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Perfectionism cognitions in sport, dance, and exercise

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The chapters of this book have so far focused on trait perfectionism – which has been the main focus of perfectionism research in sport, dance, and exercise. However, perfectionism manifests at multiple levels and includes cognitive elements that are essential when seeking to understand its full effects. With this in mind, this chapter focuses on *perfectionism cognitions* and how this type of ruminative over-thinking offers further insight into the inner experiences of athletes, dancers, and exercisers. Only a handful of studies have examined perfectionism cognitions in these domains so far. However, these studies show the importance of perfectionism cognitions and mirror more extensive work outside of sport. The chapter starts with a brief overview of the Comprehensive Model of Perfectionistic Behaviour and Perfectionism Cognitions Theory (Flett et al., 2018). We then review and discuss existing research examining perfectionism cognitions in sport, dance, and exercise. We conclude the chapter by identifying future directions for research and key research questions that should be prioritised.

Comprehensive Model of Perfectionistic Behaviour

Research examining perfectionism in sport, dance, and exercise domains has mainly focused on trait (or dispositional) perfectionism. However, trait perfectionism sits at only one level of a larger model used to study perfectionism. As presented by Hewitt et al. (2017), the Comprehensive Model of Perfectionistic Behaviour (CMPB) is an encompassing approach that views perfectionism as a "multifaceted and multilevel personality style" (p.3). In the CMPB, perfectionism functions at trait, interpersonal (or other-relational), and intrapersonal (or self-relational) levels, and there are components at each level which themselves include multidimensional traits, multifaceted self-presentational styles, and automatic thoughts (or perfectionism cognitions). In deriving the model, Hewitt et al. (2017) emphasize the importance of including, and differentiating between, these levels and what people "have" in regards to perfectionism (their traits and the content of their traits) and what people "do" in

terms of its expression (how they hide imperfection from others or experience perfectionistic thoughts).

As described by Hewitt et al. (2017), at the trait level, the focus is on the motivation and requirement to be perfect. Traits include intrapersonal and interpersonal dimensions that reflect different targets of the requirement to be perfect. The requirement can be for the self to be perfect (self-oriented perfectionism), for others to be perfect (other-oriented perfectionism), or to meet other people's requirements to be perfect (socially prescribed perfectionism). These dimensions of trait perfectionism are separate entities, but covary and interact, allowing people to be higher in one, two or all traits, and creating "complex blends" of trait perfectionism that determine its effects (Hewitt et al., 2017).

At the interpersonal (or other-relational) level, the focus is on the expression of perfectionism to others via perfectionistic self-presentational styles. Perfectionistic self-presentation is comprised of three facets: perfectionistic self-promotion (displaying perfection to others), non-display of imperfection (concealing and avoiding behavioural demonstrations of imperfection), and nondisclosure of imperfection (avoiding verbal admissions of imperfection) (Hewitt et al., 2003). Perfectionistic self-promotion is the presentation of the perfect self so to impress others and gain admiration (Hewitt et al., 2017). By contrast, the other two facets of perfectionistic self-presentation are passive and concealing styles and involve preventing any signs of imperfection being known to others (Hewitt et al., 2003).

At the intrapersonal (or self-relational) level, the focus is on the inner expression of perfectionism. In particular, the manner in which an individual's need to be perfect manifests in perfectionistic thoughts and images (Flett et al., 1998). These thoughts and images include automatic negative self-statements and rumination, and a paucity of positive self-statements

(Flett et al., 1998). Perfectionism cognitions are more state-like in comparison to trait perfectionism and perfectionistic self-presentational styles as they are more directly linked to daily events and immediate concerns (Flett et al., 2018). However, they can become chronically activated and serve as a subconscious cognitive filter for people's everyday experience (Hewitt et al., 2017). They also provide an additional source of internal pressure to be perfect (Flett et al., 2018).

In formalising the CMPB, Hewitt and Flett have brought together lines of research that span over thirty years – it is perhaps the most complete account of perfectionism available. The CMPB highlights the various ways perfectionism can exist and, through the way in which components within and between levels interact, shows the large heterogeneity we can expect in regards to manifestations of perfectionism and the variability in its effects. Research in sport, dance, and exercise is heavily skewed towards trait perfectionism with few studies of the other two levels. As such, currently we have only part of a view of the overall picture of perfectionism. However, this is changing and an increasing number of studies are including multiple components in these domains. In the current chapter, we focus on the intrapersonal level and perfectionism cognitions as this has been the focus of most of the research that has included more than just trait perfectionism. In addition, the interpersonal level is also key to understanding the inner turmoil of perfectionism, regardless of whether outwardly any desirable behaviours are being exhibited in sport, dance, and exercise.

Perfectionism Cognitions Theory

Perfectionism Cognitions Theory (PCT; Flett et al., 2015, 2018) is a sub-theory of the CMPB that seeks to explain the cognitive elements and mechanisms related to perfectionism. Building on historical cognitive approaches to perfectionism, PCT is derived from the work of Hewitt and Genest (1990) and Flett et al. (1998). This work focused on the cognitive

processing of self-relevant information and the role of different self-schemas (or beliefs about ourselves and our characteristics). Notably, this included the role of the "ideal self" in the inner expression of perfectionism and the thoughts that can arise that are focused on the need to be perfect. In this work, the salience of the ideal-self was proposed to make those higher in trait perfectionism prone to the experience of negative, automatic thoughts centred on perfectionistic themes such as personal shortcomings and failures. Flett et al. (1998) labelled these thoughts perfectionism cognitions.

In revisiting their work, Flett et al. (2015, 2018) expanded the approach based on the cognitive taxonomy proposed by Ingram and colleagues (Ingram, 1990; Ingram & Kendall, 1986; Ingram et al., 1998) and their four-level framework: (a) structural level, (b) propositional level, (c) operational level, and (d) cognitive products level. The structural level contains self-schemas, long-term memories, and deep neural networks. At this level, perfectionism is evident in the content of both actual self- and ideal self-schemas and the interconnectedness of perceived negative attributes and personal deficits. Perfectionism is also evident at this level via its influence on important long-term memories of success and failures that have merged to create generalised views of the self as being imperfect.

The propositional level contains beliefs and attitudes stored in various cognitive structures. According to Flett et al. (2018), for perfectionism, the cognitive content of these beliefs and attitudes are dysfunctional and reflect contingencies of self-worth and irrational perfectionistic beliefs. They also highlight the prominence of two conflicts and sources of tension associated with perfectionism at this level. The first conflict is between "emotional perfectionism" – a dysfunctional belief about the importance of maintaining perfect emotional control – and the routine experience of intense negative emotions. The second conflict is the "approach-avoidance conflict" which pertains to the experience of the need to

balance the perceived rewards of perfection against the consequences of striving but failing to be perfect.

The operational level contains ongoing cognitive operations and functions. Perfectionism is proposed to be influential at this level by creating attentional biases and reactivity towards perceived threats and evaluative cues, and any other perfectionism-relevant cues. This includes information from social and performance contexts, particularly those that pertain to possible rejection or failure. Perfectionism is also evident at this level in how this kind of preoccupation and sensitivity impedes other cognitive processes, creates cognitive interference, and limits working cognitive capacity. These latter effects are proposed to be especially evident under conditions of negative mood, emotional distress, and stress or pressure.

The final product level contains cognitive outputs – thoughts, images, and self-statements. At this level, the products of perfectionism include ruminative thoughts and other forms of overthinking such as worry (Flett et al., 2018). It is at this level that perfectionism cognitions sit. Perfectionism cognitions are frequent, uncontrollable, and negative thoughts centred on perfectionistic themes. Flett et al. (2018) draw on theories of ruminative cognitions to conceptualise perfectionism cognitions as a form of perseverative thought that accompanies failed goal pursuit. Cognitive interference is also evident at this level in the form of mind-wandering, with onus placed on the difficulty associated with suppressing perfectionism cognitions due to the reasons for their occurrence lying deep within the lower levels of the model and the importance of the goals and objectives associated with perfectionism (being perfect or appearing to be perfect).

