2 = .052, p = .013$).

Stigma Tolerance: PS negatively predicted stigma tolerance ($\beta = -.256, p = .009$) whereas PC was a positive predictor of stigma tolerance towards sport psychology support ($\beta = .527, p < .001$). In total, 16% of the variance of the model was explained by perfectionism ($R^2 = .162, p < .001$).

Personal Openness: PS was a negative predictor of personal openness towards sport psychology support ($\beta = .027, p = .792$) whereas PC was a positive predictor of personal openness towards sport psychology support ($\beta = .223, p = .031$). In total, 6% of the variance of the model was explained by perfectionism ($R^2 = .059, p = .007$).

Table 1 Descriptive statistics, bivariate correlations, and Cronbach's alphas

Variable	1	2	3	4	5	6	7	8	9
1. Perfectionistic strivings									
2. Perfectionistic concerns	.67***								
3. Attitudes towards sport psychology confidence	.23**	.13							
4. Attitudes towards sport psychology cultural preference	.11	.19**	.06						
5. Attitudes towards sport psychology stigma	.10	.35***	-.02	.44***					
6. Attitudes towards sport psychology personal openness	.17*	-.24**	-.05	.35***	.46***				
7. Attitudes towards mental health psychological openness	.16*	-.29***	-.02	.35***	.48***	.78***			
8. Attitudes towards mental health help-seeking	.14	-.04	.44***	.02	-.13	-.12	-.09		
9. Attitudes towards mental health indifference to stigma	.15*	.38***	.00	.44***	.67***	.51***	.63***	-.14	
<i>M</i>	0.00	0.00	2.74	1.91	2.61	1.33	4.82	3.40	2.48
<i>SD</i>	0.83	0.84	0.81	0.75	0.64	0.85	1.00	1.44	1.30
Cronbach's alpha	.80	.80	.83	.73	.72	.80	.84	.81	.91

Note. $n = 166$. * $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed. Mean (*M*) of perfectionistic strivings and perfectionistic concerns are zero as they are the sum of standardized scores.

Table 2 Regression analysis of perfectionism and attitudes towards sport psychology support and mental health support

Attitudes Towards Sport Psychology Support					
Model	β	<i>B</i>	<i>S.E.</i>	<i>P</i>	BCa 95% CI
DV: Confidence					
<i>F</i> (2,163) = 4.48, <i>p</i> = .013; <i>R</i> ² = .052					
Perfectionistic strivings	.252*	.305	.124	.015	[.060, .527]
Perfectionistic concerns	-.038	-.046	.124	.710	[-.293, .186]
DV: Cultural Preference					
<i>F</i> (2, 163) = 3.38, <i>p</i> = .036; <i>R</i> ² = .040					
Perfectionistic strivings	-.048	-.084	.179	.641	[-.453, .261]
Perfectionistic concerns	.229*	.393	.178	.029	[.006, .767]
DV: Stigma Tolerance					
<i>F</i> (2, 163) = 15.78, <i>p</i> < .001, <i>R</i> ² = .162					
Perfectionistic strivings	-.256 **	-.399	.151	.009	[-.712, -.052]
Perfectionistic concerns	.527***	.818	.150	.000	[.476, 1.181]
DV: Personal Openness					
<i>F</i> (2, 163) = 5.08, <i>p</i> = .007; <i>R</i> ² = .059					
Perfectionistic strivings	.027	.036	.135	.792	[-.231, .293]
Perfectionistic concerns	.223*	.292	.134	.031	[.019, .565]

Attitudes Towards Mental Health Support

DV: Psychological Openness

$F(2, 163) = 7.81, p < .001; R^2 = .087$

Perfectionistic strivings	-.069	-.062	.091	.496	[-.241, .142]
Perfectionistic concerns	.338***	.303	.091	.001	[.134, .471]

DV: Help-Seeking Propensity

$F(2, 163) = 4.74, p = .010; R^2 = .055$

Perfectionistic strivings	.311**	.242	.080	.003	[.082, .390]
Perfectionistic concerns	-.252*	-.196	.080	.015	[-.350, -.039]

DV: Indifference to Stigma

$F(2, 163) = 16.83, p < .001; R^2 = .171$

Perfectionistic strivings	-.197*	-.203	.099	.042	[-.404, .009]
Perfectionistic concerns	.519***	.533	.099	.000	[.339, .716]

Note. $n = 166$. DV = dependent variable. β = standardised regression weight. B = unstandardized regression weight. S.E = standard error. BCa 95% CI = bias corrected accelerated 95% confidence intervals. * $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed.

2.6.2.2 Attitudes towards mental health support

Psychological Openness: PS was a negative predictor of psychological openness towards mental health support ($\beta = -.069, p = .496$) whereas PC was a positive predictor of psychological openness towards mental health support ($\beta = .338, p < .001$). In total, 9% of the variance of the model was explained by perfectionism ($R^2 = .087, p < .001$).

Help-Seeking Propensity: PS was a positive predictor of help-seeking propensity towards mental health support ($\beta = .311, p = .003$) whereas PC was a negative predictor of help-seeking propensity towards mental health support ($\beta = -.252, p = .015$). In total, 6% of the variance of the model was explained by perfectionism ($R^2 = .055, p = .010$).

Indifference to Stigma: PS was a negative predictor of indifference to stigma towards mental health support ($\beta = -.197, p = .042$) whereas PC was a positive predictor of indifference to stigma towards mental health support ($\beta = .519, p < .001$). In total, 17% of the variance of the model was explained by perfectionism ($R^2 = .171, p < .001$).

2.7 Discussion

The aim of the present study was to provide the first examination of whether perfectionism predicts attitudes towards sport psychology support and mental health support in athletes. In agreement with our hypotheses, PS predicted positive attitudes towards sport psychology support and mental health support. Specifically, PS negatively predicted stigma tolerance towards both sport psychology support and mental health support, and positively predicted confidence in sport psychology support and help-seeking propensity towards mental health support. By contrast, PC predicted negative attitudes towards sport psychology support and mental health support. Specifically, PC positively predicted psychological and personal closedness and stigma to both sport psychology support and mental health support and negatively predicted help-seeking propensity towards mental health support.

2.7.1 Perfectionism and attitudes towards sport psychology support

2.7.1.1 Perfectionistic concerns

The present findings provide the first evidence that perfectionism is important for athletes' attitudes towards sport psychology support. In agreement with previous research on perfectionism and problematic attitudes in athletes such as the use of banned substances (Madigan et al., 2019), this appears to only be the case for PC. Previous research has found that PC is associated with higher levels of fear, negative judgement from others and a sense of inadequacy which are factors that could be responsible for this finding. Moreover, not only does PC predict negative attitudes towards doping, but it also is linked to the type of motivation an athlete has, which can positively predict negative attitudes (Wang et al., 2020). In the current study, athletes higher in PC, might be motivated to do anything possible to be seen as being perfect. To them, seeking help may mean that they are indeed not perfect.

Therefore, while research suggests that athletes higher in PC are likely to experience issues that could be addressed with the support of a sport psychology consultant (e.g., negative pre-competition emotions; Donachie et al., 2019), athletes with higher levels of PC are less likely to seek sport psychology support and be more likely to show ambivalence towards this type of support. In this regard, the perfectionistic athletes who might benefit most from sport psychology support are the least likely to seek it out. This is problematic for a number of reasons. These athletes are the ones who need support from a sport psychologist. They are far more likely to experience performance related difficulties due to their perfectionism (e.g., performance anxiety).

In addition, through their negative attitudes they are reluctant to receive or indeed seek help from a professional. This places athletes with higher levels of PC in a very precarious position. Although attitudes might differ due to a number of other factors (e.g., gender, age, sports type, nationality, and culture; Anderson et al., 2004), PC clearly

contributes significantly towards these negative attitudes. It might be that these other factors play an important role, along with levels of perfection, in forming attitudes. Applied suggestions with athletes higher in PC in mind are provided.

2.7.1.2 Perfectionistic strivings

In contrast to the findings for PC, PS was positively related to more positive attitudes towards sport psychology support; notably, higher confidence and lower stigma. This finding aligns with the idea that athletes higher in PS may well utilize all strategies at their disposal in order to perform perfectly (Stoll et al., 2008). PS was also unrelated to apprehensiveness and fear of negative evaluation of others that is instrumental to more negative attitudes and lower help-seeking behaviour (Castaldelli-Maia et al., 2019). This bodes well in regards to whether athletes are likely to seek psychological support and how they might respond to it when offered. From the outset, PS appears to help facilitate positive attitudes towards sport psychology support.

With athletes higher in PS having more positive attitudes towards sport psychology support, previous positive experiences of sport psychology may be one explanation of this finding (Ponnusamy & Grove, 2014). Having positive experiences of sport psychology will help facilitate more positive attitudes. This should be an important consideration for applied practitioners. The finding that athletes higher in PS might be more likely to seek support to improve their performances is also an additional explanation for the observed performance benefits of PS worthy of further consideration in future research (e.g., Vink & Raudsepp, 2020). This finding will require further research to better understand the perceived benefits.

However, these performance benefits may not actually be as attractive as they first sound. Athletes with higher levels of PS (and higher levels of PC) may indeed be prone to performance difficulties after experiencing competitive failure (Lizmore et al., 2019). In this example, cognitive interference meant that athletes turned their attention away from the task

at hand and redirected attention inwards. So, rather than being focussed on the task at hand, participants think that people are beginning to judge them for being inadequate. This finding may also be relevant to the current study. When they experience performance difficulties, or are under pressure, or indeed fail, will these attitudes towards sport psychology remain positive?

2.7.2 Perfectionism and attitudes towards mental health support

2.7.2.1 Perfectionistic concerns

As with sport psychology support, perfectionism predicted attitudes towards mental health support. This is the first evidence that perfectionism may affect the way athletes deal with mental health difficulties. In this regard, again, athletes higher in PC showed greater stigma towards mental health support. This is in line with research outside of sport that has found a similar impact of PC on help-seeking (Dang et al., 2020). Stigma is thought to be the main factor that inhibits help-seeking (Breslin et al., 2019). As such, athletes higher in PC may be more likely to resign themselves to living with their mental ill health and suffer than to seek help because of a fear of being judged negatively by others.

In addition, this will likely be compounded by the fact athletes higher in PC also show greater closedness, meaning that if support services reach out to them, they may not acknowledge their problems and be less willing to discuss them. The impact this has for these athletes is likely to be stark. For example, they are more likely to experience burnout, leading to depressive symptoms and anxiety (Jenson et al., 2019). As such, the need to be able to seek help from a mental health professional is incredibly important. However, for perfectionistic athletes their desire to remain perfect in the eyes of others is more important than acknowledging and opening-up about their mental health.

As with attitudes towards sport psychology, there could also be a range of other factors that contribute to problematic attitudes. For example, demographic, social factors, and

personal characteristics could all play a significant role in development of these attitudes (Castaldelli-Maia et al., 2019). However, these factors are only likely to further contribute to such negative attitudes towards mental health support. This finding highlights the difficulties that higher levels of PC brings. Finding ways to support perfectionistic athletes' attitudes towards mental health support remains an important line of enquiry.

2.7.2.2 Perfectionistic strivings

Similar to sport psychology support, PS was related to more positive attitudes towards seeking help for mental health. This is consistent with findings in an education setting among students (e.g., Dang et al., 2020). PS therefore does not appear to be problematic in the same manner as PC and includes some features that may encourage help-seeking. Seeking support in this way sits alongside other positive coping behaviours found in studies with athletes such as higher problem-focused coping, self-compassion, and optimism (e.g., Lizmore et al., 2017).

Despite this, athletes with higher levels of PS may still have negative attitudes towards help-seeking (Hardwick et al., 2021). It may be that these athletes need to be experiencing success, rather than failure, for them to perceive help as a good thing. Previous research has found that things like effort can vary following failure (e.g., Lizmore et al., 2019). This could be the same for help-seeking behaviours. The participants in the current study may have been going through success and therefore happy to get help for performance or their mental health. It may be worth testing participants levels of confidence to understand whether this correlates with their attitudes and other important performance outcomes (e.g., effort).

However, it is important to acknowledge that more positive attitudes towards mental health is a welcome finding in this regard. This is because there is evidence outside of sport that some indicators of PS are associated with a range of clinical outcomes (e.g., suicide

ideation; Smith et al., 2018). Little research examining these associations has taken place in sport, but one might expect similar findings. Therefore, some athletes higher in PS will need mental health support. Based on the current findings, in contrast to athletes higher in PC, they may also be more likely to seek it out and be receptive to this type of support when offered.

2.8 Conclusion

The present findings suggest that perfectionism is linked to attitudes towards sport psychology support and mental health support in athletes. In this regard, higher PC was related to more negative attitudes towards sport psychology support and mental health support. In comparison, PS was related to more positive attitudes. The findings suggest that athletes who have higher levels of PC are less likely to seek support for both performance and mental health problems. Applied practices may need to be adjusted when working with perfectionistic athletes, in part due to their attitudes and help-seeking intentions.

Chapter 3 Psychological Skills Training and Perfectionism: A Single-Subject Multiple Baseline Study

In chapter two, the findings of study one provided evidence that athletes with higher levels of PC have more stigma towards both sport psychology support and mental health support. This stigma can create problems for Sport and Exercise Psychologists who are delivering interventions with perfectionistic athletes (specifically those with higher PC). In addition, study one found that perfectionistic athletes were less open to and less confident in the support of a Sport and Exercise Psychologist. In the next chapter, a study is described that extends from chapter two by using a PST intervention that has a specially designed series of sessions at the start of the intervention to lower an athlete's stigma towards sport psychology support. To do this, a single-case experimental design was used to determine how effective this specially designed PST intervention is with a group of perfectionistic athletes. PST is a common approach in sport psychology so may be a first option for many practitioners. The aim of this study was to examine whether PST can reduce perfectionism in athletes with higher PC. Consequently, the findings offer valuable insights into the intervention's potential success in reducing perfectionism in athletes.

3.1 Psychological skills training

To maximize the ability to perform at their best consistently, athletes need to develop their psychological skills. PST does so through formalized practice of key skills (e.g., imagery, goal-setting, self-talk, and physical relaxation) that enhance confidence, attentional focus, and regulation of emotions. PST is a routine part of the practice of many applied sport psychologists and something they would commonly use with the athletes they work with.

While research attests to the general use of PST in supporting athletes, it may be less

effective for some athletes, even ineffective for those that may need it most. Here, there is more interest in the use of PST when working with athletes who exhibit more problematic aspects of perfectionism - a personality characteristic that can pose a number of performance, motivation, and well-being difficulties. These difficulties include the experience of frequent and disruptive thoughts about perfection as well as more negative emotional experiences. The study is intended to better inform sport psychologists of the effectiveness of PST for these athletes and whether PST is useful for addressing common issues they experience.

PST is training that focusses on learning and improving cognitive and behavioural skills. It is a widely recognized intervention to support athletic development and especially useful as a means to manage common problems (e.g., anxiety, confidence, and concentration; Birrer & Morgan, 2010). Imagery, goal-setting, self-talk, and physical relaxation are the four most common skills included on PST programmes and are the primary focus of our intervention in the current study. Different definitions and descriptions of these skills are used in research and practice. For the purpose of this study, imagery is viewed as the ability to control, create and re-create internal experiences from memory (Morris et al., 2005), goal-setting as the ability to direct effort and attention effectively towards an activity (Healy et al., 2018), self-talk as the purposeful use of verbalised or internalised statements directed to the self (Hardy, 2006), and physical relaxation as the ability to manage muscle tension in order to help regulate stress (Davis et al., 2008).

To better understand the effectiveness of PST for athletes, Brown and Fletcher (2017) examined the effects of psychological and psychosocial interventions on sport performance. The aim of the review was to determine whether interventions have a lasting effect on sport performance. The review included 35 studies using a range of intervention techniques (e.g., biofeedback and pre-performance routines). Nineteen of the interventions were designed or delivered individually and the remaining 39 were provided in a group setting. Thirty-four of

the studies used a RCT research design, from a range of sports including basketball ($n = 5$), football ($n = 7$), and golf ($n = 2$). Athletes were from a range of levels including local (42.9 %), regional (5.7 %), national (17.1 %), and international (2.9 %) levels.

The findings of the review suggest that interventions typically provide effective support for athletes. Specifically, psychological and psychosocial interventions were shown to enhance sport performance. There is also support for the longer-term effect of such interventions, with overall a large positive effect on sport performance at least a month after the intervention. However, this particular finding was based on only eight of the 35 studies. A final finding of interest was that interventions were marginally more effective for samples containing a greater proportion of males. However, the majority of the studies in the review ($n = 32$) contained samples with more males than females. Interventions should consider testing intervention effectiveness at a one-month follow up and include more females in the analysis.

In a more recent review, Barker and colleagues (Barker et al., 2020) focussed on intervention studies that used a single-case experimental design. Their review included 71 studies which spanned 30 years. Effect sizes were calculated for PST on psychological, behavioural, and performance variables. All of the studies used either psychological skills training or behavioural interventions. A broad range of psychological skills training techniques were used across the 71 studies. The most prevalent were imagery ($n = 24$), goal setting ($n = 12$), and self-talk ($n = 9$).

The review provided two additional important conclusions that are important for the present study. Firstly, PST is typically effective at enhancing behavioural and performance outcomes in athletes. These outcomes include increased performance satisfaction, increased confidence, and lower levels of anxiety. Secondly, single-case experimental designs are able to detect meaningful psychological changes that follow PST interventions. With these two

conclusions in mind, a single-case experimental design was adopted in the current study to test the effectiveness of PST intervention in reducing perfectionism cognitions and a range of other important outcomes.

3.1.1 PST and perfectionism

It is clear that PST has many benefits for athletes. What is less clear, however, is how effective PST is when supporting athletes who may have higher PC and who are experiencing some of the issues that these can pose. Examining the effectiveness of PST in these athletes is important for a number of reasons. Firstly, PST is a common approach that sport psychologists routinely use. Secondly, it is possible that sport psychologists will encounter athletes higher in PC frequently with evidence that perfectionism may be a common characteristic for athletes, particularly those at higher competitive levels (e.g., Dunn et al., 2005). Thirdly, there has been a number of suggestions that aspects of PST might be useful for addressing perfectionism with goal-setting (Kearns et al., 2007) highlighted in particular, as well as relaxation, imagery, and self-talk identified as a means of moderating the perfectionism-distress relationship (Hall et al., 2012).

PST may have benefits for athletes with higher levels of PC. For example, goal-setting is an important aspect of perfectionism, with unrealistically high goals common amongst those who are perfectionistic (see Frost et al., 1990). Therefore, educating athletes in how to set goals that are specific, measurable, achievable, realistic, and time bound (SMART; Doran, 1981), may be helpful in this regard. Goal prioritization may also be an additional skill that athletes with perfectionism may get benefit from because they often stubbornly engage in pursuit of unattainable goals at the expense of their own personal values and needs (Gaudreau, 2021).

There may be benefit in using PST for perfectionism cognitions, too. For example, self-talk strategies could be used to re-direct attention when the athlete is concerned about

making mistakes (another important dimension of perfectionism). In addition, relaxation techniques may help calm the frequency of perfectionism cognitions, as relaxation may reduce the stress that an athlete is experiencing (Bhunia, 2020). Here, PST may have an important role in reducing the frequency of and the negative consequences of perfectionism cognitions. Generally, the techniques housed within PST could have an important role to play in supporting athletes with higher levels of perfectionism.

3.2 Cognitive appraisals

In addition to perfectionism cognitions, cognitive appraisals, pre-competition emotions and performance satisfaction were also examined. To date, there are a handful of studies that outline the relationship between more frequent perfectionism and perfectionism cognitions and pre-competition emotions (Donachie et al., 2018; 2019). These show that athletes higher in perfectionism, experience more negative emotions when they have more frequent perfectionism cognitions. Therefore, perfectionism cognitions clearly have problematic implications for athletes and are worthy of inclusion in the current study. More frequent perfectionism cognitions can also result in an array of other negative effects (e.g., anxiety). As such, it is important to gain a broader understanding of these performance and well-being implications.

Cognitive appraisals are part of the stress-process and are an evaluation via which individuals construct relational meanings about the stressors they encounter (Lazarus, 1999). Stress occurs when a particular situation threatens the attainment of a goal (Lazarus, 2000). There are three transactional appraisals that athletes can experience whilst evaluating a stressful environment. Athletes make subjective evaluations and interpretations about a particular situation (Lazarus, 1999). Some appraisals are accompanied by stress and anxiety and others are not.

The first two appraisals are *threat* and *loss* and arise when an individual believes that they do not have the resources to cope with a situation. Threat and loss are associated with negative emotions (Lazarus, 1999). If someone is not able to actively cope with a stressful situation, they would perceive the situation more negatively. Threat appraisal refers to the evaluation of a situation as potentially harmful or dangerous (Lazarus, 1999). Whereas loss appraisal involves perceiving a situation as losing something valuable or important and associated with sadness (Lazarus, 1999).

Research has indicated that both threat and loss are related to perfectionism or negative consequences of perfectionism. For example, in a sample of teachers, Stoeber and Rennert (2008) found that Negative Reactions to Imperfection (a dimension of PC) was positively related to threat and loss appraisals, avoidant coping, and burnout. In a more recent example, in a sample of athletes, Ruiz et al. (2022) found that threat mediated the relationship between PC and dysfunctional psychobiosocial states. Therefore, athletes with higher levels of PC, who appraise the situation as a threat, may experience dysfunctional feeling states more frequently. Here, research demonstrates the important role of perfectionism and cognitive appraisals, namely threat and loss.

The third appraisal is *challenge*. By contrast, challenge arises when someone feels they are able to cope with a situation and are associated with positive emotions (Lazarus, 1999). If someone is able to actively cope with a stressful situation, they would perceive it more positively. A challenge appraisal often results from a positive evaluation reflecting sufficient perceived personal resources to meet situational or task demands (Jones et al., 2009). Thus, challenge appraisals are driven through high levels of self-efficacy and approach goals.

As with the research on threat and loss, there is also evidence of a relationship with perfectionism and challenge. For example, in a sample of teachers, Stoeber and Rennert (2008) found that Striving for Perfection (a dimension of PS) positively related to challenge

appraisals, as well as active coping, and inversely related to burnout. In a second example, this time in a sample of athletes, Ruiz et al. (2022) found that challenge mediated the relationship between PS and functional psychobiosocial states. These examples provide support for PS in helping athletes perceive situations more positively. Under conditions of challenge appraisal, then, PS then may help some athletes feel more ready for the demands of the task.

3.3 Pre-competition emotions

Appraisals give rise to emotions. Here there is a focus on pre-competition emotions – that is those that occur immediately before competition. Athletes can report a range of emotions prior to competition. These can be positive emotions (e.g., excitement and happiness) and negative emotions (e.g., dejection and anger). Although emotions are complex and their consequences vary depending on the individual and situation, positive emotions have an underlying relational theme of benefit (e.g., goal progress) whereas negative emotions have an underlying theme of harm (e.g., sense of possibly being demeaned) (Lazarus, 1999). As such, positive emotions are typically desirable for athletes and negative emotions are typically undesirable. The aforementioned research found trait dimensions of perfectionism, particularly those indicative of PC, are related to negative pre-competition and that perfectionism cognitions mediates this relationship over time (Donachie et al., 2019).

3.3.1 Negative pre-competition emotions

The first negative pre-competition emotion is anxiety. Anxiety is characterized by a cognitive and somatic reaction towards a threat (Smoll & Smith, 1996). Anxiety is one of the most researched aspects of sport psychology, spanning more than 30 years (Martens et al., 1990; Grossbard et al., 2009; Correia & Rosado, 2019). There are two dimensions of anxiety. The first is somatic anxiety, which are physical responses and include an increase heart rate

and muscle tension. The second is cognitive anxiety, which are mental responses and include worries and self-doubt (Martens et al., 1990).

The effects of anxiety on performance are well known (see Ong & Chua, 2021 for a review). The effects include an influence on motivational mechanisms such as self-confidence, self-efficacy, and creativity. Athletes who experience somatic anxiety find it harder in executing performance-based tasks (Neil et al., 2012). In contrast, athletes who experience cognitive anxiety often experience more frequent concentration disruption (Grossbard et al., 2009). In regards to perfectionism, research has found that athletes with higher levels of negative reaction to imperfections (a dimension of PC) was positively associated with cognitive and somatic anxiety (Hamidi & Besharat, 2010). In addition, athletes with higher levels of PC also have higher levels of anxiety (Donachie & Hill, 2020).

The second negative pre-competition emotion is dejection. Dejection is characterized by a feeling of sadness following the failure of a goal (Jones et al., 2005). It is an emotional feeling that is often accompanied by thoughts (e.g., I'm not good enough). In addition, dejection is an emotion that results from an individual's perception of the relationship between actual progress and expectations regarding rate of progress (Jones et al., 2005). For those that are experiencing dejection, tasks or activities that were once enjoyable are now tiring and uninteresting (Jones et al., 2005).

Dejection is associated with higher anxiety and anger (Lane et al., 2017). In addition, dejection is associated worse performance (Lane et al., 2017). Wasylikiw et al. (2012) suggested that dejection is experienced if there is a discrepancy between the ideal self and the actual self. Perceived discrepancies are also common in perfectionism (see Hewitt & Genest, 1990). Athletes with higher levels of SPP (a dimension of PC), for example, have higher levels of dejection (Hill et al., 2010). In addition, perfectionism cognitions positively

predicted dejection in a group of footballers in two previous studies (Donachie et al., 2018; 2019).

The last negative pre-competition is anger. Anger is characterized by a strong feeling of annoyance, displeasure, and hostility towards the self or others (Lazarus, 2000). Anger may negatively impact performance if it draws resources away from the primary task at hand. In a similar way that anxiety is viewed as being multidimensional, anger can be measured in three dimensions - feelings of anger, verbal anger, and physical anger (Spielberger et al., 1995). Based on this model, feelings of anger are typically determined by how strongly someone experiences anger. Verbal anger is how anger is expressed verbally such as shouting. Finally, physical anger is how anger is expressed physically such as lashing out.

Anger has been linked to perfectionism outside of sport (e.g., Hewitt et al., 2002) as well as inside of sport (Dunn et al., 2006). Deffenbacher (1999) proposed that anger results when something has happened or could happen that should not. People with higher levels of perfectionism may be prone to experiencing anger because they believe that they “could—and should—do better” (Hamachek, 1978, p. 27). In regards to perfectionism and anger in sport, SPP positively predicts antisocial behaviour and anger towards teammates and opponents (Grugan et al., 2019). The relationships for PS, including its proxy sub-dimensions (e.g., SOP), and anger are less clear.

3.3.2 Positive pre-competition emotions

The first positive pre-competition emotion is excitement. Excitement is characterized by high arousal and high emotions that are sometimes seen as to be facilitative anxiety (Jones, 1995). Excitement is typically considered to be a positive emotion that is associated with arousal and activation of the autonomic nervous system (Kerr, 1997). Excitement arises when individuals feel they can achieve their goals (Smith & Lazarus, 1990). Therefore, excitement is often felt by athletes as joy, passion, and motivation for their sport.

There is little research on the relationship between excitement and perfectionism. But based on previous work by Donachie et al. (2018; 2019; 2020), it can be presumed that higher levels of PC may lead to less excitement. This may be in part due to perfectionists not accomplishing their unrealistically high goals. Although, excitement for competition is likely to fuel motivation to perform well. In contrast, SOP may in fact have some positive association with excitement in athletes (e.g., Donachie et al., 2018).

The second and last positive pre-competition emotion is happiness. Happiness is deemed a positive emotion that occurs when “making reasonable progress toward the realization of a goal” (Lazarus, 2000, p. 234). Happiness can manifest in various ways, from a specific moment of joy to a more long-lasting sense of fulfilment and life satisfaction (Yadav et al., 2012). Happiness is also typically considered as a positive emotion and is an underpinning element of well-being (Giles et al., 2020). In addition, happiness can be beneficial for athletic performance (Woodman et al., 2009).

As with excitement, those with higher levels of perfectionism (specifically PC) are thought to have lower levels of happiness due to the unsatisfactory completion of their goals and achievements. In a recent study, athletes described not feeling happy until everything was perfect (Hill et al., 2015). In addition, perfectionistic athletes reported only feeling happy if they win (Gotwals & Spencer-Cavaliere. 2014). This research demonstrates that happiness is dependant of performance outcome and can therefore be something that is more susceptible to change. Happiness seems to have a complex relationship with perfectionism, with it not having a significant relationship with some dimensions of perfectionism (e.g., SOP & SPP; Donachie et al., 2018).

3.4 Performance satisfaction

The final outcome of focus is performance satisfaction. Performance satisfaction is the perception an athlete has of the adequacy of their own performance (Nicholls et al.,

2012). It is underpinned by evaluative processes that includes personal expectations and perceptions of accomplishment (Chelladurai & Riemer, 1997). When athletes meet or exceed expectations, they will experience greater satisfaction. Nevertheless, unrealistic personal expectations or expectations from others, or tendencies to view efforts pessimistically or more negatively will contribute to lower satisfaction (Gotwals & Spencer-Cavaliere, 2014).

These issues are particularly relevant to perfectionism and suggest that athletes higher in perfectionism are more likely to experience lower performance satisfaction. Previous research in sport is supportive of this suggestion and has found that PC are negatively related to satisfaction both in regards to goal progress and performance. For example, Lemyre et al. (2008) found that when athletes demonstrate perfectionistic tendencies (e.g., fear making mistakes and doubt their ability), the risk of experiencing burnout is greatly increased. In a further example, Appleton et al. (2009) found SPP was inversely related with perceived satisfaction with goal progress. Finally, Hill et al. (2014) found that athletes with higher levels of perfectionism had chronic levels of dissatisfaction and many personal and interpersonal difficulties.

3.5 Purpose of study two

The aim of the present study is to examine whether PST can reduce perfectionism cognitions as well as appraisals, pre-competition emotions, and performance satisfaction in athletes with higher PC. To do so, a group of athletes were recruited based on their level of Concern Over Mistakes (a key dimension of PC) and were provided with a four-week PST intervention. It was hypothesized that the PST intervention would reduce perfectionism cognitions, threat and loss appraisals, negative emotions, and increase challenge appraisals, positive emotions, and performance satisfaction for each athlete.

3.6 Method

3.6.1 Participants & procedures

Recruitment for the present study had two phases, screening (Phase 1) and intervention (Phase 2). The study was approved by the university's ethics committee. Informed consent was obtained from all participants in both phases.

3.6.1.1 Phase 1

Thirty-five participants, from a basketball club in the UK, were invited to complete a perfectionism questionnaire for the purpose of screening and selecting participants to take part in phase 2. Participants were national level basketball players, made up of females ($n = 15$) and males ($n = 20$), aged between 18 and 26 ($M = 20.6$ years, $SD = 2.2$). All participants completed the Concerns Over Mistakes subscale from the SMPS-2 (Gotwals & Dunn, 2009). There are currently no normative values or cut-off values available for this or other measures of perfectionism in sport. As such, a value of ≥ 29 on the Concern Over Mistakes subscale was needed as a minimum criterion to take part in phase 2. Kothari et al. (2019) used this same criterion when selecting participants to take part in a perfectionism intervention outside of sport. Of the participants who were eligible ($n = 10$), five agreed to take part in phase 2.

3.6.1.2 Phase 2

The five participants were labelled A-E. They were aged between 18 and 23 years ($M = 21.8$ years, $SD = 3.5$) and trained between nine and 27 hours a week ($M = 18.2$, $SD = 6.6$). Participant A, D and E were male and participants B and C were female. Scores on the Concerns Over Mistakes subscale were 32 (A), 32 (B), 30 (C), 29 (D), and 31 (E). As a point of reference, the validation of the SMPS and SMPS-2 included six samples of different ages, sports, and competitive levels, and reported means scores for the subscales for five of them. The scores on Concerns Over Mistakes of the five participants in this study are above the

mean in all five samples (Dunn et al., 2006; Gotwals & Dunn, 2009). Four of the participants have scores that would be in the highest 16% of scores (i.e., +1 SD) in all of these samples.

3.6.2 Design

The study used a single-subject multiple baseline design, a type of single-case experimental design. Each participant received the intervention at a different start point. Participant A received the intervention at week three, participant B at week four, participant C at week five, participant D at week six, and participant E at week seven. This type of design offers experimental and ideographic platform to observe intervention effects in an ecologically valid setting (Barker et al., 2011). All outcome variables (perfectionism cognitions, cognitive appraisals, pre-competition emotions, and performance satisfaction) were measured at pre-intervention, during the intervention, post-intervention, and at a 3-month follow-up. Participants completed each measure once a week on the morning of competition.

3.6.3 Intervention

Participants received a 4-week long PST intervention, receiving two sessions a week, each lasting 45-60 minutes. The first two sessions were aimed at developing their attitudes towards sport psychology support. Brief interventions using PST have been previously used in the broader literature ranging from 4-weeks (Röthlin et al., 2020) to 5-weeks (Meggs & Chen, 2019). Each participant had one piece of homework to complete prior to the next session. Details of the aims, content, and homework assignments are provided in [Appendix E](#).

3.6.3.1 PST intervention outline

Progressive Muscle Relaxation (PMR)

Relaxation techniques benefit athletes by enhancing self-confidence, concentration, performance and reducing anxiety and stress (Weinberg & Gould, 2019). It is this reason why PMR will be an essential component of the PST intervention. Each participant enjoyed a 30-

minute relaxation session. In a comfortable chair and with their eyes closed, they will be asked to slowly breath, counting to 4 as they breath in, and to 8 as they exhale. As they do this, they imagine the anxiety and stress leaving their body. They will be asked, whilst they continue to do the breathing, to tense and relax different muscles, starting from their feet and working up. They will be asked to notice the difference between tensed and relaxed muscles. At the end of the session, the athlete will rate their degree of relaxation (Jacobson, 1929).

Cue-controlled relaxation and differentiating

Each participant will be taught how to use cue-controlled relaxation, which will help the overall time it takes to become relaxed. The method consists of focusing on breathing with self-instructions of “INHALE” and “RELAX”. Saying “RELAX” as you exhale, will gradually build the association of the word with the feeling of being relaxed. This is a quick and effective mode of relaxation that each athlete will begin using as a way of centering. Centering (or attentional focus) is way of controlling for negative emotions and retracting to your core, focusing on your breath, and redirecting energy (Nideffer, 1976). Next, the participants work on the skill of relaxation in different situations, meaning it’s a portable, efficient coping mechanism. In this part of the session, they will work on relaxation using specific movements in basketball specific settings, focusing on how to transfer relaxation onto the court.

Rapid relaxation

The aim of this session is to refine the time it takes to relax down to 30 seconds, known as rapid relaxation. This can then be formed into a small routine that each athlete can use to help control emotions or alleviate any expectation or tension. Parnabas et al. (2014) found the higher the usage of the progressive muscle relaxation, the higher the level of sports performance increases. Rapid relaxation is also a useful skill with often-limited time during performance. Utilising the cue word and a body scan can allow the athlete to quickly know

whether they are tense. At this point, it will be very clear what being tensed feels like. By scanning, each athlete will remain in control of their breathing, allowing them to feel calm and relaxed. The key to this part of the session is to help the athlete realise that they can go from tensed to relaxed in 30 seconds.

Imagery

Each participant will be asked to understand the benefits of imagery and how it can help them manage both anxiety and expectation. The aim of using imagery will be to help each athlete prepare for performance. Being prepared will help each athlete feel less anxious, more in control of their thoughts and put them in a more positive state of mind (Pocock et al., 2019), and support confidence (Beaumont et al., 2015). Using this 'peel the lemon' technique, allows the participants to utilise each sense as a way of aiding their visualisation skills. Once the participants are feeling more assured with peeling the lemon (using imagery), the participants will begin focusing on specific situations in basketball that are likely to arise, including free throws.

Imagery script

The script will include the athlete arriving at the venue, warming up, getting changed, the feeling of putting their shoes on and holding the ball. How each time point the athlete will use their senses to help it feel as realistic as possible, so that when they do these things, they are comfortable and ready. An imagery script has been shown to control for irrational thoughts and beliefs (Rhodes & May, 2022), which will account for both high levels of anxiety and perfectionistic thoughts. Marshall and Gibson (2017) also found using scripts significantly lower pre-competitive emotions.

Self-talk

Using the right type of self-talk will help the participants think and feel more positively. Participants will form a list of current thoughts that are negative and a second list

of those thoughts that can be re-framed to make them positive. An example thought could be “I don’t think things will go well today, my footwork is too slow” – which would then be re-framed to “Let’s play to my strengths, keep on my toes”. Self-talk has been shown to reduce negative thinking (Walter et al., 2019) and reduce negative emotions. Because of this, perfectionism cognitions will also be controlled for, if athletes can understand re-framing things like fear of failure, expectation on themselves and others and self-doubt which will directly impact on their perfectionism cognitions.

3.6.4 Measures

3.6.4.1 Trait perfectionism

To measure trait perfectionism, the SMPS-2 (Gotwals & Dunn, 2009) was used. Within this, the subscale capturing Concerns Over Mistakes (8-items; e.g., “People will probably think less of me if I make mistakes in competition”). Participants are asked to score each item on a 5-point Likert scale (1 = ‘strongly disagree’ and 5 = ‘strongly agree’). A number of previous studies have provided evidence of its reliability and validity (e.g., Gotwals et al., 2010).

3.6.4.2 Perfectionism cognitions

To measure perfectionism cognitions, the Perfectionism Cognitions Inventory-10 (PCI-10; Hill & Donachie, 2019) was used. Participants indicated how frequently they experienced different perfectionistic thoughts (e.g., “Why Can’t I be perfect?”). Participants are asked to score each item on a 5-point scale (0 = ‘not at all’ and 4 = ‘all of the time’). The validation of the PCI-10 provided evidence of its reliability and validity, including its superiority to the original PCI (Flett et al., 1998).

3.6.4.3 Cognitive appraisals

To measure cognitive appraisals, the Appraisal of Life Events scale (ALE; Ferguson et al., 1999) was used. The ALE is an adjective checklist that assesses an athletes’ perception

of their environment using threat (6 items, e.g., ‘Threatening’), challenge (6 items, e.g., ‘Exciting’), and loss (4 items, e.g., ‘Pitiful’). The ALE includes 16 items scored on a 6-point Likert scale (0 = ‘not at all’ and 5 = ‘very much so’). A number of previous studies have provided evidence of its reliability and validity (e.g., Dixon et al., 2017).

3.6.4.4 Pre-competition emotions

To measure pre-competition emotions, the Sport Emotion Questionnaire (SEQ; Jones et al., 2005) was used. The SEQ measures five emotions: anxiety (5 items), dejection (5 items), anger (4 items), happiness (4 items) and excitement (4 items). Participants are asked to indicate how they feel about an upcoming sports competition on a 5-point scale (0 = ‘not at all’ and 4 = ‘extremely’). Evidence of the reliability and validity of the scale is provided by previous studies, including work with perfectionism (e.g., Donachie et al., 2019).

3.6.4.5 Performance satisfaction

Participants rated their performances out of 10 using a self-report measure after each match/performance (Didymus & Fletcher, 2017). Based on the procedure outlined by Levy et al. (2011), the participants rated their performance satisfaction on a 10-point Likert rating scale (1 = ‘totally dissatisfied’ and 10 = ‘totally satisfied’). The performance satisfaction measure instructed players to record how satisfied they were with their most recent individual performance, rather than the performance of the team.

3.6.5 Social validation

Social validation data was collected at the 3-month follow up period, using brief informal interviews. The interviews were intended to serve as a short evaluation of the PST intervention and provide an account of their experiences of the intervention. Participants were asked three questions: “How do you feel now compared to before the intervention?”, “Which of the techniques did you find most useful and why?” and “What would you change about the intervention?”. These questions were selected because they provided deep insight into the

specific components of the intervention and largely based on Hrycaiko and Martin's (1996) and Wolf's (1978) recommendations. Similar questions have been used by others (e.g., Pates et al., 2002; Pates & Maynard, 2000). This approach was intended to help understand the participants' perceptions and feelings towards the intervention, developing a greater personal understanding of the effectiveness (Barker et al., 2011). Responses were not formally analyzed due to the informal nature of the interviews and brevity of responses.

3.6.6 Data analysis

3.6.6.1 Visual analysis

The study used visual analysis to analyse the data (Lane & Gast, 2014). Visual analysis emphasizes practical rather than statistical significance (Barker et al., 2011) and helps identify step changes from pre to post intervention. Four assumptions to visually analyse the data were used. (1) the last few data points of the baseline should be stable, or in the opposite direction to the predicted effects of the intervention; (2) there are a minimal number of overlapping data points between baseline and intervention phases, (3) there is an immediate effect following the intervention, and (4) there is a larger effect size in comparison to the baseline.

