Hill, A. P. Perfectionism myths. To appear in I. Taylor & C. Englert (Eds.), *Handbook of Self-Regulation and Motivation.* Accepted: 1-11-2020

Perfectionism myths

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— 4783 words (not including references) —

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Abstract

Researchers have examined perfectionism in sport and exercise psychology for nearly 30 years. Over the course of this research we have learned a great deal about perfectionism. Despite considerable progress, however, perfectionism remains misunderstood by many researchers and practitioners. The chapter discusses four common myths regarding perfectionism. Specifically, that perfectionism refers only to the personal standards of athletes, that types of perfectionists exist, that perfectionism is necessary to be successful, and that perfectionism can be good for your health. Each of these myths is debunked by explaining how they lay in stark contrast to the findings of scientific research. In doing so, perfectionism is revealed to be a multidimensional personality trait evident to some degree in everyone. Moreover, its consequences are complex and can include performance benefits, for some athletes some of the time, but also motivation, performance, and wellbeing difficulties, for most athletes most of the time.

Introduction

Sport and exercise psychology are fraught with various myths and misunderstanding. Recent studies of coaches serve to illustrate this point with many coaches holding common but incorrect beliefs about learning and the brain (e.g., Bailey, Madigan, Cope, & Nicholls, 2018). Such myths and misunderstanding have varying degrees of impact on the effectiveness of coaches and practitioners. Whereas some myths and misunderstandings will have very little impact, others will undermine the ability to work with athletes effectively and safely. With this in mind, this chapter focuses on myths surrounding perfectionism - a personality trait that is central to athlete motivation. Even though perfectionism has been studied in sport and exercise psychology for nearly 30 years, perfectionism remains misunderstood by many coaches and other practitioners. Indeed, some accounts of perfectionism are proving difficult to dispel despite being contradicted by scientific research.

The chapter discusses four common perfectionism myths. The first myth is that perfectionism pertains only to the standards that athletes have for themselves, as opposed to having other equally important defining features. The second myth is that perfectionists exist and, therefore, types of athletes who are perfectionists can be identified and studied. The third myth is that perfectionism is a personal quality that is necessary in order to be successful. The final myth is that perfectionism, or some form or type of perfectionism, can be good for your health. Here, each myth is debunked and, in doing so, a foundation is provided for those who wish to better understand perfectionism and its consequences for athlete motivation, performance and wellbeing.

Myth 1: Perfectionism is just about personal standards

The first perfectionism myth is that perfectionism pertains just to the personal standards that people have. However, perfectionism refers to more than the personal standards people have or pursue. Perfectionism includes a particular mind-set and set of

beliefs that shape the way people think about the world and give meaning to personal experiences (Ellis, 1958; Burns, 1980; Pacht, 1984). Broadly defined, perfectionism is excessively "high standards of performance *which are accompanied by tendencies for overly critical evaluations of one's own behavior"* (Frost et al. 1990, p. 450, italics in original). The latter part of the definition serves to highlight the features of perfectionism that extend beyond personal standards. The additional features manifest in various ways such as doubts, concerns, and negative reactions to imperfection, and are central to understanding the consequences of perfectionism (Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010; Stoeber, Otto, & Stoll, 2006). Moreover, these additional features are equally as important to defining and understanding perfectionism as personal standards (Frost et al., 1990).

Because these other features are not always considered alongside personal standards, the lines can blur between perfectionism and apparently similar personality characteristics. Research examining perfectionism and conscientiousness, in particular, serves to underscore the importance of being clear about what perfectionism is and is not (see Flett & Hewitt, 2006, 2007). In a study of junior cricketers, colleagues and I compared the tendency to demand perfection from oneself (self-oriented perfectionism) with a sub-facet of conscientiousness, conscientious achievement striving, in regards to relationships with other indicators of perfectionism (Hill, Hall, & Appleton, 2010). The tendency to demand perfection from oneself had a significant positive relationship with high standards, concerns, doubts, fear of failure, self-criticism, and negative reactions to imperfection. By contrast, conscientious achievement striving had a significant positive relationship with only high standards (and to a lesser degree self-criticism). Additional analyses revealed that demanding perfection from oneself includes irrational beliefs, namely, that it was important to be perfect, which explained these differences (see Campbell & Di Paula, 2002).