Measuring Perfectionism Cognitions

To measure perfectionism cognitions, Flett and colleagues developed the Perfectionism Cognitions Inventory (HF-PCI; Flett et al., 1998). The measure is a unidimensional scale with 25-items that are used to calculate a total score. The instructions ask responders to indicate how frequently, if at all, they have experienced particular thoughts in the last week. The thoughts are those such as "Why can't I be perfect?" and "I should be perfect." The response format is from "Not at all" [0] to "All the time" [4]. There has been a number of studies that have examined the psychometric properties of the HF-PCI including in its original development and validation (Flett et al., 1998), and subsequent work focused on particular populations such as adult psychiatric patients (Flett et al., 2007), students (Rudolph et al., 2007), and adolescents (Flett et al. 2012). The findings of these studies tend to be similar and are supportive of the use of the HF-PCI.

By way of example, in the initial validation of the HF-PCI Flett et al. (1998) used 11 samples of university students and one sample of adult psychiatric patients in five studies. The HF-PCI was assessed in regard to factor structure (using exploratory factor analysis), test-retest reliability (*r*), and internal consistency (using Cronbach's alpha). Evidence was found to support the unidimensional structure in that all items appeared to load meaningfully on one factor (study 1). Test-retest reliability over a three-month period was also reasonably high in both a student sample ($r = .67$; study 2) and adult psychiatric patient sample ($r = .85$; study 4). The scale was considered internally consistent in all samples in which it was assessed ($\alpha \geq .90$).

In the initial validation, Flett et al. (1998) also examined the predictive ability of the HF-PCI in six samples of university students and one sample of adult psychiatric patients. They found that more frequent perfectionism cognitions were related to higher performance difficulties, negative affect, and general distress. In addition, perfectionism cognitions predicted unique variance in psychological distress (anxiety and depressive symptoms) after

controlling for trait perfectionism dimensions, trait neuroticism, and general measures of negative automatic thoughts. In other words, perfectionism cognitions were found to be an important predictor of maladjustment regardless of whether trait perfectionism was being exhibited or general tendencies to experience similar types of negative thoughts.

Multidimensional versus Unidimensional Measurement

The conceptualisation and measurement of perfectionism cognitions have not been without controversy. Notably, there has been disagreement among researchers in regards to whether perfectionism cognitions are best treated as unidimensional or multidimensional. Disagreement followed the publication of a Multidimensional Perfectionism Cognitions Inventory (MPCI) first published by Kobori (Kobori, 2006; Kobori & Tanno, 2004, 2005) in Japanese and then subsequently published in English (MPCI-E) by Stoeber et al. (2010). The MPCI-E is a 15-item scale that uses the same instructions and time frame as the HF-PCI, and a similar response format (Not at all" [1] to "Always" [4]). However, it includes multiple dimensions that distinguish between positive and negative perfectionism cognitions. The dimensions are *personal standards cognitions* (e.g., "It's important to set high standards for myself"), *pursuit of perfection cognitions* (e.g., "I must be perfect at any cost") and *concern over mistakes cognitions* (e.g., "I'll blame myself if I make a mistake"). Personal standards cognitions are considered positive and concern over mistakes cognitions are considered negative with pursuit of perfection cognitions somewhere in-between (Stoeber et al., 2014).

The validation of the MPCI-E included rigorous tests of its validity and reliability. In a sample of university students, Stoeber et al. (2010) found evidence for the three-factor structure (using confirmatory factor analysis) and satisfactory internal consistency for all subscales (using Cronbach's alpha). In addition, supporting the distinction between dimensions of perfectionism cognitions, personal standards cognitions displayed a

significant, positive, and small relationship with positive affect, whereas concerns over mistakes cognitions displayed a significant, negative, and small relationship with positive affect. In addition, both concerns over mistakes cognitions and pursuit of perfection cognitions displayed significant, positive, and small-moderate relationship with negative affect. MPCI-E subscales also predicted positive and negative affect beyond trait perfectionism (self-oriented and socially prescribed perfectionism).

In a subsequent study, Stoeber et al. (2014) sought to compare multidimensional versus unidimensional assessment of perfectionism cognitions. In critiquing the unidimensional approach of Flett et al (1998), they reasoned that (1) as trait perfectionism is multidimensional, so should perfectionism cognitions, (2) inspection of the items of the HF-PCI suggest close alignment between items on the scale and those on other measures indicative of the two broad dimensions of perfectionism (perfectionistic strivings and perfectionistic concerns), and (3) re-examination of the statistical analyses in Flett et al. (1998) suggests that the HF-PCI has two or three underlying dimensions. Stoeber et al.'s (2014) study included assessing the factor structure of the HF-PCI, deriving a multidimensional version of the HF-PCI (which we will call the HF-MPCI), and comparing unidimensional and multidimensional versions of the instruments when predicting positive and negative affect and depressive symptoms. After finding greater predictive ability when using the multidimensional version, they argued that multidimensional assessment of perfectionism cognitions is more advantageous than unidimensional assessment.

This study led to a rejoinder by Flett and Hewitt (2014a) who reiterated their position that, in their model, perfectionism cognitions are conceptualised as unidimensional and should be measured as such. Key to their position was how they viewed perfectionism cognitions as part of their CMPB as an intrapersonal level component focused on the self, and the underlying mechanisms they considered key to explaining *why* and *when* they arise.

Notably, their perspective is in keeping with general theories of rumination and how this type of thinking is typically considered to be negative, unintentional and unwanted, and the result of failed goal pursuit (e.g., Klinger, 1996; Nolen-Hoeksema, 1996; Pyszczynski & Greenberg, 1987). Flett and Hewitt (2014a) also questioned the interpretability of the three factors of the HF-MPCI, the appropriateness of the factor labels, and the distinctiveness of the factors. In all, Flett and Hewitt (2014a) argued that any multidimensional approach to perfectionism cognitions was an alternative to their own.

To help resolve this issue, Hill and Donachie (2020) adopted the view that theory should take precedence over the findings regarding the factor structure of the HF-PCI and sought to create a more robust unidimensional version of the instrument. In doing so, the HF-PCI and the version derived by Stoeber et al. (2014) (HF-MPCI) were also compared. Across two adolescent athlete samples, and using more robust tests of factor structure than used in both previous studies (confirmatory and exploratory-confirmatory factor analysis), it was confirmed that the HF-PCI was most likely multidimensional, but support for the HF-MPCI version was also mixed. A new short version of the HF-PCI (the PCI-10) was developed that was superior in comparison to both the HF-PCI and HF-MPCI. The new version was also highly correlated with the original (r = .94 in both samples) providing some reassurance of comparability for studies using the two versions.

Given these circumstances, what should researchers in sport, dance and exercise do in regards to conceptualising and measuring perfectionism cognitions? It is our view that when adopting Hewitt and Flett's approach, perfectionism cognitions are best conceptualised and measured as unidimensional. In addition, although Stoeber et al. (2014) illustrated that there may be merit in using a multidimensional approach, doing so currently lacks the theoretical basis of Hewitt and Flett's approach. As such, it is more difficult to hypothesize why and when positive versus negative perfectionism cognitions would arise. For the same reason, at

the moment, we are unconvinced of the utility of this approach and its ability to inform applied practice in sport, dance, and exercise. Until this changes, we therefore recommend that those in sport, dance, and exercise domains adopt a unidimensional approach to perfectionism cognitions and use the PCI-10 when doing so.

Research examining perfectionism cognitions

There is a considerable amount of research that has examined perfectionism cognitions outside of sport, dance, and exercise. This research attests to the negative effects of the experience of more frequent perfectionism cognitions. Some of the most common findings pertain to the relationship with emotional experiences, including stress (e.g., Flett et al., 2016), anxiety (e.g., Flett et al., 2002), and depressive symptoms (e.g., Flett et al., 2012). These findings are in keeping with research that has also illustrated that perfectionism cognitions are related to deficits in emotion regulation (Rudolph et al., 2007), coping (Kobori et al., 2011), and cognitive self-management (e.g., Flett et al., 2007). In addition, on the more extreme and clinical end, the experience of frequent perfectionism cognitions is related to a host of anxiety-related disorders, including generalised anxiety disorder, obsessive compulsive disorder, and social anxiety disorder (e.g., Tyler et al., 2021).