3.6.6.2 Statistical analysis

Descriptive statistics, % change, Cohen's d (using pooled standard deviations; Cohen, 1992)¹ and the percentage of nonoverlapping data (PND; Scruggs & Mastropieri, 2001) are used to compare pre-intervention and post-intervention scores (post-intervention scores did not include the 3-month follow-up score). As there can be interpretation difficulties associated with the use of Cohen's d in the context of single-case designs (see Scruggs & Mastropieri, 2001), PND was used as the primary metric to evaluate the effectiveness of the

¹ Cohen's d should be interpreted with caution due to small and uneven number of data points.

intervention. Effect sizes are provided as supplementary information and should be interpreted with caution. PND is the proportion of data points in a given treatment condition that exceeds the extreme value in the baseline condition (Scruggs & Mastropieri, 2001). The study applied PND to compare post-treatment scores to pre-treatment scores and use $>.90$ to infer very effective treatment, $.70$ to $.89$ to indicate moderate effectiveness, $.50$ to $.69$ to indicate debatable effectiveness, and scores less than $.50$ as not effective (Scruggs & Mastropieri, 1998).

3.7 Results

The results are presented in two parts. First, the intervention effects for each participant for all variables. Second, the social validation data to account for participants' perceptions of the intervention. Follow-up scores are excluded from post-intervention means, SDs, and effect size calculations. Results are reported in Table 3 and Table 4, and in Figure 1 - 5. An increase or decrease was determined by the % change from pre to post intervention and effectiveness was based on PND.

Participant A

Participant A reported a decrease in perfectionism cognitions (14%); a decrease in threat (93%) and loss (76%), and an increase in challenge (9%); a decrease in all negative pre-competition emotions (between 18% and 83%) and an increase in happiness (34%) but a decrease in excitement (1%); and an increase in performance satisfaction (40%). Changes (based on PND) were suggestive of no effectiveness (threat, challenge, anxiety, anger, and excitement), debatable effectiveness (perfectionism cognitions), and moderate effectiveness (loss, dejection, happiness, and performance satisfaction).

Participant B

Participant B reported an increase in perfectionism cognitions (27%); a decrease in threat (94%) and loss (89%), but also a decrease in challenge (19%); a decrease in all pre-

competitive negative emotions (between 71% and 73%) and also a decrease in excitement (27%) and happiness (39%); and an increase in performance satisfaction (34%). Changes (based on PND) were suggestive of no effectiveness (perfectionism cognitions, threat, challenge, anxiety, dejection, anger, excitement, and happiness) and moderate effectiveness (loss and performance satisfaction).

Participant C

Participant C reported an increase in perfectionism cognitions (20%); a decrease in threat (87%) and loss (85%), and an increase in challenge (49%); a decrease in negative pre-competitive emotions (between 36% and 63%) and an increase in positive emotions (between 9% and 67%); and an increase in performance satisfaction (100%). Changes (based on PND) were suggestive of no effectiveness (perfectionism cognitions, loss, anxiety, dejection, anger, and excitement), debatable effectiveness (threat, challenge, and happiness), and very effective (performance satisfaction).

Participant D

Participant D reported a decrease in perfectionism cognitions (19%); a decrease in both threat (27%) and loss (44%), and an increase in challenge (57%); a decrease in all negative pre-competition emotions (between 18% and 33%) and an increase in positive emotions (66% and 117%); and an increase in performance satisfaction (106%). Changes (based on PND) were suggestive of no effectiveness (threat, loss, anxiety, dejection, and anger), debatable effectiveness (perfectionism cognitions), moderate effectiveness (excitement) and very effective (challenge, happiness, and performance satisfaction).

Participant E

Participant E reported an increase in perfectionism cognitions (1%); a decrease in threat (80%) and loss (18%), and an increase in challenge (1%); a decrease in all negative pre-competition emotions (between 10% and 100%), but also a decrease in all positive

Table 3 Changes in perfectionism cognitions, cognitive appraisals, and performance satisfaction pre- and post-intervention

	Perfectionism Cognitions					Cognitive Appraisals										Performance Satisfaction									
						Threat					Challenge					Loss									
	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND
A	2.10 0.26	1.81 0.34	0.96	-14	50%	0.94 0.92	0.06 0.09	2.97	-93	0%	3.17 0.34	3.44 0.36	-0.78	9	38%	1.17 0.95	0.28 0.21	1.28	-76	88%	6.33 1.53	8.88 0.64	-2.17	40	75%
B	1.25 0.24	1.59 0.23	-1.46	27	0%	0.79 0.53	0.05 0.08	1.96	-94	0%	1.12 0.58	0.90 0.52	0.40	-19	14%	1.31 0.75	0.14 0.28	2.09	-89	86%	5.00 2.00	6.71 0.95	-1.09	34	71%
C	2.20 0.16	2.63 0.15	-2.89	20	0%	1.10 0.89	0.14 0.16	1.51	-87	50%	2.77 1.38	4.11 0.17	-1.37	49	67%	0.85 1.24	0.13 0.21	0.81	-85	0%	4.00 1.22	8.00 0.89	0.31	10 0	100%
D	2.90 0.30	2.34 0.18	2.24	-19	60%	2.56 0.99	1.87 0.25	0.96	-27	0%	2.39 0.56	3.76 0.08	-2.01	57	100%	3.04 0.49	1.71 0.49	2.72	-44	40%	4.17 2.00	8.60 0.55	-3.02	10 6	100%
E	3.06 0.21	3.10 0.22	-0.19	1	0%	0.43 0.79	0.09 0.10	0.60	-80	0%	1.69 0.46	1.71 0.32	-0.05	1	0%	0.54 0.73	0.44 0.13	0.19	-18	0%	6.67 1.63	7.00 0.71	-0.26	5	0%

Notes. *M* = means; *SD* = standard deviations; *d* = Cohen's *d*; % = percentage change; PND = percentage of nonoverlapping data.

Table 4 Changes in pre-competition emotions pre- and post-intervention

	Negative Pre-Competition Emotions															Positive Pre-Competition Emotions									
	Anxiety					Dejection					Anger					Excitement					Happiness				
	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND	Pre <i>M</i> <i>SD</i>	Post <i>M</i> <i>SD</i>	(<i>d</i>)	%	PND
A	1.73 1.33	0.93 0.54	0.79	-47	25%	0.87 0.42	0.15 0.21	2.17	-83	88%	0.42 0.38	0.34 0.30	0.21	-18	0%	2.75 0.00	2.72 0.36	0.12	-1	25%	2.08 0.52	2.78 0.31	-1.62	34	75%
B	2.00 0.75	0.54 0.32	2.51	-73	100%	0.10 0.20	0.03 0.08	0.48	-71	0%	0.38 0.75	0.11 0.20	0.49	-71	0%	2.44 1.05	1.79 0.92	0.66	-27	0%	1.75 1.04	1.07 0.61	0.80	-39	0%
C	1.48 0.61	0.60 0.13	2.00	-59	17%	0.52 0.95	0.33 0.16	0.27	-36	0%	0.45 0.67	0.17 0.20	0.57	-63	0%	2.90 0.84	3.17 0.38	-	9	0%	2.25 0.47	2.92 0.38	-1.59	30	67%
D	1.90 0.73	1.56 0.38	0.58	-18	0%	1.90 0.63	1.44 0.17	1.00	-24	0%	1.79 0.66	1.20 0.27	1.16	-33	20%	1.96 0.56	3.25 0.31	-	66	80%	1.54 0.29	3.35 0.58	3.93	117	100%
E	0.94 0.88	0.85 0.25	0.14	-10	0%	0.34 0.30	0.10 0.20	0.97	-71	75%	0.36 0.63	0.00 0.00	0.81	-100	0%	1.21 0.59	0.38 0.25	1.87	-69	0%	2.21 0.27	1.81 0.24	1.61	-18	25%

Notes. *M* = means; *SD* = standard deviations; *d* = Cohen's *d*; % = percentage change; PND = percentage of nonoverlapping data.

emotions (between 18% and 69%); and an increase in performance satisfaction (5%). Changes (based on PND) were suggestive of no effectiveness (perfectionism cognitions, threat, challenge, loss, anxiety, anger, excitement, happiness, and performance satisfaction) and moderate effectiveness (dejection).

3.7.1 Social validation

These interviews revealed that the PST intervention was received positively, that they were happy with the delivery of the intervention, as well as the content. In response to performance satisfaction, all participants reported improved evaluation and self-reflection about how they are performing. For example, participant A noted that “I feel more relaxed during my warmup, I think has helped me start games quicker. I don’t then have all these nagging thoughts. I can focus on using more of the positive self-talk”. Participants also reported appraisal improvements due to the PST intervention. These included being less negative and more positive. To illustrate, participant C suggested that “I am certainly enjoying different performance situations more now than I did before. I feel like I want to challenge myself and feel excited about that mindset”. All participants also reported that the PST contributed to how negative they are towards themselves. For example, participant B said “I’m so much happier with how I’m performing now. Everything seems to be feeling better”. Participants A and D reported feeling less critical and more constructive in their evaluation of themselves and how they performed. To show this, participant D said “I don’t think I am as critical towards how I perform. If I make a mistake, I think about what we did (the PST intervention), try and reset and move on”. Finally, all participants reported that they found benefit from using and engaging with the weekly homework tasks. For example, participant C said “I really feel the homework helped me understand each session in more detail”.

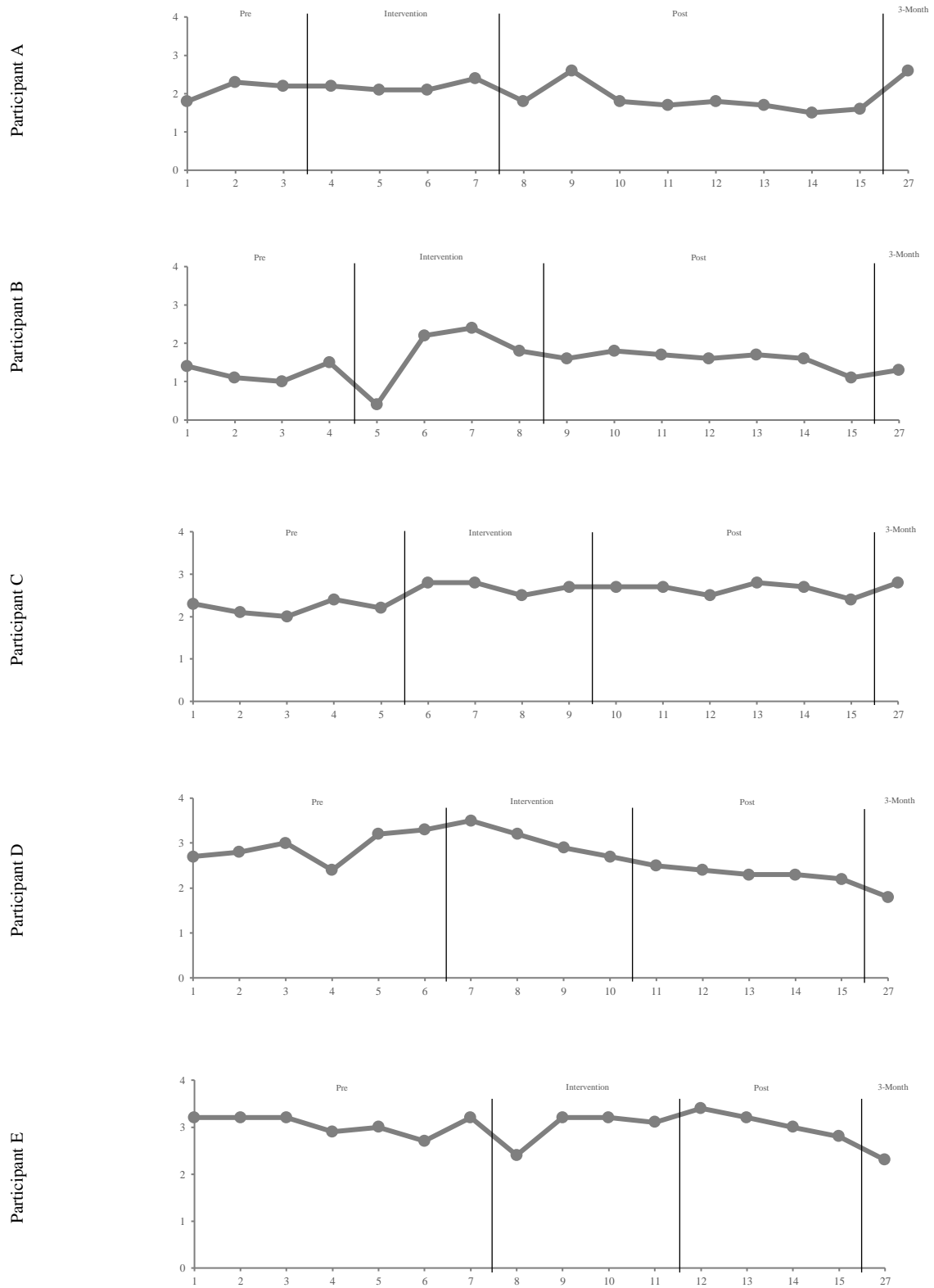


Figure 1 Perfectionism cognitions for pre, intervention, post, and 3-month follow up

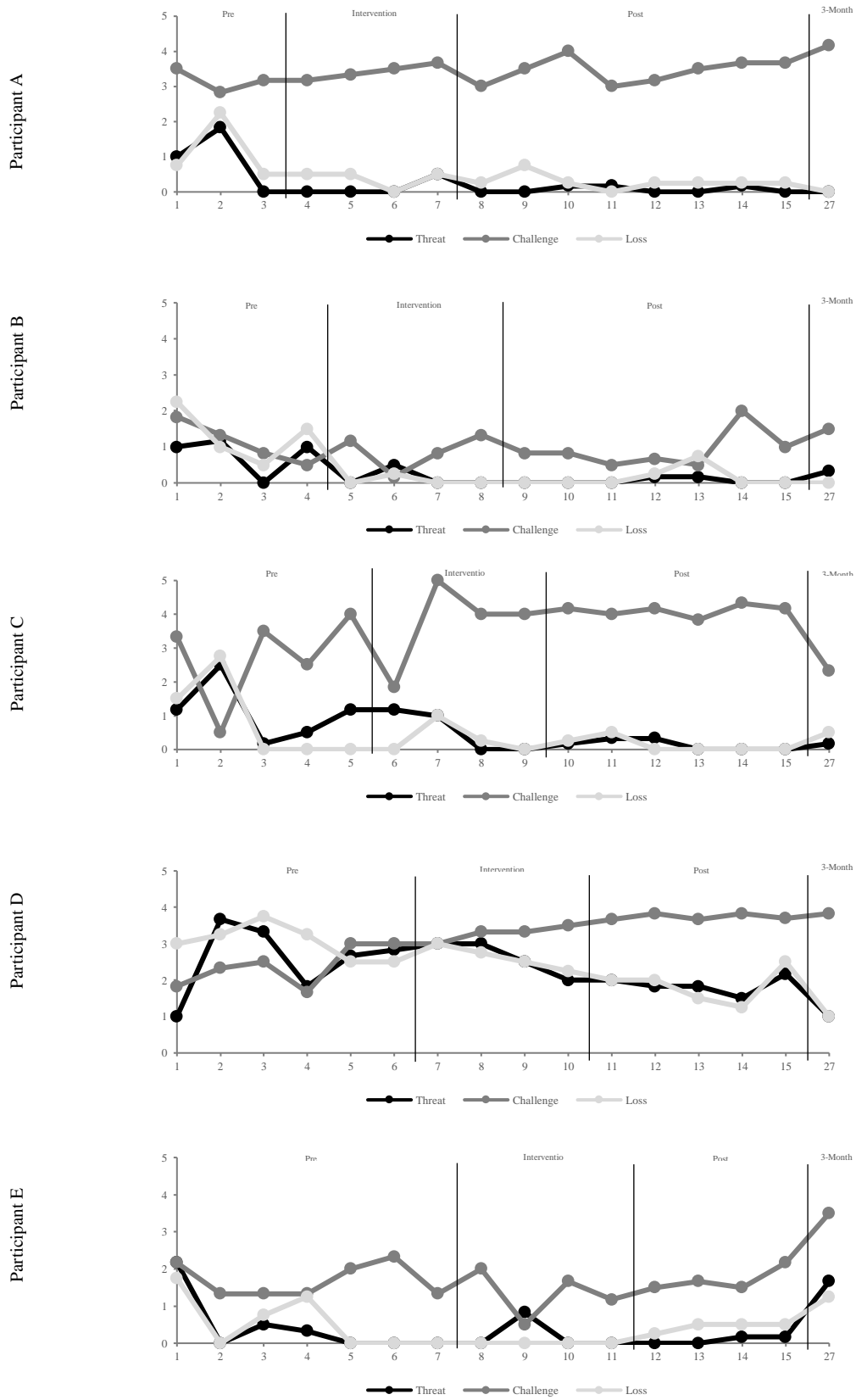


Figure 2 Cognitive appraisals for pre, intervention, post, and 3-month follow up

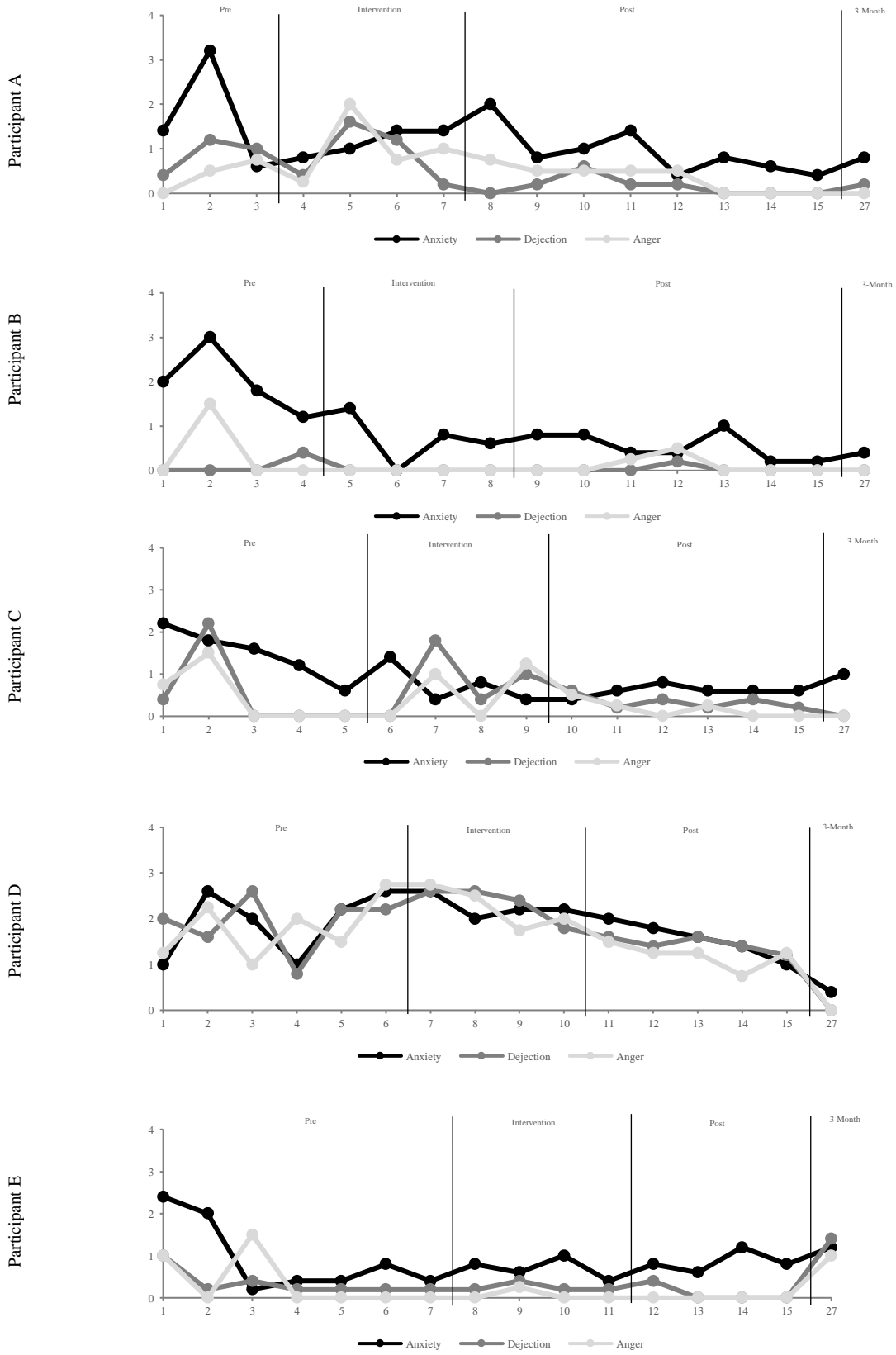


Figure 3 Negative pre-competition emotions for pre, intervention, post, and 3-month follow up

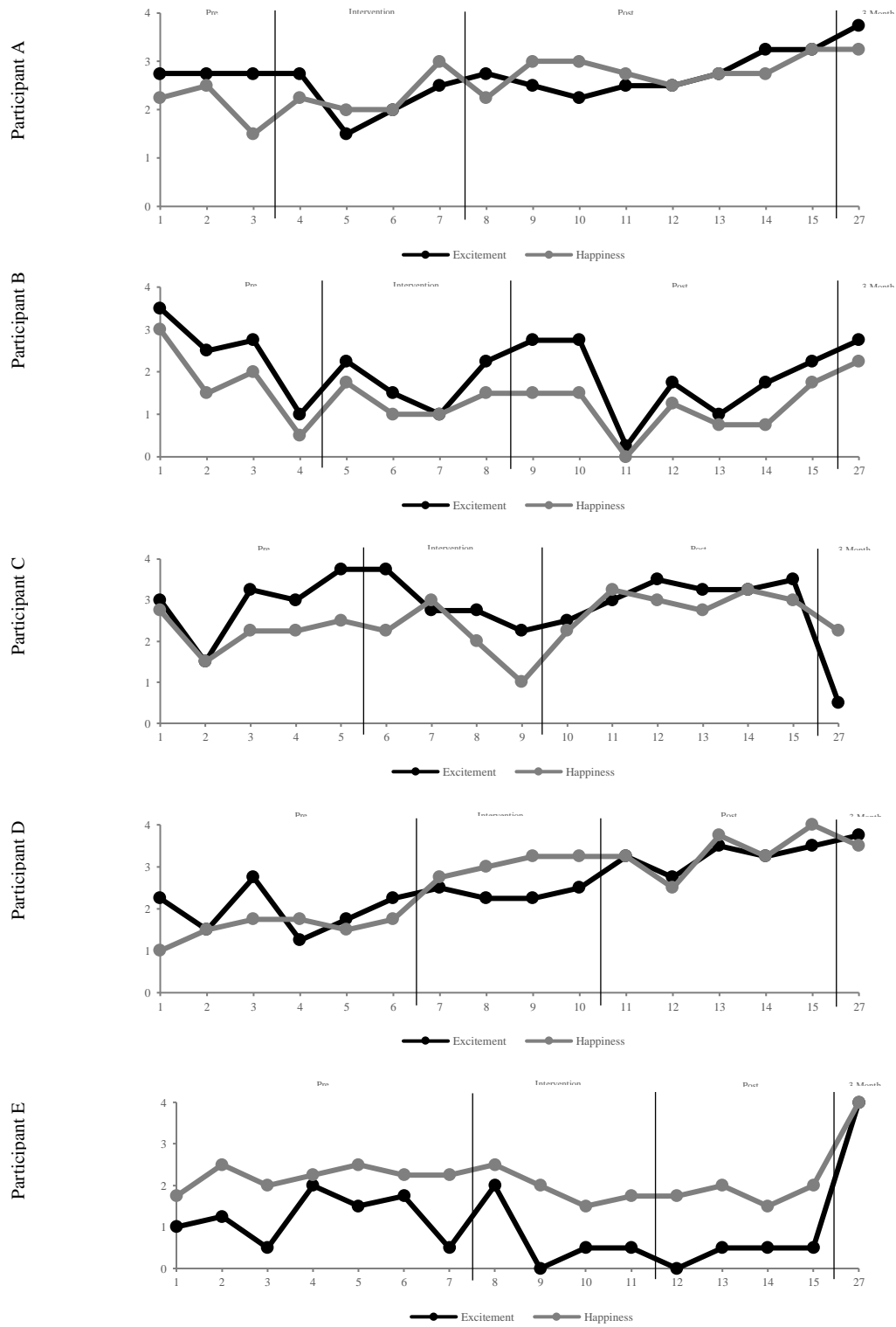


Figure 4 Positive pre-competition emotions for pre, intervention, post, and 3-month follow up

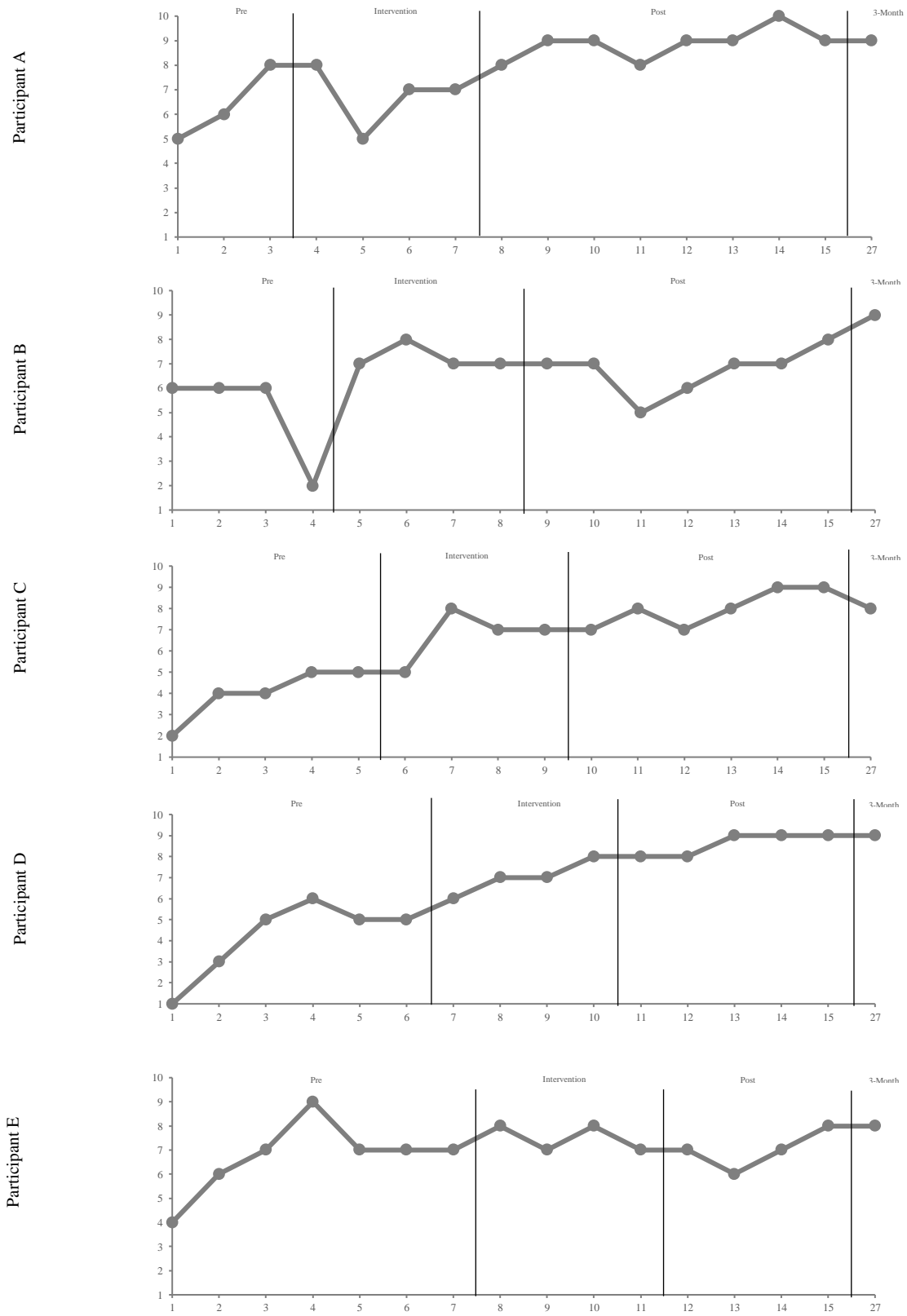


Figure 5 Performance satisfaction for pre, intervention, post, and 3-month follow up

3.8 Discussion

The purpose of the present study was to examine whether PST can reduce perfectionism cognitions as well as appraisals, pre-competition emotions, and performance satisfaction in athletes with higher PC. It was expected that perfectionism cognitions, threat and loss appraisals, negative emotions would all decrease, and that challenge appraisals, positive emotions, and performance satisfaction would all increase for each athlete. The PST intervention brought about improvements for most of the participants in at least some of the outcomes and suggested some benefit of PST. Nevertheless, of especial note, across participants perfectionism cognitions did not show any clear or consistent signs of improvement. In two of the five participants, perfectionism cognitions increased.

3.8.1 Managing appraisals, pre-competition emotions, and performance satisfaction

The present findings provide the first evidence that PST can support athletes with higher PC in regard to their cognitive appraisals. Firstly, one participant reported a very effective increase in challenge appraisals (based on PND). Despite only one participant reporting this, the findings are encouraging for the use of PST for athletes with higher PC. Research suggests that these athletes are more likely to find participation stressful (e.g., Garinger et al., 2018). This is because of the investment of self-worth and especial meaning they can attach to accomplishment (Hill et al., 2015).

Secondly, two of the participants reported a moderate decrease in loss appraisals. Previous research has highlighted the problematic nature of loss appraisals (e.g., Stoeber & Rennert, 2008). With this in mind, this finding is encouraging. For perfectionistic athletes, appraising situations positively can be challenging. The finding here suggests that some perfectionistic athletes may be able to use PST techniques from the intervention to help them evaluate situations more effectively. This may lead to less loss appraisals. This finding is of

course mixed, so there needs to be caution with how PST is used for perfectionistic athletes' evaluation processes.

Finally, four of the participants reported no effectiveness for threat appraisal with one participant reporting debateable effectiveness. Perfectionistic athletes are more likely to show avoidant coping in stressful situations and more likely still to affect an athlete's appraisal processes (Gaudreau & Antl, 2008). Furthermore, athletes who are predisposed to negative self-evaluation are more likely to see competition as threatening (Crocker et al., 2014). To this end, the participants in the current study were unable to utilize the PST techniques to perceive these situations differently. Overall, the finding here suggests that PST techniques are not useful at helping perfectionistic athletes manage their evaluative processes for threat appraisals. Our findings suggest that PST might help some athletes with higher PC better manage anticipatory experiences and help them appraise stressors more positively or at least as less harmful or damaging.

In a related way, the findings also indicate how PST can support athletes with higher PC in regards to pre-competition emotions. Four athletes reported moderate to very effective changes in at least one pre-competition emotion. Linking to appraisals, it is believed that more positive anticipatory appraisals may have helped facilitate positive subsequent emotional experiences for these athletes. The changes were a mix of increased excitement and happiness, as well as decreased anxiety and dejection. As such, the benefits appear to entail both increasing positive emotions and decreasing negative emotions.

Again, these are promising findings when one considers the typical emotional experiences of athletes with higher PC. These experiences can include prominent fears of shame and embarrassment (Sagar & Stoeber, 2009) and negative pre-competitive emotions such as anxiety and dejection (e.g., Donachie et al., 2019). However, more positive emotions may well be something that for athletes with higher PC, struggle with (Donachie et al., 2019).

For example, athletes higher in PC may never be happy considering they do not make reasonable progress towards goals (Lazarus, 2000, p. 234). To conclude, managing emotions (i.e., reducing negative pre-competition emotions) may be an important step in reducing perfectionism, with PST providing some important short-term answers.

The last positive change observed was a moderate to very effective increase for performance satisfaction in four of the five participants. Athletes with higher perfectionism engage in evaluative processes that make the experience of satisfaction less likely, more fleeting and less stable over time (Hill et al., 2015). In doing so, athletes are denied an important source of positive experiences in sport and may be more vulnerable to motivation problems as a consequence. It is possible that the positive changes in performance satisfaction were due to the use of more flexible and realistic goals (better goal-setting) or reducing self-critical elements of their evaluation (more positive self-talk). Alternatively, it may be a more indirect consequence, with athletes feeling generally psychologically better prepared, in control, and at ease – all factors associated with “best” or better performances and a sense of satisfaction (Harmison, 2011). Chronic negative evaluation is such a key part of perfectionism that the possibility that athletes with higher PC might be supported in this regard using PST are especially important and noteworthy.

3.8.2 Reducing perfectionism cognitions

Evidence for the effectiveness of PST in managing perfectionism cognitions was much more mixed and limited. Two participants had moderate decreases in their perfectionism cognitions (but fell short of clear effectiveness for PND). This finding is welcomed given the limited research on interventions in the perfectionism literature. This suggests that there may be some benefit to learning different skills to reduce the frequency of perfectionism cognitions. One explanation is that perfectionistic athletes will often do anything possible to be perfect. This may include having more positive attitudes towards

help. If they believe that the PST intervention will indeed help them to be perfect, they will do it. Though it is important to note these increased for both participants at the 3-month follow-up.

In addition, three of the participants had small increases in the frequency of perfectionism cognitions following the intervention. Perfectionism cognitions are more dependent on the context and situation, amendable to change, and have been found to reduce following short interventions in sport (e.g., Donachie & Hill, 2020). Nevertheless, our findings perhaps serve as a reminder that they are also ingrained ways of thinking that are characteristic of perfectionism and stem, at least in part, from perfectionism traits that are more difficult to change. As such, it may be that this aspect of perfectionism is more entrenched than previously thought. Certainly, the current study suggests that alternative interventions to PST may be needed to address perfectionism cognitions in athletes.

In regards to what alternative approaches may be most successful in reducing perfectionism cognitions, research suggests a number of options. The two studies outside of sport and the one study in sport that found evidence of effectiveness all used CBT. As such, it would be valuable to revisit this work and explore the use of this technique again in work similar to the current study. There is also emerging evidence inside and outside of sport that Acceptance and Commitment Therapy-based interventions (e.g., Ong et al., 2019) and compassion-based interventions (e.g., Mosewich et al., 2013) may also be effective. These other techniques also warrant further examination and rigorous testing so to improve the evidence-base and tools practitioners have in order to support athlete's problematic experiences associated with perfectionism.

3.9 Conclusion

Motivation, performance, and well-being issues will be common for athletes with higher perfectionism, particularly PC. The present study provided the first evidence that PST

can be used to improve cognitive appraisals, pre-competition emotions, and performance satisfaction for some of these athletes. However, there was limited evidence for the success of PST in reducing perfectionism cognitions. PST seemed to make some of the athletes more perfectionistic. Practitioners will need to find alternative means of supporting perfectionistic athletes.

Chapter 4 Exploring the Effectiveness of Three Cognitive-Behavioural Approaches in Reducing Perfectionism Cognitions & Managing Athlete Performance Outcomes

Chapter three provided evidence that a PST intervention could manage some of the negative consequences of perfectionism (e.g., anxiety) in a group of perfectionistic athletes. However, there was less support for its effectiveness to reduce perfectionism cognitions. In this chapter, a study is described that extends the thesis by examining alternatives to PST in reducing perfectionism in athletes in the form of three cognitive-behavioural approaches: CBT, ACT, and REBT. The aim of this study was to determine which of the three cognitive-behavioural approaches is the most effective at managing perfectionism. Again, perfectionism cognitions are measured alongside pre-competition emotions, cognitive appraisals, and performance satisfaction, and a single-subject multiple baseline design is used to compare the three approaches, along with two additional sessions at the start of the interventions aimed at decreasing stigma. The purpose of this study was to provide Sport and Exercise Psychologists with more robust guidance on the most effective approach when working with perfectionistic athletes.

4.1 History of cognitive-behavioural approaches

CBT is an umbrella term used to describe a broad set of approaches. It is also a term used to identify a specific and discreet type of therapy. To avoid confusion, the term “cognitive-behavioural approaches” is used hereafter when referring to the broad category of approaches and CBT when referring to the discreet therapy (Watson et al., 2023). The research on cognitive-behavioural approaches spans well over 70 years and is a scientific set of approaches that is used as a means to support complex psychological problems (e.g.,

anxiety and depression) (Thoma et al., 2015). In fact, cognitive-behavioural approaches are largely synonymous with empirically supported, evidence-based psychological theories and technologies aimed at improving the human condition (Wittchen et al., 2015).

Cognitive-behavioural approaches have changed dramatically over time (see Hayes, 2004). In fact, cognitive-behavioural approaches have evolved into different directions. This evolution has given rise to three different waves of cognitive-behavioural approaches. However, there are similarities between the waves. For example, cognitive-behavioural therapists tend to focus primarily on the present rather than the past (Herbert & Forman, 2011). Furthermore, therapists that use cognitive-behavioural approaches tend to use homework as a means of supporting treatment adherence (LeBeau et al., 2013), as treatment is only effective if homework is completed (see Kazantzis et al., 2017 for a review). Despite these similarities, there are important differences that define each wave.

4.1.1 First wave cognitive-behavioural approaches

This first wave of cognitive-behavioural approaches was originally developed in the 1940s. Returning World War 2 veterans needed short-term relief for their depression and anxiety following the war. The only short-term relief that was readily available at this time were behavioural approaches. This was largely due to the work of Burrhus Frederic Skinner, one of the originators of behaviourism. As described by Moore (2022), behaviourism or behavioural learning theory assumes that learning is built on responses to environmental stimuli (Thorpe, 1963). Therefore, behaviour can be explained by understanding the stimuli and the consequences that follow it.

The first wave of cognitive-behavioural approaches focused on learned behaviour and the association between stimuli and problematic behaviour. As Hupp et al. (2008) highlighted, the first wave used the principles of operant learning and classical conditioning. Therefore, the first wave went no further than basic learning. For example, operant

conditioning (Skinner, 1953) is based on basic positive and negative reinforcement. As described by Hupp et al. (2008), Skinner (1953) derived the principles of operant conditioning from Thorndike's Law of Effect, which suggests that a behaviour producing a favourable outcome is more likely to reoccur, while a behaviour producing an unfavourable outcome is more likely to decrease in frequency (Thorndike, 1911).

4.1.2 Second wave cognitive-behavioural approaches

The second wave of cognitive-behavioural approaches had a much greater emphasis on cognitive mediation and cognitive concepts (e.g., irrational thoughts). As recently described by Beck and Fleming (2021), Aaron Beck is globally recognized as the originator of CBT. In addition, Beck was a psychiatrist in the 1950s and primarily used psychoanalysis when supporting his patients. However, he recognized that patients did not have an innate need to suffer (as described by psychoanalytic theory; Freud, 1940), but patients had underlying negative beliefs associated with loss and failure. Beck then realized that these underlying beliefs were negative automatic thoughts, which he could collaborate and evaluate. By helping patients correct negative automatic thoughts, he was able to help them feel better and engage in more adaptive behaviours. He called his new therapy "Cognitive Therapy".

As noted by Beck and Fleming (2021), Cognitive Therapy (CT) is now recognized as CBT (although CT is still a widely used therapeutic approach). Here, CBT states that people are more negatively affected by their automatic thoughts. This means that assumptions and presumptions control us and our reactions far more than events or situations (Hayes & Hofmann, 2018). CBT explores how cognitions (thoughts, values, attitudes, and beliefs) affect emotions and behaviour. It is the most widely practiced and researched cognitive-behavioural approaches used across the world (David et al., 2018). But despite the success of CBT on mental health, cognitive-behavioural approaches have continued to develop.

4.1.3 Third wave cognitive-behavioural approaches

The final wave of cognitive-behavioural approaches are an extension and evolution of the previous two waves. Third wave cognitive-behavioural approaches share an emphasis on acceptance and mindfulness (Merwin et al., 2019). These approaches do not just seek to solve problems. They focus on the processes involved in better understanding the context of the issue at hand. The aim of these third wave approaches is to help people become aware of their thoughts and accept them in a non-judgemental way (Hunot et al., 2013)

The third wave of cognitive-behavioural approaches have greater emphasis on social constructivism and the notion of changing the function of thoughts (or consequences) without needing to change their form (or content). Where second wave cognitive-behavioural approaches seek to reduce and eliminate thoughts and behaviours, third wave cognitive-behavioural approaches look towards values and acceptance. Third wave approaches emphasise acceptance of thoughts (Hayes et al., 1999). Further, third wave cognitive-behavioural approaches focus on context, processes, and function of internal experiences.

One approach that is becoming synonymous with third wave cognitive-behavioural approaches is ACT. According to Hayes (2004), ACT targets the emotional response and discourages emotional suppression. This is very different to first and second waves where the aim is often a reduction or change in cognitions (Hofmann & Asmundson, 2008). In addition, ACT aims to increase cognitive flexibility by promoting acceptance of thoughts, being present, and using values (Hayes et al., 2004). The primary aim of ACT is to reduce psychological inflexibility rather than reduction symptoms (Hacker et al. 2016).

4.2 Cognitive Behaviour Therapy

CBT is considered by many psychologists as the most evidence-based treatment for several psychological syndromes (e.g., depression, anxiety; Hofmann et al., 2013). CBT is a second wave cognitive-behavioural approach and targets thoughts, feelings, and behaviours.

CBT is based on the cognitive model and suggest that if you have a negative experience, you might experience negative emotions as a result, and those bad feelings might then lead you to behave in a certain way. CBT aims to change one thing, for example thoughts, and that this will ultimately change the wider cognitive model (see Beck & Haigh, 2014).

There is an abundant amount of research using CBT as a means to reduce anxiety and other problematic emotions. For example, Saddichha et al. (2014) explored the effectiveness of internet-based CBT interventions aimed at reducing negative emotions (e.g., anxiety and depression). The systematic review included 33 studies for depression and 24 studies for anxiety, all of which used CBT techniques including psychoeducation, behavioural activation, cognitive restructuring, social skills training, and relaxation. Twenty-nine of the studies used a RCT research design, with a mixture of therapist led and self-guided. The results showed that there were larger effect sizes for interventions that were therapist led than self-guided. In addition, there were medium to large effect sizes for both anxiety and depression when delivered by a therapist. This review provides strong support for utilizing internet-based interventions for both anxiety and depression.

CBT has also been shown to reduce negative emotions in athletes. For example, in a case study, Gustafsson et al. (2017) showed that an exposure intervention (a typical technique from CBT) reduced competition anxiety in a female cross-country skier. In another example, Olmedilla et al. (2019) demonstrated the effective use of a CBT intervention with male youth football players. They found a significant improvement in stress control from pre to post intervention. Finally, Isorna-Folgar et al. (2022) found improvements in stress control and performance enhancement in a group in a sample of youth rowers following a CBT intervention. The aforementioned studies provide strong evidence of the efficacy of CBT interventions for athletes.

CBT has also been shown to be an efficacious and effective intervention in managing perfectionism across several domains (Lloyd et al., 2015). Recently, for example, Shafran et al. (2017) delivered an online CBT intervention to 120 perfectionistic adults (M age = 28.9 years). Using an RCT, they found significant decrease and main effect in perfectionism in the intervention group compared to the control group. Specifically, they found a significant decrease in Concerns Over Mistakes. However, despite this, there was over 70% of participants completed less than half of the intervention. This demonstrates the difficulties of supporting people with perfectionism, who often have high levels of stigma.

CBT is also emerging as an effective tool at reducing perfectionism in athletes. For example, Donachie and Hill (2020) delivered a CBT-based self-help book. They found between-group differences for perfectionism cognitions, anxiety, and happiness following the intervention. This maintained at a 5-week follow for perfectionism cognitions and anxiety, but not for happiness. In addition, they found significant interaction effects for perfectionism cognitions, SPP, anxiety, anger, and dejection.

4.3 Acceptance & Commitment Therapy

ACT is a third wave cognitive-behavioural approach (Hayes et al., 1999). Rather than seeking to change thoughts and feelings, ACT seeks to change the function of events and the relationship people have with them (Hayes, 2004). ACT is sensitive to how ‘workable’ someone’s problems are, and how these bond with their values. It is this workability that determines change through contextualism rather than through mechanism (Hayes, 1993). With a large emphasis on human language and cognitions, ACT is grounded within Relational Frame Theory (RFT; Hayes et al., 2001). Through this connection of language, ACT promotes psychological flexibility to enable people to gain a sense of coherence and quality (Hayes et al., 1999).

ACT is quickly becoming a preferred cognitive-behavioural approach to reduce negative emotions and a wide range of disorders. For example, Trompeter et al. (2015) delivered an ACT intervention in a sample of adults. The ACT intervention group showed significantly greater improvements in depression compared to the two other groups. In a final example, Maghsoudi et al. (2019) explored the effectiveness of an ACT intervention for emotional distress. A sample of elderly people were randomly assigned to either an ACT intervention group or a control group. Mean scores were lower for the intervention group compared to the control group both post-intervention and 3-month follow-up.

There is strong evidence and support for the use of ACT in sport. For example, in a recent systematic review, Noetel et al. (2019) reviewed 66 studies all using either ACT, self-compassion, or mindfulness-based interventions. From the RCT studies, they found moderate to large effect sizes for reducing anxiety when comparing to a control group. In addition, there was some support for enhancing athletic performance, with large effect sizes when compared to a waitlist control group. Finally, the review found support in ACT for injured athletes and rehabilitation adherence following an ACT intervention.

There is also growing support for ACT in reducing perfectionism. For example, Ong et al. (2019) tested the efficacy of a ten-week ACT intervention for clinical perfectionism and global outcomes (e.g., anxiety). A sample of adults with clinical levels of perfectionism were randomly assigned to an intervention group or a waitlist control group. Participants completed measures of perfectionism, quality of life, distress, and values, pre-, post-intervention, and one-month follow-up. The findings revealed that the ACT group had significantly lower scores for clinical perfectionism than the control group. Despite the success of the ACT intervention in this study, there was a dropout rate of over 35%. This follows a similar theme from other intervention studies and needs to be a consideration for future interventions.

There is a limited, yet growing body of research on the use of ACT with athletes with higher levels of perfectionism, too. In the first example, De Petrillo et al. (2009) delivered a 4-week mindful sport enhancement intervention with a group of recreational long-distance runners. They found improvements for the experimental group for Personal Standards (a dimension of PS) and Parental Criticism (a dimension of PC) following the intervention. In another example, Kaufmann et al. (2009), again delivered a 4-week mindful sport enhancement intervention, but this time with archers and golfers. The findings were less successful, with some dimensions of perfectionism increasing (e.g., Parental Expectations). However, somatic anxiety significantly decreased following the intervention for the archers.

4.4 Rational Emotive Behaviour Therapy

REBT is a second wave cognitive-behavioural approach that provides a theoretical framework to identify and change irrational beliefs through cognitive restructuring and endorsing rational beliefs (Ellis, 1957). REBT promotes psychological health and well-being, and assumes that all disturbance occurs as a consequence of dysfunctional information processing (Ellis, 1962). REBT at its core holds that rational and irrational beliefs are key cognitive mediators between our inferences and our emotional and behavioural consequences. Ellis (2002) listed perfectionism as one of the 12 irrational beliefs and because of this, perfectionism should be viewed as an irrational belief that can be managed using REBT.

There is some useful research that helps demonstrate REBT's effectiveness at reducing negative emotions. For example, David et al. (2008) explored the effectiveness of REBT, CT, and medication on depression. A sample of adults with depression were randomly assigned to a REBT group, a CT group, and a medication group. The findings showed a large significant effect for depression for the REBT group at the 6-month follow-up compared to the CT group and the medication group. In a second example, Ede et al. (2020)

explored REBT on parenting stress in families of children with autism spectrum disorders. A sample of adults with high levels of stress were randomly assigned to either a REBT intervention group or the control group. The results of the study found a significant improvement in the management of parenting stress among parents in the REBT intervention at the post-intervention and the 6-month follow-up compared the control group.

In sport, there seems to be more research examining the effectiveness of REBT on athletic performance and related emotions. For example, Wood et al. (2018) explored the effectiveness of REBT for athletic performance outcomes. A sample of elite paralympic athletes received five, one-to-one REBT sessions. The results revealed significant reductions in irrational beliefs, reductions in systolic blood pressure (an indicator of adaptive physiological response), improved athletic performance during competition simulations, and reductions in avoidance goals. This study highlights the positive performance and psychological benefits that REBT can have for athletes.

Despite Ellis' strong views towards perfectionism, there is very little research using REBT to manage perfectionism either inside or outside of sport. In fact, there is only one study. Using a sample of female students, Yang and Han (2020) delivered a REBT based intervention to reduce binge eating. Using an experimental research design, they found that there was a greater decrease in perfectionism in the intervention group than that of the control group. They also found that neuroticism and anxiety (aspects and consequences of perfectionism) reduced from pre to post intervention. Despite the lack of attention towards REBT and perfectionism in sport, it seems important to investigate this type of cognitive-behavioural approach.

4.5 Purpose of study three

The present study aims to compare different cognitive-behavioural approaches with view to identifying which is the most effective at reducing perfectionism in sport. Previous

research has shown that all the proposed cognitive-behavioural approaches have had success at managing perfectionism or the consequences of perfectionism, predominantly outside of sport. Therefore, these approaches need to be tested inside of sport to determine which is the most effective at managing perfectionism. Therefore, it was hypothesized that there would be a reduction in perfectionism cognitions, threat and loss appraisals, negative emotions, and an increase in challenge appraisals, positive emotions, and performance satisfaction for each athlete in each of the three groups.

4.6 Method

4.6.1 Participants & procedures

An original sample of 15 participants agreed to take part in the study. However, three participants withdrew during week 1 of the study due to injury and were therefore all excluded (they did receive support for their individual issues). The remaining participants ($n = 12$) were male academy rugby league players, aged between 18 and 21 ($M = 19.1$ years, $SD = 0.99$), and trained between 9 and 15 hours a week ($M = 12.0$, $SD = 2.04$). All participants self-identified as being perfectionistic. The study was approved by the university's ethics committee and informed consent was obtained from all participants.

The participants were randomly assigned to one of three cognitive-behavioural intervention groups (CBT, $n = 4$; ACT, $n = 4$; REBT, $n = 4$) and received eight, one-to-one sessions for 6 weeks. All participants completed measures of perfectionism cognitions, cognitive appraisals, pre-competition emotions, and performance satisfaction, once a week for 15 weeks. A staggered design was adopted, meaning that participants started at different weeks.

4.6.2 Design

The study used a single-subject multiple baseline design with three groups. A single-subject multiple baseline design is characterized by a baseline (A) and an intervention (B),

with the timings of the intervention staggered to enhance the conviction that observed effects are a function of the intervention (Kazdin, 1982). This design offers experimental as well as an ideographic platform to observe intervention effects (Barker et al., 2013). All outcome variables (perfectionism cognitions, cognitive appraisals, pre-competition emotions, and performance satisfaction) were collected from all participants at pre-intervention, during the intervention, post-intervention and at a 3-month follow-up.

4.6.3 Intervention

Participants received a 6-week long intervention, receiving eight sessions each lasting around 60 minutes. The first two sessions were aimed at developing their attitudes towards sport psychology support. This meant that each intervention group received six sessions based on that particular cognitive-behavioural approach. In addition, each participant received inter-session homework tasks (Thelwell et al., 2008). This supports adherence as well as the overall impact of the intervention. Each session corresponded to an aspect of perfectionism (e.g., fear of failure). This design feature was put in place to remove as much bias and ambiguity as possible from the results. Details of the aims, content, and homework assignments for all interventions are provided in [Appendix E](#).

4.6.3.1 CBT intervention outline

Psycho-education and self-monitoring

Each participant in this group received sessions on psycho-education and self-monitoring. The athlete will learn about the dysfunctional behaviours (i.e., thoughts, feelings/physical, and behaviours), their functions, and the rationale for the intervention. An increased understanding of the experienced problem can bring about great relief to the athlete. Each participant will learn about the effective strategies founded in evidence-based research to help overcome the problem (Clark & Beck, 2010). The athlete will also be educated on the role of self-monitoring, and how this can lead to more healthy understanding

on the role of thoughts. Allowing the athlete to monitor when certain thoughts are present (automatic thoughts).

Evaluating and changing self-evaluation

Negative self-evaluations are negative thoughts that commonly occur when you encounter an 'At-Risk Situation' where your unhelpful rule or assumption is broken, and your negative core beliefs have been activated. When this happens, you will tend to evaluate yourself in a negative way, becoming harsh and critical of who you are as a person – which is a core principle of perfectionism. Each participant will work through some examples of negative self-evaluations from the participant's perspective and begin to write these down and discuss them. They will rate them on how much they believe these self-evaluations from 1 to 10. This will help the participants have a balanced self-evaluation. In addition, to help overcome these self-evaluations participants will begin to challenge them and see fact over fiction.

Dealing with rigid rule and extreme standards

Unhelpful rules are those that are inflexible, rigid, and unreasonable. For example, holding the belief "I must never make mistakes" is unreasonable in the sense that it is unlikely that one would be able to maintain this standard and this means one are likely to feel bad when one made any mistake. It is not possible or reasonable to expect yourself to "never" make a mistake so this type of unhelpful rule will only keep you feeling bad about yourself. In this session, participants will need to view rules as guidelines, rather than strict beliefs. So, in this session, the focus is on one unhelpful rule. Determine where it comes from. Question how realistic the rule is. Recognise the negative consequences of the rule and to identify a more helpful rule.

Challenge cognitive bias

Selective abstraction (Beck, 1976) or 'Mental filters' are where athletes only focus on one stimulus, that is often negative, despite there being many positives that were also present. This develops higher levels of self-criticism, and the athlete develops a cognitive bias towards negative events. So, the objective of the session is to help the athlete think more logically and rationally, reducing the cognitive distortion. One tool to do this is using cognitive restructuring, which has been shown to have positive effects on athletes' sportsperson-like emotions (e.g., Haney, 2004), and stress appraisals and performance (e.g., Didymus & Fletcher, 2017). Cognitive restructuring aims to help people reduce stress through cultivating more positive and functional thought habits and is a core therapeutic ingredient of CBT (Clark, 2013).

Dealing with self-criticism and increasing compassion

Self-critical individuals experience feelings of unworthiness, inferiority, failure, and guilt. They engage in constant and harsh self-scrutiny and evaluation, and fear being disapproved and criticized and losing the approval and acceptance of others (Blatt & Zuroff, 1992). An important technique to increase someone's self-worth, and decreasing self-criticism is to focus on being compassionate to oneself. Participants will be required to re-direct attention so that it create a better sense of perspective. Furthermore, participants will learn some imagery techniques to increase their self-compassion.

Relapse prevention

Coping strategy and is attempting to put it into practice they are vulnerable to relapsing and using other (less adaptive) coping strategies. Relapse management can be used to reinforce use of the new coping strategy. In this session, the athlete will be asked what they can continue to do to maintain their thinking. What have they learnt? What was most useful part? What can I continue to do to prevent a setback? What are the situations that might cause

a setback? What are the signs? What if I lose control? If I do have a setback, how can I make sense of it? What have I learned previously that will help?

4.6.3.2 ACT intervention outline

Contacting the present moment

The meaning of the session is being in the moment to help produce psychological flexibility" (Hayes et al., 2012). Present moment awareness is used in ACT to connect the world around you through your senses and various meditations allow a chance to practice this skill. In the session, the participant will be taken through meditation and breathing techniques. This will help them notice the changes in their relaxed body, and the senses that help them connect to the present. This session, along with the entire ACT intervention, is designed to develop psychological flexibility.

Defusion

This is the process of looking at thoughts rather than from thoughts; of noticing thoughts rather than becoming caught up in thoughts; of letting thoughts come and go rather than holding onto them (Harris, 2009). The purpose of defusion is to bring awareness to the participants thought process and then accept any unhelpful thoughts and thereby relinquish their control over the client's actions. Creative hopelessness (Hayes et al., 1999) was used to show clients that what they have been trying currently has not been working, and thus they will be more motivated towards trying a new option. Once the participant has given their previous techniques, they will be asked if they have worked or not. This will build a feeling in the participant that they need to try something different.

Acceptance

This process means making room for negative experiences in our minds. One does not have to like any of the painful things one has experienced or any of the unpleasant thoughts one has, but acceptance simply means allowing them to be. The quicksand metaphor (Harris, 2009) was used to explain how dealing with emotions is much the same as dealing with

getting stuck in quicksand: ‘the more one struggles the harder they pull one in’. The acceptance scale (Harris, 2009) was then given to the participant to allow them to quantify how much they deemed they were able to accept an emotion. In the session, one will discuss different emotions. This entailed observing the feeling, where it occurred in his body, drawing an outline of it, noting its temperature, colour, labelling it, breathing into it, and finally moving towards acceptance of it.

Values

This process encourages us to identify what one wants to stand for, what truly matters to us. Identifying your own values can help you to make decisions in regard to taking action about behaviour change. In ACT, values act like a compass, giving the client a direction by identifying what gives their life meaning. The first exercise was to look at past moments of joy and pain, where the participant is instructed to write down a moment in their life that was particularly painful and one that was particularly joyful. This was to help prime the participant for the session and help them uncover what is valuable to them.

Self

Adopting an observer perspective can help us put some distance between who one is and problematic domains in life that one might be overidentifying with. Quite similar to the Common Humanity construct of Self-Compassion, this process is viewing our psychological and physical experiences as transient and ever-changing (Neff, 2003; Neff & Tirsch, 2013). Becoming self-transcendent so that one perceives our emotions, sensations, thoughts, and more as peripheral and dynamic is to step away from the alternative—where they define us (Koltko-Rivera, 2006). Your Observer Self means is not defined by the roles you have identified; rather, it’s the constant that can view the changes taking place. The observer experiences what you’re doing, thinking, and feeling, and simply watches.

Committed action

This is where the participant begins making values-congruent action. In this process, individuals make behaviour change that is based upon their own values. The main exercise in the session is goal setting. What goals from the intervention will help the participant continue to adhere to the exercise and processes conducted? Using the acronym SMART, each participant will construct several process goals, performance goals and outcome goals. These will act as an anchor for the participants to depart from the services of the psychologist.

4.6.3.3 REBT intervention outline

Education of REBT

The primary objective of this phase is to teach the athlete about the ABCDE process of REBT and to ascertain whether the athlete wishes to pursue this strategy or not. Participants are informed that when facing adversity (A) it is their beliefs (B) about the adversity that determines their emotional and behavioural responses (C), not the adversity alone. In the session, it is vital at this stage that the athlete realises that it is their beliefs that are leading to anxiety, and that they can develop their ability to alter and control their beliefs, and thus control their emotional and behavioural responses. Light discussion on how REBT links with the ABCDE process, with examples of what these looks like.

Finding emotional responses and adversity & finding irrational beliefs

The education phase aimed to teach the client that it is their beliefs (B) that determine their emotional and behavioral consequences (C), rather than the adversity alone (A) (Dryden & Branch, 2008). REBT anxiety is considered unhealthy as it is associated with behaviours that are incongruent with goal attainment. The healthy alternative to anxiety is concern, in that it is associated with behaviours congruent with goal attainment. To understand whether the participant, when faced with adversity, is anxious or concerned, it is important to explore the action tendencies. the emotional response (C) is usually the main performance issue (e.g., anxiety) characterised by particular behavioural indicators (e.g., action tendencies).

Throughout the education phase the client's emotional responsibility was emphasized, highlighting the B (Belief) – C (Consequence) connection, rather than the adversity (A) being solely responsible for her response (Ellis & Dryden, 1997).

Irrational beliefs vs. Rational beliefs

Adopting an ABCDE model, the practitioner rather than disputing the adversity (A), disputed (D) the participants existing IBs (B) and strengthened the new effective (E) RBs, thus promoting healthy emotions, and adaptive behaviors (Ellis & Dryden, 1997). The practitioner and participant discuss how certain IRs have been formed and what a RB might look like, and how one can begin thinking in this manner. It is important to reinforce the link between rigid demands (I must) and dysfunctional emotions (e.g., anxiety), and flexible preferences (I want) and functional emotions (e.g., concern).

Awfulizing

To help dispute awfulizing, the participants complete a badness scale advocated for brief therapy (Ellis et al., 1997). A scale from 0% to 100% is drawn on a white board or large piece of paper and presented to the athlete are 10 possible adversities they may face in their life, both in sport and out of sport. Importantly the adversities usually include failure in important situations, along with such events as stubbing a toe, being permanently injured, contracting an incurable disease, being assaulted, losing a loved one, shrinking their kit, being slowly tortured, their house being burned down, and ruining their favourite piece of kit (e.g., cricket bat, football boots, hockey stick). The athlete then places the adversities on the badness scale by considering how bad they are in relation to 0-100%.

Pragmatics

Often, the pragmatic strategy is the most difficult part for athletes in the process as they realise, to their disappointment, that their strongly held and frequently used irrational belief may not be helping and may actually be contributing to their performance issues. In pragmatics the athlete is asked “where is this irrational belief getting you?” to which athletes

usually reply “nowhere” or “not where I want to be.” In short, this stage is asking “what is the point in having this irrational belief if you are getting so anxious that it stops you from achieving your goals?” This is an important strategy as it more strongly than any of the previous steps helps the athlete to realise that it is not the coach or the important competition causing anxiety.

Reinforcing effective beliefs

To gauge and reassert the participants understanding of REBT they participated in ‘Rational Reverse Role-play’ (RRR; Kassino & DiGiuseppe, 1975). Here the practitioner became the client who role-played an athlete with irrational beliefs, whilst the participants acted as the practitioner actively elicited, disputed, and replaced the irrational beliefs with new effective rational beliefs. The aim of this last session is to help the participant better understand their rational beliefs and commit to these.

4.6.4 Measures

4.6.4.1 Perfectionism cognitions

To measure perfectionism cognitions, the PCI-10 (Hill & Donachie, 2019) is used. The PCI-10 is a short version of the original 25-item Perfectionism Cognitions Inventory (Flett et al., 1998). Participants indicated how frequently they experienced different perfectionistic thoughts (e.g., “Why can’t I be perfect?”) over the last week on a 5-point scale (0 = ‘not at all’, 4 = ‘all of the time’). The PCI-10 has adequate internal reliability (Cronbach’s $\alpha > .70$; Hill & Donachie, 2019).

4.6.4.2 Cognitive appraisals

To measure cognitive appraisals, the ALE (Ferguson et al., 1999) is used. The ALE is an adjective checklist that assesses an athletes’ perception of their environment using threat (6 items, e.g., ‘Threatening’), challenge (6 items, e.g., ‘Exciting’), and loss (4 items, e.g., ‘Pitiful’). The ALE includes 16 items scored on a 6-point Likert scale (0 = ‘not at all’ and 5 =

‘very much so’). A number of previous studies have provided evidence of its reliability and validity (e.g., Dixon et al., 2017).

4.6.4.3 Pre-competition emotions

To measure pre-competition emotions, the SEQ (Jones et al., 2005) is used. The SEQ measures negative (14 items; e.g., ‘anxiety’ and ‘dejection’) and positive (8 items; e.g., ‘happiness’ and ‘excitement’) emotions. Participants are asked to indicate how you feel right now, at this moment to their upcoming sports competition on a 5-point scale (0 = ‘not at all’, 4 = ‘extremely’). The SEQ has been reported to be a reliable measure of both pre- (Cronbach’s $\alpha > .81-.88$) and post- competition (Cronbach’s $\alpha > .70-.89$) emotions (Allen et al., 2011).

4.6.4.4 Performance satisfaction

Participants rated their performances out of 10 using a self-report measure after each match/performance (Didymus & Fletcher, 2017). Based on the procedure outlined by Levy et al. (2011), the participants rated their performance satisfaction on a 10-point Likert rating scale (1 = ‘totally dissatisfied’ and 10 = ‘totally satisfied’). The performance satisfaction measure instructed players to record how satisfied they were with their most recent individual performance, rather than the performance of the team.

4.6.5 Social validation

Social validation data was collected at the 3-month follow up period, using semi-structured interviews. These interviews were brief (no more than 15 minutes per participant) and aimed at understanding the participants thoughts and feelings towards the intervention. This is an integral part of single case research (Barker et al., 2013).

4.6.6 Data analysis

4.6.6.1 Visual analysis

Intervention effects were inferred when two of the following criteria were met (Barlow & Hersen, 1984): (1) the last few data points of the baseline were stable, or in the opposite direction to the predicted effects of the intervention; (2) there were a minimal number of overlapping data points between baseline and treatment phases, (3) there was an immediate effect following the intervention, and (4) there was a larger effect size in comparison to the baseline (Hrycaiko & Martin, 1996). Visual analysis helps identify step changes from pre to post intervention. And emphasizes practical rather than statistical significance (Barker et al., 2011).

4.6.6.2 Statistical analysis

Descriptive statistics, % change, Cohen's d (using pooled standard deviations; Cohen, 1992)² and the PND (Scruggs & Mastropieri, 2001) are provided to compare pre-intervention and post-intervention scores (post-intervention scores did not include the 3-month follow-up score). As there can be interpretation difficulties associated with the use of Cohen's d in the context of single-case designs (see Scruggs & Mastropieri, 2001), we use the PND as the primary metric to evaluate the effectiveness of intervention. PND has routinely correlated very well with visual analysis judgments during meta-analysis (Parker et al., 2011). PND is the proportion of data points in a given treatment condition that exceeds the extreme value in the baseline condition (Scruggs & Mastropieri, 2001). PND is used to compare post-treatment scores to pre-treatment scores and use $>.90$ indicate very effective treatment, $.70$ to $.89$ to indicate moderate effective treatment, $.50$ to $.69$ to indicate debatable effective treatment, and scores less than $.50$ as not effective (Scruggs & Mastropieri, 1998). This technique has been used previously (Watson et al., 2022).

² Cohen's d should be interpreted with caution due to small and uneven number of data points.

4.7 Results

The results are presented in three paragraphs for each group. First, the intervention effects for each participant for all variables using % changes are provided. Second, the PND scores to evaluate the effectiveness of each intervention for each group. Finally, social validation data is used to account for participants' perceptions of the intervention. Follow-up scores are excluded from post-intervention means, SDs, and effect size calculations. Results are reported for the CBT group in Table 5 and Table 6, ACT group in Table 7 and Table 8, and the REBT group in Table 9 and Table 10. Figures for perfectionism cognitions (Figure 6), threat (Figure 7), challenge (Figure 8) loss (Figure 9), anxiety (Figure 10), dejection (Figure 11), anger (Figure 12), excitement (Figure 13), happiness (Figure 14), and performance satisfaction (Figure 15) are also provided.

4.7.1 CBT

In the CBT intervention group, all participants reported a decrease in perfectionism cognitions between 15% to 24%. All participants had a decrease in threat between 21% to 33%. All but one participant reported a decrease in loss between 12% and 27%. All participants reported an increase in challenge between 16% to 31%. All participants negative pre-competition emotions decreased between 15% to 45%. All participants reported an increase in both excitement between 6% and 33% and happiness between 37% to 52%. Finally, all participants reported an increase in performance satisfaction between 62% to 150%.

For participant A, changes were suggestive of being not effective (anger & excitement), moderately effective (happiness, threat, & loss), and very effective (perfectionism cognitions, anxiety, dejection, challenge, & performance satisfaction).

Table 5 Means, standard deviations, pooled effect sizes, % changes, and PND for Perfectionism Cognitions, Cognitive Appraisals, and Performance Satisfaction during the pre and post CBT intervention

Notes. Abbreviations: M = means; SD = standard deviations; Cohen's d = pooled effect size, PND = Percentage of non-overlapping data.

	Perfectionism Cognitions					Cognitive Appraisals										Performance Satisfaction									
						Threat			Challenge				Loss												
	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND
A	3.07 0.06	2.32 0.21	4.69	-24	100%	3.50 0.17	2.78 0.44	2.19	-21	83%	2.06 0.10	2.61 0.14	4.63	27	100%	3.00 0.25	3.38 0.31	1.34	13	83%	3.67 0.26	7.00 0.34	-2.53	91	100%
B	3.93 0.08	3.25 0.11	6.83	-17	100%	4.33 0.17	3.03 0.07	10.04	-30	100%	2.61 0.10	3.42 0.36	3.09	31	100%	3.50 0.00	2.54 0.37	3.69	-27	100%	3.00 0.00	7.50 1.11	-4.29	150	100%
C	3.60 0.07	2.85 0.06	12.50	-21	100%	4.39 0.10	2.94 0.54	3.70	-33	100%	2.39 0.10	2.86 0.19	3.17	20	100%	3.00 0.25	2.58 0.20	1.81	-14	83%	4.33 0.71	7.00 0.89	-0.15	62	100%
D	3.77 0.05	3.20 0.06	9.44	-15	100%	4.72 0.09	3.56 0.66	2.49	-25	100%	2.94 0.10	3.42 0.09	4.72	16	100%	3.75 0.00	3.29 0.10	6.55	-12	100%	3.33 0.55	6.67 1.21	-2.51	100	100%

Table 6 Means, standard deviations, pooled effect sizes, % changes, and PND for Pre-Competition Emotions during the pre and post CBT intervention

	Pre-Competition Emotions																								
	Anxiety					Dejection					Anger					Excitement					Happiness				
	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND
A	2.67 0.23	1.93 0.37	3.01	-33	100%	2.74 0.23	2.13 0.16	3.00	-22	100%	2.58 0.29	2.21 0.33	1.21	-15	33%	2.08 1.44	2.21 0.33	-0.12	6	0%	2.08 0.29	3.00 0.42	-2.55	44	83%
B	3.60 0.20	1.97 0.23	7.42	-45	100%	2.93 0.31	1.73 0.21	4.62	-41	100%	2.92 0.14	1.67 0.13	8.93	-43	100%	1.83 0.14	2.42 0.34	-2.24	32	83%	1.67 0.29	2.42 0.20	-3.00	45	100%
C	3.73 0.12	2.43 0.54	3.33	-35	100%	3.07 0.12	2.43 0.45	1.92	-21	83%	3.08 0.14	2.25 0.45	2.53	-27	100%	1.83 0.29	2.33 0.20	-2.00	27	83%	2.08 0.38	3.17 0.20	-3.49	52	100%
D	3.93 0.12	2.50 0.39	4.94	-36	100%	3.20 0.00	2.27 0.30	4.44	-29	100%	2.75 0.25	2.25 0.00	2.78	-18	100%	2.00 0.00	2.67 0.47	-2.02	33	100%	2.25 0.25	3.08 0.26	-3.33	37	100%

Notes. Abbreviations: M = means; SD = standard deviations; Cohen's d = pooled effect size, PND = Percentage of non-overlapping data.

For participant B, changes were suggestive of being moderately effective (excitement) and very effective (perfectionism cognitions, threat, challenge, loss, anxiety, anger, dejection, happiness, & performance satisfaction). For participant C, changes were suggestive of being moderately effective (dejection, excitement, & loss) and very effective (perfectionism cognitions, threat, challenge, anxiety, anger, happiness, & performance satisfaction). Finally for participant D, changes were suggestive of being very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, excitement, happiness, & performance satisfaction).

Participants reported feeling more positive towards themselves, especially after suffering a bad result or poor individual performance. For example, Participant A said, “I find myself having more resilience...I don’t become critical about myself or others straightaway”. Participants in the CBT group also reported having less perfectionistic thoughts. For example, Participants D said, “I definitely don’t have the same pressure to be perfect all of the time anymore...It’s such a weight off my shoulders”. All the participants also reported evaluating their performances more positively. For example, Participant B said, “I don’t have the same reaction after games. I can think about the game and my performance more logically”.

4.7.2 ACT

In the ACT intervention group, all participants reported a decrease in perfectionism cognitions between 59% to 69%. All participants had a decrease in threat between 37% to 48%. All but one participant reported a decrease in loss between 27% and 42%. All participants reported an increase in challenge between 31% to 48%. All participants negative pre-competition emotions decreased between 29% to 63%. All participants reported an increase in both excitement between 33% to 232% and happiness between 30% to 372%.

Table 7 Means, standard deviations, pooled effect sizes, % changes, and PND for Perfectionism Cognitions, Cognitive Appraisals, and Performance Satisfaction during the pre and post ACT intervention

	Perfectionism Cognitions					Cognitive Appraisals										Performance Satisfaction									
						Threat					Challenge					Loss									
	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND
E	3.88 0.06	1.58 0.31	9.98	-59	100%	4.38 0.21	2.78 0.14	9.31	-38	100%	2.17 0.19	3.20 0.30	4.14	48	100%	4.13 0.14	2.40 0.38	5.95	-42	100%	3.25 0.00	8.60 1.13	-5.05	165	100%
F	3.98 0.05	1.54 0.11	27.06	-61	100%	4.46 0.09	2.37 0.18	14.93	-47	100%	2.25 0.17	3.27 0.25	4.85	45	100%	3.75 0.20	2.75 0.40	3.23	-27	100%	2.75 0.50	9.00 0.69	-5.73	227	100%
G	3.90 0.08	1.44 0.10	27.33	-63	100%	3.67 0.00	2.30 0.18	10.55	-37	100%	2.04 0.09	2.67 0.39	2.23	31	100%	3.38 0.25	2.30 0.45	2.99	-32	100%	2.25 0.45	9.20 0.58	-0.25	309	100%
H	4.00 0.00	1.24 0.06	69.00	-69	100%	4.50 0.00	2.33 0.26	11.40	-48	100%	2.09 0.17	2.87 0.14	4.88	37	100%	4.19 0.13	2.55 0.33	6.55	-39	100%	2.75 0.89	9.00 1.03	-4.50	227	100%

Notes. Abbreviations: M = means; SD = standard deviations; Cohen's *d* = pooled effect size, PND = Percentage of non-overlapping data.

Table 8 Means, standard deviations, pooled effect sizes, % changes, and PND for Pre-Competition Emotions during the pre and post ACT intervention

Pre-Competition Emotions																									
Anxiety					Dejection					Anger					Excitement					Happiness					
	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND
E	2.95 0.25	1.88 0.39	3.24	-36	100%	3.60 0.00	1.96 0.36	6.56	-46	100%	3.56 0.24	1.90 0.14	8.75	-47	100%	1.13 0.14	1.80 0.96	0.98	60	40%	2.31 0.13	3.00 0.50	-1.91	30	40%
F	3.85 0.10	1.44 0.09	26.78	-63	100%	3.05 0.19	2.16 0.33	3.30	-29	100%	3.69 0.38	1.55 0.11	7.63	-58	100%	1.88 0.14	2.50 0.31	2.60	33	20%	1.63 0.43	3.30 0.11	-5.23	103	100%
G	3.95 0.10	1.80 0.28	10.24	-54	100%	3.05 0.30	2.12 0.30	3.10	-30	83%	3.56 0.38	1.60 0.29	5.95	-55	100%	1.38 0.48	2.15 0.38	1.80	56	20%	1.13 0.14	2.40 0.14	-9.11	113	100%
H	3.85 0.10	1.20 0.28	12.62	-69	100%	3.35 0.25	1.76 0.36	5.13	-47	100%	3.31 0.13	1.85 0.29	6.65	-44	100%	0.81 0.13	2.70 0.11	15.73	233	100%	0.63 0.25	2.95 0.27	-8.94	372	100%

Notes. Abbreviations: M = means; SD = standard deviations; Cohen's d = pooled effect size, PND = Percentage of non-overlapping data.

Finally, all participants reported an increase in performance satisfaction between 165% to 309%.

For participant E, changes were suggestive of being debatably effective (excitement & happiness) and very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, & performance satisfaction). For participant F changes were suggestive of being moderately effective (excitement) and very effective (perfectionism cognitions, threat, challenge, loss, anxiety, anger, dejection, happiness, & performance satisfaction).

For participant G, changes were suggestive of being moderately effective (excitement) and very effective (perfectionism cognitions, threat, challenge, loss, anxiety, anger, happiness, & performance satisfaction). Finally, for participant H, changes were suggestive of being very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, excitement, happiness, & performance satisfaction).

Participants in the ACT group reported feeling pressure and expectation. For example, Participant F said, “I am definitely more relaxed about playing. I don’t have the same pressure or constant thought of ‘I must be perfect’ towards myself”. Participants in the ACT group also reported being calmer and accepting of performances. For example, Participants E said, “I just led mistakes go now... It’s such a weight off my shoulders”.

4.7.3 REBT

In the REBT intervention group, all participants reported a decrease in perfectionism cognitions between 6% to 17%. All participants had a decrease in threat between 40% to 42%. All but one participant reported a decrease in loss between 35% and 41%. All participants reported an increase in challenge between 29% to 50%. All participants negative pre-competition emotions decreased between 24% to 60%. All participants reported an increase in both excitement between 8% to 224% and happiness between 47% to 111%.

Table 9 Means, standard deviations, pooled effect sizes, % changes, and PND for Pre-Competition Emotions during the pre and post REBT intervention

	Perfectionism Cognitions					Cognitive Appraisals					Performance Satisfaction														
						Threat			Challenge		Loss														
	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND	Pre (M SD)	Post (M SD)	(<i>d</i>)	%	PND
I	3.54 0.06	3.33 0.10	2.69	-6	100%	3.60 0.28	2.13 0.09	7.36	-41	100%	2.00 0.00	2.71 0.08	11.83	36	100%	4.10 0.14	2.63 0.14	10.54	-36	100%	2.60 0.00	7.75 0.83	5.56	198	100%
J	3.88 0.05	3.35 0.12	5.89	-14	100%	4.00 0.17	2.33 0.00	13.92	-42	100%	2.03 0.14	2.71 0.08	5.63	33	100%	4.85 0.22	2.88 0.14	10.39	-41	100%	1.60 0.50	6.25 0.38	4.95	291	100%
K	3.80 0.07	3.35 0.06	7.50	-12	100%	3.97 0.08	2.38 0.16	13.26	-40	100%	2.27 0.09	2.92 0.10	7.21	29	100%	4.45 0.11	2.88 0.25	8.29	-35	100%	2.80 0.45	5.50 0.55	0.10	96	100%
L	3.82 0.06	3.18 0.06	10.75	-17	100%	4.13 0.18	2.42 0.32	6.59	-41	100%	2.47 0.08	3.71 0.08	15.55	50	100%	4.75 0.00	3.06 0.13	18.75	-36	100%	3.40 0.55	6.75 0.52	3.25	99	100%

Notes. Abbreviations: M = means; SD = standard deviations; Cohen's *d* = pooled effect size, PND = Percentage of non-overlapping data.

Table 10 Means, standard deviations, pooled effect sizes, % changes, and PND for Pre-Competition Emotions during the pre and post REBT intervention

Pre-Competition Emotions																									
Anxiety					Dejection					Anger					Excitement					Happiness					
	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND	Pre (M SD)	Post (M SD)	(d)	%	PND
I	3.32 0.23	1.50 0.12	10.11	-55	100%	2.88 0.11	1.50 0.12	12.55	-48	100%	3.50 0.31	1.75 0.00	7.95	-50	100%	2.00 0.14	2.81 0.96	9.03	41	100%	1.80 0.27	3.50 0.00	8.95	94	100%
J	3.96 0.09	1.60 0.00	39.33	-60	100%	3.32 0.27	2.50 0.12	3.90	-25	100%	3.35 0.22	2.13 0.14	6.45	-37	100%	0.85 0.14	2.75 0.00	19.00	224	100%	1.60 0.22	3.38 0.14	9.34	111	100%
K	3.92 0.18	2.15 0.25	8.05	-45	100%	3.52 0.11	1.95 0.10	15.70	-45	100%	3.60 0.22	2.31 0.52	3.22	-36	100%	1.65 0.22	2.38 0.14	3.82	44	100%	1.95 0.21	2.88 0.14	5.14	47	100%
L	3.84 0.09	1.80 0.28	9.71	-53	100%	2.88 0.11	2.20 0.00	8.50	-24	100%	2.90 0.14	2.13 0.14	6.65	-27	100%	2.75 0.00	2.98 0.05	5.63	8	100%	1.80 0.27	3.56 0.13	8.39	98	100%

Notes. Abbreviations: M = means; SD = standard deviations; Cohen's d = pooled effect size, PND = Percentage of non-overlapping data.

Finally, all participants reported an increase in performance satisfaction between 96% to 291%.

For participant I, changes were suggestive of being very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, excitement, happiness, & performance satisfaction). For participant J changes were suggestive of being very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, excitement, happiness, & performance satisfaction). For participant K, changes were suggestive of being very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, excitement, happiness, & performance satisfaction). Finally, for participant L, changes were suggestive of being very effective (perfectionism cognitions, threat, challenge, loss, anxiety, dejection, anger, excitement, happiness, & performance satisfaction).

Participants in the REBT group reported feeling less critical about themselves and others. For example, Participant L said, “Before, my immediate reaction was to shout at myself...now I think more rationally about the situation”. Participants in the ACT group also reported feeling happier and more positive. For example, Participants J said, “I don’t react to mistakes the same way...I am far happier now, even when I play in front of others”.

4.8 Discussion

The present study examined which cognitive-behavioural approach is the most effective at reducing perfectionism in sport. We expected to see a reduction in perfectionism cognitions, threat and loss appraisals, negative emotions, and an increase in challenge appraisals, positive emotions, and performance satisfaction for each athlete in each of the three groups. The results support all three of the cognitive-behavioural approaches in reducing and supporting the outcomes. The ACT intervention group saw the biggest reduction in perfectionism cognitions.