As we noted earlier, perfectionism cognitions have been found to predict some of these outcomes, including anxiety and depressive symptoms, after controlling for trait perfectionism (e.g., Flett et al., 1998, 2007, 2012). The implication being that the experience of perfectionism cognitions is important regardless of more stable perfectionistic qualities. Building on this idea, more recent research has found support for the notion that the experience of more frequent perfectionism cognitions is an explanation for *why* trait perfectionism is associated with a range of difficulties. So far, research testing a mediation model has included negative affect (e.g., Kobori et al., 2005), eating disturbances (e.g.,

Downey et al., 2014), and anxiety and depression (e.g., Macedo et al., 2017). Some of the most impressive work testing this model has demonstrated these effects over time (e.g., Besser et al., 2019).

To our knowledge, six studies have included perfectionism cognitions in sport, dance, and exercise, and all of the studies have been conducted in sport. The focus of these studies mirror those outside of sport in that they have included an emphasis on emotional experiences, tested predictive ability above traits, and more recently sought to model perfectionism cognitions as a mediating factor between traits and various outcomes. To account for the current state of knowledge in sport, we have described each of these studies in detail below and provided a shorthand account of their features and findings in Table 8.1. Of the six studies, two focus on pre-competition emotions, three focus on athlete burnout, and one focuses on motivational climate.

Motivational climates and perfectionism cognitions

We start with the study examining perfectionism cognitions and motivational climate in sport (Appleton et al. 2011). This is one of the few studies in any domain to examine if the experience of perfectionism cognitions is related to perceptions of the social environment. The study adopted Achievement Goal Theory (AGT; Nicholls, 1989) to test the relationship between perfectionism cognitions and perceptions of different motivational climates created by parents and coaches in youth sport. Within AGT, coaches create a mastery climate (emphasising effort and personal development) and a performance climate (emphasising the importance of normative ability and comparative superiority). Similarly, parents are considered to initiate a learning-enjoyment climate (emphasis on enjoyment derived from skill acquisition), worry-conducive climate (emphasis on negative consequences of mistakes), and success-without-effort climate (reserving approval for occasions of success with minimal

effort) (White, 1996). Athletes report the subjective experience of these climates by commenting on the behaviours, expectations, and values of their coach and parents.

Perceptions of the motivational climate have an important influence on how athletes feel about themselves and their sport (Duda & Balaguer, 2007). Based on the last review of research in this area (Harwood et al., 2015), we know for instance that a mastery climate is typically positively related to valuing effort, intrinsic motivation, self-esteem, and prosocial moral attitudes. By contrast, a performance climate is typically positively related to valuing ability, extrinsic motivation, negative affect, and antisocial moral attitudes. These relationships are mirrored when it comes to parents. In terms of outcomes, a learning-enjoyment climate is akin to a mastery climate, and worry-conducive and a success-without-effort climates are akin to a performance climate (e.g., Gustafsson et al., 2016; Kolayiş et al., 2017; Wagnsson et al., 2016).

Appleton et al. (2011) examined whether perceived parent and coach-created motivational climates predicted perfectionism cognitions in a sample of youth athletes. In doing so, they also sought to test alternative hypotheses on the development of perfectionism whereby perfectionism in children is more strongly related to the primary caregiver (mother) or same-sex parent (mother-daughters and father-sons). For female athletes, mother-worry-conducive climate predicted more frequent perfectionism cognitions, as did father-learning-enjoyment climate. For male athletes, father-worry-conducive climate predicted more frequent perfectionism cognitions and father-success-without-effort climate predicted less frequent perfectionism cognitions, as did mother-worry-conducive climate. After controlling for these effects, coach performance climate predicted more frequent perfectionism cognitions for both male and female athletes, and coach mastery climate predicted more frequent perfectionism cognitions for female athletes.

In a second analysis they examined whether athlete gender and age moderated the relationships between parent and coach motivational climates and perfectionism cognitions. Age did not moderate any of the relationships. However, it was found that gender moderated the relationship of one of the climate measures - mother- worry-conducive climate – with perfectionism cognitions. The moderation showed that, for female athletes, as perceptions of mother-worry-conducive climate increased, the frequency of perfectionism cognitions increased. However, for male athletes, as perceptions of the mother-worry-conducive climate increased, the frequency of perfectionism cognitions decreased.

The findings of this study are complex and include some unexpected findings (e.g., a father-learning-enjoyment climate predicting higher perfectionism cognitions in female athletes). However, the findings are noteworthy in regard to a coach performance climate predicting more frequent perfectionism cognitions in junior athletes. This is the first indication that coaches are important in the experience of perfectionism cognitions. In addition, findings are also noteworthy in regards to an interesting same-sex effect for parents whereby a worry-conductive climate predicts more frequent perfectionism cognitions when there is a gender match (mothers-daughters and father-sons). More research is needed to follow-up this study to better understand its findings, but for now it provides a clear indication that the social environment created in sport may be important for the experience of perfectionism cognitions.

Perfectionism Cognitions and Burnout

One of the most examined relationships involving perfectionism in sport is trait perfectionism and burnout (see Hill & Curran, 2018). Likewise, most studies in sport that include perfectionism cognitions also include a focus on burnout. Athlete burnout is a syndrome that includes three symptoms: reduced sense of accomplishment, physical and

emotional exhaustion, and sport devaluation (Raedeke & Smith, 2001). There are different models of burnout but the most popular and well-supported model views burnout as the result of chronic stress (Smith, 1989). Trait perfectionism is implicated in the development of burnout because of its role in the stress process – making appraisals of threat and the experience of stress more likely. In a similar manner, perfectionism cognitions may also be important because of the internal sense of pressure they can generate and their potential to magnify and maintain stressful experiences (Flett et al., 2018).

The first study to examine perfectionism cognitions and athlete burnout was conducted by Hill and Appleton (2011). They examined whether perfectionism cognitions were related to burnout symptoms in male youth and adult rugby union players and whether perfectionism cognitions predicted burnout symptoms after controlling for trait perfectionism. The trait dimensions they controlled for were self-oriented perfectionism and socially prescribed perfectionism. Results showed that perfectionism cognitions had a significant, positive, and small-to-medium relationship with two burnout symptoms – reduced sense of athletic accomplishment and emotional and physical exhaustion. In addition, perfectionism cognitions also predicted variance in all three symptoms of athlete burnout after controlling for the two trait dimensions of perfectionism.

The findings suggest that perfectionism cognitions are likely to increase the risk of burnout for athletes. It may be that perfectionism cognitions maintain and exacerbate stress experiences leaving them physically and emotionally exhausted. Alternatively, ruminating about imperfect performances may undermine their motivation and lead athletes to feel dissatisfied with their accomplishments in sport. Regardless, as found outside of sport, the study provides evidence that perfectionism cognitions are a unique feature of perfectionism and need to be considered alongside whether athletes are typically more or less perfectionistic (i.e., trait perfectionism). As such, perfectionism cognitions may warrant additional attention

when examining the perfectionism-athlete burnout relationship, when considering who is most at risk to burnout, and when devising interventions aimed at reducing burnout.

A second study by Crowell and Madigan (2021) has examined the relationship between perfectionism cognitions and burnout in sport over time. Crowell and Madigan (2021) built on Hill and Appleton's (2011) study by using a two-wave, three-month longitudinal design with measures taken at the start and end of season. In this study the sample were university athletes from various sports. The study is noteworthy, too, because it also examined all versions of the HF-PCI (HF-PCI, PCI-10, and HF-MPCI). Scores on the PCI-10 and HF-MPCI were related to burnout symptoms at Time 1 and Time 2. However, only concern over mistakes cognitions (labelled perfectionistic concerns cognitions in their study) from the HF-MPCI predicted changes in athlete burnout over time. Specifically, concern over mistakes cognitions predicted increases in reduced accomplishment and sport devaluation over the course of the season.

With controversy regarding the use of the HF-MPCI in mind, we believe some caution is required when extrapolating from this study. However, as the only test of the perfectionism cognitions and burnout relationship over time to date, it clearly has evidential value and is potentially informative. In this regard, it suggests that the relationship between perfectionism cognitions and athlete burnout symptoms may be something that is evident over time. If this is the case, there is a considerable amount we still do not know about this finding such as why the relationship exists for some symptoms of burnout (and possibly some cognitions) but not others. More longitudinal research of this kind is sorely needed to address these issues and further our understanding of the role of perfectionism cognitions in the development of athlete burnout.