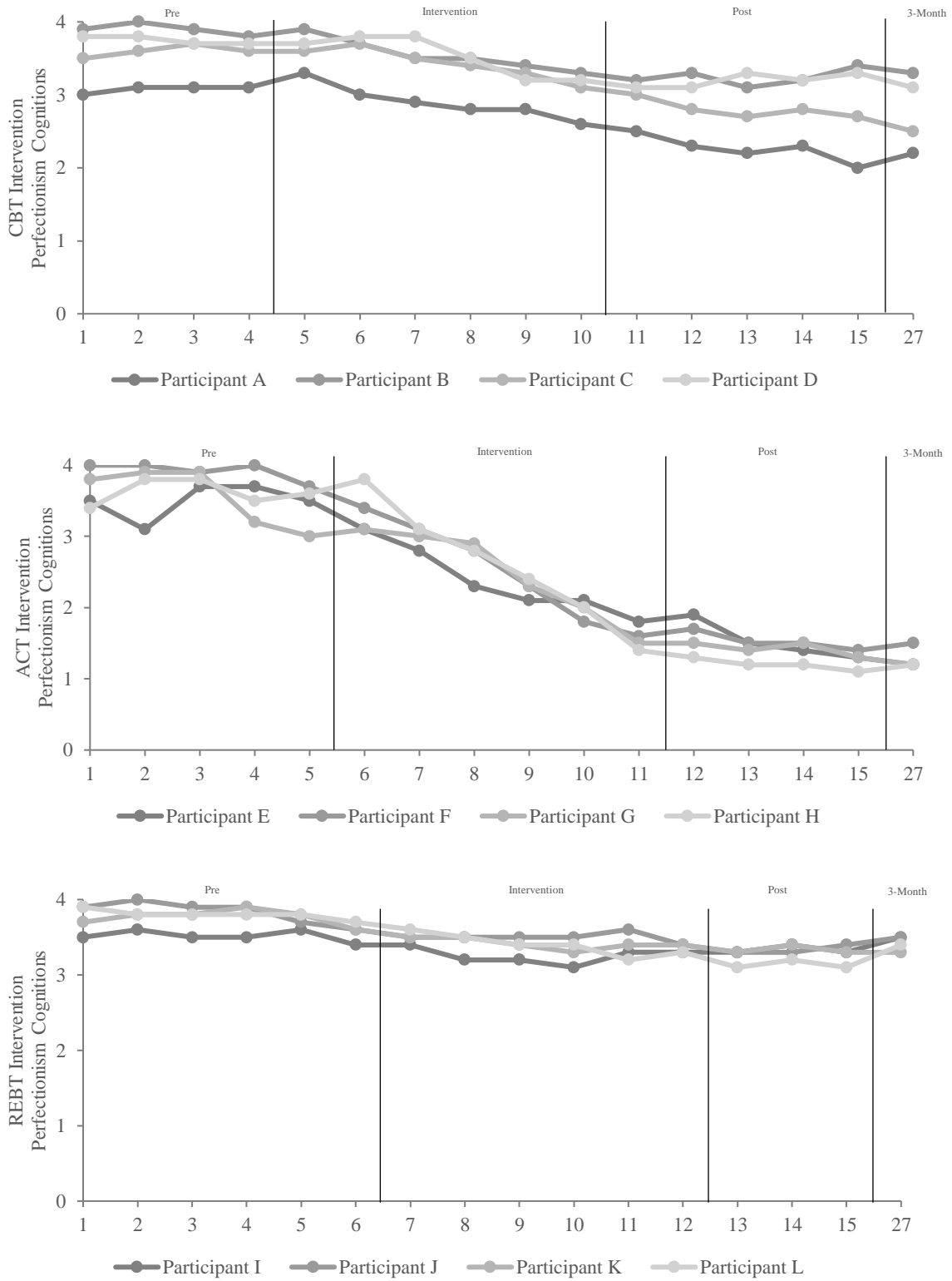


Figure 6 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Perfectionism Cognitions

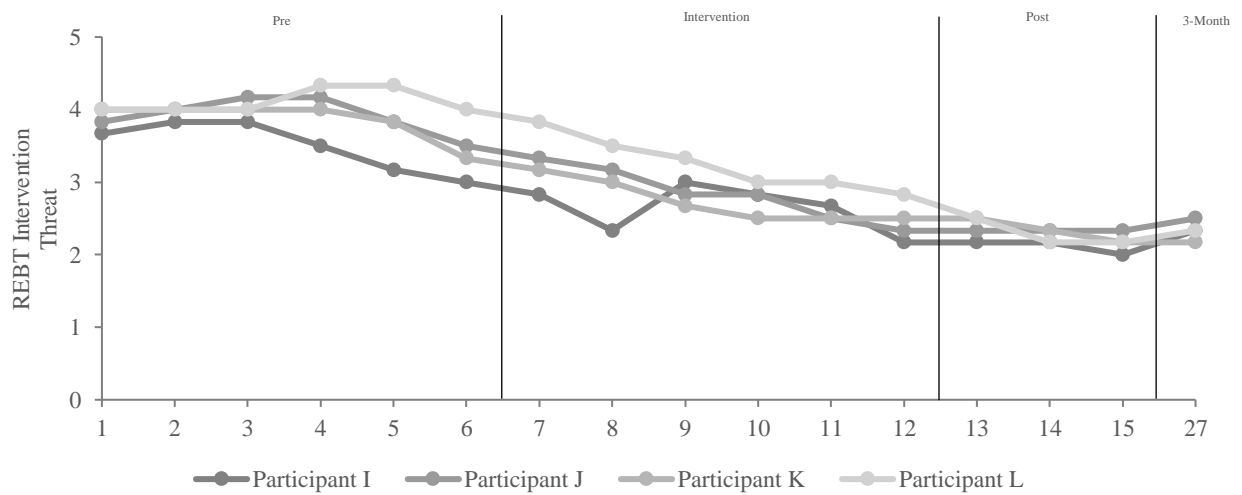
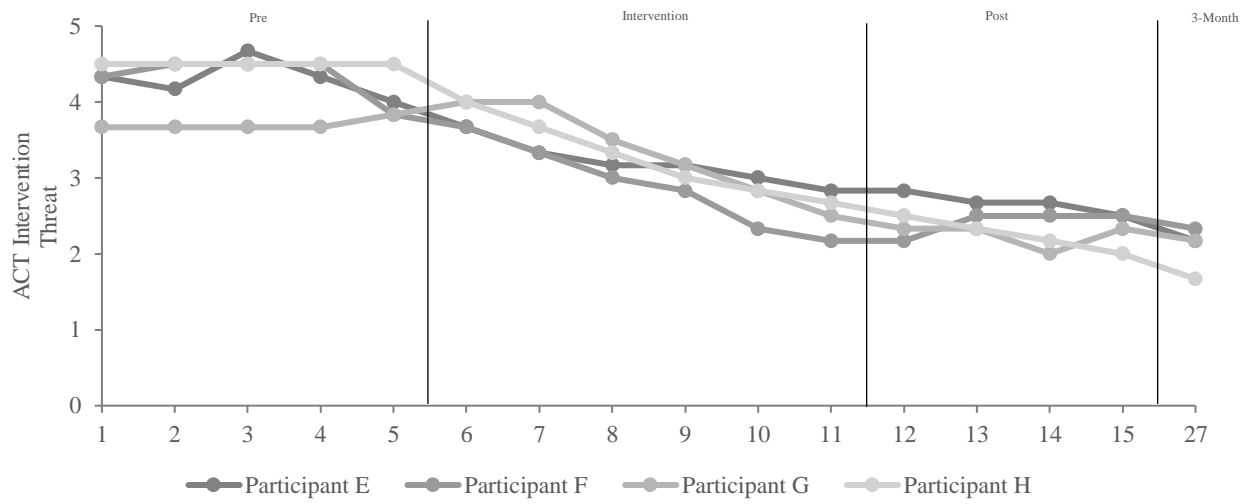
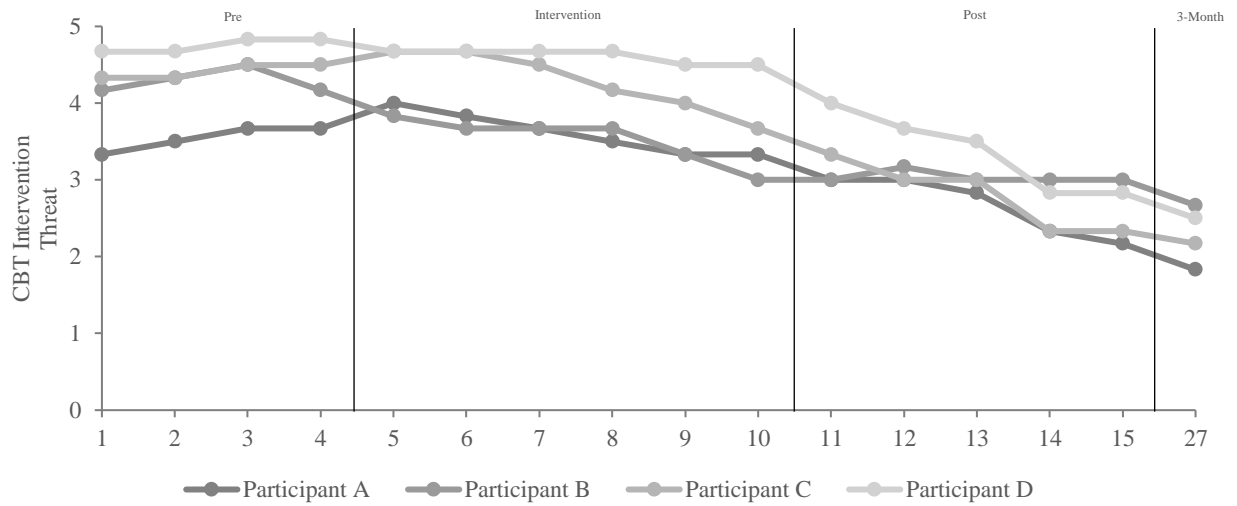


Figure 7 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Threat

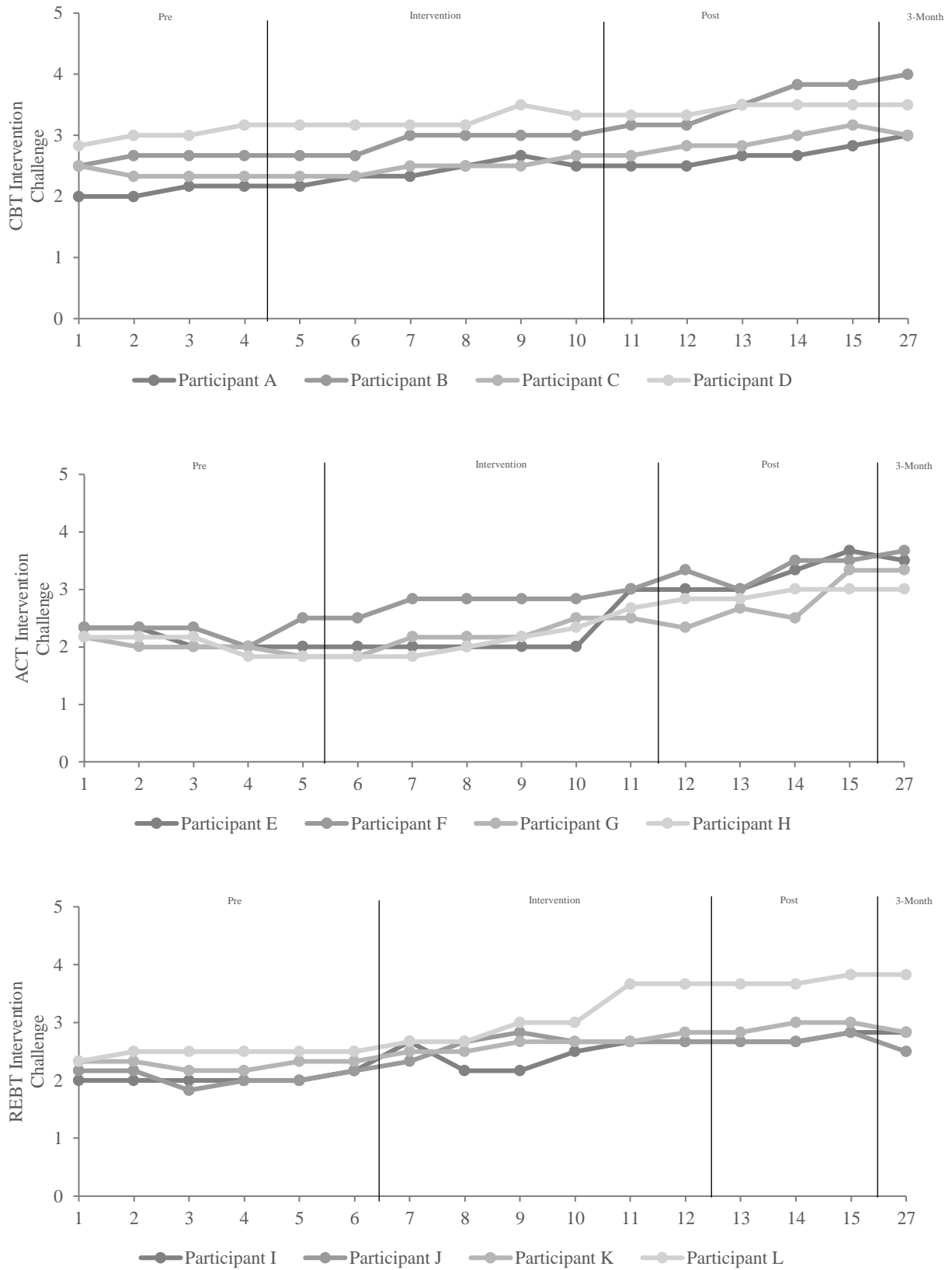


Figure 8 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Challenge

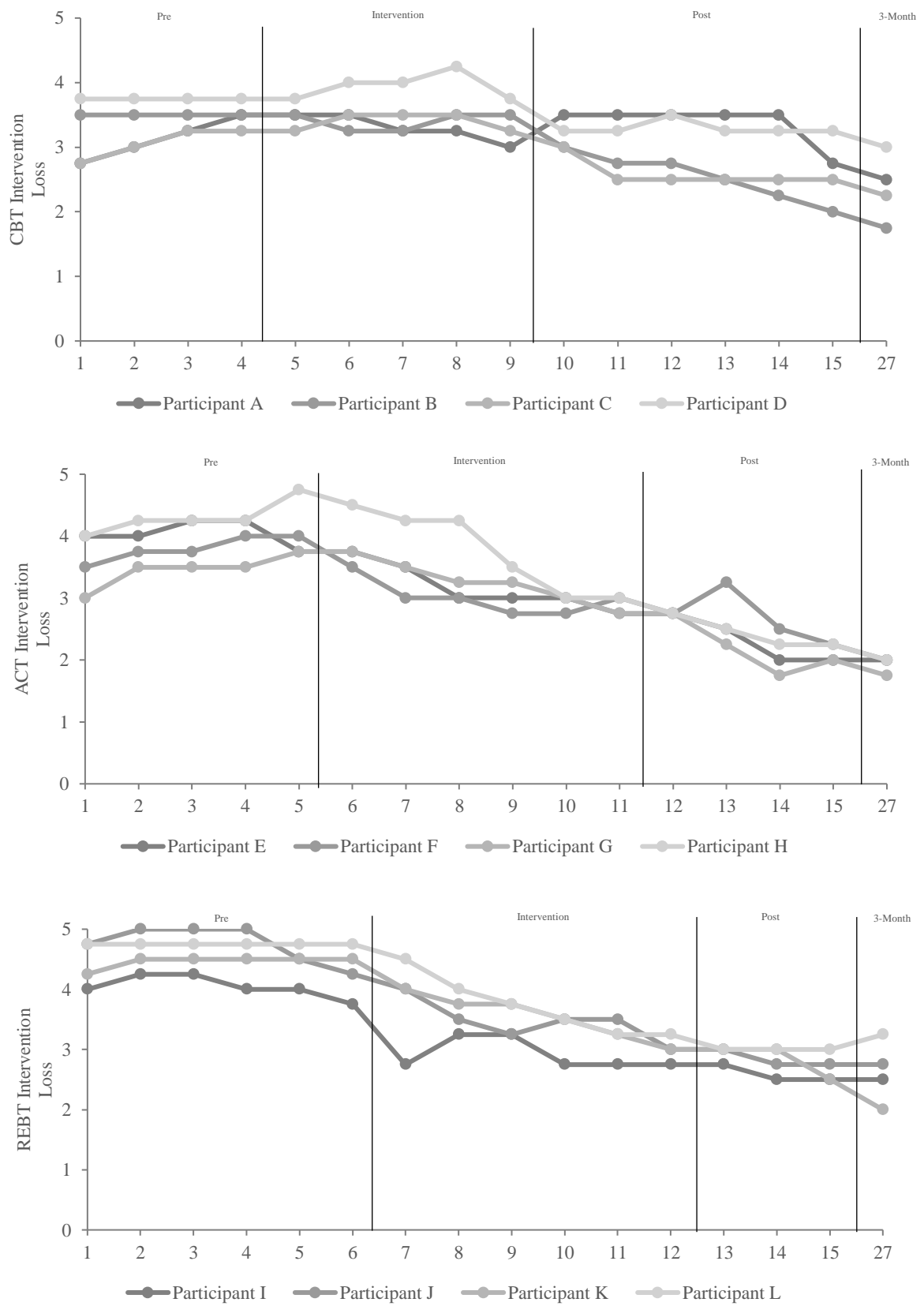


Figure 9 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Loss

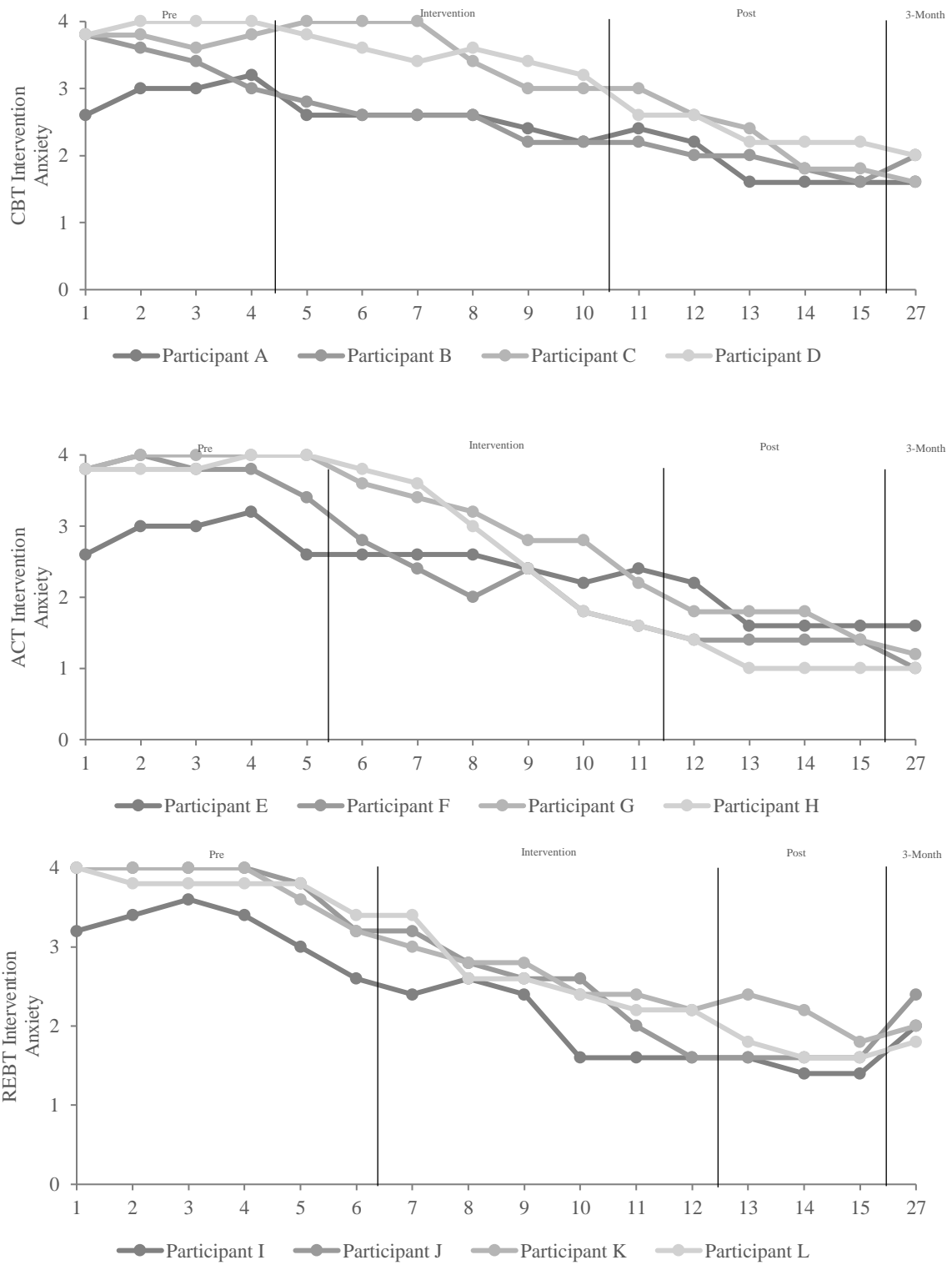


Figure 10 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Anxiety

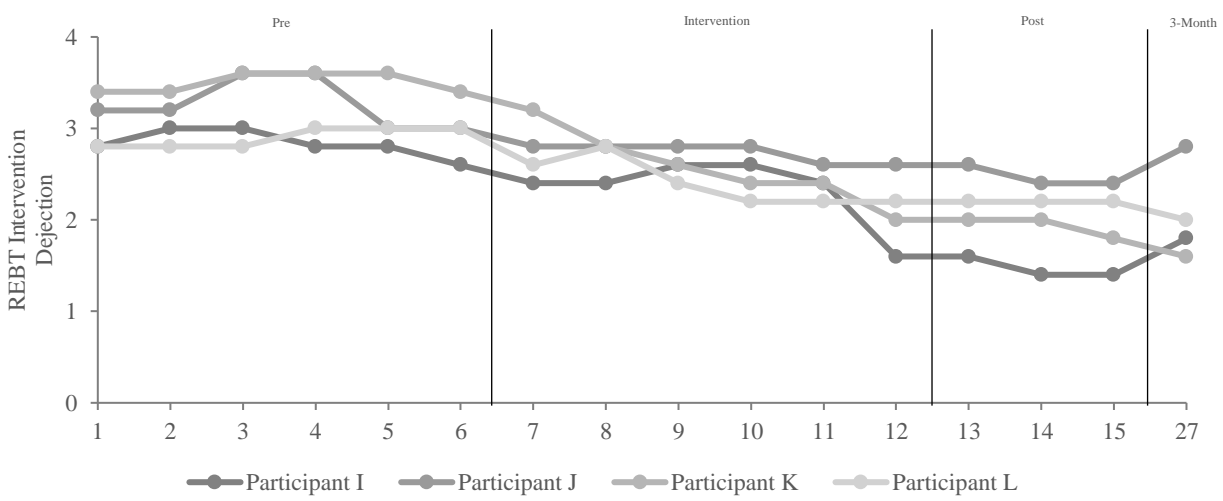
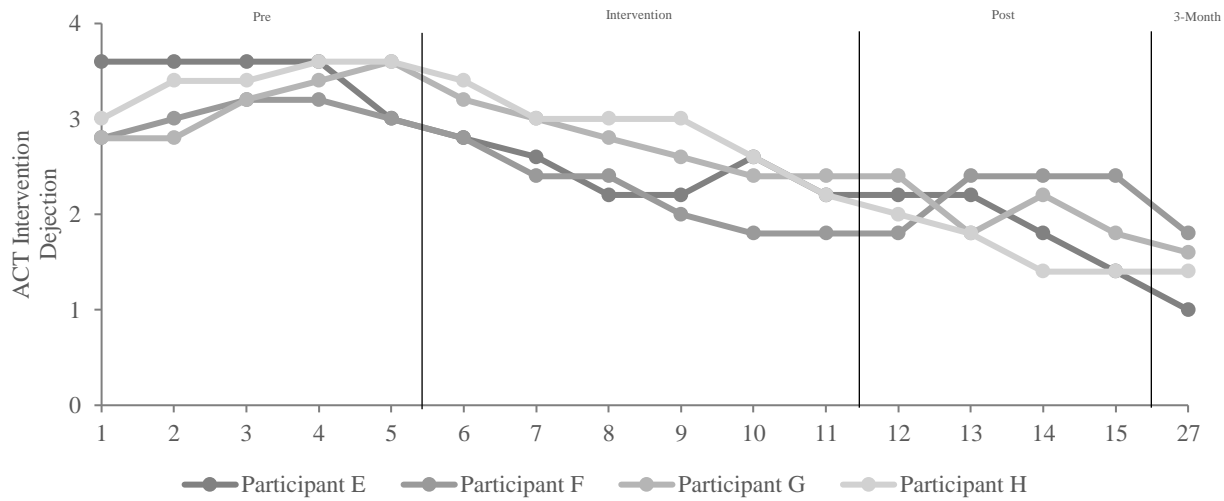
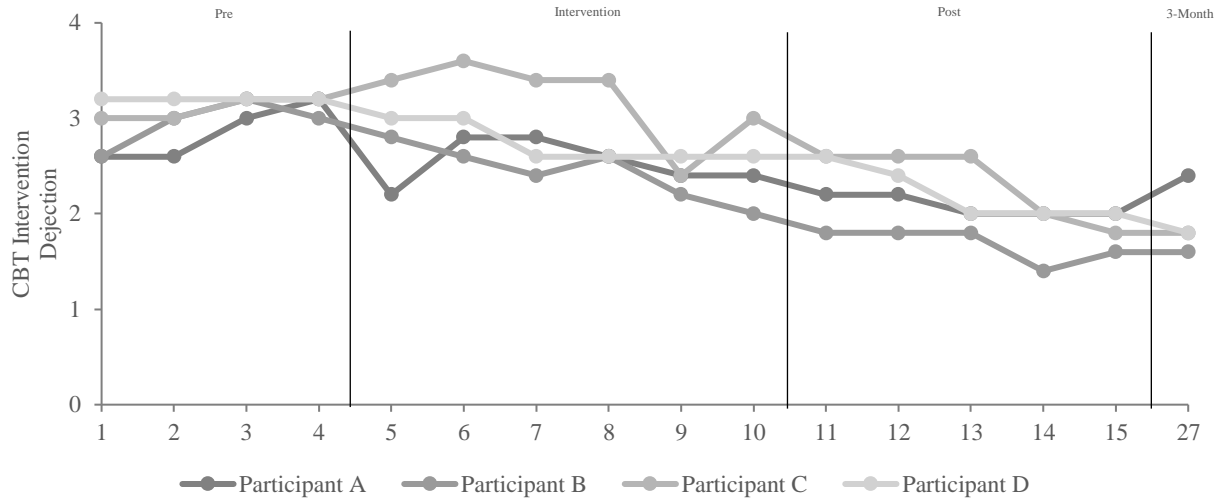


Figure 11 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Dejection

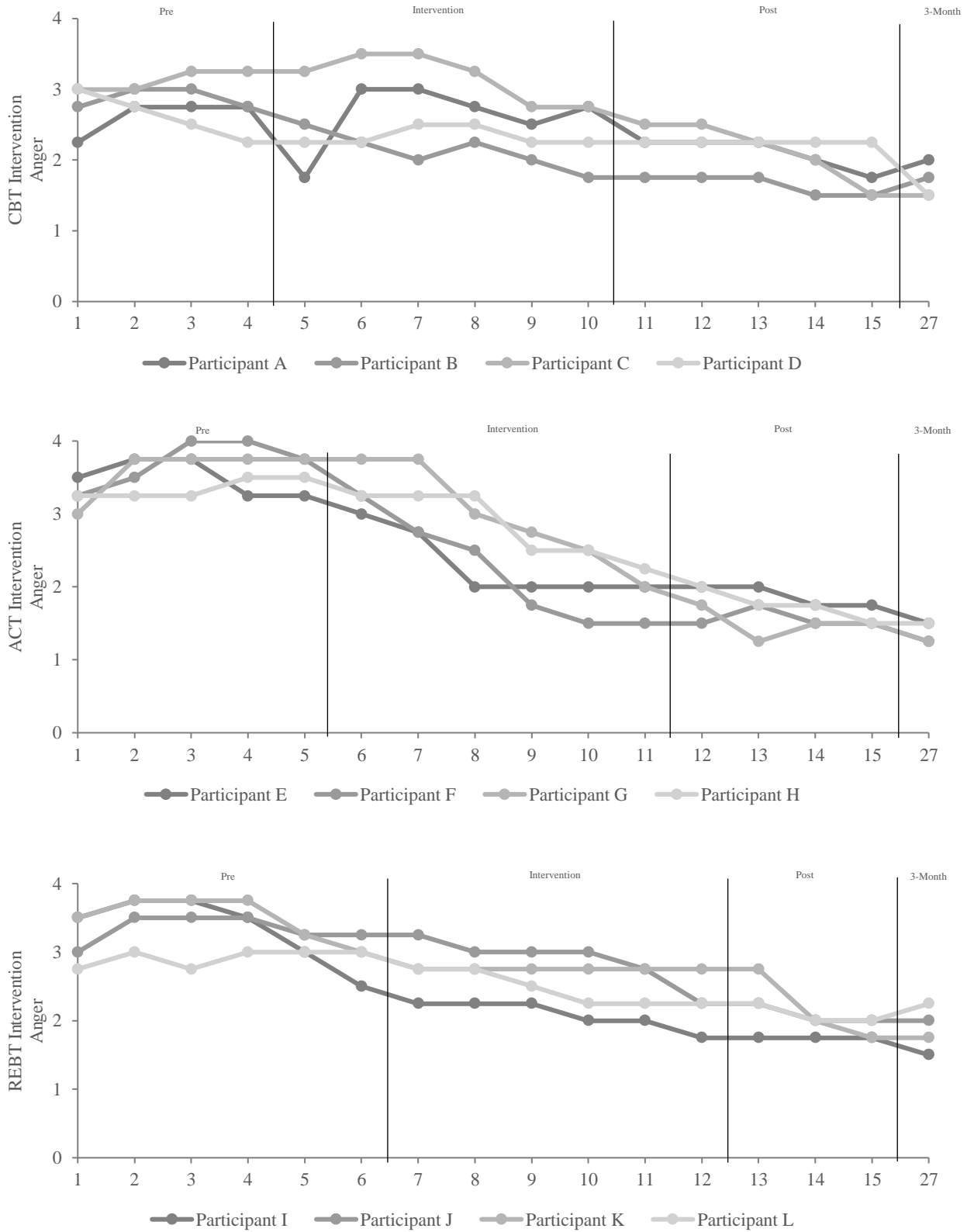


Figure 12 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Anger

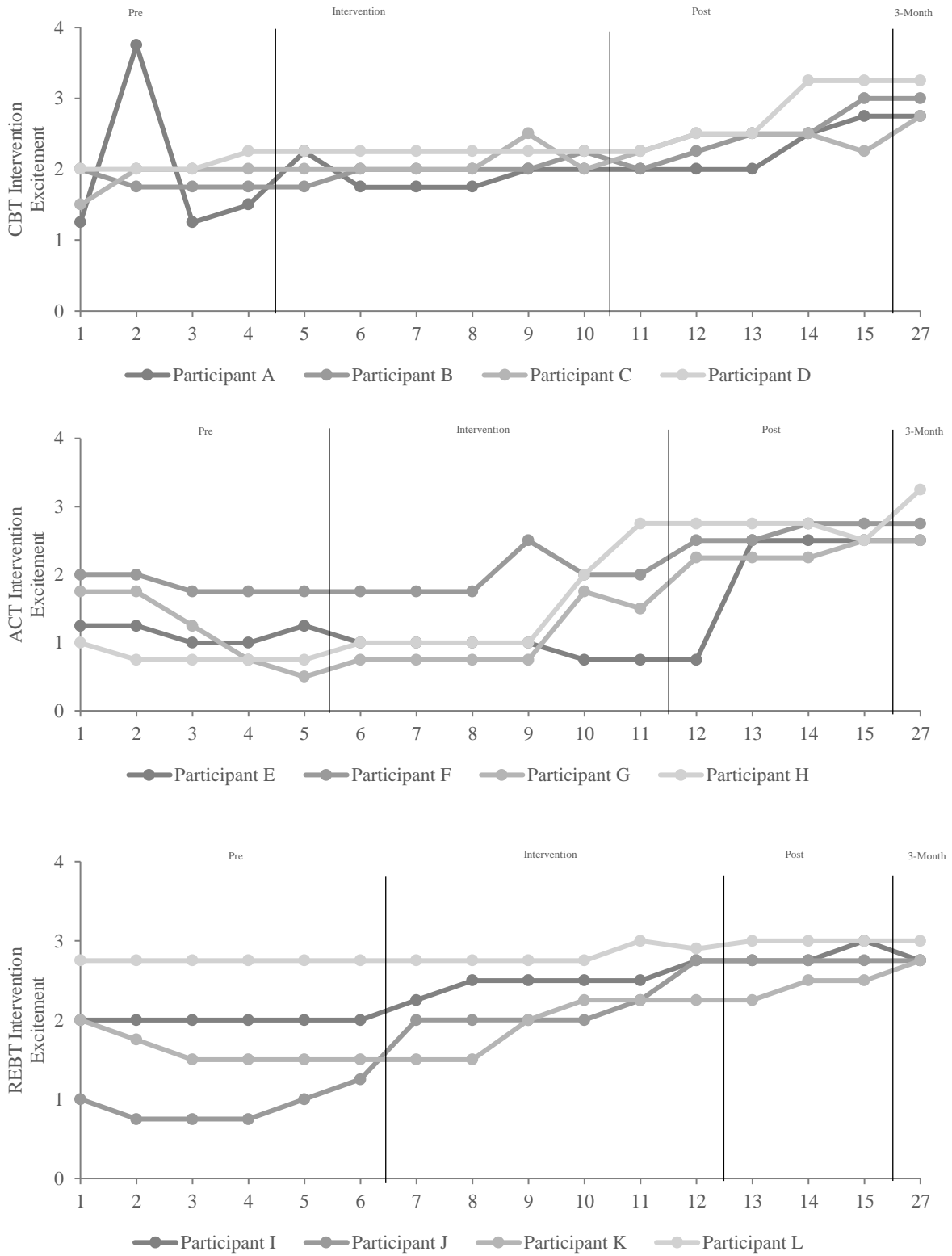


Figure 13 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Excitement

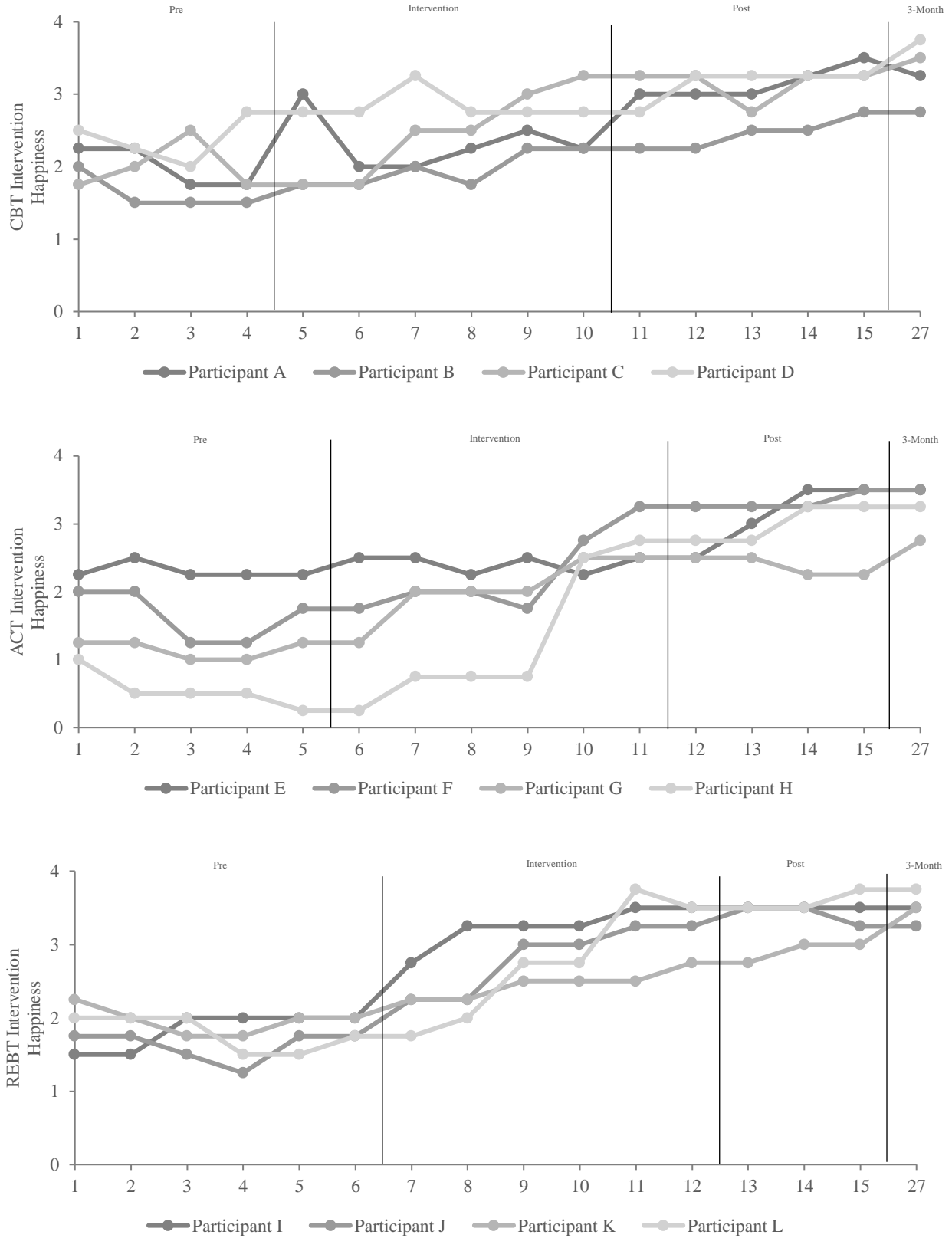


Figure 14 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Happiness

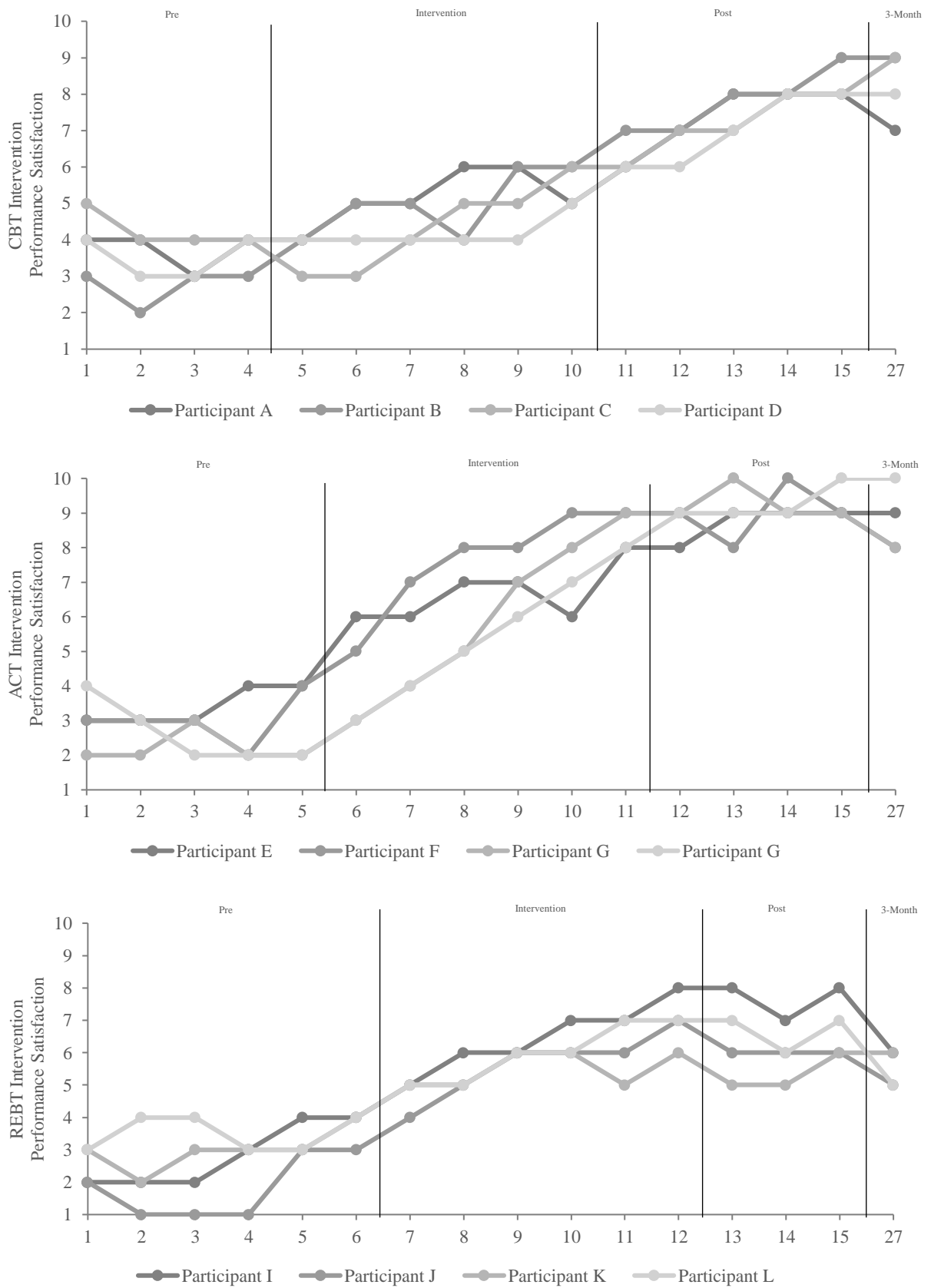


Figure 15 CBT, ACT, and REBT intervention groups for pre, post, and 3-month follow up for Performance satisfaction

4.8.1 Effects of CBT

All the athletes who received CBT reported very effective decreases in perfectionism cognitions (based on PND). Furthermore, three of the four participants reported a very effective decrease in threat appraisals and all the participants reported a very effective increase in challenge appraisals. However, this was not as consistent in regards to loss appraisals, with one participant increasing from pre to post. In regards to pre-competition emotions, all of the participants reported very effective decreases in anxiety. However, only three participants reported very effective decreases for both dejection and anger. Only one participant reported very effective increase in excitement and three for happiness. Finally, performance satisfaction increased for all participants and was deemed very effective.

This is the first evidence of the effectiveness of one-to-one CBT for athlete perfectionism beyond self-help workbooks (Donachie & Hill, 2020). There are explanations for the positive findings. An important part of CBT is changing thoughts, as well as changing perspective. Given that perfectionism is associated with rigid rules and dichotomous thinking (Shafran et al., 2016), it might be that these athletes in the CBT group have opportunities to change unhelpful perfectionistic thoughts (e.g., “I must be perfect”) with thoughts that have less emphasis on perfectionism. It is also possible that the CBT intervention allowed participants to replace some rigid rules with more flexible guidelines. It is important to remember that perfectionistic thoughts are ingrained ways of thinking (Pratt et al., 2022), and therefore restructuring could be beneficial for perfectionistic athletes and may explain the positive findings within this group.

The findings provide important insights on perfectionism in sport. Firstly, CBT can reduce frequent perfectionism cognitions in athletes. This also has benefits on some of the negative pre-competition emotions, too (e.g., anxiety). So, the findings here are similar to the findings outside of sport (see Galoway et al., 2022). Despite the decrease for all athletes in

this group, there needs to be caution as to how effective these findings are for all perfectionistic athletes. For example, excitement seemed to be a lot more variable in comparison to other pre-competition emotions, with some participants increasing and some decreasing. This may align with previous research as some perfectionistic athletes have a preference towards and value their perfectionism (Hill et al., 2015).

4.8.2 Effects of ACT

All the athletes who received ACT reported very effective decreases in perfectionism cognitions, to a greater degree than CBT. Furthermore, all athletes reported very effective decreases in both threat and loss appraisals and very effective increases in challenge appraisals. In addition, participants reported very effective decreases for anxiety, anger, and dejection. The findings for happiness and excitement were mixed (as was the case for the other two cognitive-behavioural approaches) between debatable, moderate, and very effective across the participants. Performance satisfaction was very effective for all participants.

The present findings provide the first evidence that ACT can reduce perfectionism in sport. Previous research has shown support for mindfulness (e.g., Kaufman et al., 2009), but yet to explore ACT. There are several reasons why ACT was effective for the perfectionistic athletes in the present study. Firstly, athletes who use ACT are able to accept mistakes, show more compassion to themselves, and align closer to their values (Hayes et al., 2004). This is likely to affect the frequency of perfectionism cognitions, as this set of athletes can now accept some of these thoughts. In addition, athletes in this group have an increased psychological flexibility and therefore are able to gain a sense of coherence of their emotions (Hayes et al., 1999). These aspects are an explanation of the decrease in some of the consequences of perfectionism (e.g., anxiety, dejection) as well as the decrease in the frequency of perfectionism cognitions.

Based on these findings ACT may play an important role in supporting athletes with perfectionism. For example, accepting mistakes, rather than ruminating over them, may alleviate many of the issues associated with perfectionism. In addition, being present, and not thinking about mistakes that may have happened in the past, might provide perfectionistic athletes with some respite from the relentless nature of their perfectionism. ACT may also be useful for frequent perfectionism cognitions. Here, allowing perfectionistic thoughts to come and go without engaging with them, may be particularly useful for perfectionistic athletes.

4.8.3 Effects of REBT

All of the athletes who received REBT reported very effective decreases in perfectionism cognitions, but less so than ACT. Furthermore, all athletes reported very effective decreases in both threat and loss appraisals and very effective increases in challenge appraisals. In addition, participants reported very effective decreases for anxiety, anger, and dejection. In contrast to the CBT and ACT group, the findings for happiness and excitement were very effective. Performance satisfaction was also very effective for all participants.

The present findings provide the first evidence of the effectiveness of REBT in sport for perfectionism. REBT allows athletes to identify and change irrational beliefs. In addition, a defining feature of REBT is to logically assess the nature of irrational thoughts and beliefs (Jordana et al., 2020). Some of these thoughts and beliefs are ingrained in perfectionism (e.g., “I must perform perfectly or others will criticise me”). In the present study, following the intervention, athletes in the REBT group are better able to logically rationalise situations and events that previously evoked stress. In addition, they may continue to experience frequent perfectionism cognitions, but are now able to logically rationalise these (Ellis & Dryden, 1997).

There are a number of reasons why REBT may be successful in reducing perfectionism in the current study. Firstly, athletes with high levels of perfectionism

encounter more frequent problematic irrational beliefs, therefore REBT may sit well at supporting perfectionistic athletes (Flett et al., 1991). Secondly, REBT teaches athletes to recognize these irrational (or perfectionistic) thoughts and beliefs, athletes are better prepared for the type of thought that may previously been disruptive. This could also be an explanation for the reduction in dysfunctional (unhealthy) emotions (e.g., anxiety, unhealthy anger, depression). These new rational beliefs promote functional emotions that are deemed supportive (Ellis & Dryden, 1997). However, caution is needed as REBT relies heavily on specific situations that evoke failure and rejection, which may create irrational and rational schemas. Drawing upon these might create further suppression and avoidance.

4.8.4 Comparison between CBT, ACT, and REBT

ACT provided the biggest and most effective change in perfectionism cognitions for the athletes in comparison to the other two cognitive-behavioural approaches. The findings here provide the first account of ACT in reducing perfectionism in athletes, supporting the work outside of sport (Ong et al., 2019). ACT was the most effective cognitive-behavioural approach for perfectionism because ACT allows deeply ingrained thoughts to be accepted and to pass by, which is seemingly more effective than trying to remove these thoughts altogether (Hill, 2023). In addition, ACT provides more flexibility around some of the frequent perfectionistic thoughts, making these thoughts more like guidelines rather than rules.

The findings for cognitive appraisals were more encouraging again for the ACT group compared to the CBT group. Clearly then, taking a ‘step back’ to assess a situation can reduce how certain situations can be perceived with more challenge and less threat and loss. Despite this, there were equally encouraging signs for the REBT group for cognitive appraisals. As such, trying to rationalise thoughts or accept thoughts maybe more beneficial than eliminating them altogether, especially for the appraisal of situations. For the CBT

group, their approach of eliminating or avoiding these situations and thoughts might not be possible, leaving these athletes with appraisals that reflect loss and threat.

In regards to pre-competition emotions, the ACT group was seemingly as effective for reducing negative pre-competition emotions, in comparison to the CBT and REBT groups. Perfectionistic athletes may get some benefit from any of the three approaches in this regard. However, positive pre-competition emotions were more complex. The REBT group was the most effective in making the athletes feel both excited and happy about competition. Here, irrational thoughts and beliefs may be tied to positive pre-competition emotions. In contrast, the CBT and ACT groups were both far less effective. This may suggest that it is possible to make perfectionistic athletes less angry, anxious, and dejected, using techniques from CBT, ACT, or REBT, but making them happier and excited towards competition is seemingly a far tougher task.

4.9 Conclusion

Athletes with higher levels of perfectionism are often face many problematic performance and well-being related issues. Therefore, it is imperative that athletes receive the most effective cognitive-behavioural approach available. The present study provides further evidence for the use of cognitive-behavioural approaches in reducing perfectionism and its negative consequences, with CBT, ACT, and REBT all having positive effects for perfectionism cognitions. However, there was strongest evidence for ACT in reducing perfectionism cognitions and its negative consequences.

Chapter 5 Effectiveness of an Acceptance and Commitment Therapy-Based Programme for Reducing Perfectionism in Football Players

The findings in chapter four indicated that three cognitive-behavioural approaches reduced perfectionism cognitions across all athletes. However, the ACT intervention was the most effective approach. In addition, the ACT intervention provided unequivocal support for pre-competition emotions, cognitive appraisals, and performance satisfaction. On this basis, ACT was selected as the intervention to be scaled up to an RCT for further evaluation in the final study of the thesis. This chapter describes an online ACT-based intervention for perfectionism and how it was rigorously tested. The aim of this study was to assess the effectiveness of an online ACT-based intervention for reducing perfectionism in football players. It was hoped that this study would provide increased support for ACT as a means of supporting perfectionistic athletes. In addition, the findings would provide much needed confidence for Sport and Exercise Psychologists in applying ACT techniques when working with perfectionistic athletes.

5.1 Research designs

To date, five studies have evaluated the effectiveness of interventions aimed at reducing perfectionism in sport. Interventions have been delivered in different sports (running, archery, golf, and football), using different types of interventions (mindfulness-based, compassion-based, CBT-based, and PST), and using different designs (pretest-posttest, RCT, and single-subject multiple baseline). Generally, this research has provided evidence that perfectionism in athletes can, to varying degrees, be reduced using different interventions. For example, in one of the two studies using an RCT design, a one-week

compassion-based intervention was found to reduce Concerns Over Mistakes in varsity athletes (Mosewich et al., 2013). In the only other study that used an RCT design, too, a seven-week CBT-based self-help intervention was found to reduce SPP and perfectionism cognitions in football players (Donachie & Hill, 2020).

An RCT is a type of research design where participants are randomly assigned to one of two or more groups. There are several strengths in using RCTs. Firstly, RCTs are the gold standard of research design for establishing causal conclusions (Cartwright & Munro, 2010). This is due, in part, to having two groups – a treatment group and a control group. The findings can then be compared between the two groups to estimate the average treatment effects. Secondly, RCTs provide a platform on which to deliver an intervention in a controlled way, whilst using randomization, blinding, and concealment (Sil et al., 2019). In these ways RCTs minimise the risk of confounding factors influencing the results. This study adopts this design to provide the first robust test of an online ACT-based intervention to reduce perfectionism in sport.

5.2 Acceptance & Commitment Therapy

ACT is a third wave cognitive-behavioural approach (Hayes et al., 1999). Rather than seeking to change thoughts and feelings (something you would expect to see from traditional CBT), ACT seeks to help individuals change their relationships with these thoughts and feelings (Hayes, 2004). ACT is sensitive to how ‘workable’ someone’s problems are, and how these connect with their values. It is this workability that determines change through contextualism rather than through mechanism (Hayes et al., 2006). With a large emphasis on human language and cognitions, ACT is grounded within Relational Frame Theory (RFT; Hayes et al., 2001). Through this connection of language, ACT promotes psychological flexibility to enable people to gain a sense of coherence and quality (Hayes et al., 1999). It

has been found to be an effective approach in a range of contexts including non-clinical samples and settings (e.g., Gagnon et al., 2019).

ACT has particular philosophical (Functional Contextualism) and theoretical (Relational Frame Theory) underpinnings. For a detailed discussion of these underpinnings, see Hayes (2004) and colleagues (e.g., Fletcher & Hayes, 2005; Hayes et al., 2006; Hayes et al., 2013). Here, it is highlighted that these underpinnings set this therapy apart from those in the first two waves and directs those using the approach to think in terms of subjective, value-led experiences, and contextual and relational (acquired) bases for experiences. In practice, ACT aims to support people to accept their difficult thoughts and feelings, and to break both the link between them and the desire to avoid them (Hayes, 2004).

The ability to accept the experience of problematic thoughts and feelings, remain present in the moment, and still behave aligned with one's values, is referred to as psychological flexibility (Bond et al., 2011.). Increasing psychological flexibility is considered one of the main processes of change in ACT and is developed through six-core processes: Being Present, Acceptance, Defusion, Values, Self, and Commitment (Hayes et al., 1999). Being present promotes direct contact with psychological events as they occur in that moment, rather than flicking between the future or the past. Acceptance involves embracing and accepting inner experiences rather than avoiding certain emotions and feelings. Defusion seeks to change the relationship with problematic thoughts. Values are activities that give life meaning and provide direction. Self is being aware of experiences without being attached or invested in them. Commitment is about setting goals in order to take action (Hayes et al., 2006).

ACT shares characteristics with other approaches in regards to how it is conducted. For example, during ACT interventions there is reliance on homework to be completed by clients between sessions. In addition, the success or failure of an ACT intervention will be

influenced by how much the individual participates and engages in the homework (see LeBeau et al., 2013). There is a strong emphasis on the therapeutic alliance which in ACT is described as “important, powerful, and deliberately equal” (Hayes, 2004, p. 652). Forming a strong therapeutic alliance is likely to lead to greater athlete disclosure (Katz & Hemmings, 2009). However, this is something that both therapists and clients can find difficult (Eubank et al., 2014). The importance of the therapeutic alliance is especially noteworthy here as there are suggestions that perfectionism can interfere with its development (Miller et al., 2017; Hewitt et al., 2020).

5.2.1 ACT interventions

The research exploring ACT interventions in promoting physical activity has recently been summarised in a meta-analysis and systematic review (Pears & Sutton, 2021). The review included seven studies that examined the impact of ACT on physical activity. Four studies were conducted in the USA, one in Canada, one in Australia, and one in Finland. One study was set in a university campus, one was set in the community, one was set in a centre for nutrition and metabolism, and for four studies the setting was not specified. There were six RCTs, and one pre–post study. Four studies compared an ACT intervention with another intervention, one study compared an ACT intervention with two other interventions, one study compared an ACT intervention with a no-treatment (waitlist) control group, and one study used a single-arm (pre–post) design.

ACT intervention delivery had a face-to-face component in six studies and was delivered via a self-managed DVD in one study. Two of the studies with a face-to-face component delivered the ACT intervention in a single, individual session lasting 40–60 min. The remaining four studies with a face-to-face component delivered the ACT intervention in a group setting, with durations ranging from a single six-hour session to eight 90-minute sessions over 10 weeks. In three studies, the intervention condition was an ACT intervention

focusing on physical activity. In the four remaining studies, an ACT intervention was combined with additional intervention components – self-monitoring with a pedometer plus feedback on current physical activity, a walking programme, and exercise prescription.

The meta-analysis showed a significant, small-to-moderate effects for ACT-based interventions on physical activity. There are a number of important conclusions based on this review and the findings. Firstly, ACT interventions show promise for increasing physical activity behaviour. However, it should be remembered that the seven studies varied in how they measured physical activity and how ACT was delivered (e.g., session duration, modality, and intervention length). Furthermore, there may need to be more consistency in regards to the ACT interventions. For example, three ACT processes (e.g., defusion, values and committed action) were included in the ACT-based interventions in all seven of the identified studies, while acceptance and contact-with-the-present-moment were targeted in six studies.

A second and more recent review, this time with secondary school children, examined ACT interventions for their mental health. Knight and Samual (2022) reviewed nine studies between 2014 and 2020. Five studies used a ‘pilot’ or ‘feasibility’ research study design. Three of the studies were randomised controlled trials with two using cluster randomisation of school classes, and the other using individual randomisation. Two studies used a quasi-randomised design, both of which involved cluster randomisation of school classes. A control group was used in eight studies. The treatment as usual conditions (or control group) consisted of ‘12 weeks of monitoring’ from the school counsellor or school nurse.

Important findings from the review indicated that ACT interventions that specified and targeted symptoms of mental health were more effective than those that were universal. Furthermore, ACT was more beneficial compared to control groups for depression, anxiety, anger, psychological capital, stress, well-being, life satisfaction, psychological health,

emotional problems and mental health symptoms. However, there was mixed significance and effect sizes. For example, despite being measured in six studies, there was only one study that reported a large effect size for depression. In addition, there was only one significant medium effect size for anxiety. Finally, only three studies used a follow-up design, with one of these showing a medium to large effect size for stress and anxiety.

There is also research examining the impact of ACT-based interventions to reduce other negative mental and physical health outcomes. For example, Zakiei et al. (2021) explored the benefits of ACT on sleep quality. A sample of adults with insomnia were randomly assigned to the ACT intervention (weekly group therapy for 60–70 min) or to the active control condition (weekly group meetings for 60–70 min without interventional and psychotherapeutic character). Participants completed measures of sleep quality, dysfunctional beliefs and attitudes about sleep, emotion regulation, and experiential avoidance, pre-, post-intervention, and 12-week follow-up. Participants also completed a daily sleep log, which consisted of items regarding subjective sleep duration, sleep quality, and the feeling of being restored. The ACT intervention group improved on all of the measures outlined compared to the control group. ACT appeared to have improved experiential avoidance, which in turn improved both sleep quality and sleep-related cognitive-emotional processes at longer-term in adults with insomnia.

5.2.2 ACT interventions in sport

ACT is becoming one of the most used forms of intervention in sport. There is recent support for ACT in variety of different contexts including youth sport (Hartley, 2020), stress-management (Wagstaff et al., 2019), and performance enhancement (Lundgren et al., 2020). ACT has also been used to help athletes overcome problematic thoughts. For example, Price et al. (2022) used ACT with a youth snowboarder to help overcome fear of being injured. In a case study design, Price et al. (2022) delivered the ACT intervention using the ACT matrix,

which is as an effective tool that visually represents one's actions and internal experiences (Polk et al., 2016). They revealed how ACT can support athletes and overcome strong internal difficulties and pressures. This case study in sport and exercise psychology provides a useful model of ACT in sport.

There is also evidence of ACT in supporting injured athletes' adherence towards rehabilitation programmes. For example, Mahoney and Hanrahan (2011) explored the experiences of four injured athletes during their rehabilitation from anterior cruciate ligament injuries and to examine the potential usefulness of an adapted a brief ACT intervention in addressing individuals' adherence to rehabilitation protocols and their general psychological well-being. The ACT intervention, which included 4-sessions, proved to be beneficial for the injured athletes' recoveries. Specifically, it allowed the athletes to understand the challenges in regards to their individual rehabilitation programmes and accept private events linked to being injured. In addition, accepting and opening up has proved more effective than avoiding and suppressing these experiences.

There is growing support for the effectiveness of ACT for athletic performance. For example, Lundgren et al. (2020) explored the effectiveness of an ACT intervention for male ice-hockey players. The ACT program consisted of four sessions, once a week, with homework assignments between sessions. The intervention consisted of ACT exercises targeted to enhance skills in acceptance, mindfulness, and values to promote ice hockey related psychological flexibility and performance. The results showed significant increase in psychological flexibility for the players in the intervention group. ACT can have positive implications for athletic performance. Lundgren et al. (2020) concluded that there needs to be more objective measures used in future research to better understand the impact of ACT.

There is also evidence for ACT interventions in supporting athlete emotions (e.g., anger). For example, Chang and Hwang (2017) developed an ACT intervention for youth

taekwondo athletes. The ACT intervention spanned eight sessions that included values, mindfulness, and the self. They found positive changes in attitude, thoughts, and feelings (anger and irritation). This provides support for ACT with youth athletes and as a means of managing negative emotions. However, it should be noted that the study did not use a control group and was underpowered.

5.2.3 ACT interventions for perfectionism

There is a limited but growing body of research examining the impact of ACT interventions on perfectionism. For example, Ong et al. (2019) delivered a ten-week intervention to a community sample with higher scores on an obsessive-compulsive scale (so to screen for what was described as “clinical perfectionism” in this study). The intervention included sessions on acceptance, defusion, values, commitment, and relapse prevention. Using an RCT design, they found that following the intervention the ACT intervention group reported lower PC (Concern Over Mistakes and Doubts About Action), as well as reduced psychological inflexibility, and increased self-compassion and quality of life, in comparison to a waitlist control group. Many of these changes were considered clinically significant and reliable immediately after the treatment and one-month follow-up. Tentative evidence of changes in neural activation indicative of more efficient cognitive processing and reduced reactivity to negative stimuli were also reported in additional analyses (Ong et al., 2020).

In a second study, using the same sample and procedures, Ong et al. (2020) explored the efficacy of an ACT interventions for both perfectionism and neural functioning. Twenty-nine participants underwent a functional near-infrared spectroscopy assessment during which they completed behavioural tasks designed to elicit error detection and error generation at pre- and post-intervention. The hemodynamic response function (HRF) in the dorsolateral prefrontal cortex, dorsomedial prefrontal cortex, and right inferior parietal lobe were analysed using mixed effects models. They found support for decreases in HRF for the ACT

intervention in comparison to the control group. This study highlights the physiological and biological changes that can be experienced through ACT. This also demonstrates the deep ingrained nature of perfectionism.

ACT interventions have also been developed to support perfectionism and exam anxiety. For example, Miri and Mansouri (2020) delivered an 8-week ACT intervention with 26 female undergraduate students. Using a quasi-experimental design, the participants were randomly assigned to either an intervention group or a control group. They found significant decreases in perfectionism and anxiety in the ACT intervention group compared to the control group. The aforementioned study has a number of limitations. For example, limited details are given in regards to who delivered the intervention. Despite this, the study provides more support for ACT and perfectionism.

In a final example, Esmaeili et al. (2021) explored the effectiveness of ACT on perfectionism and resilience in migraine patients. A sample of adults were randomly assigned to either an ACT intervention group or a waitlist control group (there was no information in the article as to how many were in each group). Participants completed measures of perfectionism and resilience, pre- and post-intervention. The ACT intervention consisted of eight sessions lasting for 60 minutes per session. The findings support the use of ACT for both perfectionism and resilience in migraine patients. However, there are several issues with this particular research study including the measures used and little information regarding the experiences of the patients' migraines post intervention.

5.3 Self-help interventions

Interventions can be delivered in a variety of ways. Self-help interventions are one form of support. They have been shown to be an effective means and modality of reducing negative emotions and increasing healthy behaviours across different domains (e.g., physical health, depression, gambling). In a recent review, for example, self-help interventions have

been found to be effective for anxiety, depression, and low mood. Fleming et al. (2018) reviewed 10 studies that used digital interventions to reduce depression, anxiety, and or the enhancement of mood. The studies spanned between 2002 to 2017 and included a mix of online programmes and Apps. All interventions used a CBT based intervention and three of the studies used an RCT design.

The findings of the review suggest that up to 28% of the participants completed all of the modules or continue to use apps after six weeks. This finding is positive and helps highlight the flexible benefits of self-help interventions that are delivered by an online modality. Furthermore, up to 80% of the participants completed at least one module or weeks' worth of App use. Again, accessing online self-help interventions is incredibly easy and provides those participants with support that fits around their availability. However, there a number of challenges in regards to the data that can be collected in online interventions compared to traditional face-to-face.

The review indicates that uptake and engagement can vary widely. For example, trial research participation is often very different to real-world settings, as outlined in the review. completion rates of 43% to 99% in a systematic review of adherence in controlled trials of online interventions for depression and anxiety (Christensen et al., 2009). Reduced adherence is a real issue in regards to interventions, especially self-help modalities. Guided vs unguided (pure self-help) interventions have previously been shown to have significant difference in adherence (Baumeister et al., 2014). Despite issues in data transparency, there are some encouraging findings from this review on the use and effectiveness of self-help interventions.

Self-help interventions have also been shown to be effective for smoking cessation. For example, Livingstone-Banks et al. (2022) provided an updated review of studies that have explored self-help on smoking. The review included 75 studies that contained self-help

information about how to give up smoking and help people to quit. The review included studies published between 2019 and 2020. All studies used a RCT research design with at least a 6-month follow up. All interventions included a self-help style intervention, which included support from a therapist.

Based on 11 studies with over 21,000 participants, there was evidence of a small benefit of printed non-tailored structured self-help materials when provided without any other contact. The likelihood of quitting increased by about 20%. If self-help was compared to even a brief pamphlet about smoking ($k = 6$), there was no evidence of additional benefit from structured materials. When self-help materials were provided in addition to brief face-to-face contact ($k = 5$) or advice ($k = 11$), there was no longer any evidence of additional benefit compared to the contact or advice alone. There was evidence based on nine studies with over 13,000 participants that tailored materials were of more benefit than no materials.

The review provides strong support for the use of self-help interventions. These type of interventions help more people to stop smoking than no intervention at all. In addition, they represent a bridge between the clinical approach and one that targets large populations (Curry, 1993). This review, along with the previous reviews described, provide a strong sense that self-help interventions, specifically those delivered electronically, can be an effective means for a range of health outcomes. Importantly, it reaches a large number of people because they can be extremely flexible.

5.3.1 Self-help interventions in sport

There is only limited research using self-help interventions in sport. One of the earliest examples, Bakker and Kaiser (1994) explored a self-help mental skills programme on field hockey performance, in a sample of female field hockey players. Participants were divided into an experimental group, a placebo control group, and a control group. The results suggested that the experimental group, who received a self-help mental skills training

package, had a significantly better hockey performance than either of the two control groups. In addition, the experimental group reported feeling more confident, relaxed, and focussed towards penalty strokes. However, competitive anxiety did not differ between any of the groups.

In a more recent example, again in sport, Lane et al. (2016) explored the benefits of a brief online self-help intervention on emotions and satisfaction levels in athletes. A sample of runners completed a personal goal that they wished to achieve on a particular run. Participants were then randomly assigned to one of three groups (e.g., 1) if-then planning; 2) goal setting; 3) control group). Participants who engaged in online self-help intervention reported significant changes in emotions and were satisfied with performance. However, there was no significant difference between groups. Despite this, there is support for athletes, especially to large groups of athletes, to receive self-help interventions for emotions and performance needs.

There are several benefits of self-help interventions. Firstly, this type of intervention can be delivered remotely with little support from a practitioner (Mills et al., 2020). Secondly, this type of intervention can improve access to support (Fleming et al., 2018), which is important for perfectionistic athletes who may be reluctant to seek help (Watson et al., 2021). Finally, self-help interventions can be scaled up, so that they can reach large numbers of people who may require help (Fleming et al., 2018). This benefit may be particularly important given the increasing numbers of perfectionism in young people (Curran & Hill, 2019).

5.4 Online interventions

Interventions can also be delivered face-to-face or online. In Suh et al.'s (2019) review there are a number of recent examples demonstrating the positive effect of online interventions for perfectionism. In the most recent study, Wakelin et al. (2023) delivered an

online intervention to a group of veterinarians. In this example, all of the participants received the intervention. The intervention included 14 10-minute videos on mindfulness, imagery, and compassionate skills. They found that perfectionism, rumination, and self-criticism all significantly reduced over the intervention duration and maintained effects at follow-up. Despite the lack of any rigorous research design (control group and randomisation), the findings could be viewed as encouraging.

Visvalingam et al. (2022) also delivered a brief online intervention for perfectionism to a group of university students. Participants, who were allocated into an intervention group and whom had moderate to extreme levels of perfectionism, received a two-hour Intentional Imperfection Programme. The intervention included mindfulness, self-compassion techniques, and educational activities. They found that compared to the intervention group, the intervention group reduced their levels of perfectionism (e.g., SOP and SPP) as well as the negative consequences of perfectionism (e.g., depression and anxiety). The strong findings, as well as the strong research design, provide encouraging support for the use of online interventions for perfectionism.

Online interventions have also been shown to be effective using a longer intervention. In a final example, Redden et al. (2022) delivered an online intervention for perfectionism to university students. Participants with elevated levels of perfectionism and who were allocated to an intervention group, received a 2-week online exposure-based intervention. The intervention included three practical tasks – (1) Shape Ordering Task, (2) Intentional Misspelling Task, and (3) Simple Math Task. They found that when comparing the control group to the intervention group, perfectionism decreased. In addition, both social anxiety and depressive symptoms decreased for the intervention group in comparison to the control group. This final example also helps support the use of online interventions for perfectionism.

5.4.1 Online interventions in sport

There are currently no online interventions for reducing perfectionism in sport. However, there have been two online interventions outside of the perfectionism research of especial mention because of the similarities in regards to length and intervention type to the proposed intervention in the current study. In the first example, Lasnier and Durand-Bush (2022) delivered an online intervention to middle distance runners to support their pain management and mental performance. Participants were purposefully selected and entered either a self-regulation intervention or a mindfulness intervention, after which completing weekly modules over an 8-week period. They found that the online interventions were effective as they were accessible at any time. In addition, the participants enjoyed being able to complete the modules on their own time. However, participants did describe a desire to have some component delivered live rather than being pre-recorded.

In the second example, Meijen et al. (2021) also delivered an online intervention, this time to endurance athletes for self-efficacy, goal attainment, performance satisfaction, coping, and stress appraisals. Participants were randomly allocated to either a self-talk intervention, implementation intentions intervention, or a control group. Despite no statistically significant effects, both intervention groups were satisfied with their interventions, found them useful, and were planning to continue using them. Both studies demonstrate the feasibility and value of using online interventions in sport, and it is hoped that the same findings can be replicated with perfectionism.

There are several benefits in using online interventions, too. Firstly, athletes can easily self-refer for online interventions if they feel their perfectionism is problematic (Andersson & Titov, 2014). Secondly, online interventions allow athletes to remain anonymous (Wallin et al., 2018). This benefit may be particularly important for perfectionistic athletes, who often feel higher levels of stigma towards sport psychology

support (Watson et al., 2021). Finally, online interventions can be accessed from anywhere and delivered flexibly (Price et al., 2020).

5.5 Purpose of study four

The present study aimed to assess the effectiveness of an online ACT-based intervention for reducing perfectionism in football players. Based on previous research, it was hypothesized that the intervention group will report (H1) significantly lower trait perfectionism, (H2) significantly lower perfectionism cognitions, and (H3) significantly lower negative pre-competition emotions (anxiety, dejection, anger) and significantly higher positive pre-competition emotions (excitement, happiness), than the control group following the online ACT-based intervention.

5.6 Method

5.6.1 Participants

Eighty-one high performance female football players were recruited from multiple academies across the UK (M age = 24.28 years, SD = 6.77, range 18-44 years). Participants trained on average for 6.46 hours a week (SD = 2.67) and were from a range of backgrounds including White (n = 76), Black, African, Caribbean, or Black British (n = 3), and mixed or multiple ethnic groups (n = 2). Of the 81 participants, 41 were randomly allocated to the intervention group (M age = 26.00 years, SD = 7.88), and 40 were allocated to the control group (M age = 22.53 years, SD = 4.90). For a description of the flow of participants from each stage of the study see Table 11. The study adhered to the CONSORT checklist for reporting the RCT (see Appendix F).

5.6.2 Power Calculation

The minimum target sample size is based on an a priori power analysis. G.Power (Faul et al., 2009) for sample size estimation for a two-tailed test, alpha (p) = .05, power = .80, and an anticipated effect size of Cohen's d = 0.75, provided a target sample size of 58.

The anticipated effect size is based on Donachie and Hill (2020) who, following a perfectionism intervention, found a difference between intervention and control groups immediately following their intervention (time 2) of Cohen's $d = 0.75$ for PCI (the largest effect observed at that time point). However, the study aimed to recruit at least an additional 20% to account for possible dropout (dropout was 13% in Donachie and Hill, 2020). Therefore, the final target sample size was 70 participants (58×1.2): intervention group $n = 35$ and control group $n = 35$.

5.6.3 Design and procedure

Following ethical approval from the research committee, athletes were recruited from female football teams across the UK. Recruitment was done by communicating with gatekeepers and talking to coaches and players. The gatekeeper letter and participant information sheet stated our desire to recruit female football players (aged 18+ years) who self-identified as perfectionists and wanted to learn ways to manage their perfectionism (Donachie & Hill, 2020). If athletes were interested in taking part, they accessed an online survey that included information on the study, a consent form, and a questionnaire. Once athletes had signed and agreed to take part in the study and had completed their initial questionnaire, they were randomly assigned to either the intervention group or to a waitlist control group using block randomization.

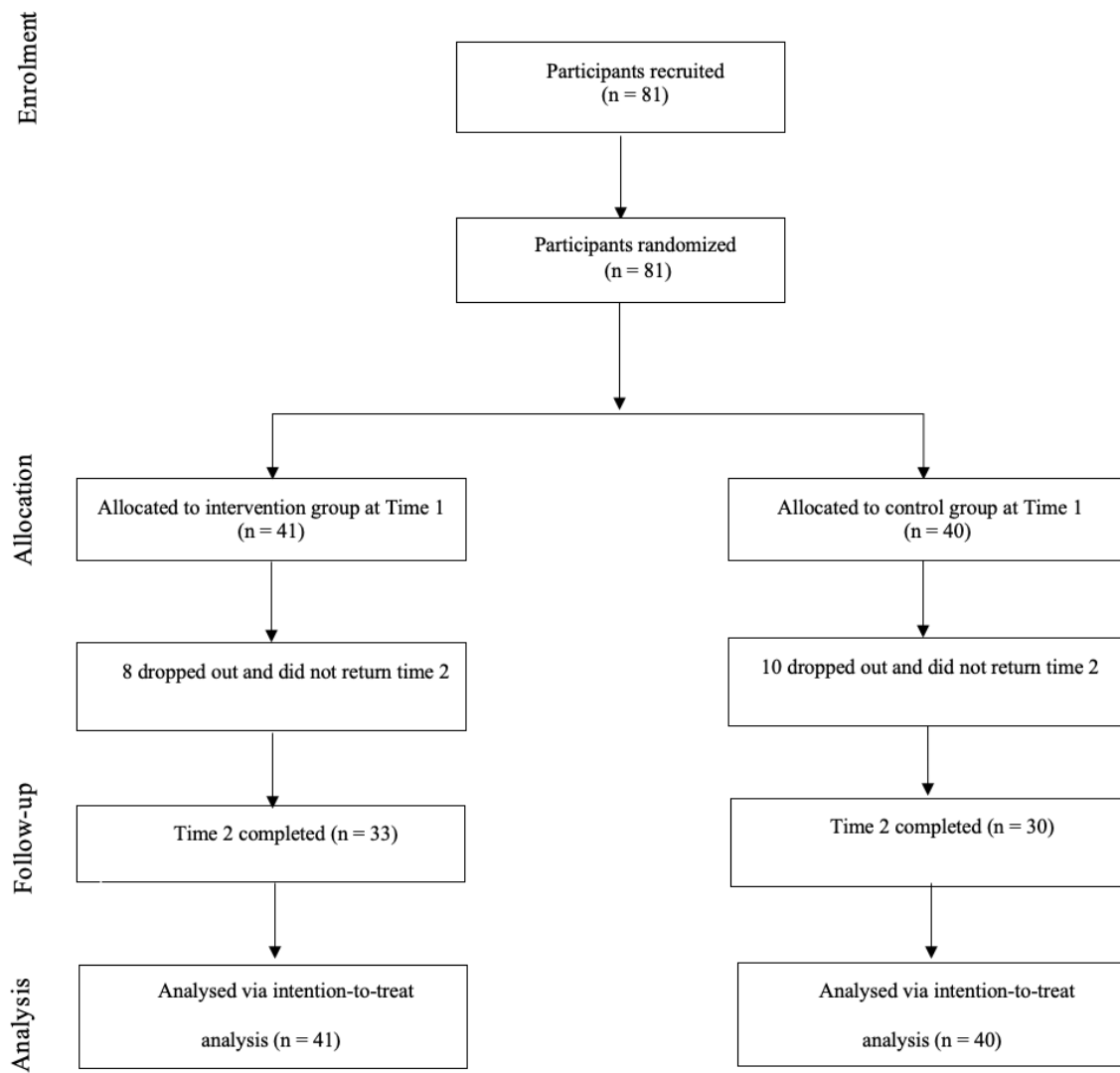
Block randomization was used because it balances the allocation of athletes into the intervention and control groups (Efird, 2011). Block randomization is useful when the entire sample of the study is not yet recruited as it can help maintain equal allocation of participants into the intervention and control groups (Matts & Lachin, 1988). In the present study, there were three rounds of recruitment, each lasting for roughly two-weeks, and three blocks. Block randomisation ensured an approximately equal number of participants in the intervention and control group though the recruitment period. During this process, block sizes

were determined by recruitment each round and there was no blinding to group allocation (rather than random block sizes or blinded allocation).

In designing the intervention, different options for delivery were considered. An online approach was selected as a pragmatic and scalable means of delivering an intervention over a short period of time, in multiple locations, to a large number of athletes. There is evidence that online delivery can be just as effective as face-to-face delivery for perfectionism interventions (see Suh et al., 2019). The intervention group had immediate access to eight online ACT-based modules. The athletes accessed the modules via an online platform. They were told to start with module one (an introduction to sport psychology and ACT) but thereafter could complete the modules in any order and at their own speed. Apart from module one, the modules were designed around the Hexaflex model (Hayes et al., 2006). The modules included sessions on being present with a focus on how each participant reacts to mistakes. There were also modules on opening-up which included accepting thoughts and allowing thoughts to pass. Finally, there were modules on doing what matters which included living towards one's values.

Each module was developed, pre-recorded, and narrated by a Health and Care Professions Council (HCPC) registered practitioner psychologist and ACT practitioner. Each module included worksheets and metaphors (athletes were asked to stop and start the pre-recorded video to access these). With the exception of module one, each module started by asking the participant to think about what they had learnt from the homework of the previous module. Thereafter, each module explained the topic, outlined several key skills to support with a particular aspect or dimension of perfectionism, and provided homework that the participant was expected to complete between modules. Homework was then reviewed at the

Table 11 CONSORT diagram representing the flow of participants for each stage of the intervention



start of the next module. Athletes in the intervention group were emailed at week four and six to check in and find out if they had any questions or concerns.

After the control group completed the first questionnaire, they were emailed and told that they would receive a further email when they can access the online modules. The waitlist control group did not have access to the intervention during the 8-week block. Once the 8-weeks had passed, both the intervention group and the control group completed the online questionnaire for a second and final time. The control group was then given access to the modules to complete at their leisure. There were no known or reported adverse effects from the intervention.

5.6.4 Intervention

The intervention group had access to eight online ACT-based modules (for an overview, see [Appendix E](#)). The participants accessed the modules through Dropbox and were told that they could access any module in any order at their own speed. However, participants were asked to start on module 1, which was an introduction to sport psychology and ACT. The remaining modules were all underpinned by the Hexaflex model (Bach & Moran, 2008). Each module was also accompanied by worksheets and metaphors (participants were asked to stop and start the pre-recorded video to access these). Participants were emailed at week four and six to check in and find if there were any issues. The intervention group completed their post questionnaire at the end of the eight weeks.

5.6.4.1 ACT intervention outline

Module 1. Introduction to ACT

In the first module, participants were introduced to sport psychology and to ACT. This first module, which participants were asked to start first, was heavily education based. Participants were guided through what sport psychology was, how it will help their performances, and what to expect from the upcoming modules. One important part of this

module is to reduce any stigma or pre-conceptions towards sport psychology that participants may have (Watson et al., 2021). This first module will help participants gain a better sense of the intervention to follow.

Module 2. Contacting the present moment

In the second module, there is a focus on identifying specific moments where one is unable to be present with thoughts and actions. Having a focus on the past (i.e., rumination) or future (i.e., worry) is a common problem for athletes with high levels of perfectionism. The aim of the session was to the participants with an understanding of what being present felt like and b) a clear process to follow in order to be present. The intention was to help the participants stay focussed during training and in games. Metaphors can play an important role in the delivery of ACT interventions (Varra et al., 2009). One metaphor that was relevant was 'leaves on a stream'. This metaphor describes the need to allow thoughts to pass by without examining each one. Taking that step back and not being drawn into every thought. Just being present and allowing each leaf to pass by. This would help the participants understand that some of her their thoughts can be left without the need to control them.