One final study has examined the relationship between perfectionism cognitions and burnout (Hassmén et al., 2020). In this study, the focus was not on athlete burnout but on coach burnout. This built on the two aforementioned studies as well as a small number of studies that have examined trait perfectionism and burnout in coaches (e.g., Vealey et al., 2020). There are similarities and differences between the circumstances athletes and coaches find themselves. For example, both share irregular working hours, long seasons with limited breaks, and can be focus of harsh criticism from others (e.g., Bentzen et al., 2016). However, coaches have the additional burden of stress associated with being responsible for overall team performance and the emotional investment in both the sport and their athletes (e.g., Lee & Cho, 2021). It may be, then, that coaches are even more prone to burnout than athletes.

Noting the differences and the additional stressors for coaches, Hassmén et al. (2020) examined the relationship between perfectionism cognitions and one symptom of burnout (exhaustion) in a sample of professional soccer coaches. They also examined the predictive ability of a range of demographic and work factors, as well as a perfectionistic self-presentational style. Perfectionism cognitions were found to have a significant, positive, and moderate relationship with exhaustion. The relationship remained after demographic and work factors were taken into account (gender, age, civil status, and level of coaching, work hours). It also remained when considered alongside the three facets of a perfectionistic self-presentational style (one of which also predicted higher exhaustion - non-display of imperfection).

The study by Hassmén et al. (2020) illustrates that coaches may, like athletes, also be susceptible to burnout when they experience more frequent perfectionism cognitions. We believe it is noteworthy that this relationship was evident beyond perfectionistic self-presentational styles, too. Typically, research has focused on traits when examining incremental predictive ability. It appears that *thinking* you should be perfect places coaches at

risk to burnout even if they are also trying to *appear* perfect. It would be interesting to see if perfectionism cognitions still emerged as a unique predictor alongside both trait perfectionism and perfectionistic self-presentation styles. There are few studies that include all three, generally. One examining burnout in sport would be especially useful given we now know that components at all levels of the CMPB are related to higher burnout symptoms.

Perfectionism cognitions and emotions in sport

Two studies in sport have examined the relationship between perfectionism cognitions and pre-competition emotions (Donachie et al., 2018; Donachie et al., 2019). Pre-competition emotions are complex and their influence depends on a number of factors (Jekauc et al., 2021). However, athletes experiencing positive pre-competition emotions (e.g., excitement) are typically considered to be braced for competition and energised. By contrast, athletes experiencing negative pre-competition emotions (e.g., anger) are typically considered more prone to being distracted and having displaced energy (e.g., Vast et al., 2010). Over time, too, pre-competitive emotions are a key aspect of the overall sport experience. With these issues in mind, a better understanding of why some athletes report more negative and less positive pre-competition emotions, and vice versa, provides an opportunity to better support athletes with their wellbeing and their performance.

In the first study, Donachie et al. (2018) examined the relationship between trait perfectionism, perfectionism cognitions, and pre-competition emotions in youth soccer players. Youth soccer players completed a questionnaire once approximately a day before their next match. Perfectionism cognitions displayed significant, positive, and small-to-moderate relationships with pre-competition anxiety, dejection, and anger. After controlling for trait perfectionism, perfectionism cognitions predicted unique variance in all of these pre-competition emotions. In the same way that perfectionism cognitions predicted burnout

symptoms in an incremental fashion, then, they also did the same for the negative pre-competition emotions soccer players were reporting.

In a follow-up study, Donachie et al. (2019) examined whether perfectionism cognitions act as a mediator between trait perfectionism and pre-competition emotions. Youth footballers completed questionnaires three times, three-weeks apart, and approximately three days before their next match. The mediation was modelled at both between-person (changes relative to other athlete's scores) and within-person level (changes relative to an individual's own scores). At the between-person level, perfectionism cognitions mediated the relationships between trait perfectionism (self-oriented and socially prescribed perfectionism) and all pre-competition emotions, as well as multidimensional anxiety and anger. At the within-person level, again, perfectionism cognitions mediated the relationship between trait perfectionism and general pre-competition anxiety and anger, as well as multidimensional anxiety and anger. That is, it was found that as self-oriented and socially prescribed perfectionism increase over time so do perfectionism cognitions and, subsequently, so do pre-competition anxiety and anger.

This study provides one of the strongest indications yet that the experience of perfectionism cognitions explain why perfectionistic athletes will be prone to more negative emotional experiences. In this regard, the findings are very much consistent with research outside of sport. Pre-competition anxiety and anger, in particular, appear to be a key aspect of their emotional experiences and may pose particular difficulties in regards to emotion regulation. Of note, too, the experience of more negative pre-competition emotions is related to perfectionism cognitions regardless of whether an athlete typically expects perfection of themselves or believes others expects it of them. Hence, whether the result of trait perfectionism or the social environment, as perfectionism cognitions become more frequent athletes will likely experience more emotional difficulties.

Managing Perfectionism Cognitions in Sport

As evidenced in previous sections, perfectionism cognitions predict both burnout and negative emotions beyond trait perfectionism. In addition, perfectionism cognitions appear to be the mechanism by which trait perfectionism is related to undesirable emotional experiences. Therefore, it is important to find ways to protect athletes (and coaches) from the harmful consequences of perfectionism cognitions. Despite the evidence that perfectionism can be problematic in sport, studies testing the effectiveness of interventions for perfectionism are scarce. As trait perfectionism is relatively stable and may not be as amenable to change, it may even be that a focus on perfectionism cognitions, which is more state-like, may be a better focus for this work and is more likely to be successful.

Outside of sport, at least two intervention studies have found evidence that perfectionism cognitions can be reduced. The first study examined a 12-week web-based cognitive behavioural therapy (CBT) intervention with university students (Radhu et al., 2012). While they found that perfectionism cognitions (and concerns over mistakes) significantly reduced from pre- to post-intervention, no significant difference between the intervention group and control post-intervention was found. The second study also examined a web-based CBT intervention in students albeit slightly shorter (10-weeks) and compared it to both a general stress intervention and a control group in university students (Arpin-Cribbie et al., 2012). They found that perfectionism cognitions significantly reduced from pre- to post- for both intervention groups. In addition, the CBT group reported significantly lower perfectionism cognitions compared to the general stress intervention group and the control group post-intervention, when pre-intervention scores were controlled. As such, while limited and somewhat mixed, there is at least some emerging evidence that perfectionism cognitions can be reduced via intervention.

There are two studies that have tested interventions aimed at reducing perfectionism cognitions in the three domains this book is focused on. The first is by Karin and Nordin-Bates (2020) in dance and the second in by Donachie and Hill (2020) in sport. In the first study, Karin and Nordin-Bates's (2020) used a pretest-posttest design to examine the influence of a five-day intervention on 13 adolescent vocational ballet students. The intervention was pedagogical (rather than therapeutic or psychoeducational) with an emphasis on the use of implicit- learning and sensori-kinetic imagery as a means of improving creativity and reducing perfectionism cognitions. They found support for the intervention with statistically significant reductions in perfectionism cognitions pre- to post-intervention. Limitations of the design aside, these are intriguing findings and suggest that educational and indirect interventions may be useful in reducing perfectionism cognitions in dance and other domains.

In the second study, Donachie and Hill (2020) examined the effectiveness of a CBT-based self-help book ("When Perfect Isn't Good Enough"; Antony & Swinson, 2009) for reducing trait perfectionism and perfectionism cognitions among athletes. This approach, and book, had successfully been used in previous intervention research focused on trait perfectionism outside of sport (Pleva & Wade, 2007; Steele & Wade, 2008). One hundred and fifteen soccer players were randomly allocated to the self-help intervention group or a control group. The intervention group had access to the book for 8-weeks and were encouraged to read its 16 chapters and complete as many of its 53 exercises as possible. In support of the intervention, there were statistically significant, moderate-to-large, differences found between the two groups post-intervention in perfectionism cognitions which were also evident three months later.

The results from the two studies provide early indication that the experience of perfectionism cognitions is amenable to intervention in dance and sport. The use of implicit-

learning and sensori-kinetic imagery is particularly novel. It may be that a focus on multisensory images and absorption in the task leaves less “cognitive room” for negative thoughts. By contrast, CBT-based practices may provide the opportunity to abate perfectionism cognitions by challenging and changing some of the preceding beliefs and behaviours. However, given that the origins of perfectionism cognitions lie at a deep structural level, fundamental change is likely to be more involved and difficult, and possibly require other types of intervention (see Hewitt et al., 2017). While we wait for more research, we recommend practitioners consider the content of studies reviewed here in their own applied work and use them as the basis for interventions aimed at reducing perfectionism cognitions.

Other future directions for research

We close the chapter by briefly considering avenues for future research. Perhaps the most obvious avenue for future research is the general need to increase the number of studies of perfectionism cognitions in sport, dance, and exercise. Our view is that the importance of perfectionism cognitions is currently underappreciated in these domains. Perfectionism cognitions are likely to be extremely influential in regards to the experiences of athletes, dancers, and exercisers, and revealing in regards to the consequences of being perfectionistic. Perfectionism cognitions are a unique aspect of perfectionism that can help distinguish the characteristic from other personal qualities and is an important explanatory factor for the effects of trait perfectionism. This includes, in our view, being part of a key indirect pathway that links ambiguous dimensions of perfectionism – perfectionistic strivings – to negative outcomes such as burnout and emotional difficulties. As such, we believe research examining perfectionistic cognitions as an explanatory factor and mediator for outcomes associated with perfectionism to be an important avenue for future research.

One related future avenue pertains to broadening the focus of research to include other outcomes. So far research has focused mainly on pre-competition emotions and burnout. We would encourage researchers in sport, dance, and exercise to consider examining more clinically oriented outcomes (e.g., depressive symptoms and eating disorder symptomology). As noted by others, this would mirror research outside of sport and address concerns that we are in danger of painting too positive a picture of perfectionism in these domains (e.g., Flett & Hewitt, 2014b). We would also encourage researchers to examine how the experience of perfectionism cognitions undermines the presence of positive outcomes, such as enjoyment, confidence, and satisfaction. These types of outcomes have the potential to show how perfectionism cognitions not only increase the likelihood of problems, but also deny athletes, dancers, and exercisers experiences that are considered central to the value of participation in these domains.

A final future avenue pertains to the types of designs that are used to test these relationships. There have been many calls for more longitudinal research in the perfectionism area (e.g., Hill & Curran, 2016; Stoeber, 2018; Crowell & Madigan, 2022). These calls are applicable to perfectionism cognitions, too, and maybe especially important when considering their more state-like features and the situational and momentary changes that can only be captured over time. As such, some of the longitudinal designs and methods we have seen in trait perfectionism research would be useful for perfectionism cognitions like the use of daily diaries (e.g., MacKinnon et al. 2019). Other designs and methods used in sport, dance, and exercise capable of capturing more momentary changes such as the think aloud method would also be useful in this regard (see Eccles & Arsal, 2017). Such designs are necessary if we are to capture the experience of perfectionism cognitions in ecologically valid ways.

Many of the same merits apply to the use of more experimental designs. Again, while in short supply, some of the more revealing studies in the perfectionism area include attempts to observe the consequences of failure and negative feedback in competitive scenarios (e.g., De Muynck et al., 2021; Curran & Hill, 2018; Lizmore et al., 2019). To date, perfectionism cognitions have not featured in this research but, arguably, may be more relevant and revealing in regards to immediate responses to these types of manipulations. It would be interesting to see how responsive perfectionism cognitions are in these scenarios and their impact on state thoughts, feelings and behaviour such as performance. As such, we also call for more routine inclusion of perfectionism cognitions in these types of studies.

Concluding comments

This chapter focused on perfectionism cognitions and their role in revealing the inner experiences of athletes, dancers, and exercisers. The chapter begun by outlining the Comprehensive Model of Perfectionistic Behaviour and Perfectionism Cognitions Theory (Flett et al., 2018) which illustrated the deep-rooted nature of perfectionism cognitions and how they differ from other components of perfectionism. We then reviewed and discussed the research examining perfectionism cognitions in sport, dance, and exercise. These studies are indicative of the importance of perfectionism cognitions, particularly in regards to the emotional experiences of athletes and coaches, and suggest perfectionism cognitions are amenable to interventions aimed at reducing them. We concluded the chapter by identifying future directions for research and called for a greater focus on perfectionism cognitions and different outcomes, the use of more sophisticated research designs and methods, and the inclusion of perfectionism cognitions in research that examines responses to negative feedback and competitive failure.

References

Antony, M. M., & Swinson, R. P. (2009). When perfect isn't good enough: Strategies for

coping with perfectionism. New Harbinger Publications.

Appleton, P. R., Hall, H. K., & Hill, A. P. (2011). Examining the influence of the parent-initiated and coach-created motivational climate upon athletes' perfectionism cognitions. *Journal of Sports Sciences, 29*(7), 661–671.

Appleton, P. R. & Curran, T. (2016). The origins of perfectionism in sport, dance, and

exercise: An introduction to the conceptual model of perfectionism development. In A. P. Hill (Ed.), The psychology of perfectionism in sport, dance, and exercise (pp. 57-82). Routledge.

Arpin-Cribbie, C., Irvine, J., & Ritvo, P. (2012). Web-based cognitive-behavioral therapy for perfectionism: a randomized controlled trial. *Psychotherapy Research*, *22*(2), 194-207. https://doi.org/10.1080/10503307.2011.637242

Atkins, M. R., Johnson, D. M., Force, E. C., & Petrie, T. A. (2015). Peers, parents, and coaches, oh my! The relation of the motivational climate to boys' intention to continue in sport. *Psychology of Sport and Exercise*, *16*, 170-180. https://doi.org/10.1016/j.psychsport.2014.10.008

Belli, G. (2009). Nonexperimental quantitative research. In S. D. Lapan & M. T. Quartaroli (Eds.), *Research essentials: An introduction to designs and practices* (pp. 59–77). Jossey-Bass.

Besser, A., Flett, G. L., Sherry, S. B., & Hewitt, P. L. (2020). Are perfectionistic thoughts an antecedent or a consequence of depressive symptoms? A cross-lagged analysis of the Perfectionism Cognitions Inventory. *Journal of Psychoeducational Assessment, 38*(1), 99–111. https://doi.org/10.1177/0734282919877764

Burns, D. D. (1980). *Feeling good: The new mood therapy.* The New American Library Inc.

Campo, M., Champely, S., Lane, A.M., Rosnet, E., Ferrand, C., & Louvet, B. (2016). Emotions and performance in rugby. *Journal of Sport and Health Science, 294*, 1–6. https://doi.org/10.1016/j.jshs.2016.05.007

Casale, S., Fioravanti, G., Rugai, L., Flett, G.L., & Hewitt, P.L. (2020) What lies beyond the superordinate trait perfectionism factors? The Perfectionistic Self-Presentation and Perfectionism Cognitions Inventory versus the Big Three Perfectionism Scale in predicting depression and social anxiety. *Journal of Personality Assessment, 102*, 3, 370-379. https://doi.org/10.1080/00223891.2019.1573429

Crowell, D. & Madigan, D.M. (2021). Perfectionistic concerns cognitions predict burnout in college athletes: a three-month longitudinal study. *International Journal of Sport and Exercise Psychology*, 1-19. https://doi.org/10.1080/1612197X.2020.1869802

Curran, T., & Hill, A. P. (2018). A test of perfectionistic vulnerability following competitive failure among college athletes. *Journal of Sport and Exercise Psychology, 40*(5), 269-279. https://doi.org/10.1123/jsep.2018-0059

Curran, T., Hill, A. P., Hall, H. K., & Jowett, G. E. (2015). Relationships between the coach-created motivational climate and athlete engagement in youth sport. *Journal of Sport and Exercise Psychology*, *37*(2), 193-198. https://doi.org/10.1123/jsep.2014-0203