Module 3. Mindfulness

Mindfulness is about trying to draw attention to, and connect to, the wider environment and observe the present experience with an accepting and open attitude (Bishop et al., 2004). The participants are to engage in mindfulness to reduce their feelings of stress and overriding fear of failure. The session included practicing mindfulness. This comprises of a range of different exercises including body scanning. Body scanning involves paying attention to parts of the body in order to notice tension and ultimately increase awareness to the self. These are exercises that are helpful in noticing thoughts, to be in the present moment, and avoiding trying to change the experience (see Segal et al., 2013).

Module 4. Acceptance

Acceptance is about accepting thoughts and emotions. It is an active process of engaging with one's emotions, which will allow for greater compassion to oneself (Hayes et al., 2011). It is hoped that accepting one's thoughts and emotions will create a more mindful and flexible perspective, making a shift from avoidance to engagement. In perfectionism, avoiding inner experiences (e.g., procrastinating to avoid seeming imperfect) is common (Ong et al., 2019). Participants were then educated on struggling vs opening-up. Opening-up makes room for problematic thoughts and feelings, rather than struggling and fighting them. To overcome the difficulty in opening-up, participants needed to show courage and willingness. Participants were also encouraged to practice mindfulness in moments when they are struggling with perfectionistic thoughts or behaviours.

Module 5. Defusion

Defusion attempts to alter the context so that participants are not punished by their own idiosyncratic thinking. Defusing thoughts in ACT shows the participants that they are not their thoughts and that they don't define who they are. Altering the context will allow them to be free to think and act in accordance with their values. Unlike the first and second waves of cognitive-behavioural approaches, the aim in this session isn't to control, suppress, or avoid the thoughts that the participants are having. There are a number of metaphors that help the delivery of this module (e.g., the Sushi Train).

Module 6. Values

Values are verbally construed desired life consequences that guide us in the choices that one makes (Hayes et al., 1999). Therefore, values give direction and purpose to our behaviour. When someone does not live in line with her values, they can become more critical towards themselves and feel less confident about their abilities. The discrepancies between values and current behaviour, create and further fuel perfectionism. Better

understanding values will provide the participants to maintain their sense of motivation and energy, because they will know what matters to them.

Module 7. Self

An aim of this module was to focus on the self is to distinguish between the content of private events and the context in which they occur (Strosahl et al., 2004). Understanding the self (i.e., the perfectionistic self-descriptions each participants have) will allow them to adopt different perspectives on their thoughts and feelings and help overcome the trappings of their perfectionistic thinking. In the module, participants use a chessboard metaphor to understand their own thoughts and what the impact of these has on their behaviour. Here the pieces are like thoughts – some positive, some negative. This can often be a battle between pleasant and unpleasant chess pieces (or thoughts). The participants were encouraged to be more like the chessboard and observe the thoughts without engaging or reacting to them.

Module 8. Committed action

The aim of the final module is to provide the participants with perspective and an established method of setting goals that don't fuel perfectionism. As is the case for most perfectionistic athletes, setting unrealistic goals often undermines how they deal with setbacks and failure (Lizmore et al., 2019). So, better goal setting is an imperative part of the intervention process that supports a greater drive for healthy striving and realistic goal setting. Committed action is defined as engaging in a pattern of behaviour, in pursuit of short- and medium-term health related goals, that is consistent with a person's values (Hayes et al., 1999).

5.6.5 Measures

5.6.5.1 Trait perfectionism

To measure multidimensional perfectionism, six subscales were used from three measures of perfectionism in sport: the SMPS-2 (Gotwals & Dunn, 2009), the MIPS (Stoeber

et al., 2007) and the PPS-S (Hill et al., 2016). Following the recommendations of Stoeber and Madigan (2016), to measure PS we used (a) the SMPS-2 subscale capturing Personal Standards (7 items; e.g., “I have extremely high goals for myself in my sport”), (b) the MIPS subscale capturing Striving for Perfection (5 items; e.g., “I strive to be as perfect as possible”) and (c) the PPS-S subscale capturing SOP (4 items; e.g., “I put pressure on myself to perform perfectly”). To measure PC, we used (a) the SMPS-2 subscale capturing Concerns Over Mistakes (8 items; e.g., “People will probably think less of me if I make mistakes in competition”), (b) the MIPS subscale capturing Negative Reactions to Imperfection (5 items; e.g., “I feel extremely stressed if everything does not go perfectly”) and (c) the PPS-S subscale capturing SPP (4 items; e.g., “People always expect more, no matter how well I perform”). The SMPS-2 and the MIPS had a response format of 1 (*strongly disagree*) to 5 (*strongly agree*) and for the PPS-S had a response format of 1 (*strongly disagree*) to 7 (*strongly agree*). All three instruments have previous evidence of reliability and validity (e.g., factor structure, internal consistencies; Hill et al., 2016; Madigan, 2016; Dunn et al., 2016).

5.6.5.2 Perfectionism cognitions

To measure perfectionism cognitions, the PCI-10 (Hill & Donachie, 2020) was used. Participants indicated how frequently they experienced different perfectionistic thoughts on 10 items (e.g., “I should be perfect”). Participants are asked to score each item on a 5-point scale (0 = ‘not at all’ and 4 = ‘all of the time’). The PCI-10 was developed by Hill and Donachie (2020) using athletes. It has strong evidence to support its validity and reliability, including internal consistency and (unidimensional) factor structure. The PCI-10 is also strongly correlated with the longer version of the instrument ($r = .94$; Hill & Donachie, 2020).

5.6.5.3 Pre-competition emotions

To measure pre-competition emotions, the SEQ (Jones et al., 2005) was used. The SEQ measures five emotions that are grouped into two higher order dimensions: negative emotions (anxiety, 5 items, dejection, 5 items, and anger, 4 items) and positive emotions (happiness, 4 items and excitement, 4 items). The SEQ is made up of 22 items. Participants are asked to indicate how they feel right now, at this moment to their upcoming sports competition on a 5-point scale (0 = 'not at all' and 4 = 'extremely'). In support of the reliability and validity of the SEQ, evidence has been provided in regards to factor structure and internal consistency (e.g., Arnold & Fletcher, 2015; Jones et al., 2005).

5.6.5.4 Adherence

As part of the T2 assessment, participants in the intervention group were asked two additional questions: (1) How many hours did you spend on the modules altogether? and (2) How many modules did you complete? This type of assessment has been used previously (Pleva & Wade, 2007) and found to be a useful way of assessing intervention effectiveness by correlating adherence with residual change scores (Donachie & Hill, 2020).

5.6.6 Statistical analyses

All statistical analyses were performed with SPSS version 23.0 (Statistical Package for Social Sciences; IBM, USA). As recommended by Galloway et al. (2022), intention-to-treat analysis (ITT) (i.e., participant scores are carried forward from baseline if they drop out) was used, which meant that all 81 participants were included in the statistical analyses. A 2 (group) x 2 (time) analysis of variance (ANOVA) was used followed by independent samples t-tests. Partial η^2 statistics were used to determine the size of the interaction effects. A partial $\eta^2 = .01$ signifying a small effect, a partial $\eta^2 = .06$ a medium effect and a partial $\eta^2 = .15$ a large effect (Richardson, 2011). Cohen's *d* was used for between-group comparisons with 0.30, 0.50, and 0.80 denoting a small, medium, and large effect (Cohen, 1992).

5.7 Results

5.7.1 Reliability of scores from instruments

Prior to the primary analyses, internal reliabilities (Ω) and test-retest reliability (intra-class correlations) were calculated for all instruments and both time points. Internal reliabilities and test-retest reliabilities were adequate in most cases ($\Omega > .70$ and $ICC > .50$). However, there was also lower internal reliability for all pre-competition emotions at T2 for the intervention group ($\Omega < .70$). The findings are presented in full here but note caution for effects pertaining to these variables and when the discussion of findings. It was also noteworthy that, based on the control group, ICCs indicated lower test-retest reliability in some dimensions of perfectionism (Negative Reactions to Imperfection and perfectionism cognitions) and pre-competition emotions (happiness and excitement) ($ICC < .50$). Again, this is important information in considering the findings.

5.7.2 Assessment of intervention

Main and interaction effects are presented in Table 12 and comparison of intervention group and control group at T1 and T2 are presented in Table 13.

5.7.3 Trait perfectionism and perfectionism cognitions

In regards to the group, time, and interaction effects, there was a statistically significant group effect for all dimensions of perfectionism, except self-oriented perfectionism. There was also a statistically significant time effect for self-oriented perfectionism, socially-prescribed perfectionism, and perfectionism cognitions. Finally, there was an interaction effect (group x time) for all dimensions of perfectionism except socially-prescribed perfectionism. In examining post-intervention differences, there was a statistically significant mean difference between the intervention group and the control group at T2 for all dimensions of perfectionism. Effects typically exceeded criteria for being large (Cohen's $d =$

0.80). This was not the case for self-oriented perfectionism (medium-to-large effect) and socially prescribed perfectionism (marginally above a large effect) which were smaller.

5.7.4 Pre-competition emotions

In regards to the group, time, and interaction effects, there was a statistically significant group effect for all pre-competition emotions. There was also a statistically significant time effect for anxiety. Finally, there was an interaction effect (group x time) for all pre-competition emotions except excitement. In examining post-intervention differences, there was a statistically significant mean difference between the intervention group and the control group at T2 for all of the pre-competition emotions. All effects exceeded criteria for being large (Cohen's $d = 0.80$).

5.7.5 Ancillary analyses

Unplanned ancillary analyses are provided, too (Table 14). These are a series of analysis of covariance (ANCOVA) focusing on differences between intervention and control groups in each dependent variable at T2 adjusted for the dependent variable at baseline (T1). These analyses show statistically significant differences for all dependent variables. We note the possible benefits of providing this type of analysis alongside non-adjusted analyses (e.g., De Boer et al., 2015) but also that CONSORT guidelines stress the potential for this type of analysis to bias the estimate of the treatment effect (Schultz et al., 2010).

5.7.6 Adherence

To further assess the link between the intervention and observed changes, the study examined whether the adherence measures (the number of hours spent on the modules and the number of modules completed) were correlated to change in outcome variables (see Table 15). To do so, a regression analysis was conducted in which T2 scores were regressed on T1 scores and then correlated the resulting unstandardized residual scores with measures of

Table 12 Main group, time, and interaction effects (group x time)

Measure	Group effect	Partial η^2	Time effect	Partial η^2	Group*Time effect	Partial η^2
Perfectionistic Strivings						
PES	$F(1,79) = 15.89, p < .001$	.17	$F(1,79) = 0.45, p = .505$	.01	$F(1,79) = 12.37, p < .001$	.14
SOP	$F(1,79) = 1.46, p = .230$	.02	$F(1,79) = 33.82, p < .001$	.30	$F(1,79) = 34.54, p < .001$	.30
SP	$F(1,79) = 10.86, p < .001$	.12	$F(1,79) = 0.95, p = .333$	.01	$F(1,79) = 9.12, p = .003$	.10
Perfectionistic Concerns						
CM	$F(1,79) = 12.06, p < .001$	.13	$F(1,79) = 0.23, p = .633$	.00	$F(1,79) = 5.67, p = .020$	.07
SPP	$F(1,79) = 15.41, p < .001$	.16	$F(1,79) = 6.29, p = .014$	.07	$F(1,79) = 0.28, p = .602$	.00
NR	$F(1,79) = 15.81, p < .001$	.17	$F(1,79) = 0.02, p = .879$	.00	$F(1,79) = 10.42, p = .002$	.12
Perfectionism Cognitions						
PCI	$F(1,79) = 32.45, p < .001$	.29	$F(1,79) = 5.52, p = .021$	.07	$F(1,79) = 39.09, p < .001$	.33
Pre-Competition Emotions						
Anxiety	$F(1,79) = 33.45, p < .001$	.30	$F(1,79) = 47.86, p < .001$	.38	$F(1,79) = 56.30, p < .001$	.42
Dejection	$F(1,79) = 40.36, p < .001$	.39	$F(1,79) = 0.91, p = .342$	.01	$F(1,79) = 8.00, p = .006$	.09
Anger	$F(1,79) = 40.40, p < .001$	.34	$F(1,79) = 0.61, p = .438$	.01	$F(1,79) = 7.77, p = .007$	.09
Happiness	$F(1,79) = 51.82, p < .001$	.40	$F(1,79) = 0.00, p = .980$	.00	$F(1,79) = 4.17, p = .044$	.05
Excitement	$F(1,79) = 40.95, p < .001$	.34	$F(1,79) = 1.82, p = .181$	.02	$F(1,79) = 0.38, p = .541$	.01

Note. PES = personal standards, SOP = self-oriented perfectionism, SP = striving for perfection, CM = concerns over mistakes, SPP = socially-prescribed perfectionism, NR = negative reactions to imperfection, PCI = perfectionism cognitions.

Table 13 Analysis of simple effects on all measures between intervention and control group

Measure	Time 1					Time 2				
	Intervention M (SD)	Control M (SD)	M difference	<i>P</i> values	<i>d</i>	Intervention M (SD)	Control M (SD)	M difference	<i>P</i> values	<i>d</i>
Perfectionistic Striving										
PES	3.58 (0.85)	3.88 (0.78)	0.30	.103	0.37	3.23 (0.74)	4.12 (0.70)	0.89	<.001	1.24
SOP	5.51 (1.16)	5.58 (0.88)	0.07	.764	0.07	5.12 (1.12)	5.58 (0.85)	0.47	.037	0.46
SP	3.65 (0.92)	3.86 (0.76)	0.21	.263	0.25	3.28 (0.77)	4.05 (0.69)	0.77	<.001	1.05
Perfectionistic Concerns										
CM	3.50 (1.12)	3.83 (0.87)	0.33	.143	0.33	3.30 (0.82)	4.13 (0.75)	0.84	<.001	1.06
SPP	4.09 (1.59)	5.00 (1.45)	0.92	.009	0.60	4.43 (1.17)	5.53 (1.34)	1.10	<.001	0.87
NR	3.53 (0.95)	3.81 (0.85)	0.28	.168	0.31	3.19 (0.77)	4.13 (0.73)	0.94	<.001	1.25
Perfectionism Cognitions										
PCI	2.60 (0.98)	2.75 (0.86)	0.15	.480	0.16	1.66 (0.75)	3.17 (0.64)	1.51	<.001	2.17
Pre-Competition Emotions										
Anxiety	2.73 (0.90)	2.91 (0.88)	0.17	.384	0.20	1.25 (0.86)	2.97 (0.83)	1.71	<.001	2.04
Dejection	1.31 (1.24)	2.31 (1.17)	1.00	<.001	0.83	0.88 (0.59)	2.51 (1.11)	1.63	<.001	1.83
Anger	1.28 (1.29)	2.29 (1.19)	1.01	<.001	0.81	0.85 (0.64)	2.54 (1.17)	1.69	<.001	1.79
Happiness	2.46 (0.75)	1.74 (0.77)	0.72	<.001	0.95	2.65 (0.54)	1.54 (0.76)	1.10	<.001	1.68
Excitement	2.61 (0.76)	1.88 (0.76)	0.74	<.001	0.96	2.55 (0.49)	1.71 (0.61)	0.84	<.001	1.52

Note. PES = personal standards, SOP = self-oriented perfectionism, SP = striving for perfection, CM = concerns over mistakes, SPP = socially prescribed perfectionism, NR = negative reactions to imperfection, PCI = perfectionism cognitions. Intervention group (n = 41) and the control group (n = 40).

Table 14 Results of Analysis of Covariance (ANCOVA) for dependent variables

Measure	Intervention M	Control M	<i>F</i> (<i>df</i>)	<i>P</i> values
Perfectionistic Strivings				
T2 PES	3.30	4.05	29.05 (1,78)	<.001
T2 SOP	5.15	5.55	38.14 (1,78)	<.001
T2 SP	3.32	4.01	21.72 (1,78)	<.001
Perfectionistic Concerns				
T2 CM	3.35	4.08	20.65 (1,78)	<.001
T2 SPP	4.43	5.53	12.45 (1,78)	.004
T2 NR	3.23	4.08	29.46 (1,78)	<.001
Perfectionism Cognitions				
T2 PCI	1.68	3.15	97.11 (1,78)	<.001
Pre-Competition Emotions				
T2 Anxiety	1.29	2.93	92.70 (1,78)	<.001
T2 Dejection	1.09	2.30	47.59 (1,78)	<.001
T2 Anger	1.05	2.33	44.28 (1,78)	<.001
T2 Happiness	2.56	1.64	35.27 (1,78)	<.001
T2 Excitement	2.44	1.82	24.03 (1,78)	<.001

Note. PES = personal standards, CM = concerns over mistakes SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, SP = striving for perfection, NR = negative reactions to imperfection, PCI = perfectionism cognitions. Intervention group (n = 41) and the control group (n = 40). Time 1 variable is included as covariate with corresponding adjusted means displayed.

Table 15 Pearson's correlations of adherence with residual change

Measure	Hours Spent on the Modules		Number of Modules Completed	
	<i>r</i>	<i>P values</i>	<i>r</i>	<i>P values</i>
Perfectionistic Strivings				
PES	-.027	.882	-.238	.182
SOP	.405	.019	.192	.284
SP	-.196	.274	-.373	.032
Perfectionistic Concerns				
CM	-.174	.331	-.343	.051
SPP	-.133	.459	-.130	.472
NR	-.210	.241	-.349	.047
Perfectionism Cognitions				
PCI	-.599	<.001	-.617	<.001
Pre-Competition Emotions				
Anxiety	-.363	.038	-.641	<.001
Dejection	-.024	.896	-.016	.932
Anger	-.283	.111	-.359	.040
Happiness	.133	.459	.265	.136
Excitement	-.033	.853	.227	.203

Note. PES = personal standards, CM = concerns over mistakes SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, SP = striving for perfection, NR = negative reactions to imperfection, PCI = perfectionism cognitions. Sample size (n = 33) includes all completers from the intervention group.

adherence. To conduct these analyses, completers were used in the intervention group only. Results are reported in Table 15 and show that the number of hours spent on the modules was significantly correlated with reductions in SOP, perfectionism cognitions, and anxiety over time. The number of modules completed was also significantly correlated with reductions in Striving for Perfection, Negative Reactions to Imperfection, perfectionism cognitions, anxiety, and anger over time.

5.8 Discussion

The present study aimed to assess the effectiveness of an online ACT-based intervention for reducing perfectionism and improving pre-competition emotions in football players. Based on previous research, the current study hypothesized that the intervention group will report (H1) significantly lower trait perfectionism, (H2) significantly lower perfectionism cognitions, and (H3) significantly lower negative pre-competition emotions (anxiety, dejection, anger) and significantly higher positive pre-competition emotions (excitement, happiness), than the control group following the online ACT-based intervention. Support was found for all hypotheses with the exception of one dimension of trait perfectionism (SPP) and one pre-competition emotion (excitement).

5.8.1 Trait perfectionism and perfectionism cognitions

The findings suggest that perfectionism can be reduced using an online ACT-based intervention inside of sport. This was the case when examining higher-order dimensions of perfectionism (PS and PC) and all their subdimensions, barring SPP. In terms of contextualising these findings, it is noted that other studies have found similar support for ACT outside of sport (Ong et al., 2019). The findings suggest similar beneficial effects are evident for athletes. In addition, previous studies have also found support for the use of elements of ACT for reducing perfectionism in athletes; namely, mindfulness (Kaufman et al., 2009). The findings are supportive in this regard and suggest broader coverage of ACT

techniques are also effective. Finally, the most rigorous research in sport so far suggests CBT-based interventions and compassion-based interventions are effective for reducing perfectionism (Donachie & Hill, 2020; Mosewich et al., 2013). The current study extends this work by suggesting that ACT-based interventions may also be effective and useful.

In comparing the findings to the two previous studies in sport using rigorous designs, it is noted that there are a number of similarities and differences. Donachie and Hill (2020) found a significant interaction effect for SPP (but not for SOP) with significant differences between groups evident at follow-up (7 weeks later) but not immediately after the intervention. The effect was medium in size (Cohen's $d = 0.51$). There was a significant interaction effect for SOP (but not SPP) and significant differences between groups immediately after the intervention (a follow-up was not included). The effect was again medium in size (Cohen's $d = 0.46$). There are two possibilities that may explain differences in the findings. It may be that the effectiveness of CBT-based interventions and ACT-based interventions differ depending on the dimension of perfectionism examined. Alternatively, it may be that observation over a longer period of time is needed to assess effectiveness for SPP. Future studies are required to directly compare the effects of equivalent CBT-based and ACT-based interventions (and others) to better understand the differences in findings and examine these possible explanations.

The findings are more consistent with those of Mosewich et al. (2013). They found a significant interaction effect for Concern Over Mistakes and significant differences between groups immediately after the intervention (and at follow-up). The size of their effects exceeded the criteria for being considered large (Cohen's $d = 0.63$ and 0.78). Similarly, in the current study, there was a significant interaction effect for Concern Over Mistakes and significant differences between groups immediately after the intervention. The effect that was observed was larger still (Cohen's $d = 1.06$). In this case, it appears that a compassion-based

intervention and ACT-based interventions yield similar effects in regards to the dimensions of perfectionism they influence. Note, too, the ACT intervention outside of sport by Ong et al. (2019) had an effect on Concern Over Mistakes as observed in the current study (Hedges' $g = 1.03$). The larger effects observed in the current study may reflect a range of factors including, differences between the two types of intervention (ACT versus compassion-based), but also factors such as the longer length of the ACT interventions. Again, research comparing the effectiveness of equivalent interventions is needed to explore these differences further.

The effect of the intervention on perfectionism was largest for perfectionism cognitions. This was also the case in Donachie and Hill (2020) who observed effects that were nearly twice the size of the effect for any other dimension of perfectionism (Cohen's $d = 0.75$ and 1.15). As they argued, it may be that as a more state-like feature of perfectionism they are more amendable to change. In the current study, the effect was exceptionally large (Cohen's $d = 2.17$). So it may be that ACT is also especially effective at addressing perfectionism cognitions. As to why this is the case, a distinctive aspect of the ACT-based intervention was taking a step back from thoughts, allowing thoughts to pass by, and to not engage with each individual thought. In this sense, through the intervention athlete's may have come to notice or acknowledge perfectionistic thoughts less. Alternatively, by increasing psychological flexibility, they may have learned to spend more time, cognitively, in the present, rather than ruminating about the past – an important feature of perfectionism cognitions. Again, more direct comparison of different approaches, but comparable in all other ways, is required to understand these findings better.

As with research outside of sport (Ong et al., 2021), trait perfectionism can be reduced using an ACT-based intervention inside of sport (Kaufman et al., 2009; De Petrillo et al., 2009). However, the findings in the current study are especially noteworthy for several

reasons. Firstly, the ACT-based intervention likely provided some participants with a better sense of coherence, values, and perspective (Hayes et al., 1999). With perfectionistic athletes traditionally struggling with self-acceptance, it is an important finding. Secondly, with trait perfectionism being deeply ingrained (Donachie & Hill, 2020), ACT is seemingly well suited to allow participants to stop avoiding, denying, and or struggling with their inner perfectionistic emotions and, instead, accept that these deeper feelings (Hayes, 2004).

The findings also provide support for reducing perfectionism cognitions using an online, self-help ACT-based intervention. Perfectionism cognitions showed the biggest change from pre- to post-intervention (Donachie & Hill, 2020). Furthermore, there was also an adherence impact, with the number of modules completed and the amount of time spent on the modules having a direct correlation with the level of perfectionism cognitions. When considering that perfectionism cognitions are more dynamic and amendable to change (Hill & Donachie, 2019), this might not come as a surprise. However, an important aspect of the ACT-based intervention was taking a step back from thoughts, and to allow them to pass by, using skills of mindfulness and other techniques (e.g., struggling vs opening-up worksheet). The reduction in perfectionism cognitions might be then due to acceptance of these thoughts, with participants using these skills and techniques to allow perfectionistic thoughts to pass without engaging in them.

5.8.2 Effectiveness of self-help interventions

The current study also provides evidence for a self-help intervention in reducing trait perfectionism, aligning with previous research (Donachie & Hill, 2020). It is possible that providing perfectionistic athletes with self-help options, may in fact provide greater autonomy, something that has previously been found to be an issue with perfectionistic athletes (Hill et al., 2018). Self-help guides have found themselves to be an important source of support for perfectionists (Steele & Wade, 2008). It is possible that the self-help nature of

the intervention allowed participants to feel ready to be helped, without the feeling of judgement from a coach or significant other. This might suggest that this type of self-help intervention might only be successful with perfectionistic athletes that feel ready to be helped. However, practitioners should be aware though that they may need to monitor progress and engagement (Suh et al., 2019).

The self-help intervention has significantly reduced perfectionism cognitions from pre- to post-intervention for the intervention group. Self-help interventions have previously been shown to be effective for perfectionism cognitions (e.g., Donachie & Hill, 2020). This is because self-help interventions are flexible that fit around the individual and their needs. Furthermore, perfectionism cognitions are less ingrained than that of trait perfectionism, as such are more amendable to change (Flett et al., 2018). But it is an important finding as previous research has shown the difficulties in reducing perfectionism cognitions (Watson et al., 2022). Therefore, self-help interventions, specifically for perfectionism cognitions, should be celebrated.

Perfectionism has several negative consequences (e.g., anxiety and depression; Hill et al., 2018). It can also influence negative reactions and aggressive behaviour (Grugan et al., 2020). Previously, self-help interventions have been found to be effective for anxiety, depression, and low mood (Fleming et al., 2018) and this seems to be the case in the current study. These positive findings also mean that there will be improvements in athletic performance (Lane et al., 2016) as the athletes will be able to control emotions that previously may have proved difficult. Part of this success may be down to the fact that the self-help materials were accessible to a wider range of athletes, which is a benefit of the type of intervention.

However, self-help interventions may have some negative connotations. Firstly, for example, there was no significant improvement in excitement, despite a lower mean

difference from pre to post intervention for the intervention group. Previously, interventions have found success at reducing negative pre-competition emotions but proved more difficult to increase positive pre-competition emotions in perfectionistic athletes (Watson et al., 2022). Perfectionistic athletes do not achieve their goals, meaning that they are never happy with themselves or others, often feeling worthless (Overholser & Dimaggio, 2020). Therefore, showing excitement or happiness are very difficult emotions for perfectionistic athletes to express.

A second potential issue with self-help interventions is the adherence quality (Christensen et al., 2009). Self-help interventions can be either guided by a practitioner or purely self-directed. In the current study, there was two time points that participants were guided in some way. Previous research suggests that purely self-directed may be a less suitable strategy than interventions that are guided by a practitioner in treating perfectionism (Pleva & Wade, 2007). In the current study, the number of modules completed was significantly correlated with improvements in perfectionism cognitions, anxiety, and anger. Furthermore, the number of hours spent on the modules was significantly correlated with improvements in perfectionism cognitions and anxiety. It may therefore be worthwhile comparing the same intervention that is delivered purely as a self-directed intervention (as well as one that is delivered face to face) to better understand the impact of adherence.

5.8.3 Effectiveness of online interventions

The findings are supported by previous research on online interventions for trait perfectionism (e.g., Grieve et al., 2021). Previously, online interventions for perfectionism have shown to be largely successful (see Suh et al., 2019). One explanation might be that perfectionistic athletes can remain anonymous during online interventions, which will help them overcome any feelings of stigma towards help-seeking (Wallin et al., 2018). Another explanation might be that perfectionistic athletes require less tailored support (Watson et al.,

2021). If this is the case, there may be even more support for online interventions than first thought as they offer perfectionistic athletes with more control (Kothari et al., 2019), but they also can help them overcome initial feelings of stigma towards sport psychology.

The findings are in line with previous research on online interventions for perfectionism cognitions (Radhu et al., 2012), too. As such, online interventions for trait perfectionism and perfectionism cognitions have an important benefit. Online interventions allow perfectionistic athletes to complete the modules or sessions they feel are most relevant to them (Greive et al., 2021). Reported reasons across the literature for lack of engagement include time constraints and lack of motivation (Christensen et al., 2009). Therefore, providing perfectionistic athletes with more flexible online options, can help them overcome these reported barriers. Online interventions also provide practitioners with an essential tool that can be used across a large number of perfectionistic athletes (especially if sessions are pre-recorded like in the current study).

However, there are several issues with online interventions for perfectionistic athletes. Firstly, because there is so much more flexibility than traditional face-to-face interventions, this naturally means that some perfectionistic athletes may not engage or adhere to sessions and programmes (Suh et al., 2019). Secondly, online interventions can pose problems for developing strong working alliances between practitioner and client (Shahar et al., 2004). Engaging in co-designed interventions with clients who have lived experience of perfectionism may help overcome this issue (Egan et al., 2022).

5.8.4 Pre-competition emotions

In further support of intervention, along with perfectionism there was also observed improvements in pre-competition emotions. However, internal reliability for measures of pre-competitive emotions were not adequate at T2 in the intervention group ($\Omega < .70$). In some cases, due to the very low internal reliability (dejection, happiness, and excitement), these

findings should be discounted. In the other cases, where internal reliability is approaching acceptable levels for smaller instruments (anxiety and anger), it is recommended that these findings are interpreted with caution. It is unclear why internal reliabilities were acceptable at T1 and not T2 in the intervention group. In this regard, it is noteworthy that the scores remained reliable at T2 for the control group. As such it is possible that some items of the scales were affected by the intervention but not others, for example. Regardless, in the absence of this form of reliability, inferences regarding the effectiveness of the intervention for these variables are not advised.

Notwithstanding this caution, results pertaining to the more reliable scores for anxiety and anger are consistent with the wider benefits of ACT-based interventions. It is noted, for example, that ACT has previously been shown to be effective in supporting regulation of emotions in athletes (e.g., anger; Chang & Hwang, 2017). It is also noted that research examining perfectionism and pre-competitive emotions overtime in football players has shown strong links between both trait aspects of perfectionism and perfectionism cognitions with negative emotional experiences, anxiety, and anger, in particular (Donachie et al., 2019). Therefore, findings are also consistent with the notion that addressing perfectionism may have additional benefits for athletes. Whether these effects are a direct consequence of ACT or indirect as a consequence of reducing perfectionism would be an insightful avenue for future research. Of course, so is revisiting the effects to secure more reliable measurement.

5.9 Conclusion

The study was the first to examine the effectiveness of an online, self-help ACT-based intervention for reducing perfectionism in female football players. It was found that the intervention reduced trait perfectionism, perfectionism cognitions, and negative pre-competition emotions in all the participants in the intervention group. This particular cognitive-behavioural approach, delivered online, should be considered by sport

psychologists, coaches, and organisations as a means to support perfectionistic athletes. As with the benefits of online, self-help interventions (i.e., flexible and fits around the athlete), they could be a simple means of support for a very complex problem.

Chapter 6 General Discussion

6.1 Purposes of this thesis

The overarching aim of this thesis was to extend research on perfectionism by examining different cognitive-behavioural approaches in reducing and managing perfectionism in athletes. To answer this broad aim, four studies were conducted. The first study examined the relationship between trait perfectionism and help-seeking attitudes, in student-athletes. The second study used a PST intervention in a group of basketball players. The third study compared three cognitive-behavioural approaches (CBT, ACT, and REBT) in a group of rugby league academy players. The fourth study evaluated the effectiveness of an online, ACT-based intervention in female football players. The purpose of this present chapter is to discuss the major findings of the thesis in the context of existing research. This chapter also provides suggestions for future directions and limitations of the studies in the thesis, and applied recommendations based on the thesis. The chapter ends with specific guidance to Sport and Exercise Psychologists, followed by a conclusion.

6.2 Summary of the findings

Study one used a cross-sectional research design to examine the relationship between trait perfectionism and help-seeking behaviours in student-athletes and whether higher levels of PC predict negative attitudes towards both sport psychology support and mental health support. Study one was the first study inside of sport to examine this relationship and subsequently the first study inside of sport to evidence the negative impact higher levels of perfectionism (specifically PC) can have on attitudes towards help-seeking. Based on these findings, it was clear there needs to be more education on the importance of help-seeking for performance and or mental health related needs. In addition, sport psychologists may need to

build better, more robust relationships with perfectionistic athletes so that they have less stigma and pre-conceptions of the service.

Study two used a single-subject, multiple base line design to examine whether a specially adapted PST intervention was effective at reducing perfectionism cognitions, cognitive appraisals, pre-competition emotions, and performance satisfaction in a group of perfectionistic athletes. Study two utilised the first single subject, multiple base line design in perfectionism. Furthermore, study two was only the fifth intervention study aimed at reducing perfectionism and or perfectionism cognitions in athletes. Based on these findings, it was clear that the specially designed PST intervention lacked effectiveness with perfectionistic athletes. In addition, PST may in fact increase or induce more frequent perfectionism cognitions due to the nature of the PST intervention (e.g., perfecting skills). These findings highlight the complex nature of perfectionism and signals how there needs to be greater emphasis on the use of second (e.g., CBT) and third (e.g., ACT) wave, cognitive-behavioural approaches.

Study three also used a single-subject, multiple base line design, this time with three groups, to explore the effectiveness of three different cognitive-behavioural approaches on the same outcomes in a group of perfectionistic athletes. Study three was the first known single subject, multiple base line design to use three groups inside of sport. Furthermore, study three was one of very few pieces of research to compare the effectiveness of different cognitive-behavioural approaches. Based on the findings, there was support for all three cognitive-behavioural approaches. However, ACT was deemed the most effective at reducing perfectionism cognitions, cognitive appraisals, pre-competition emotions, and performance satisfaction. In addition, the findings of study three provide paralleled support to the research outside of sport, where CBT and ACT have been proved effective across different domains.

Sport psychologists will need to up skill their approaches so that they deliver the most effective interventions to perfectionistic athletes.

Study four, used an RCT design to test the effectiveness of an online, ACT-based intervention to reduce perfectionism, perfectionism cognitions, and pre-competition emotions in a group of female footballers. Study four was the third RCT intervention to be used on perfectionism inside of sport and the first to use an online modality. Based on the findings, there was support for ACT in reducing perfectionism in female footballers. In addition, the findings support the use of delivering online interventions to perfectionistic athletes. The findings outline that sport psychologists, as well as organisations more generally, should adopt ACT interventions as a way of supporting perfectionistic athletes. Furthermore, self-help interventions, which have had some support previously, may offer important contribution to the way perfectionism is managed in sport. In addition, online interventions, which have had less research in comparison to face to face interventions, are becoming a practical and effective way at delivering interventions.

6.3 Themes of this thesis

6.3.1 Attitudes towards help-seeking

People with higher levels of perfectionism are vulnerable to a range of physical, psychological, and emotional problems (Hill & Curran, 2016). In addition, higher levels of perfectionism may play a role in their ability to seek help for these problems (Dang et al., 2020), as well as facilitating more problematic attitudes (Madigan et al., 2019). In this regard, research has highlighted that stigma is a central factor in developing negative attitudes towards help-seeking (e.g., Shannon et al., 2018). This is similar to the findings of study one, where athletes with high levels of PC had higher levels of stigma, and lower levels of confidence and openness towards sport psychology support. In contrast, PS negatively predicted stigma to sport psychology support and mental health support, and positively

predicted confidence in sport psychology support and help-seeking towards mental health support.

Some of the findings may be explained by the desire of athletes to be seen as perfect (Stoeber & Rountree, 2021). As a result, they may fear the judgement of others (e.g., coaches, parents, and teammates). To them, receiving help for a performance or well-being related issue would result in them being imperfect and may also contribute to more negative attitudes towards help-seeking. As such, athletes with higher levels of PC would rather persist with their perfectionism, not matter how difficult it is, than seek help for it. This finding also supports previous research, which demonstrates that some athletes with higher levels of perfectionism value the outcomes associated with their perfectionism, despite the challenges that their perfectionism brings (Hill et al., 2015).

Perfectionistic athletes tend to react negatively to failure or mistakes (Gotwals & Tamminen, 2022). Athletes with higher levels of PC are prone to pessimism and rumination following failure (Lizmore et al., 2017). In addition, athletes with higher levels of PC and PS perform more poorly following failure (Lizmore et al., 2019). Therefore, more positive attitudes towards help-seeking are important, especially following mistakes or failure. However, perfectionistic athletes who make mistakes or experience failure may lack the resources needed to seek-help due to the judgement of others. The results of study one suggests that athletes with higher levels of PC will have lower help-seeking behaviours. In addition, study one suggests that perfectionistic behaviours may be a factor that interferes with athletes seeking and obtaining help for psychological difficulties (Dang et al., 2020).

In contrast to PC, there may be some benefit of athletes having higher levels of PS. For example, PS may lead to a desirable patterns of engagement and help-seeking (Shim et al., 2016). In study one, athletes with higher levels of PS have higher levels of confidence and more openness towards both sport psychology support and mental health support. This

bodes well in regards to whether athletes are likely to seek psychological support and how they might respond to it when offered. However, the perceived benefits of PS, in regards to help-seeking, may be undermined by failure (Lizmore et al., 2019). Furthermore, athletes with higher levels of SOP (a dimension of PS) may experience higher levels of threat as well as withdrawing effort following failure (Hill et al., 2011).

The relationship between perfectionism and attitudes towards help-seeking is clearly complex. Perfectionism may support help-seeking behaviours, but it may also act as an inhibitor of them. As perfectionism is linked to a number of issues (e.g., decreased quality of life and reduced longevity; Fry & Debats, 2009), it seems essential to make sure athletes have positive attitudes towards help-seeking. This may mean enhancing their knowledge of the support (e.g., psycho-education workshops). However, there are challenges with this approach. For example, a major facet of perfectionist behaviour is an inability to admit or outwardly demonstrate a need for help, as this would be evidence for being less than perfect (Hewitt & Flett, 2002). Despite these issues, study one provides the first evidence that perfectionistic athletes may need support with their attitudes.

Developing more positive attitudes is an important step to support perfectionistic athletes with both performance and well-being. There are several important factors to consider when developing attitudes. Firstly, we should aim to develop perfectionistic athletes help-seeking literacy skills. That is, their ability to understand the benefits of psychology and when they should be seeking help. Secondly, practitioners must build and sustain very strong personal and professional relationships with athletes (Crawford et al., 2022), including perfectionistic athletes. Finally, developing positive and inclusive cultures that accept mistakes may also support athletes help-seeking behaviours (Crawford et al., 2022), reduce barriers, and facilitate help-seeking behaviours. These steps reflect the potential importance

of providing educational and informational (psychoeducation) interventions to perfectionistic athletes.

There is no research to date that has looked at developing perfectionistic athletes' attitudes towards help-seeking over time. However, there is two recent pieces of research inside of sport that have found some benefit in psychoeducation interventions for athletes. In the first example, Ryan et al. (2023) delivered a single, 1.5-hour intervention session to rugby league athletes. The intervention session included educational components and real-life experiences of mental health. They found that stigma, knowledge of mental health, and help-seeking intentions improved 1.5 weeks after the intervention session. In the second example, Oftadeh-Moghadam et al. (2023) delivered a psychoeducation intervention to advance help-seeking attitudes. Female rugby players received four 60-minute weekly sessions and found the educational intervention was successful in enhancing the player's mental health literacy and reducing stigma towards seeking help.

6.3.2 Effective versus non-effective management of perfectionism

Effective ways of reducing perfectionism are needed. Previous research has highlighted the benefits that CBT has on perfectionism (Galloway et al., 2022, for a summary). These interventions have allowed practitioners to be able better understand what works (i.e., what is effective vs what is not effective). However, the vast majority of this research has been conducted outside of sport, in settings that include education (e.g., Grieve et al., 2021) and the community (e.g., Ong et al., 2019). The findings of the thesis provide the best indication yet in regards to what the best and most effective interventions are to reduce and manage athlete perfectionism. In particular, study two, three, and four were intervention studies that provided answers to this dilemma. Across all three studies, there were both effective and less effective ways at reducing perfectionism in athletes.

In study two, which used a PST intervention, there was no clear indication that PST was an effective way at reducing perfectionism. In two of the five participants, the frequency of perfectionism cognitions actually increased over time. It may be that some of the skills from the PST intervention (e.g., self-talk), do not 'extend' to the deeply ingrained issues of the athlete's perfectionism. In addition, perfectionism cognitions may not be as dynamic or amendable to change as first thought (Flett et al., 2017). Therefore, reducing perfectionism may require alternative interventions that target specific perfectionistic tendencies, thoughts, behaviours, or emotions.