De Muynck, G. J., Vansteenkiste, M., Morbée, S., Vandenkerckhove, B., Vande Broek, G., & Soenens, B. (2021). The interplay between normative feedback and self-critical perfectionism in predicting competitive tennis players' competence, tension, and enjoyment: An experimental study. *Sport, Exercise, and Performance Psychology*. https://doi.org/10/1037/spy0000234

Donachie, T. C., & Hill, A. P. (2020). Helping soccer players help themselves: Effectiveness of a psychoeducational book in reducing perfectionism. *Journal of Applied Sport Psychology*, 1-21. https://doi.org/10.1080/10413200.2020.1819472

Donachie, T. C., Hill, A. P., & Hall, H. K. (2018). The relationship between multidimensional perfectionism and pre-competition emotions of youth footballers. *Psychology of Sport and Exercise, 37*, 33–42. https://doi.org/10.1016/j.psychsport.2018.04.002

Donachie, T. C., Hill, A. P., & Madigan, D. J. (2019). Perfectionism and pre-competition emotions in youth footballers: A three-wave longitudinal test of the mediating role of perfectionism cognitions. *Journal of Sport and Exercise Psychology, 41(*5), 309–319. https://doi.org/10.1123/jsep.2018-0317

Donahue, E. G., Forest, J., Vallerand, R. J., Lemyre, P. N., Crevier-Braud, L., & Bergeron, É. (2012). Passion for work and emotional exhaustion: The mediating role of rumination and recovery. *Applied Psychology: Health and Well-Being, 4(3)*, 341-368. https://doi.org/10.1111/j.1758-0854.2012.01078.x

Downey, C. A., Reinking, K. R., Gibson, J. M., Cloud, J. A., & Chang, E. C. (2014). Perfectionistic cognitions and eating disturbance: Distinct mediational models for males and females. *Eating Behaviors*, *15*(3), 419-426. https://doi.org/10.1016/j.eatbeh.2014.04.020

Eccles, D. W., & Arsal, G. (2017). The think aloud method: what is it and how do I use it? *Qualitative Research in Sport, Exercise and Health*, *9*(4), 514-531.

Ferrari, J. R. (1995). Perfectionism cognitions with nonclinical and clinical samples. *Journal of Social Behaviour and Personality, 10*(1), 143–156.

Flett, G. L., & Hewitt, P. L. (2014a). The multidimensional assessment of perfectionistic automatic thoughts: A commentary on "Examining mutual suppression effects in the assessment of perfectionism cognitions: Evidence supporting multidimensional assessment". *Assessment*, *21*(6), 661-665. https://doi.org/10.1177/1073191114553015

Flett, G. L., & Hewitt, P. L. (2014b). The perils of perfectionism in sports" revisited: Toward a broader understanding of the pressure to be perfect and its impact on athletes and dancers. *International Journal of Sport Psychology*, *45*(4), 395-407.

Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Gray, L. (1998). Psychological distress and the frequency of perfectionistic thinking. *Journal of Personality and Social Psychology, 75*(5), 1363–1381. https://doi.org/10.1037/0022-3514.75.5.1363

Flett, G. L., Hewitt, P. L., Demerjian, A., Sturman, E. D., Sherry, S. B., & Cheng, W. (2012). Perfectionistic automatic thoughts and psychological distress in adolescents: An analysis of the Perfectionism Cognitions Inventory. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *30*(2), 91-104.

https://doi.org/10.1007/s10942-011-0131-7

Flett, G. L., Hewitt, P. L., Nepon, T., & Besser, A. (2018). Perfectionism cognitions theory: The cognitive side of perfectionism. In J. Stoeber (Ed.), *The psychology of perfectionism: Theory, research and applications* (pp.89–110). Routledge.

Flett, G. L., Hewitt, P. L., Whelan, T., & Martin, T. R. (2007). The perfectionism cognitions inventory: Psychometric properties and associations with distress and deficits in cognitive self-management. *Journal of Rational-Emotive and Cognitive Therapy, 25*(4), 255–277. https://doi.org/10.1007/s10942-007-0055-4

Flett, G. L., Madorsky, D., Hewitt, P. L., & Heisel, M. J. (2002). Perfectionism cognitions, rumination, and psychological distress. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 20*(1), 33–47. https://doi.org/10.1023/A:1015128904007

Flett, G. L., Molnar, D. S., Nepon, T., & Hewitt, P. L. (2012). A mediational model of perfectionistic automatic thoughts and psychosomatic symptoms: The roles of negative affect and daily hassles. *Personality and Individual Differences*, *52*(5), 565–570. https://doi.org/10.1016/j.paid.2011.09.010

Flett, G.L., Nepon, T., & Hewitt, P.L. (2016). Perfectionism, worry and rumination in health and mental health: A review and a conceptual framework for a cognitive theory of perfectionism. In. F. S. Sirois & D. S. Molnar (Eds.), *Perfectionism, Health and Well-being* (pp.121–155). Springer International.

Garinger, L. M., Chow, G. M., & Luzzeri, M. (2018). The effect of perceived stress and specialization on the relationship between perfectionism and burnout in collegiate athletes. *Anxiety, Stress, & Coping*, *31*(6), 714-727. https://doi.org/10.1080/10615806.2018.1521514

Gustafsson, H., Hill, A. P., Stenling, A., & Wagnsson, S. (2016). Profiles of perfectionism, parental climate, and burnout among competitive junior athletes. *Scandinavian Journal of Medicine & Science in Sports*, *26*(10), 1256-1264. https://doi.org/10.1111/sms.12553

Gustafsson, H., DeFreese, J. D., & Madigan, D. J. (2017). Athlete burnout: Review and recommendations. *Current Opinion in Psychology*, *16*, 109-113. https://doi.org/10.1016/j.copsyc.2017.05.002

Harwood, C. G., Keegan, R. J., Smith, J. M., & Raine, A. S. (2015). A systematic review of the intrapersonal correlates of motivational climate perceptions in sport and physical activity. *Psychology of Sport and Exercise*, *18*, 9-25. https://doi.org/10.10.16/j.psychsport.2014.11.005

Hassmén, P., Lundkvist, E., Flett, G. L., Hewitt, P. L., & Gustafsson, H. (2020). Coach burnout in relation to perfectionism cognitions and self-presentation. *International Journal of Environmental Research and Public Health, 17(23),* 8812-8821. https://doi.org/10.3390/ijerph17238812

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456–470. https://doi.org/10.1037/0022-3514.60.3.456

Hewitt, P. L., Flett, G. L., & Mikail, S. F. (2017). *Perfectionism: A relational approach to conceptualization, assessment, and treatment.* Guilford Publications.

Hill, A. P., & Appleton, P. R. (2011). The predictive ability of the frequency of perfectionism cognitions, self-oriented perfectionism, and socially prescribed perfectionism in relation to symptoms of burnout in youth rugby players. *Journal of Sports Sciences*, *29*(7), 695–703. https://doi.org/10.1080/02640414.2010.551216

Hill, A. P., Hall, H. K., Duda, J. L., & Appleton, P. R. (2011). The cognitive, affective and behavioural responses of self-oriented perfectionists following successive failure on a

muscular endurance task. *International Journal of Sport and Exercise Psychology*, *9*(2), 189–207. https://doi.org/10.1080/1612197x.2011.567108

Hill, A. P., & Curran, T. (2016). Multidimensional perfectionism and burnout: A meta-analysis. *Personality and Social Psychology Review*, *20*(3), 269–288. https://doi.org/10.1177/1088868315596286

Hill, A. P., & Donachie, T. C. (2020). Not all perfectionism cognitions are multidimensional: Evidence for the Perfectionism Cognitions Inventory–10. *Journal of Psychoeducational Assessment, 38*(1), 15-25.

https://doi.org/10.1177/0734282919881075

Hill, A. P., Madigan, D. J., Smith, M. M., Mallison-Howard, S. H., & Donachie, T. C. (2020). Perfectionism. In D. Hackfort, & R. J. Schinke (Eds.), The Routledge international encyclopaedia of sport and exercise psychology: Theoretical and methodological concepts (pp. 405–412). (Key Issues in Sport and Exercise Psychology). Routledge.

Hill, A. P., Mallinson-Howard, S. H., & Jowett, G. E. (2018). Multidimensional perfectionism in sport: A meta-analytical review. *Sport, Exercise, and Performance Psychology*, *7*(3), 235–270. https://doi.org/10.1037/spy0000125

Ingram, R. E. (1990). Self-focused attention in clinical disorders: Review and a conceptual model. *Psychological Bulletin*, *107*(2), 156–176. https://doi.org/10.1037/0033-2909.107.2.156

Isoard-Gautheur, S., Guillet-Descas, E., & Gustafsson, H. (2016). Athlete burnout and the risk of dropout among young elite handball players. *Sport Psychologist*, *30*(2). https://doi.org/10.1123/tsp.2014-0140

Jekauc, D., Fritsch, J., & Latinjak, A. T. (2021). Toward a theory of emotions in competitive sports. *Frontiers in Psychology*, 12. https://doi.org/10.3389/fpsyg.2021.790423

Karin, J., & Nordin-Bates, S. M. (2020). Enhancing creativity and managing perfectionism in dancers through implicit learning and sensori-kinetic imagery. *Journal of Dance Education*, *20*(1), 1-11. https://doi.org/10.1080/15290824.2018.1532572

Klinger, E. (1996). The contents of thoughts: Interference as the downside of adaptive normal mechanisms in thought flow.

Kobori, O. (2006). A cognitive model of perfectionism: The relationship of perfectionism personality to psychological adaptation and maladaptation (Unpublished doctoral dissertation). Department of Cognitive and Behavioral Science, University of Tokyo, Japan.

Kobori, O., & Tanno, Y. (2004). Development of multidimensional perfectionism cognition inventory. *Japanese Journal of Personality*, *13*(1), 34–43.

Kobori, O., & Tanno, Y. (2005). Self-oriented perfectionism and its relationship to positive and negative affect: The mediation of positive and negative perfectionism cognitions. *Cognitive Therapy and Research*, *29*(5), 555–567.

https://doi.org/10.1007/s10608-005-2835-4

Kobori, O., Yoshie, M., Kudo, K., & Ohtsuki, T. (2011). Traits and cognitions of perfectionism and their relation with coping style, effort, achievement, and performance anxiety in Japanese musicians. *Journal of Anxiety Disorders*, *25*, 674–679. https://doi.org/10.1016/j.janxdis.2011.03.001

Kolayiş, H., Sarı, İ & Çelik, N. (2017). Parent-initiated motivational climate and self-determined motivation in youth sport: how should parents behave to keep their child in sport? *Kinesiology*, *49*(2), 217-224.

Lemelin, E., Verner-Filion, J., Carpentier, J., Carbonneau, N., & Mageau, G. A. (2022). Autonomy support in sport contexts: The role of parents and coaches in the promotion of athlete well-being and performance. *Sport, Exercise, and Performance Psychology*. https://doi.org/10.1037/spy0000287

Lizmore, M. R., Dunn, J. G., Dunn, J. C., & Hill, A. P. (2019). Perfectionism and performance following failure in a competitive golf-putting task. *Psychology of Sport and Exercise, 45,* 101582. https://doi.org//10.1016/j.psychsport.2019.101582

Macedo, A., Marques, C., Quaresma, V., Soares, M. J., Amaral, A. P., Araújo, A. I., & Pereira, A. T. (2017). Are perfectionism cognitions and cognitive emotion regulation strategies mediators between perfectionism and psychological distress? *Personality and Individual Differences, 119(1),* 46–51. https://doi.org/10.1016/j.paid.2017.06.032

Mackinnon, S. P., Ray, C. M., Firth, S. M., & O'Connor, R. M. (2019). Perfectionism, negative motives for drinking, and alcohol-related problems: A 21-day diary study. *Journal of Research in Personality, 78,* 177-188. https://doi.org/10.1016/j.jrp.2018.12.003

Madigan, D. J., Gustafsson, H., Smith, A., Raedeke, T. D., & Hill, A. P. (2019). The BASES expert statement on burnout in sport. *The Sport and Exercise Scientist, 61,* 6–7.

Madigan, D. J., Stoeber, J., & Passfield, L. (2015). Perfectionism and burnout in junior athletes: A three-month longitudinal study. *Journal of Sport and Exercise Psychology, 37*(3), 305–315. https://doi.org/10.1123/jsep.2014-0266

Madigan, D. J., Stoeber, J., & Passfield, L. (2016). Motivation mediates the perfectionism-burnout relationship: A three-wave longitudinal study with junior athletes. *Journal of Sport and Exercise Psychology*, *38*(4), 341–354. https://doi.org/10.1123/jsep.2015-0238

Mandel, T., Dunkley, D. M., Lewkowski, M., Zuroff, D. C., Lupien, S. J., Juster, R.-P., Ng Ying Kin, N. M. K., Foley, J. E., Myhr, G., & Westreich, R. (2018). Self-critical perfectionism and depression maintenance over one year: The moderating roles of daily stress–sadness reactivity and the cortisol awakening response. *Journal of Counseling Psychology*, *65*(3), 334–345. https://doi.org/10.1037/cou0000284

Martinent, G., & Ferrand, C. (2009). A naturalistic study of the directional interpretation process of discrete emotions during high-stakes table tennis matches. *Journal of Sport and Exercise Psychology*, *31*(3), 318–336. https://doi.org/10.1123/jsep.31.3.318

Moen, F., Hrozanova, M., Stiles, T. C., & Stenseng, F. (2019). Burnout and perceived performance among junior athletes—Associations with affective and cognitive components of stress. *Sports*, *7*(7), 171. https://doi.org/10.3390/sports7070171

Molnar, D. S., Moore, J., O'Leary, D. D., MacNeil, A. J., & Wade, T. J. (2021). Perfectionism cognitions, Interleukin-6, and C-Reactive protein: A test of the perfectionism diathesis stress model. *Brain, Behavior, & Immunity-Health*, *13*, 100211. https://doi.org/10.1016/j.bbih.2021.100211

Mosewich, A. D., Crocker, P. R., Kowalski, K. C., & DeLongis, A. (2013). Applying self-compassion in sport: An intervention with women athletes. *Journal of Sport and Exercise Psychology*, *35*(5), 514–524.

Nicholls, J. G. (1989). The competitive ethos and democratic education. Harvard University Press.

Nolen-Hoeksema, S. (1996). Chewing the Cud and Other. *Ruminative thoughts*, *9*, 135.

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100(4)*, 569–582.

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, *3*(5), 400–424. https://doi.org/10.1111/j.1745-6924.2008.00088.x

Nordin-Bates, S. M., Cumming, J., Sharp, L., &. Aways, D. (2011). Imagining Yourself Dancing to Perfection? Correlates of Perfectionism in Ballet and Contemporary Dance. *Journal of Clinical Sport Psychology*, *5*, 58-76. https://doi.org/10.1123/jcsp.5.1.58

Oliver, J. M., Hart, B. A., Ross, M. J., & Katz, B. M. (2001). Healthy perfectionism and positive expectations about counseling. *North American Journal of Psychology*, *3*(2), 229–242.

O'Rourke, D. J., Smith, R. E., Smoll, F. L., & Cumming, S. P. (2014). Relations of parent-and coach-initiated motivational climates to young athletes' self-esteem, performance anxiety, and autonomous motivation: who is more influential? *Journal of Applied Sport Psychology*, *26*(4), 395-408. https://doi.org/10.1080/10413200.2014.907838

Patterson, H., Firebaugh, C. M., Zolnikov, T. R., Wardlow, R., Morgan, S. M., & Gordon, B. (2021). A systematic review on the psychological effects of perfectionism and accompanying treatment. *Psychology*, *12*(1), 1-24. https://doi.org/10.4236/psych.2021.121001

Pleva, J., & Wade, T.D. (2007). Guided self-help versus pure self-help for perfectionism: A randomised control trial. *Behaviour Research and Therapy. 45*(5), 849–861. https://doi.org/10.1016/j.brat.2006.08.009

Pyszczynski, T., & Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: a self-awareness theory of reactive depression. *Psychological Bulletin, 102*(1), 122–138. https://doi.org/10.1037/0033-2909.102.1.122

Radhu, N., Daskalakis, Z. J., Arpin-Cribbie, C. A., Irvine, J., & Ritvo, P. (2012). Evaluating a web-based cognitive-behavioral therapy for maladaptive perfectionism in university students. *Journal of American College Health*, *60*(5), 357-366.

https://doi.org/10.1080/07448481.2011.630703

Raedeke, T. D., & Smith, A. L. (2001). Development and preliminary validation of an athlete burnout measure. *Journal of Sport and Exercise Psychology*, *23*(4), 281-306.