More specific interventions were tested in study three and four, which compared the effectiveness of different cognitive-behavioural approaches. All of these approaches reduced athlete perfectionism to some degree and more than PST. Study three found support for three cognitive-behavioural approaches. These interventions, in comparison to study two (PST), may better tackle the deeply ingrained aspects of perfectionism (Mikail et al., 2022), such as harsh self-criticism. In addition, these interventions may provide athletes with greater insight and awareness of their perfectionism, allowing them to examine the negative impact it has on their beliefs and behaviours (Egan & Shafran, 2017). Techniques such as cognitive restructuring (CBT), being present (ACT), and awfulizing (REBT) are some examples of techniques that might do so.

CBT is one of the most widely used and researched therapies in sport (McArdle & Moore, 2012). There is also a large body of evidence for CBT's effectiveness in reducing perfectionism (Galloway et al., 2022). CBT allows athletes to change how they think, including restructuring thoughts to change behaviours or feelings. In addition, CBT focuses on the athlete's capacity to change themselves and does not address wider problems or systems. This may be particularly important if their perfectionism is facilitated by others (e.g., parents or coaches). But the structured approach that CBT offers may be beneficial for

some practitioners and be well suited to reducing perfectionism than other more non-structured approaches.

There is growing support for the use of REBT in sport. REBT has less evidence, especially in the perfectionism research. But REBT may provide perfectionistic athletes with an opportunity to identify and change their irrational beliefs, which can lead to a reduction in dysfunctional emotions and behaviours (Turner, 2016). In addition, REBT focuses on the event that may be causing the negative response, something that CBT does not consider. Awfulizing is a common technique in REBT, which lends itself well with perfectionism given the rigid thinking that is associated with perfectionism. However, REBT may not always be appropriate for perfectionism, because it may be difficult to identify irrational beliefs, especially given the complexity of perfectionism.

Practitioners should use either CBT or REBT for perfectionism with caution, though. There is initial evidence that either approach may reduce perfectionism cognitions as well as its negative effects. In addition, both approaches offer important practical advantages that suit perfectionism and perfectionistic thinking (e.g., cognitive restructuring and awfulizing). Both approaches, and their subsequent techniques, focus on change and avoidance of the problems associated with perfectionism. This may be one reason why both approaches were less effective than ACT in study three.

6.3.3 ACT is an effective approach for perfectionism

There is less research on the effectiveness of ACT interventions for perfectionism compared to CBT. But ACT interventions are becoming a more frequently used form of support for perfectionism. ACT differs dramatically in comparison to other cognitive-behavioural approaches (particularly second wave approaches), with its emphasis on acceptance and values rather than avoidance and change (Hayes et al., 1999). When thinking about perfectionism, the negative thoughts and feelings that encompass frequent self-

criticism, fear of being judged by others, and concerns over making mistakes (Flett & Hewitt, 2002). Therefore, using an ACT lens seems to naturally fit with the aforementioned issues associated with perfectionism. The results from study four provide strong support with all participants in the intervention group significantly reducing their frequency of perfectionism cognitions and levels of perfectionism from pre- to post-intervention.

ACT may be an effective approach with perfectionism for several reasons. Firstly, ACT helps athletes to allow rigid self-critical thoughts to pass without analysing each one in detail. Analysing each thought is a technique that is synonymous with CBT and REBT (Turner, 2023). As such, rather than focussing on these thoughts and attempting to change or avoid them, accepting, noticing, and allowing each thought to pass by may be more appropriate for athletes with higher levels of perfectionism. In addition, being present with one's thoughts, again, might be more beneficial for athletes with higher perfectionism (who typically focus on past mistakes or concerns with future outcomes), than trying to change or avoid these situations or thoughts (Ong et al., 2019). Finally, living by one's values is particularly beneficial for athletes with higher levels of perfectionism as these athletes are often very unhappy with who they are or how they perform and driven by their unrealistic goals. Therefore, bringing greater attention to these values allows athletes feel happier and more content with what they are achieving (Hayes et al., 2004).

For ACT interventions to be effective there are a number of considerations. Firstly, there must be a strong and balanced working alliance between the practitioner and client. This balanced alliance must also be seen as a shared humanity between the practitioner and client, who are seen as equals. Secondly, the practitioner needs to develop willingness from the client. Both of these considerations must be taken into account when developing an intervention. In study four, there was a specific module (module one) on building rapport and questions on why each participant was taking part in the intervention. These considerations

were challenging to include in study four due to the online, self-help nature of the intervention. But nonetheless, must be considered by the practitioner (Hayes et al., 2004).

The fourth study in this thesis provided the first ACT intervention with perfectionistic athletes. The intervention group had significant reductions in perfectionism and perfectionism cognitions from pre- to post-intervention. ACT can therefore be a useful and effective approach at reducing athlete perfectionism. It is encouraged that sport psychologists deliver ACT to perfectionistic athletes, either through traditional face to face, or as is the case in study four, online. Previous research has highlighted the benefits of self-help support outside of sport (e.g., Steele & Wade, 2008) and inside of sport (e.g., Donachie & Hill, 2020), and this type of support may be useful and empowering tool to help perfectionistic individuals manage their cognitions and emotions. But it is hoped that interventions begin adopting either face to face or online interventions that are grounded in cognitive-behavioural approaches (e.g., ACT).

6.3.4 Other features of effective interventions

The thesis also provides support for the use of online modes of delivery. Online interventions are a seemingly effective way at reducing perfectionism and it is a growing area of applied psychology. Online interventions offer a purposeful and effective way at reducing perfectionism and its negative consequences. In study four, the findings agree with previous research and show that interventions which are online or self-guided can produce significant reductions in perfectionism. There are clear benefits of online guided interventions for perfectionism (Anderson, 2016). Online interventions are effective, and they represent a scalable mode of delivery, which is important given the benefit in widescale dissemination of self-help interventions (Galloway et al., 2022). However, they may be less effective than the face-to-face interventions at maintaining positive changes (Egan et al., 2014), and should not be replacing face to face intervention, but instead used alongside them (Suh et al., 2019).

The use of self-guided interventions was also supported. Self-guided interventions are becoming a common feature of interventions in the perfectionism literature (Lowndes et al., 2019) and have been shown to be effective at reducing perfectionism (Rozenal et al., 2017). Self-guided interventions allow athletes to access the resources/support at their own speed, and because they are not delivered by an in-person therapist, much of the stigma is reduced (Watson et al., 2021). In study four, the findings provided strong support for the use of self-guided interventions, also supporting previous research (Donahie & Hill, 2020). However, there are limitations associated with self-guided interventions. This includes retention and adherence towards self-guided interventions (Shafran et al., 2017). Therefore, practitioners must be aware of this issue and possibly provide more hands-on guidance during the pre- and post-intervention.

Practitioners and researchers should consider the length of interventions. Research has used a range of different lengths of interventions. Interventions to reduce perfectionism have used shorter, brief interventions (e.g., LaSota et al., 2017) to longer, 12-week interventions (e.g., Radhu et al., 2012). To date, there is no guidance for practitioners on how long their intervention must be. Study two used a 4-week intervention, study three used a 6-week intervention, and study four used an 8-week intervention. Ultimately, shorter interventions (e.g., 4-6 weeks) seem to have the most evidence behind them and practitioners are encouraged to use this length of intervention when working with perfectionistic athletes.

Effective perfectionism interventions use homework assignments. Homework was used throughout the interventions in study two, three, and four. During any cognitive-behavioural approach, there is reliance on homework to be completed by the athletes between sessions (LeBeau et al., 2013). This helps the athletes engage and adhere to the processes involved in the intervention (Kazantzis et al., 2017). In addition, the success or failure of an intervention will be influenced by how much the individual participates and engages in the

homework tasks (see LeBeau et al., 2013). The homework is reviewed at the beginning of each session. The use of homework may be difficult to implement when used within a self-guided intervention, so practitioners may be challenged to think creatively to apply this.

A final key feature of effective interventions is the buy in from the athlete. As demonstrated in study one, athletes with higher levels of perfectionism (in particular PC) have more negative attitudes towards sport psychology support, which include stigma and closedness. As such, practitioners were encouraged to adopt more psychoeducation into any intervention they deliver. The aim here was to help athletes with higher levels of perfectionism better understand and appreciate sport psychology, as well as when and why they might need it. Subsequently, study two, three, and four incorporated sessions or modules designed to enhance the athletes' attitudes and help-seeking behaviours. Not only will this retain them in the intervention, but they be more inclined to seek help in the future, too.

6.4 Future directions and remaining questions

6.4.1 Perfectionism interventions for athletes

The research into athlete interventions to manage perfectionism is still in its infancy. Research has varied between approaches, lengths, and modalities, but the reality is that little is known on the most effective approaches for certain demographics. Even including the studies from the thesis, there are numerous questions that remain. For example, there is little known regarding the length, duration, frequency, and intensity of any intervention aimed at reducing perfectionism in athletes. These are important features of any successful or less successful intervention (Henriksen et al., 2019). It is hoped that answering these remaining questions that recommendations can be made as to the most effective way of working with perfectionistic athletes.

With much of the research yet to be conducted, other researchers must continue to look outside of sport for inspiration. One interesting question is the use and impact of

interventions that use multiple cognitive-behavioural approaches (e.g., Ong et al., 2022). These are referred to as process-based interventions (PBI). Previous research has found positive benefits of combining approaches and allows a variety of skills from evidence-based treatments to match environmental needs and personal goals in the moment (Ong et al., 2022). In study two of the thesis, the findings outline the individualistic nature of perfectionism and its impacts on those individuals. Therefore, opening up to a broader variety of support (e.g., PBI) may offer greater access and support for perfectionistic athletes.

There are other novel approaches that are yet to be delivered in sport to reduce perfectionism but have shown to be effective in other contexts and domains. For example, Dialectical Behaviour Therapy (DBT), which is a cognitive-behavioural approach for people who experience intense emotions and feelings (Linehan, 1993). DBT is a combination of acceptance- and change-oriented strategies (Chapman, 2006). In addition, DBT was originally developed for personality disorders, and teaches people about being present, coping with emotions, and developing positive relationships (Chapman, 2006). DBT has yet to be used with perfectionism but given DBTs use with a range of complex disorders, including suicidal thoughts, it may well be a useful approach with perfectionism in mind.

There may be benefit for practitioners in using Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991), too. FAP is a contextual, behavioural, relational approach to psychotherapy (Tsai et al., 2010). FAP focusses on the therapeutic relationship as a fundamental part of any success or failure within FAP interventions. This may be beneficial for perfectionistic athletes, given the need to have a strong working alliance (Watson et al., 2021). However, it may also create some issues, notably how open perfectionistic athletes are to this support. They may be even less inclined to engage in the support of a sport psychologist. These examples, along with other cognitive-behavioural approaches, provide

inspiration and hope for reducing perfectionism outside of the approaches that have been used to date.

There may be scope for Single-Session Therapy (SST) for perfectionistic athletes, which has a growing evidence-base. For example, Pitt et al. (2015) reviewed research that has used SST in sport. They found that SST was largely underpinned by Solution-Focussed Therapy (SFT), which is a type of positive psychology focussed on providing solutions (de Shazer, 1985). In addition, SST focussed on behavioural issues, relationship issues, and anxiety or stress related issues, which are all befitting perfectionism. These types of interventions may then be useful for perfectionism, as they do not necessarily require the same time commitments that longer approaches do. And given the increasing numbers of people struggling with perfectionism (see Hill & Curran, 2016), it may seem like a pragmatic approach to use.

Future studies may also want to examine the impact of individual intervention sessions or components of interventions. This would help clarify the impact of specific parts of the intervention, rather than summarising the intervention as effective or not effective. There may be specific elements that are more impactful than others. Further, future research may consider identifying which of these techniques are more helpful to develop a more robust and effective intervention, as well as include more performance and behavioural outcomes (Watson et al., 2022). For example, in study two, three, and four of the thesis, only the intervention as a whole was evaluated rather than the individual sessions within the interventions. In study two, there may be some aspects of the PST intervention that were effective.

6.4.2 Coach interventions

The coach has a central role in developing athletes (Madigan et al., 2019). This includes building positive relationships, which play a key role in developing effective

coaching environments (Jowett et al., 2017). However, these environments may become toxic and create a host of negative consequences for athletes (e.g., abuse; Taylor et al., 2018).

These types of environments may even fuel athlete perfectionism (Olsson et al., 2021). This is especially important if a coach expects athletes to be perfect and are highly critical of them when they fail to meet these expectations (OOP; Hewitt & Flett, 1991). Therefore, it seems appropriate to begin supporting coaches with educational interventions aimed at reducing their perfectionistic behaviours.

Research into OOP and its effects on athletes is gaining interest. For example, Olsson et al. (2022) examined the impact of perceived coach perfectionism on athlete burnout. Using a cross-sectional research design, they found that coaches OOP positively predicted athlete burnout. The findings suggest that when athletes perceive their coaches to be more perfectionistic towards others, they are more likely to experience burnout. This finding outlines how athletes can be damaged by the harsh nature of perfectionism beyond their own perfectionism. Ultimately, coaches play a significant role in developing athlete perfectionism. Athletes can perceive perfectionism from their coach in a number of ways, including communication, which has previously shown to increase athlete perfectionism (Grugan et al., 2021).

Developing coach interventions to reduce their levels of OOP is important for several reasons. Firstly, athletes who perceive their coach to be perfectionistic are prone to experiencing negative psychological consequences (e.g., motivation; Barcza-Renner et al., 2016). For example, educating coaches on how they communicate may reduce some of their unrealistically high expectations towards their athletes. Secondly, coaches themselves are prone to experiencing psychological consequences of their own perfectionism (Vealey et al., 2020). Specifically, how coaches perceive perfectionism from others and the negative impact this has on their motivation and satisfaction. Here, interventions may include changing the

coach's leadership style (Sarkar & Page, 2022). Coach interventions will not replace interventions for athletes but would act as a protective factor against coaches OOP.

These interventions might include group or individual coach education workshops, aimed at supporting leadership and communication styles (e.g., Turnnidge & Côté, 2017). Supporting leadership and communication in coaches is important because the way that coaches interact with athletes can be perceived as facilitating perfectionism (Madigan et al., 2019). In addition, interventions might aim to develop coaches' knowledge (Dempsey et al., 2022). This might include what perfectionism is, how to spot it in themselves and athletes, and how they can reduce environments that are perfectionistic. If coaches are aware of perfectionism and have knowledge of perfectionism, which includes how they fuel athlete perfectionism (Olsson et al., 2022), they may then be better equipped to cope or change their behaviours to reduce it.

There is limited evidence to date that any coach intervention can reduce OOP. However, there is research that has looked to develop coaching knowledge and practice, as a way of supporting athletes. In a recent example, Jones et al. (2023) delivered an 8-week multi-component intervention (e.g., education workshops, positive game-based pedagogy, mentoring, peer evaluation, and an online discussion forum) to football coaches. They found improvements in game based coaching practices and higher quality feedback for coaches in the intervention group. In another example, McLaren et al. (2015) reduced motivational climates in football coaches. Following an educational intervention, they found that coaches positively influence perceptions of task and social cohesion. The examples provide support for educational-based interventions in reducing some of the negative coaching behaviours that may facilitate perfectionism in athletes.

6.4.3 Environmental and organisational support

A final consideration for future research is to examine and better understand the impact of interventions that are delivered from a top-down perspective and that aim to develop a more positive culture (see Grange, 2010). Organizational sport psychology has previously outlined the need for sport psychology practitioners to move beyond individual support (Fletcher & Wagstaff, 2009). This shift will bring greater acknowledgement of the wider contextual influences on performance and well-being (McKenzie et al., 2022).

Practitioners can have an impact on organisations beyond just the individual, and include leadership and coaching expertise, socialization processes refinement and provision, and cultural and climatic awareness and monitoring (Wagstaff, 2019). Despite the challenges involved (e.g., sport psychology practitioners lack of awareness surrounding their own cultural identity), sport psychology can become a recognised tool that is used to develop positive environments within organisations (Quartiroli et al., 2022).

A growing area of research, that is related to environmental and organisational psychology, is the development of perfectionistic climates. Perfectionistic climates focus on aspects of the social environment that are perfectionistic (Hill & Grugan, 2020). These environments are heavily influenced by the coach and coaching behaviours (e.g., expectation, criticism, control, conditional regard, and anxiousness). Therefore, coaches expect performances to be perfect and less than perfect performances are seen as unacceptable. As such, perfectionistic climates reflect positive (low levels of perfectionism) and negative (high levels of perfectionism) environments.

These particular environments encourage perfectionism and reflect coaches as being harsh, negligent, and psychologically controlling. Because of these features, it is paramount that support is in place to reduce perfectionistic climates and help athletes. Interventions may include broad educational workshops for coaches (see previous future direction), specific

tailored support for parents (e.g., Knight et al., 2017), or support with identity and values (Henrikson, 2015). These suggestions may help reduce athletic perfectionism by supporting those who may impose or fuel perfectionism across the environment. Research is required to better understand if this is possible and what impact it may have on athlete perfectionism.

Again, there is evidence in support of similar types of interventions. For example, Dorsch et al. (2017) outlined strategies for parents to reduce their high expectations towards their children. Parents who were allocated to an intervention group received a 45 min presentation along with an education guide. They found an increase in positive parental involvement, parent-child relationships, and children's enjoyment and competence in sport. This example, as was the case with coach interventions, provide a sense of how important educational interventions can be in reducing perfectionistic environments.

In another example, Henrikson (2015) delivered an intervention to develop a high-performance culture. The intervention included identifying aspects of a damaging team culture, re-establishing pillars that represent a constructive team culture, and integrating values. Despite the intervention being a difficult and lengthy process, Henrikson found that performance of the team and the individuals increased and that the organisational stress decreased. Here, the case study describes and defines the importance of having a strong and positive team culture. It also demonstrates how this intervention may also translate into reducing climates that are perfectionistic.

6.5 Limitations

6.5.1 Self-report

A first limitation of the thesis is that we predominantly used self-report measures. Across all four studies, self-report measures were used. Self-reporting relies on an individual's own report of their symptoms, behaviours, beliefs, or attitudes (Levin-Aspenson & Watson, 2018). The main advantage of self-report is that it is a relatively simple way to

collect data from many people quickly and at low cost. Furthermore, self-report measures act as a screening tool for a number of important constructs (e.g., personality). The only person with direct access to mental events is the self; therefore, the self is the best person to report on these variables.

However, self-report measures come with several limitations. Firstly, studies using self-report measures are dependent on the respondent's ability to answer honestly and accurately and may be subject to response bias (Paulhus & Vazire, 2007). Across all four studies, the responses to self-report measures of perfectionism may be influenced by social desirability (Podsakoff et al., 2003). Research suggests that those higher in perfectionism may also be higher in perfectionistic self-presentation. Therefore, it is likely that certain athletes would underreport their levels of perfectionism, perfectionism cognitions, or negative pre-competition emotions.

To address the limitations of self-report measures, future studies could consider using additional sources of measurement. For example, as well as collecting data using self-report measures, data could be collected by using interviews (e.g., from coaches) and from physiological responses (e.g., heart rate). In addition, it may also be worthwhile including more qualitative assessments. This may include brief social validation interviews or more in-depth semi-structured interviews, both of which could be used to gain a more specific understanding of the athlete's perfectionism. These assessments may also be used to evaluate the effectiveness of any intervention.

6.5.2 Sample

A second limitation of the thesis is the samples used across the four studies. For example, study one was comprised of university athletes. In another example, study four focused on a sample comprised exclusively of female footballers. Both samples in study one and four were used because of the access that the lead author had with the organisations, as

well as pragmatics. In addition, the demographic of the sample in study three and four self-identified as perfectionistic. Again, using athletes who self-identified would mean greater access, in particular for study four, which required a large sample.

These limitations with the sample may mean that participants in study four are likely to have been more self-motivated to receive help than participants who did not come forward to take part in the study. This represents selection bias and may undermine the treatment fidelity and the overall findings of study four. This is because the findings may only support perfectionistic footballers who have a high internal level of motivation to receive help. This of course is not a representative sample of perfectionistic athletes/footballers. In addition, the findings across the four studies may not generalize beyond the present samples and contexts. As such further research is required with participants from different sports and levels.

Future research should re-examine the present relationships in demographics other than footballers (e.g., swimmers). In addition, participants were predominantly white, therefore future research may consider exploring participants from more culturally diverse backgrounds. To address the issue of self-identified perfectionistic athletes, future research may want to screen footballers for high levels of perfectionism (similar to that of study two). Screening is used outside of sport (e.g., Kothari et al., 2019) and is an effective way at recruiting participants that are deemed to have higher levels of perfectionism. Scoring ≥ 29 on the Concern Over Mistakes subscale of the SMPS-2 (Gotwals & Dunn, 2009) is the main way of screening.

6.5.3 Research designs

A third limitation is the research design used in study one. Study one used a cross-sectional research design. This type of design provides a snapshot of possible relationships between the variables. In addition, cross-sectional research designs are quick and cheap (Knowland et al., 2015). At the time of planning study one, there was no research that had

looked at whether perfectionism predicts attitudes towards help-seeking. The lack of research provided the rationale in using a cross-sectional research design and form a clearer understanding of this relationship.

Despite helping answer the research question of study one, there are several weaknesses in using the research design. Cross-sectional research designs provide limited evidence in regard to causation (Solem, 2015). They only demonstrate a relationship between two or more variables in a specific timeframe. Participants may be feeling more or less perfectionistic due to personal or performance related issues. This may be especially the case for perfectionism cognitions, which fluctuate and change. In addition, there are a number of bias that might be present when using cross-sectional research designs (e.g., recall bias; Tripepi et al., 2010). As such, participants might not be recalling true information, especially with perfectionistic athletes wanting to be perceived as perfect.

Future research may want to examine the same variables in study one but using a longitudinal research design. Longitudinal research designs may enhance the current understanding of attitudes towards help-seeking by assessing temporal relationships (Wang et al., 2017). It may also support variables such as perfectionism cognitions, which may give a more reliable indication if it is measured more than once. Future research may also consider using qualitative research designs. Here, participants could provide more in-depth responses of the relationship between perfectionism and attitudes towards help-seeking.

6.5.4 Single-case experimental design

A fourth limitation was that in chapter three and four PND was used to determine the effect sizes of the intervention. Previously, there has been some confusion over the best analysis techniques for single-case experimental designs. Researchers have previously used social validation interviews (Page & Thelwell, 2013) and visual analysis (Lane & Gast, 2014), which assess trends, levels, and stability of the data. However, single-case

experimental design studies are based on baseline logic, meaning participants serve as their own control for evaluating change (Gast & Hammond, 2010). This makes it problematic for assessment from pre- to post-intervention. One suggestion to overcome this issue is to use metrics to assess intervention effectiveness (Scruggs & Mastropieri, 1998).

The earliest suggested metric to be used within single-case experimental designs was the use of effect sizes (Gingerich, 1984). However, a practical complication is the fact that single-case experimental designs contain very few data points, which means that effect sizes are over inflated. PND is the percentage of treatment phase data that exceeds a single noteworthy point within the baseline phase (Lenz, 2013). PND provides the most accurate assessment of the intervention effectiveness. However, PND is not without its limitations. One limitation of the PND is that the yielded effect size measure is based on only one data point in the baseline phase. Specifically, if one of the data points in the baseline phase approaches the ceiling or floor of the score range, it may be possible for no treatment effect to be yielded despite obvious improvements depicted in treatment phase data (Lenz, 2013).

Future research should continue to use PND as a means of single-case experimental design assessment, but caution should be applied when using it. As described, some data points might be extremely high or extremely low. Researchers need to be aware that these extreme scores might indicate very effective treatment, but this might not actually be the case. It may then be worthwhile for research to use PND alongside other assessments methods (e.g., visual analysis or % changes). In addition, researchers should consider collecting a larger number of baseline observations (i.e., 8 or more; Ottenbacher, 1986) to reduce publication bias.

6.5.5 Long-term effectiveness

A fifth limitation of the thesis is the lack of clarity on the long-term effectiveness of the interventions. For example, despite using correlations to understand the adherence effects

of the intervention (e.g., hours spent on the modules and the number of modules completed), there is little known as to which of the modules were the most effective in reducing perfectionism. A further limitation in regards to the effectiveness of the intervention was the follow-up phases. In study two and three, there was a 3-month follow-up. In study four there was no follow-up, which was partly due to the complexity of the study.

There are weaknesses in the studies due to the lack of clarity. Firstly, the absence and shortage of follow-up meant that it is difficult to say for certain how effective the interventions were. In addition, there was no way of tracking or verifying the participants engagement with the intervention in study four. In which case there may be some validity issues in the adherence data. This is especially important given the need to understand whether hours or the number of modules completed correlates with improvements in perfectionism. Participants may feel inclined to lie or may falsely report how many hours or modules they completed.

Future research needs to examine which of the ACT-based modules provided the biggest change. This might be done statistically or through more extensive social validation interviews (e.g., Watson et al., 2022). It may also be worthwhile collecting more data points throughout the intervention phase as a means of tracking and interpreting. In addition, future research may want to ensure there is a follow-up to intervention studies. Extending this to six or nine months (see Wood et al., 2017), would provide far more robust data on the maintenance effects of the interventions. Finally, future research might want to consider using a system that can measure this data more closely.

6.5.6 Selection of participants and participant experiences

Finally, despite screening for higher levels of perfectionism in study two, clinical perfectionism or pre-existing mental health conditions were not screened for in any of the studies in the thesis. In some intervention studies they screen for clinical perfectionism (e.g.,

Ong et al., 2019). Moreover, some participants may have had existing mental health challenges, which may alter the impact and effectiveness of the intervention. In addition, study one did not investigate whether participants have had previous experiences of sport psychology support or mental health support or not. This may be a limitation as negative or positive experiences may significantly affect attitudes towards help-seeking (Gulliver et al., 2012).

Not screening for clinical perfectionism may be a weakness in some of the studies in the thesis. Firstly, if participants were screened, we would know whether participants were appropriate for the intervention or not. We feel that we made it clear in the introduction and debrief as to where participants can access further support if they need it. In addition, some participants may have had a sport psychologist previously. This might undermine some of the findings from study one, as participants have formed attitudes towards help-seeking. Participants could have been asked if they had seen a sport psychologist before and generally gaining a fuller sense of their history would have been beneficial.

6.6 Advice and recommendations

The thesis closes with several important applied recommendations for applied sport psychologists.

6.6.1 Adapt practice

The first of which is to highlight that sport psychologists may need to adapt their current practice when supporting or in close contact with athletes who are higher in PC. With these athletes less likely to seek support, sport psychologists may need to provide extra support and care with an intention of building stronger, more positive attitudes towards sport psychology. One way to do so would be to adapt earlier phases of any intervention. This might be achieved by using Motivational Interviewing (MI; Miller & Rollnick, 2013) or similar techniques (e.g., person-centered counselling; Rogers, 1987), which places the

emphasis on relationship-building over content (Mack et al., 2019). Sport psychologists are encouraged to really focus on building and sustaining relationships to help build support perfectionistic athletes effectively.

6.6.2 Adopt different interventions

A second suggestion is that sport psychologists need to adopt different interventions specifically for perfectionistic athletes with their poorer attitudes in mind (e.g., high stigma, higher closedness). Once these athletes show more engagement, potential interventions that could be successful in reducing stigma and increasing openness include online counselling (Bird et al., 2018) and brief psycho-education workshops (Saporito et al., 2011). Self-help techniques may also be useful and effective in this regard particularly in the initial stages of applied work with perfectionistic athletes before more formal work (Donachie & Hill, 2020). Sport psychologists are also encouraged to deliver workshops and individual support aimed at increasing negative attitudes towards sport psychology and mental health.

6.6.3 Support coaches in identifying problematic perfectionistic behaviours

A third applied suggestion would be to develop and support coaches and support staff in their own development to recognize athletes who need support. Sometimes referred to as “mental health first aiders”, these individuals can provide initial support and direct individuals for additional support when required (Hadlaczky et al., 2014). This is achieved by upskilling existing practitioners or establishing new roles to directly support people with mental health issues (Kitchener & Jorm, 2002). Sport psychologists are also encouraged to attend CPD and different workshops in order to maximise the current knowledge base. This will directly influence their skills in supporting other coaches and support staff.

6.6.4 Deliver online interventions

A fourth suggestion is that sport psychologists and coaches should start delivering online interventions and move beyond traditional face-to-face consultancy (Fletcher & Wagstaff, 2009), specifically with perfectionistic athletes in mind. Online interventions allow

athletes greater flexibility, opportunity, and accessibility (Price et al., 2021). Although, one challenge with online interventions is developing a strong working alliance between the practitioner and athlete (Richards & Viganó, 2013). However, it might be that the absence of a working alliance in online interventions might in fact benefit perfectionistic athletes, who often have high levels of guilt and shame towards receiving help (Sagar & Stoeber, 2009). More research on the benefits and effectiveness of online vs face-to-face interventions is needed. It may be that sport psychologists utilise hybrid delivery methods to maximise the benefits of both modes of delivery (see Lasnier & Durand-Bush, 2022).

6.6.5 Use self-help guides

A fifth and final suggestion is to continue using self-help style interventions to support perfectionism. Self-help guides have been shown to be an effective means of support for perfectionistic athletes (Donachie & Hilll, 2020). Sport psychologists should begin practicing in this way, by giving the athletes more control and autonomy. Sport psychologists will need to be careful with this type of delivery though. It is thought that drop-out rates are higher with self-help interventions (Powell et al., 2020). As such, sport psychologists may only use this type of intervention with particular athletes who have had extensive help-seeking attitude development and have an environment that provides high levels of support from coaches (Grugan et al., 2021).

6.7 Guidance for practitioners

Based on the findings of the thesis, there are three key considerations for Sport and Exercise Psychologists. Firstly, perfectionistic athletes may not want the support of a Sport and Exercise Psychologist due to their overriding stigma. As such, Sport and Exercise Psychologists are encouraged to provide more educational resources, develop better relationships, and consider delivering online interventions to help develop more positive attitudes. Secondly, some approaches (e.g., PST) may not work. Sport and Exercise

Psychologists need to be trained and qualified in the use of other cognitive-behavioural approaches (e.g., ACT) in order to effectively support perfectionistic athletes. Finally, Sport and Exercise Psychologists should consider the use of self-help style interventions (e.g., pre-recorded sessions). This type of delivery provides a more flexible way of supporting perfectionistic athletes, who can remain anonymous to the support delivered.

6.8 Thesis conclusions

The broad aim of the thesis was to extend research in perfectionism by examining different cognitive-behavioural approaches in reducing and managing perfectionism in athletes. The aim of study one was to understand levels of perfectionism in athletes and whether this predicted more positive or negative attitudes towards help-seeking. The aim of study two was to determine the effectiveness of a PST intervention on athlete's perfectionism cognitions, pre-competition emotions, cognitive appraisals, and performance satisfaction. The aim of study three was to compare the effectiveness of three different cognitive-behavioural approaches for athlete's perfectionism cognitions, pre-competition emotions, cognitive appraisals, and performance satisfaction. Finally, the aim of study four was to determine how effective an online ACT-based intervention was for athlete trait perfectionism, perfectionism cognitions, and pre-competition emotions.

In study one, the findings suggests that athletes with high levels of PC are more likely to have high levels of stigma as well as closedness towards sport psychology support. In study two, the findings showed the PST intervention did not reduce perfectionism cognitions for all athletes, and in some of the athletes, it increased. These findings demonstrated the complex nature of perfectionism. The findings of study three showed that all three cognitive-behavioural approaches were effective at reducing perfectionism. However, ACT was the most suitable and effective intervention as it reduced perfectionism cognitions the most. The findings of the fourth and final study showed that that the online ACT-based intervention was

a viable and effective way to reduce trait perfectionism and perfectionism cognitions in football players.

The thesis demonstrated the complex nature of perfectionism. Practitioners must be aware of the issues regarding attitudes towards help-seeking. Here, practitioners may consider extending the time spent at the beginning and the end of any intervention to support these attitudes. This caution also extends to the use of PST with perfectionistic athletes. However, the thesis provided initial evidence that cognitive-behavioural approaches are effective in reducing both trait perfectionism and perfectionism cognitions, across a range of athletes. ACT-based interventions, in particular, are the most effective way at supporting perfectionistic athletes, with these being delivered online and self-guided as plausible modes of delivery.

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List of Abbreviations

ACT	Acceptance and Commitment Therapy
ALE	Appraisal of Life Events Scale
APS-R	Almost Perfect Scale-Revised
CBT	Cognitive Behavioural Therapy
CFA	Confirmatory Factor Analysis
CMPB	Comprehensive Model of Perfectionistic Behaviour
CT	Cognitive Therapy
DBT	Dialectical Behaviour Therapy
F-MPS	Frost Multidimensional Perfectionism Scale
FAP	Functional Analytic Psychotherapy
HCPC	Health and Care Professions Council
HF-MPS	Hewitt and Flett Multidimensional Perfectionism Scale
HRF	Hemodynamic Response Function
IASMHS	Inventory of Attitudes Toward Seeking Mental Health Services
IOC	International Olympic Committee
MI	Motivational Interviewing
MIPS	Multidimensional Inventory of Perfectionism In Sport
MSPE	Mindful Sport Performance Enhancement
OOP	Other-Oriented Perfectionism
PBI	Process-Based Interventions
PC	Perfectionistic Concerns
PCI	Perfectionism Cognitions Inventory
PCT	Perfectionism Cognitions Theory
PND	Percentage of Nonoverlapping Data
PPS-S	Performance Perfectionism Scale for Sport
PS	Perfectionistic Strivings
PST	Psychological Skills Training
RCT	Randomized Control Trial
REBT	Rational Emotive Behaviour Therapy
RFT	Relational Frame Theory
SEQ	Sport Emotion Questionnaire
SMPS	Sport-Multidimensional Perfectionism Scale
SOP	Self-Oriented Perfectionism
SPA-R	Sport Psychology Attitudes-Revised Questionnaire
SPP	Socially Prescribed Perfectionism
SST	Single-Session Therapy

Appendix A

A1. Study one ethical approval form



York St John University,
Lord Mayors Walk,
York,
YO31 7EX

22nd January, 2019

York St John University Cross School Research Ethics Committee
(Health Sciences, Sport, Psychological and Social Sciences and Business)

Dear Dean,

Title of study: Perfectionism, attitudes towards sport psychology, and attitudes towards mental health services in athletes
Ethics reference: Watson_22/01/2019
Date of submission: 02/01/2019

I am pleased to inform you that the above application for ethical review has been reviewed by the Cross School Research Ethics Committee and I can confirm a favourable ethical opinion on the basis of the information provided in the following documents:

Document	Date
Application for ethical approval form	21/01/2019
Responses to feedback	21/01/2019

Please notify the committee if you intend to make any amendments to the original research as submitted at date of this approval, including changes to recruitment methodology or accompanying documentation. All changes must receive ethical approval prior to commencing your study.

Yours sincerely,

Nathalie Noret

A2. Study two ethical approval form



York St John University,
Lord Mayors Walk,
York,
YO31 7EX

22nd February, 2019

York St John University Cross School Research Ethics Committee
(Health Sciences, Sport, Psychological and Social Sciences and Business)

Dear Dean,

Title of study: Using Psychological Skills Training To Manage Maladaptive Perfectionism
In Professional Basketball Players
Ethics reference: Watson_24/06/2019
Date of submission: 17/06/2019

I am pleased to inform you that the above application for ethical review has been reviewed by the Cross School Research Ethics Committee and I can confirm a favourable ethical opinion on the basis of the information provided in the following documents:

Document	Date
Application for ethical approval form	21/06/2019
Responses to feedback	21/06/2019
Questionnaire	21/06/2019

Please notify the committee if you intend to make any amendments to the original research as submitted at date of this approval, including changes to recruitment methodology or accompanying documentation. All changes must receive ethical approval prior to commencing your study.

Yours sincerely,

Nathalie Noret

A3. Study three ethical approval form

Est.
1841

YORK
ST JOHN
UNIVERSITY

York St John University
Lord Mayor's Walk
York YO31 7EX

+44(0)1904 624 624
www.yorksja.ac.uk

School of Education, Language and Psychology

14 January 2021

Dear Dean Watson,

I am pleased to inform you that your project "What is the most effective form of CBT in reducing athlete perfectionism?" has now been approved by the School Research Ethics Committee for the School of Education, Language and Psychology.

The approval code is RECELP00003

You may now proceed with the project and we wish you good luck.

Yours sincerely,



Dr Scott Cole, Chair
Ethics committee
School of Education, Language and Psychology.

Est.
1841



A4. Study four ethical approval form



York St John University,
Lord Mayors Walk,
York,
YO31 7EX

23/08/2021

School of Science, Technology, and Health Research Ethics Committee

Dear Dean,

Title of study: Effectiveness of an online Acceptance and Commitment Therapy-based sport psychology programme for managing perfectionistic thoughts and emotions in athletes
Ethics reference: STHEC0044
Date of submission: 30/07/2021

I am pleased to inform you that the above application for ethical review has been reviewed by the School of Science, Technology, and Health Research Ethics Committee and I can confirm a favourable ethical opinion on the basis of the information provided in the following documents:

Document	Date
Application for ethical approval form	23/08/2021
Participant information sheet and debrief	23/08/2021
Gatekeeper letter	23/08/2021
Recruitment poster	23/08/2021
Questionnaires and module content	23/08/2021

Please notify the committee if you intend to make any amendments to the original research as submitted at date of this approval, including changes to recruitment methodology or accompanying documentation. All changes must receive ethical approval prior to commencing your study. You are now free to begin data recruitment and collection for the above approved study.

Yours sincerely,

Dr Sophie Carter
Chair of the School of Science, Technology, and Health Research Ethics Committee

Appendix B

B1. Study 1 gatekeeper letter

Dean Watson
PhD Researcher
York St. John University
School of Sport
Lord Mayor's Walk
York
YO31 7EX
Dean.watson@yorks.ac.uk

Dear Sport Performance Manager,

As part of my PhD research, I am completing a project examining athlete's levels of perfectionism and their attitudes towards Sport Psychology and mental health services. I request your permission to use your University athletes and teams to complete my research study.

What does the study involve?

The study will involve athletes from any of the SHU sports, including both teams and individuals. Those athletes that give their consent will complete three questionnaires that will measure their level of perfectionism, their attitudes towards sport psychology and their attitudes towards mental health services. SHU will not be asked to do anything other than the use of their athletes for the purposes of the research. I have included further information about the study in the accompanying Participant Information Sheet.

What happens with the study findings?

Only my PhD supervisors and myself will have access to the information from this investigation. All information will be stored in line with the requirements of the General Data Protection Regulation (GDPR). Participant ID numbers will also be used to protect the anonymity of all participants, people and organisations who take part in the study. When the final draft of this study is written up, no University names will be mentioned along with any of the names of athletes that took part in the study.

Who can I contact if I have any questions?

My details are at the top of the page. Alternatively, you can contact my supervisor:

Professor Andrew Hill
a.hill@yorks.ac.uk

If you have any concerns, queries or complaints regarding the research project please contact Nathalie Noret (Chair of the Cross-School Research Ethics Committee for Health Sciences, Sport, Psychological and Social Sciences and Business at York St John University) on 01904 876311 or n.noret@yorks.ac.uk.

Thank you for taking the time to read this information.

Yours faithfully,

Dean Watson
PhD Researcher
York St John University

Please sign below if you are happy for me to complete my research in your University -

I have read and understand the above information and **do give my consent** to this study taking place.

Print Name: Date:

Signature:

B2. Study 1 information sheet

Participant No.: _____

Dean Watson
 School of Sport
 York St. John University
 Lord Mayors Walk
 York, YO31 7EX
dean.watson@yorks.ac.uk

Information Sheet

Invitation to participate

You have been invited to take part in a research project on perfectionism and attitudes towards Sport Psychology. Before you decide whether or not to take part, it is important that you understand why the research is being done and what it will involve. Please take time to read this information carefully and discuss it with others if you wish. If there is anything that is unclear or if you would like more information please contact me (*details listed above*).

How does the study involve me?

To participate all you will be required to do is complete a questionnaire measuring perfectionism, attitudes towards Sport Psychology and attitudes towards mental health services. The questionnaire will also ask for your age, gender, sport, hours you train, and your current participation level.

Do I have to take part?

No. It is up to you whether or not you take part in this study, although your contribution would be extremely appreciated. If you decide to take part, you may withdraw at any time (up until one month after the original date you completed the questionnaire) without giving a reason. If you withdraw from the research any data provided by you will be removed from the data analysis. Moreover, the study poses minimal risk to you and there are no immediate risks or benefits to you as a participant.

Will my taking part in this study be kept confidential?

All your data will be kept confidential and secured on a password protected computer. Moreover, we will not store your name as you will be issued with a participant ID number. This will maintain your anonymity.

What are the potential risks to you in taking part?