Rudolph, S. G., Flett, G. L., & Hewitt, P. L. (2007). Perfectionism and deficits in cognitive emotion regulation. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *25*(4), 343-357. https://doi.org/10.1007/s10942-007-0056-3

Sagar, S.S., & Stoeber, J. (2009). Perfectionism, fear of failure, and affective responses to success and failure: The central role of fear of experiencing shame and embarrassment. *Journal of Sport & Exercise Psychology*, *31*(5). 602-627.

https://doi.org/10.1123/jsep.31.5.602

Smith, R. E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of Sport and Exercise Psychology*, *8*(1), 36-50. https://doi.org/10.1123/jsp.8.1.36

Steele, A. L., & Wade, T. D. (2008). A randomised trial investigating guided self-help to reduce perfectionism and its impact on bulimia nervosa: A pilot study. *Behaviour Research and Therapy, 46*(12), 1316–1323. https://doi.org/10.1016/j.brat.2008.09.006

Stoeber, J. (2018). *The psychology of perfectionism: Critical issues, open questions, and future directions.* In J. Stoeber (Ed.), The psychology of perfectionism: Theory, research, applications (pp. 333-352). Routledge.

Stoeber, J., Kobori, O., & Brown, A. (2014). Examining mutual suppression effects in the assessment of perfectionism cognitions: Evidence supporting multidimensional assessment. *Assessment, 21*(6), 647–660. https://doi.org/10.1177/1073191114534884

Stoeber, J., Kobori, O., & Tanno, Y. (2010). The multidimensional perfectionism cognitions inventory–English (MPCI-E): Reliability, validity, and relationships with positive and negative affect. *Journal of Personality Assessment, 92*(1), 16–25. https://doi.org/10.1080/00223890903379159

Sysko, R., & Walsh, B. T. (2008). A critical evaluation of the efficacy of self-help interventions for the treatment of bulimia nervosa and binge-eating disorder. *International Journal of Eating Disorders, 41*(2), 97–112. https://doi.org/10.1002/eat.20475

Tyler, J., Mu, W., McCann, J., Belli, G., & Asnaani, A. (2021) The unique contribution of perfectionistic cognitions to anxiety disorder symptoms in a treatment-seeking sample, *Cognitive Behaviour Therapy, 50*(2,) 121-137. http://doi.org/10.1080/16506073.2020.1798497

Vast, R. L., Young, R. L., & Thomas, P. R. (2010). Emotions in sport: Perceived effects on attention, concentration, and performance. *Australian Psychologist, 45*(2), 132–140. https://doi.org/10.1080/00050060903261538

Vealey, R. S., Martin, E., Coppola, A., Ward, R. M., & Chamberlin, J. (2020). The slippery slope: Can motivation and perfectionism lead to burnout in coaches?. *International Sport Coaching Journal*, *7*(1), 1-10. https://doi.org/10.1123/iscj.2018-0043

Wagnsson, S., Stenling, A., Gustafsson, H., & Augustsson, C. (2016). Swedish youth football players' attitudes towards moral decision in sport as predicted by the parent-initiated motivational climate. *Psychology of Sport and Exercise*, *25*, 110-114. https://doi.org/10.1016/j.psychsport.2016.05.003

White, S. A. (1996). Goal orientation and perceptions of the motivational climate initiated by parents. *Pediatric Exercise Science*, *8*, 122–129. https://doi.org/10.1123/pes.8.2.122

Xie, Y., Kong, Y., Yang, J., & Chen, F. (2019). Perfectionism, worry, rumination, and distress: A meta-analysis of the evidence for the perfectionism cognition theory. *Personality and Individual Differences*, *139*, 301-312. https://doi.org/10.1016/j.paid.2018.11.028

Table 8.1. A summary of research examining perfectionism cognitions in sport, exercise, and dance

Study	Sample	Domain	Measure	Criterion variable	*r*		
					T1	T2	T3
Appleton et al. (2011)	73 female adolescent athletes	Sport	PCI	Coach-created mastery climate	**.25**	-	-
				Coach-created performance climate	**.34**	-	-
				Mother-initiated learning-enjoyment climate	-.11	-	-
				Father-initiated learning-enjoyment climate	.05	-	-
				Mother-initiated success-without-effort climate	**.22**	-	-
				Father-initiated success-without-effort climate	.17	-	-
				Mother-initiated worry-conducive environment	**.45**	-	-
				Father-initiated worry-conducive environment	**.23**	-	-
	117 male adolescent athletes	Sport	PCI	Coach-created mastery climate	.05	-	-
				Coach-created performance climate	**.31**	-	-
				Mother-initiated learning-enjoyment climate	-.04	-	-
				Father-initiated learning-enjoyment climate	-.03	-	-
				Mother-initiated success-without-effort climate	-.12	-	-
				Father-initiated success-without-effort climate	**-.21**	-	-
				Mother-initiated worry-conducive environment	.01	-	-

				Father-initiated worry-conducive environment	**.19**	-	-
Hill & Appleton (2011)	202 male adult rugby players	Sport	PCI	BO: Reduced accomplishment	**.27**	-	-
				BO: Exhaustion	**.21**	-	-
				BO: Devaluation	.03	-	-
Donachie et al. (2018)	206 adolescent soccer players (62% females)	Sport	PCI-10	Anxiety	**.32**	-	-
				Anger	**.29**		
				Dejection	**.24**	-	-
				Happiness	.12	-	-
				Excitement	.13	-	-
Donachie et al. (2019)	352 adolescent soccer players (33% females)	Sport	PCI-10	Anxiety	**.30**	**.44**	**.41**
				Anger	**.27**	**.39**	**.39**
				Dejection	**.24**	**.39**	**.35**
				Happiness	.10	**.13**	**.22**
				Excitement	-.01	**.13**	**.33**
				Cognitive anxiety	**.46**	**.49**	**.53**
				Somatic anxiety	**.37**	**.39**	**.41**
				Feeling anger	**.25**	**.29**	**.24**
				Verbal anger	**.31**	**.30**	**.24**
				Physical anger	**.32**	**.33**	**.33**
Hassmén et al. (2020)	272 adult sports coaches (15% females)	Sport	PCI	BO: Exhaustion	**.41**	-	-
				Working hours	**.14**	-	-

Crowell & Madigan (2021)	170 university athletes (44% females)	Sport	PCI	BO: Exhaustion	.14	.14	-
				BO: Reduced accomplishment	.07	.11	-
				BO : Devaluation	-.04	.01	-
			PCI-10	BO: Exhaustion	**.18**	.14	-
				BO: Reduced accomplishment	**.15**	**.18**	-
				BO: Devaluation	.05	.08	-
			PSC	BO: Exhaustion	.04	-.03	-
				BO: Reduced accomplishment	-.09	-.12	-
				BO: Devaluation	**-.17**	-.14	-
			PCC	BO: Exhaustion	**.23**	**.29**	-
				BO: Reduced accomplishment	**.22**	**.36**	-
				BO: Devaluation	.12	**.24**	-
			PD	BO: Exhaustion	.05	.05	-
				BO: Reduced accomplishment	.03	-.05	-
				BO: Devaluation	-.12	**-.16**	-

Notes: PCI = Perfectionism Cognitions Inventory (Flett et al., 1998); PCI-10 = Perfectionism cognitions Inventory-10 (Hill & Donachie, 2020); PSC = Perfectionistic Strivings Cognitions (Stoeber et al., 2014) PCC = Perfectionistic Concerns Cognitions (Stoeber et al., 2014); PD = Perfectionistic Demands Cognitions (Stoeber et al., 2014). All correlations for longitudinal studies are within timepoints.