There are minimal risks in the project by taking part in this project. However, if any you suffer an emotional distress then there is information available on the debrief sheet. You do have the right to withdraw from this project at any point, without giving a reason. You can withdraw from the project by informing me (the researcher) via email or by verbally referring to their participant ID number if you wish to do so. If you withdraw from the research, any words used by you will be removed from the data that has been collected. To withdraw from the study, you have up until the **01/05/2019**.

How will this research data be used?

The data gathered from this research study will help shape our understanding around athletes' views and attitudes towards help seeking. By breaking these barriers down, we can help athletes access the relevant mental health support and make it easier for athletes to seek help.

What happens next?

If any of the participants are happy to help and be involved in this project, they will be asked to sign a consent form to confirm this. If any participants are not happy to be involved in this project, then thank you for your attention and participation so far.

It is possible that the results of this research project will subsequently be published. If this is the case, appropriate steps will be taken to ensure that all participants and organisations remain anonymous.

If you do not want to be involved in the project, I would like to take this opportunity to thank you for reading the information above.

This investigation was granted ethical approval by the Cross-School Research Ethics Panel at York St John University.

Researcher contact details:**Dean Watson**

School of Sport,
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: d.watson@yorks.ac.uk

Dr Daniel Madigan

School of Sport,
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: d.madigan@yorks.ac.uk

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought, please contact:

Nat Noret

Chair of the Cross-School Research Ethics Committee for Health Sciences, Sport, Psychological and Social Sciences and Business,
York St John University,
Lord Mayors Walk,
York,
YO31 7EX.

Email: n.noret@yorks.ac.uk

B2. Study 1-4 consent form

Informed Consent Form

Please tick all boxes and date and sign where indicated below (X):

A. I confirm that I have read and understood the information sheet for the above study and understand what is expected of me

B. I confirm that I have been given the opportunity to ask questions regarding the study and, if asked, my questions were answered to my full satisfaction

C. I understand that my participation is voluntary. I also understand that I may withdraw at any time without giving a reason for my withdrawal and without penalty

D. I understand that all information about me will be treated in strict confidence and that I will not be named in any written work arising from this study

E. I consent to participate in this study

F. I give permission for my anonymous data to be stored in a public repository for wider use by others.

_____	_____	_____
Your name (PRINT)	Date	Signature
_____	_____	_____
Researcher's name (PRINT)	Date	Signature

B3. Study 1 debrief

Thank you for taking part in our research project. We would be happy to answer any queries you have about our work now or at any point in the future.

Given the importance of the mental health, we have prepared a short summary of key issues athletes should be aware of. For further information on mental health, or services, you may wish to visit www.mind.org.uk

How do I find a Sport Psychologist?

If you feel that you may benefit from seeing a Sport Psychologist, but not sure where to find one, then you can search <http://www.hcpc-uk.co.uk/> to locate your nearest practitioner. Alternatively search through Google, but make sure the practitioner you use is either BPS or BASES accredited and ideally is HCPC registered.

How can I learn more about perfectionism?

If you would like to read more about perfectionism, please visit <https://ray.yorks.ac.uk/>. Alternatively search 'perfectionism in sport' via Google Scholar.

How do I know if I'm experiencing a mental health problem?

It's common to feel unsure, and to wonder whether you should try to handle things on your own. But **it's always ok to ask for help** – even if you're not sure you are experiencing a specific mental health problem.

You might want to seek help if you're:

- worrying more than usual
- finding it hard to enjoy your life
- having thoughts and feelings that are difficult to cope with, which have an impact on your day-to-day life
- interested to find more support or treatment

Many thanks for taking part in the present study. If you would like further support in regards to the questions/topics that have been raised, you can visit www.mind.org.uk or contact Support Line via email info@supportline.org.uk for additional information and/or support.

Thank you once again for participating in our research. If you wish to remove your data from the study please contact us up before the 01/05/2019. State the participant ID number given and use the contact details below. If you have any other questions about the project, please feel free to contact:

Dean Watson
 School of Sport
 York St John University
dean.watson@yorks.ac.uk

B4. Study 2 information sheet

Participant No.: _____

Dean Watson
 School of Sport
 York St. John University
 Lord Mayors Walk
 York, YO31 7EX
dean.watson@yorksj.ac.uk

Information Sheet

Invitation to participate

You have been invited to take part in a research project looking into sport psychology and performance. Before you decide whether or not to take part, it is important that you understand why the research is being done and what it will involve. Please take time to read this information carefully. If there is anything that is unclear or if you would like more information, please contact me (*details listed above*).

How does the study involve me?

To participate you will be required to complete an initial questionnaire measuring your level of perfectionism. This will also include information about your age, gender, sport, hours you train, and your current participation level for most, this will be the end of their participation in the study, depending on the results. If selected to continue, and with your continued consent and participation, there will be then a 5/6 week period where you will be required to complete three questionnaires (1. Measuring emotions 2. Measuring appraisal 3. Measuring performance satisfaction), twice a week. After this period, there will be a four-week intervention where you will receive one to one support, twice a week. During this phase, you will also complete the questionnaires. Finally following this, there will be a 5/6-week period where you will be required to complete the same questionnaires, twice a week.

Do I have to take part?

No. It is up to you whether or not you take part in this study, although your contribution would be extremely appreciated. If you decide to take part, you may withdraw at any time (up until one month after the completion of the project) without giving a reason. If you withdraw from the research any data provided by you will be removed from the data analysis. Moreover, the study poses minimal risk to you and there are no immediate risks or benefits to you as a participant. There is of course a significant time contribution, so please think carefully before giving your consent.

Will my taking part in this study be kept confidential?

All your data will be kept confidential and secured on a password protected computer. Moreover, we will not store your name as you will be issued with a participant ID number. This will maintain your anonymity. However as part of the one to one phase, it may be obvious to others that you are receiving sport psychology support, however everything you receive during these sessions will also be confidential.

What are the potential risks to you in taking part?

There are minimal risks in the project by taking part in this project. You can withdraw from the project by informing me (the researcher) via email or by verbally referring to their participant ID number if you wish to do so. If you withdraw from the research, any words used by you will be removed from the data that has been collected. To withdraw from the study, you have up until the **01/02/2020**.

How will this research data be used?

The data gathered from this research study will help shape our understanding around athletes' use of coping techniques, to manage their emotions. Sport psychologists will be able to help athletes to manage their emotions and perform better.

What happens next?

If you are happy to help and be involved in this project, you will be asked to sign a consent form to confirm this. If you are not happy to be involved in this project, then thank you for your attention and participation so far.

It is possible that the results of this research project will subsequently be published. If this is the case, appropriate steps will be taken to ensure that all participants and organisations remain anonymous.

If you do not want to be involved in the project, I would like to take this opportunity to thank you for reading the information above.

This investigation was granted ethical approval by the Cross-School Research Ethics Panel at York St John University.

Researcher contact details:**Dean Watson**

School of Sport,
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: d.watson@yorks.ac.uk

Dr Daniel Madigan

School of Sport,
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: d.madigan@yorks.ac.uk

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought, please contact:

B5. Study 2 debrief

Thank you for taking part in our research project. We would be happy to answer any queries you have about our work now or at any point in the future.

How do I find a Sport Psychologist?

If you feel that you may benefit from seeing a Sport Psychologist, but not sure where to find one, then you can search <http://www.hcpc-uk.co.uk/> to locate your nearest practitioner. Alternatively search through Google, but make sure the practitioner you use is either BPS or BASES accredited and ideally is HCPC registered.

How can I learn more about perfectionism?

If you would like to read more about perfectionism, please visit <https://ray.yorksj.ac.uk/>. Alternatively search 'perfectionism in sport' via Google Scholar.

Many thanks for taking part in the present study. If you would like further support in regards to the questions/topics that have been raised, you can visit www.mind.org.uk or contact Support Line via email info@supportline.org.uk for additional information and/or support.

Thank you once again for participating in our research. If you wish to remove your data from the study please contact us up before the 01/02/2020. State the participant ID number given and use the contact details below. If you have any other questions about the project, please feel free to contact:

Dean Watson
School of Sport
York St John University
dean.watson@yorksj.ac.uk |

B6. Study 3 information sheet

Dean Watson
School of Science, Technology, and Health
York St. John University
Lord Mayors Walk
York, YO31 7EX
dean.watson@yorks.ac.uk

Information Sheet

Invitation to participate

You have been invited to take part in a research project looking into sport psychology and performance. Before you decide whether to take part, it is important that you understand why the research is being done and what it will involve. Please take time to read this information carefully. If there is anything that is unclear or if you would like more information, please contact me (*details listed above*).

How does the study involve me?

Perfectionism is commonly conceived of as a personality style characterized by striving for flawlessness and setting of excessively high standards for performance accompanied by tendencies for overly critical evaluations of one's behaviour (Flett & Hewitt, 2002). To participate you will be required to complete an initial questionnaire measuring your level of perfectionism. This will also include information about your age, gender, sport, hours you train, and your current participation level. For most, this will be the end of their participation in the study, depending on the results. If selected to continue, and with your continued consent and participation, there will be then a five-week period where you will be required to complete four questionnaires measuring emotions (e.g., thoughts and feelings), appraisals (e.g., perception of stressful events), performance satisfaction and perfectionism, once a week. After this period, there will be a four-week intervention where you will receive one to one support, twice a week. These will be provided online, and delivered by an accredited Sport and Exercise Psychologist, lasting no more than 1 hour per session. During this phase, you will also complete the questionnaires. Finally following this, there will be a five-week period where you will be required to complete the same questionnaires, once a week. All questionnaires will be completed online using SuveryMonkey.

Do I have to take part?

No. It is up to you whether you take part in this study, although your contribution would be extremely appreciated. If you decide to take part, you may withdraw at any time (up until one month after the completion of the project) without giving any reason. If you withdraw from the research any data provided by you will not be used.

You can withdraw from the project by informing me (the researcher) via email or by any other means of contact with the lead researcher or any of the contacts below. If you withdraw

from the research, any words used by you will be removed from the data that has been collected. To withdraw from the study, you have up until the **08/06/2021**.

Will my taking part in this study be kept confidential?

All your data will be kept confidential and secured on a password protected computer. Moreover, we will not store your name as you will be issued with a participant ID number. This will maintain your anonymity. However, as part of the one-to-one phase, it may be obvious to others that you are receiving sport psychology support, however everything you receive during these sessions will also be confidential.

What are the benefits and risks to you in taking part?

We consider the risks to be minimal. However, there will be discussion around private, confidential aspects of your life, inside and outside of sport, this could trigger new ill feelings and negative emotions, which could be distressing. This being said, as a HCPC registered psychologist, it is important to discuss these emotions, and each participant will be competently supported. Benefits are associated with engaging in sport psychology support (although this is not guaranteed). A debrief form will also be given to each participant, which will contain information of other organisations that may provide help if you so require.

How will this research data be used?

The data gathered from this research study will help shape our understanding around athletes' use of coping techniques, to manage their emotions. Sport psychologists will be able to help athletes to manage their emotions and perform better.

What happens next?

If you are happy to help and be involved in this project, you will be asked to sign a consent form to confirm this. If you are not happy to be involved in this project, then thank you for your attention and participation so far. It is possible that the results of this research project will subsequently be published. If this is the case, appropriate steps will be taken to ensure that all participants and organisations remain anonymous. If you do not want to be involved in the project, I would like to take this opportunity to thank you for reading the information above.

This investigation was granted ethical approval by the Cross-School Research Ethics Panel at York St John University.

Researchers contact details:

Dean Watson

School of Science, Technology, and Health
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: dean.watson@yorks.ac.uk

Dr Daniel Madigan

School of Science, Technology, and Health
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: d.madigan@yorks.ac.uk

B7. Study 3 debrief

Thank you for taking part in our research project. We would be happy to answer any queries you have about our work now or at any point in the future.

How do I find a Sport Psychologist?

If you feel that you may benefit from seeing a Sport Psychologist, but not sure where to find one, then you can search <http://www.hcpc-uk.co.uk/> to locate your nearest practitioner. Alternatively search through Google, but make sure the practitioner you use is either BPS or BASES accredited and ideally is HCPC registered.

How can I learn more about perfectionism?

If you would like to read more about perfectionism, please visit <https://ray.yorks.ac.uk/>. Alternatively search 'perfectionism in sport' via Google Scholar.

Many thanks for taking part in the present study. If you would like further support in regards to the questions/topics that have been raised, you can visit www.mind.org.uk or contact Support Line via email info@supportline.org.uk for additional information and/or support.

Thank you once again for participating in our research. If you wish to remove your data from the study, please contact us up before the 01/02/2020. State the participant ID number given and use the contact details below. If you have any other questions about the project, please feel free to contact:

Dean Watson
York St John University
dean.watson@yorks.ac.uk

Dr Scott Cole
York St John University
s.cole1@yorks.ac.uk

B8. Study 4 gatekeeper letter

Dean Watson
School of Science, Technology, and Health
York St. John University
Lord Mayors Walk
York, YO31 7EX
dean.watson@yorksja.ac.uk

Dear Sir/Madam,

Invitation to participate

We would like permission to invite your players to take part in a research project examining the usefulness of an online sport psychology intervention in managing perfectionistic thoughts and emotions in sport. Before you decide whether to allow us to do so, it is important that you understand why the research is being done and what it will involve. Please take time to read this information carefully. If there is anything that is unclear or if you would like more information, please contact me (*details listed above*).

What does the study involve?

The study involves taking part in an online sport psychology programme. Resources are made available to the players to use over an eight-week period. We expect players to work through the materials at their own pace and complete as much of the programme as possible. The programme is based on Acceptance and Commitment Therapy (ACT) and has been developed by a HCPC accredited Sport and Exercise Psychologist. The players will also be asked to complete questionnaires about their sports participation two times. The questionnaires measure different thoughts and feelings that are common in athletes.

Do They have to take part?

No. It is up to them whether they take part in this study, although their contribution would be extremely appreciated. If they decide to take part, they may withdraw at any time (up until one month after the completion of the project) without giving any reason. If they withdraw from the research any data provided by you will not be used.

They can withdraw from the project by informing me (the researcher) via email or any of the contacts below. If they withdraw from the research, any data they have provided will be destroyed. They have up until **08/06/2022** to withdraw.

Will their taking part in this study be kept confidential?

All their data will be kept confidential and secured on a password protected computer. We will not store their names as they will be issued with a participant ID number. This will maintain their anonymity. There will be two time points where we will ask you and one of the researchers to contact each participant to find out how they are getting on. This will be done via text or email.

What are the benefits and risks to them taking part?

We consider the risks to be minimal. However, the programme will require them to think about private, confidential aspects of their life, inside and outside of sport, and this could involve negative experiences and negative emotions. This is highlighted to the participants plus they will be given the contact details of a HCPC registered practitioner psychologist to use if they want support (Dean Watson, details below). At the end of the study, a debrief form will also be given to each participant, which will contain information of other organisations that can provide additional help in the future if required. The two check in points are designed to help understand the experiences of the participants, too.

How will this research data be used?

We aim to publish the results of this research project. If this is the case, appropriate steps will be taken to ensure that all participants and organisations remain anonymous. The data gathered from this research study will help shape our understanding around the effectiveness of this type of intervention in sport. Finally, anonymised data from the research will be shared on a public repository, meaning it will be free to access for others to use.

What happens next?

If you are happy to grant access, you will be asked to share a poster, containing a Qualtrics link, which will give each player an opportunity to provide consent and complete the initial questionnaire. This will then 'enter' them into the study. If you are not happy to grant access, I would like to take this opportunity to thank you for reading the information above. This investigation was granted ethical approval by the School of Science, Technology and Health Research Ethics Committee at York St John University.

Researchers contact details:**Dean Watson**

PhD Researcher
School of Science, Technology, and Health
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX
Email: dean.watson@yorks.ac.uk

Professor Andrew Hill

Professor of Sport & Exercise Psychology
School of Science, Technology, and Health
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX
Email: a.hill@yorks.ac.uk

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person, please contact:

Dr Sophie Carter

Chair of School Ethics Committee
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX
Email: s.carter@yorks.ac.uk

Dr Amanda Wilcox

University Secretary
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX
Email: us@yorks.ac.uk

B9. Study 4 information sheet

Dean Watson
School of Science, Technology, and Health
York St. John University
Lord Mayors Walk
York, YO31 7EX
dean.watson@yorksj.ac.uk

Information Sheet

Invitation to participate

You have been invited to take part in a research project examining the usefulness of an online sport psychology intervention in managing perfectionistic thoughts and emotions in sport. Before you decide whether to take part, it is important that you understand why the research is being done and what it will involve. Please take time to read this information carefully. If there is anything that is unclear or if you would like more information, please contact me (*details listed above*).

What does the study involve?

The study involves taking part in an online sport psychology programme. Resources are made available to you to use over an eight-week period. The resources are stored on Dropbox, which you will be granted permission to access (information on this will be provided before you start). We expect participants to work through the materials at their own pace and complete as much of the programme as possible. The programme is based on Acceptance and Commitment Therapy (ACT) and has been developed by a HCPC accredited Sport and Exercise Psychologist. You will also be asked to complete questionnaires about your sports participation two times. The questionnaires measure different thoughts and feelings that are common in athletes. The questionnaires will take approximately 10 minutes to complete.

Do I have to take part?

No. It is up to you whether you take part in this study, although your contribution would be extremely appreciated. If you decide to take part, you may withdraw at any time (up until one month after the completion of the project) without giving any reason. If you withdraw from the research any data provided by you will not be used.

You can withdraw from the project by informing me (the researcher) via email or any of the contacts below. If you withdraw from the research, any data you have provided will be destroyed. You have up until **08/06/2022** to withdraw.

Will my taking part in this study be kept confidential?

All your data will be kept confidential and secured on a password protected computer. We will not store your name as you will be issued with a participant ID number. This will maintain your anonymity. There will be two time points where your coach and one of the

researchers will contact each participant to find out how they are getting on. This will be done via text or email.

What are the benefits and risks to you in taking part?

We consider the risks to be minimal. However, the programme will require you to think about private, confidential aspects of your life, inside and outside of sport, and this could negative experiences and negative emotions. Please consider this possibility before deciding to take part. If this is the case for you, support can be sought from the researcher, a HCPC registered practitioner psychologist (Dean Watson, details below). At the end of the study, a debrief form will also be provided which will contain information of organisations that can provide support in the future if required. The two check in points are also designed to help understand your experiences of the intervention and if you want any additional support.

How will this research data be used?

We aim to publish the results of this research project. If this is the case, appropriate steps will be taken to ensure that all participants and organisations remain anonymous. The data gathered from this research study will help shape our understanding around the effectiveness of this type of intervention in sport. Finally, anonymised data from the research will be shared on a public repository, meaning it will be free to access for others to use.

What happens next?

If you are happy to help and be involved in this project, you will be asked to confirm consent by completing the Qualtrics link. If you do not want to be involved in the project, I would like to take this opportunity to thank you for reading the information above. This investigation was granted ethical approval by the School of Science, Technology and Health Research Ethics Committee at York St John University.

Researchers contact details:

Dean Watson

PhD Researcher
School of Science, Technology, and Health
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: dean.watson@yorks.ac.uk

Professor Andrew Hill

Professor of Sport & Exercise Psychology
School of Science, Technology, and Health
York St John University,
Lord Mayor's Walk,
York,
YO31 7EX.
Email: a.hill@yorks.ac.uk

If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought, please contact:

B10. Study 4 debrief

Thank you for taking part in our research project. We would be happy to answer any queries you have about our work now or at any point in the future. Contact details are available below.

How do I find a Sport & Exercise Psychologist?

If you feel that you may benefit from seeing a Sport & Exercise Psychologist, but not sure where to find one, then you can search <https://www.bps.org.uk/lists/cpsychol> or <https://www.sportingbounce.com/>. It is advised that you cross check each practitioner to make sure they are HCPC registered - <http://www.hcpc-uk.co.uk/>.

How can I learn more about perfectionism?

If you would like to read more about perfectionism, please visit <https://ray.yorks.ac.uk/id/eprint/2966/1/Perfectionism%20fact%20sheet.pdf> where you'll find a short factsheet.

How do I get other types of support?

You might want other types of support that relate to your mental health and wellbeing. If so, you can visit www.mind.org.uk or contact Support Line via email info@supportline.org.uk for additional information and/or support of this kind.

Thank you once again for participating in our research. If you wish to remove your data from the study, please contact us up before the **08/06/2022**. State the participant ID number given and use the contact details below. If you have any other questions about the project, please feel free to contact:

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Appendix C

C1. Performance Perfectionism Scale-Sport (Hill et al., 2016)

Strongly Disagree	Disagree	Moderately Disagree	Neutral	Moderately Agree	Agree	Strongly agree
1	2	3	4	5	6	7
1. I am tough on myself when I do not perform perfectly					1 2 3 4 5 6 7	
2. I put pressure on myself to perform perfectly					1 2 3 4 5 6 7	
3. I only think positively about myself when I perform perfectly					1 2 3 4 5 6 7	
4. To achieve the standards, I have for myself I need to perform perfectly					1 2 3 4 5 6 7	
5. People always expect more, no matter how well I perform					1 2 3 4 5 6 7	
6. People always expect my performances to be perfect					1 2 3 4 5 6 7	
7. People view even my best performances negatively					1 2 3 4 5 6 7	
8. People criticize me if I do not perform perfectly					1 2 3 4 5 6 7	

C2. Sport Multidimensional Perfectionism Scale-2 (Gotwals & Dunn 2009)

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5
1. If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player				1 2 3 4 5
2. I hate being less than the best at things in my sport				1 2 3 4 5
3. It is important to me that I be thoroughly competent in everything I do in my sport				1 2 3 4 5
4. I think I expect higher performance and greater results in my daily sport-training than most players				1 2 3 4 5
5. I feel that other players generally accept lower standards for themselves in sport than I do				1 2 3 4 5
6. I have extremely high goals for myself in my sport				1 2 3 4 5
7. I set higher achievement goals than most athletes who play my sport				1 2 3 4 5
8. Even if I fail slightly in competition, for me, it is as bad as being a complete failure				1 2 3 4 5
9. If I fail in competition, I feel like a failure as a person				1 2 3 4 5
10. The fewer mistakes I make in competition, the more people will like me				1 2 3 4 5
11. I should be upset if I make a mistake in competition				1 2 3 4 5
12. If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree				1 2 3 4 5
13. If I do not do well all the time in competition, I feel that people will not respect me as an athlete				1 2 3 4 5
14. People will probably think less of me if I make mistakes in competition				1 2 3 4 5
15. If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance				1 2 3 4 5

C3. Multidimensional Inventory of Perfectionism in Sport (Stoeber et al., 2007)

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5
1. I strive to be as perfect as possible				1 2 3 4 5
2. It is important to be perfect in everything I attempt				1 2 3 4 5
3. I feel the need to be perfect				1 2 3 4 5
4. I am a perfectionist as far as my targets are concerned				1 2 3 4 5
5. I have the wish to do everything perfectly				1 2 3 4 5
6. I feel extremely stressed if everything does not go perfectly				1 2 3 4 5
7. I feel depressed if I have not been perfect				1 2 3 4 5
8. I get completely furious if I make mistakes				1 2 3 4 5
9. I get frustrated if I do not fulfil my high expectations				1 2 3 4 5
10. If something does not go perfectly, I am dissatisfied with the whole competition				1 2 3 4 5

C4. Perfectionism Cognitions Inventory-10 (Hill & Donachie, 2019)

Not at all				All of the time
0	1	2	3	4
1. I should be perfect				0 1 2 3 4
2. I can't stand to make mistakes				0 1 2 3 4
3. No matter how much I do, It's never good enough				0 1 2 3 4
4. I must be efficient at all times				0 1 2 3 4
5. I expect to be perfect				0 1 2 3 4
6. Why can't things be perfect?				0 1 2 3 4
7. My work has to be superior				0 1 2 3 4
8. My work should be flawless				0 1 2 3 4
9. I can't do this perfectly				0 1 2 3 4
10. I am too much of a perfectionist				0 1 2 3 4

C5. Sport Emotion Questionnaire (Jones et al., 2005)

Not at all				All of the time
0	1	2	3	4
1. Uneasy				0 1 2 3 4
2. Upset				0 1 2 3 4
3. Exhilarated				0 1 2 3 4
4. Irritated				0 1 2 3 4
5. Pleased				0 1 2 3 4
6. Tense				0 1 2 3 4
7. Sad				0 1 2 3 4
8. Excited				0 1 2 3 4
9. Furious				0 1 2 3 4
10. Joyful				0 1 2 3 4
11. Nervous				0 1 2 3 4
12. Unhappy				0 1 2 3 4
13. Enthusiastic				0 1 2 3 4
14. Annoyed				0 1 2 3 4
15. Cheerful				0 1 2 3 4
16. Apprehensive				0 1 2 3 4
17. Disappointed				0 1 2 3 4
18. Angry				0 1 2 3 4
19. Energetic				0 1 2 3 4
20. Happy				0 1 2 3 4
21. Anxious				0 1 2 3 4
22. Dejected				0 1 2 3 4

C6. Appraisal of Life Events Scale (Ferguson et al., 1999)

Not at all					All of the time
0	1	2	3	4	5
1. Threatening					0 1 2 3 4 5
2. Fearful					0 1 2 3 4 5
3. Enjoyable					0 1 2 3 4 5
4. Worrying					0 1 2 3 4 5
5. Hostile					0 1 2 3 4 5
6. Challenging					0 1 2 3 4 5
7. Stimulating					0 1 2 3 4 5
8. Exhilarating					0 1 2 3 4 5
9. Painful					0 1 2 3 4 5
10. Depressing					0 1 2 3 4 5
11. Pitiful					0 1 2 3 4 5
12. Informative					0 1 2 3 4 5
13. Exciting					0 1 2 3 4 5
14. Frightening					0 1 2 3 4 5
15. Terrifying					0 1 2 3 4 5
16. Intolerable					0 1 2 3 4 5

C7. Sport Psychology Attitudes – Revised Scale (Martin et al., 2002)

Strongly Disagree	Disagree	Moderately Disagree	Neutral	Moderately Agree	Agree	Strongly agree
1	2	3	4	5	6	7
1. A sport psychology consultant can help athletes improve their mental toughness					1 2 3 4 5 6 7	
2. I respect the opinions of people of my own culture more so than those of another culture					1 2 3 4 5 6 7	
3. If an athlete asked my advice about personal feelings or failure related to sport, I might recommend that he/she see a sport psychology consultant					1 2 3 4 5 6 7	
4. I would not go to see a sport psychology consultant because my team mates would harass me					1 2 3 4 5 6 7	
5. There are certain problems, which should not be discussed outside ones immediate family					1 2 3 4 5 6 7	
6. The athlete that I associate most with are of the same race and ethnicity as me					1 2 3 4 5 6 7	
7. A good idea for avoiding personal worries and concerns is to keeps one's mind on a job					1 2 3 4 5 6 7	
8. To help me better understand myself as an athlete, I would like the assistance of a sport psychology consultant					1 2 3 4 5 6 7	
9. I would feel uneasy going to a sport psychology consultant because some people would disapprove					1 2 3 4 5 6 7	
10. There is something respectable in the attitude of athletes who are willing to cope with their conflicts and fears without resorting to professional help					1 2 3 4 5 6 7	
11. There are great differences between people of different ethnic backgrounds					1 2 3 4 5 6 7	
12. An athlete with emotional problems during sport performances would feel most secure in receiving assistance from a sport psychology consultant					1 2 3 4 5 6 7	
13. Having seen a sport psychology consultant is bad for an athletes reputation					1 2 3 4 5 6 7	
14. There are experiences in my life that I would not discuss with anyone					1 2 3 4 5 6 7	

15. If I was worried or upset about my sport performance, I would want to get help from a sport psychology consultant	1 2 3 4 5 6 7
16. Emotional difficulties tend to work themselves out in time	1 2 3 4 5 6 7
17. I think a sport psychology consultant would help me perform better under pressure	1 2 3 4 5 6 7
18. I would not want someone to know about me receiving help from a sport psychology consultant	1 2 3 4 5 6 7
19. If I went to a sport psychology consultant, I would not want my coach to know about it	1 2 3 4 5 6 7
20. A sport psychology consultant could help me fine tune my sport performance	1 2 3 4 5 6 7
21. If I went to a sport psychology consultant, I would not want other athletes to know about it	1 2 3 4 5 6 7
22. At times I have felt lost and would have welcomed professional advice for a personal or emotional problem	1 2 3 4 5 6 7
23. The coach would think less of me if I went to a sport psychology consultant	1 2 3 4 5 6 7
24. Athletes with a strong character can get over mental conflicts by themselves	1 2 3 4 5 6 7
25. I would be more comfortable with a sport psychology consultant if he/she were the same ethnicity, culture or race as me	1 2 3 4 5 6 7

C8. Inventory of Attitudes Toward Seeking Mental Health Services

(MacKenzie et al., 2004)

Disagree	Somewhat disagree	Undecided	Somewhat agree	Agree
0	1	2	3	4
1. There are certain problems which should not be discussed outside of one's immediate family				0 1 2 3 4
2. I would have a very good idea of what to do and who to talk to if I decided to seek professional help for psychological problems				0 1 2 3 4
3. I would not want my significant other (spouse, partner, etc.) to know if I was suffering from psychological problems				0 1 2 3 4
4. Keeping one's mind on a job is a good solution for avoiding personal worries and concerns				0 1 2 3 4
5. If good friends asked my advice about a psychological problem, I might recommend that they see a professional				0 1 2 3 4
6. Having been mentally ill carries with it a burden of shame				0 1 2 3 4
7. It is probably best not to know everything about oneself				0 1 2 3 4
8. If I was experiencing a serious psychological problem at this point in my life, I would be confident that I could find relief in psychotherapy				0 1 2 3 4
9. People should work out their own problems; getting professional help should be a last resort				0 1 2 3 4
10. If I were to experience psychological problems, I could get professional help if I wanted to				0 1 2 3 4
11. Important people in my life would think less of me if they were to find out that I was experiencing psychological problems				0 1 2 3 4
12. Psychological problems, like many things, tend to work out by themselves				0 1 2 3 4
13. It would be relatively easy for me to find the time to see a professional for psychological problems				0 1 2 3 4

14. There are experiences in my life that I would not discuss with anyone	0 1 2 3 4
15. I would want to get professional help if I worried or upset for a long period of time	0 1 2 3 4
16. I would be uncomfortable seeking professional help for psychological problems because people in my social or business circles might find out about it	0 1 2 3 4
17. Having been diagnosed with a mental disorder is a blot on a person's life	0 1 2 3 4
18. There is something admirable in the attitude of people who are willing to cope with their conflicts and fears without resorting to professional help	0 1 2 3 4
19. If I believed I was having a mental breakdown, my first inclination would be to get professional attention	0 1 2 3 4
20. I would feel uneasy going to a professional because of what some people would think	0 1 2 3 4
21. People with strong characters can get over psychological problems by themselves and would have little need for professional help	0 1 2 3 4
22. I would willingly confide intimate matters to an appropriate person if I thought it might help me or a member of my family	0 1 2 3 4
23. If I received treatment for psychological problems, I would not feel that it ought to be "covered up"	0 1 2 3 4
24. I would be embarrassed if my neighbour saw me going into the office of a professional who deals with psychological problems	0 1 2 3 4

Appendix D

D1. Pre-Registration Certificate

T1 Title: Effectiveness of an online Acceptance and Commitment Therapy-based sport psychology programme for managing trait perfectionism, perfectionistic thoughts, and emotions in athletes

T2 Contributors, Affiliations, and Persistent IDs (recommend ORCID iD)

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T3 Date of Preregistration

14/10/2021 12:09:55

T4 Versioning information

As stipulated on the electronic permanent record

T5 Identifier

As stipulated on the electronic permanent record

T6 Estimated duration of project

Six months.

T7 IRB Status

Ethical approval has been granted by the York St John University, UK, for the study (Ethics reference - STHEC0044).

T8 Conflict of Interest Statement

The researchers have no conflict of interest to declare.

T9 Keywords

Perfectionism, intervention, athletes.

T10 Data accessibility statement and planned repository

Appendix E

E1. Study 2 - PST Intervention Outline

Session	CBT	Perfectionism	Aim of the Session	Session Components
1	Progressive Muscle Relaxation (PMR)	Fear of Failure	Be relaxed for competition	1.1 How to relax 1.2 Differences in relaxed & tense 1.3 30 minutes guided relaxation
2	PMR - centering and differentiating	Self-Criticism	Be relaxed in different contexts/situations	2.1 Cue controlled 2.2 Specific relaxation 2.3 Develop trigger words
3	PMR - Rapid relaxation	Doubt About Actions	Relax in 30 seconds	3.1 To relax in 30 seconds 3.2 Identify situations 3.3 How to react to these situations
4	Imagery ability and prudent thinking	Managing Expectations	Use imagery to develop confidence	4.1 Understanding imagery 4.2 Best performance imagery 4.3 What if planning
5	Imagery script	Negative Reactions to Imperfections	Use imagery to plan for performances	5.1 Develop imagery script 5.2 Control thoughts 5.3 Understand emotions
6	Positive self-talk	Healthy Striving	Use self-talk to reframe situations	6.1 Current negative thoughts 6.2 Self-talk cues 6.3 Positive self-talk cue control

E2. Study 3 - CBT Intervention Outline

Session	CBT	Perfectionism	Aim of the Session	Session Components
1	Developing better attitudes	Help-seeking behaviour	To increase confidence towards sport psychology	1.1 What is sport psychology? 1.2 When we need to seek-help 1.3 Goals of the programme
2	Dispelling pre-conceptions	Stigma	To reduce stigma	2.1 Outline pre-conceptions 2.2 Model athletes who have used sport psychology 2.3 Talk positively about the service to others
3	Psychoeducation and self-monitoring	Fear of Failure	To understand automatic thoughts and their impact	3.1 Beliefs 3.2 Dysfunctional behaviours 3.3 Automatic thoughts
4	Evaluating and changing self-evaluation	Self-Criticism	To create a balanced self-evaluations	4.1 At-Risk Situations 4.2 Positive thinking 4.3 Mood scale
5	Dealing with rigid rule and extreme standards	Doubt About Actions	To assess the rules we live by	5.1 What are unhelpful rules 5.2 Assessing our rules 5.3 Developing flexible standards
6	Challenge cognitive bias	Managing Expectations	To understand unhelpful thinking	6.1 Negative conclusions 6.2 What is cognitive bias? 6.3 Reducing cognitive distortion
7	Dealing with self-criticism and compassion	Negative Reactions to Imperfections	To increase self-worth	7.1 Deliberate focus on helpful behaviours 7.2 Developing mindful attention 7.3 What is it to be compassionate?
8	Relapse prevention	Healthy Striving	To maintain positive thinking and behaviour	8.1 Planning for relapse 8.2 Reinforce new strategies 8.3 What if I lose control?

E3. Study 3 - REBT Intervention Outline

Session	REBT	Perfectionism	Aim of the Session	Session Components
1	Developing better attitudes	Help-seeking behaviour	To increase confidence towards sport psychology	1.1 What is sport psychology? 1.2 When we need to seek-help 1.3 Goals of the programme
2	Dispelling pre-conceptions	Stigma	To reduce stigma	2.1 Outline pre-conceptions 2.2 Model athletes who have used sport psychology 2.3 Talk positively about the service to others
3	Education on REBT	Fear of Failure	Learn about the ABCDE process of REBT	3.1 Adversity 3.2 Beliefs 3.3 Response
4	Adversity & irrational beliefs	Self-Criticism	To place ownership and control of the emotional and behavioural responses	4.1 Find anxiety inducing situations 4.2 Create more functional emotional responses 4.3 ABC diary
5	Irrational beliefs vs. Rational beliefs	Doubt About Actions	Dispute the existing irrational beliefs	5.1 Promoting healthy emotions and adaptive behaviours 5.2 Understanding rational beliefs 5.3 Rigid demands and dysfunctional emotions
6	Awfulizing	Managing Expectations	Putting thoughts into context	6.1 Badness scale 6.2 Context 6.3 Revelation towards existing thoughts
7	Pragmatics	Negative Reactions to Imperfections	To realise that irrational beliefs are not helping	7.1 Where is this irrational belief getting you? 7.2 Overcoming imperfections 7.3 What do our new rational beliefs look like?
8	Reinforcing effective beliefs	Healthy Striving	To integrate new beliefs	8.1 Committing to the plan 8.2 Rational Reverse Role-play 8.3 Self-reflection

E4. Study 3 - ACT Intervention Outline

Session	ACT	Perfectionism	Aim of the Session	Session Components
1	Developing better attitudes	Help-seeking behaviour	To increase confidence towards sport psychology	1.1 What is sport psychology? 1.2 When we need to seek-help 1.3 Goals of the programme
2	Dispelling pre-conceptions	Stigma	To reduce stigma	2.1 Outline pre-conceptions 2.2 Model athletes who have used sport psychology 2.3 Talk positively about the service to others
2	Contacting the present moment	Concerns Over Mistakes	Staying focused in competition/training	2.1 What is being present? 2.2 Contacting the present moment 2.3 Using senses (e.g., dropping anchor)
4	Acceptance	Self-Criticism	To be able to accept mistakes/the self	4.1 How do I accept? 4.2 Struggling vs opening up 4.3 Thoughts – emotions – actions
5	Defusion	Doubt About Actions	To disconnect thoughts	5.1 Removing doubt (e.g., hands Infront of face) 5.2 Being more compassionate to the self 5.3 Getting hooked
6	Values	Managing Expectations	Leading a values led life	6.1 Values vs goals 6.2 Exploring values 6.3 Overcoming expectations
7	Self	Negative Reactions to Imperfections	Increase awareness of the self	7.1 How do you want to be seen? 7.2 Overcoming imperfections 7.3 Obituary
8	Committed action	Healthy Striving	Setting realistic and healthy goals	8.1 Committing to the plan 8.2 What If planning 8.3 Overcoming FEAR

E5. Study 4 - ACT Intervention Outline

Module	ACT	Perfectionism	Aim of the Module	Module Components
1	Introduction to ACT	Stigma	Reduce stigma and provide overview of ACT	1.1 What is sport psychology? 1.2 Welcome to ACT 1.3 Goals of the programme
2	Contacting the present moment	Concerns Over Mistakes	Staying focused in competition/training	2.1 What is being present? 2.2 Contacting the present moment 2.3 Using senses (e.g., dropping anchor)
3	Mindfulness	Fear of Failure	To be able to control the body and mind	3.1 What is mindfulness? 3.2 Emptying the mind 3.3 Pink elephant
4	Acceptance	Self-Criticism	To be able to accept mistakes/the self	4.1 How do I accept? 4.2 Struggling vs opening up 4.3 Thoughts – emotions – actions
5	Defusion	Doubt About Actions	To disconnect thoughts	5.1 Removing doubt (e.g., hands Infront of face) 5.2 Being more compassionate to the self 5.3 Getting hooked
6	Values	Managing Expectations	Leading a values led life	6.1 Values vs goals 6.2 Exploring values 6.3 Overcoming expectations
7	Self	Negative Reactions to Imperfections	Increase awareness of the self	7.1 How do you want to be seen? 7.2 Overcoming imperfections 7.3 Obituary
8	Committed action	Healthy Striving	Setting realistic and healthy goals	8.1 Committing to the plan 8.2 What If planning 8.3 Overcoming FEAR

Appendix F

F1. CONSORT Checklist of information to include when reporting a randomised trial

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomized trial in the title	1
	1b	Structured summary of trial design, methods, results, and conclusions	2
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	3
	2b	Specific objectives or hypotheses	8
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	8
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	8
Participants	4a	Eligibility criteria for participants	9
	4b	Settings and locations where the data were collected	10
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	10
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	11-12
	6b	Any changes to trial outcomes after the trial commenced, with reasons	NA
Sample size	7a	How sample size was determined	9
	7b	When applicable, explanation of any interim analyses and stopping guidelines	13
Randomization:			
	8a	Method used to generate the random allocation sequence	9

Sequence generation	8b	Type of randomization; details of any restriction (such as blocking and block size)	9
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	9
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	9
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	NA
	11b	If relevant, description of the similarity of interventions	NA
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	13
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	13
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome	33
	13b	For each group, losses and exclusions after randomization, together with reasons	33
Recruitment	14a	Dates defining the periods of recruitment and follow-up	NA
	14b	Why the trial ended or was stopped	NA
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	31
Numbers analyzed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	31
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	30-31
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	30-31
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	NA
Harms	19	All important harms or unintended effects in each group	10
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	19-20
Generalizability	21	Generalizability (external validity, applicability) of the trial findings	13-14

Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	15-18
Other information			
Registration	23	Registration number and name of trial registry	NA
Protocol	24	Where the full trial protocol can be accessed, if available	10
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	NA