The problem with focusing on just personal standards is made worse by the tendency of researchers to statistically create and examine new personal standards dimensions of perfectionism that are unrelated to other dimensions of perfectionism. The technique used to do so is known as "partialling" and the new dimensions created are labelled either residualized or partialled personal standards. The merits of partialling have been debated by researchers in this area (see Hill, 2014, 2017; Stoeber & Gaudreau, 2017). In this debate, I have argued that partialled personal standards offer an inappropriate basis to make inferences about perfectionism because it no longer contains core features that overlap with other perfectionism dimensions (e.g., concerns, doubts, and negative reactions). Whether colleagues agree or not, the importance of being clear about what the exact basis of our conclusions are is illustrated by the opposing conclusions of two reviews of research examining perfectionism in sport. One, drawing heavily on findings using partialled personal standards, concluded that personal standards may be part of a healthy striving for excellence (Stoeber, 2011). The other, focusing on personal standards, concluded that they were complex and ambiguous (Hill, Mallinson-Howard, & Jowett, 2018). The latter is a more accurate account of research so far in sport psychology, in my opinion.

A related part of this myth is the notion that perfectionism pertains only to how you think and feel about yourself – demanding perfection from oneself (self-oriented perfectionism). However, one of the most important advances in our understanding of perfectionism has been to broaden the study of the trait to include beliefs about other people and the target of the perfectionistic demands. Perfectionism can include demanding that other people are perfect (other oriented perfectionism) and believing that other people demand that you are perfect (socially prescribed perfectionism). Distinguishing between these three dimensions of perfectionism is the cornerstone of a model developed by Hewitt and Flett (1991). This model is perhaps the most popular model of perfectionism outside of sport and

exercise psychology and has now been used numerous times to study it in athletes (see Hill, Mallinson-Howard, & Jowett, 2018, review). One thing that this research has taught us is that if we want to fully understand the consequences of perfectionism, we need to consider each of these different dimensions.

One recent example of research testing this model serves to illustrate the importance of studying perfectionism in this way. Grugan, Jowett, Mallinson-Howard, and Hall (2020) examined the relationship between the three different dimensions of perfectionism and antisocial behavior in competitive team athletes. They found that self-oriented perfectionism was unrelated to antisocial teammate behavior and negatively related to antisocial opponent behavior. By contrast, socially prescribed perfectionism and other oriented perfectionism were positively related to both antisocial teammate and opponent behaviors. For other-oriented perfectionism, the relationships were also mediated by angry reactions to poor teammate performance. As such, we can expect the likelihood of antisocial behavior, and underpinning triggers for that behavior, to differ depending on the dimension of perfectionism athletes exhibit. This information would be lost if we were to focus only on the tendency to demand perfection from oneself.

One final point on the myth regarding perfectionism being just about personal standards is worth making. Colleagues and I have recently proposed that perfectionism can be conceptualised as a quality of the social environment, in addition to the individual (see Hill & Grugan, 2019). Specifically, we believe that different social environments can be construed as more or less perfectionistic. Perfectionistic climates are environments that promote the view that performances must be perfect and less than perfect performances are unacceptable. More perfectionistic climates include unrealistic expectations that performances should be perfect (expectation), harsh criticism when performances are not perfect (criticism), coercive behavior used to pressure perfect performance (control), recognition and appreciation based

on perfect performances (conditional regard), and worry and vigilance regarding mistakes and the consequences of not performing perfectly (anxiousness). Although our research on perfectionistic climate is in its infancy, we believe this approach offers great promise in regards to understanding perfectionism. If others agree, the study of perfectionism in sport will move even further away from focusing on just the personal standards of athletes.

Myth 2: "Perfectionists" exist

The second perfectionism myth is that "perfectionists" exist. That is, there are types of athletes who are perfectionists and there are types of athletes who are not perfectionists. In actuality, like most personality traits, perfectionism exists in everyone (and every athlete) to some degree. This is the conclusion of research that has directly examined the structure of perfectionism. Specifically, Bromen-Fulks, Hill, and Green (2008) examined the structure of perfectionism using taxometric procedures to determine whether perfectionism is best conceptualized as taxonic (categorical) or dimensional (continuous). Taxometric procedures are used to uncover naturally occurring patterns in data and the existence of underlying taxons or classes. These procedures have been applied to a range of personality characteristics in the same way to determine their structure (see Haslam, Holland, & Kuppens, 2012). On the basis of their analyses, they argued that "…individual differences in perfectionism are reflective of a difference in degree rather than type of perfectionism experienced" (p.488).

This means that there is no point, cut-off or threshold on the instruments that are used to measure perfectionism that can identify an athlete who is a perfectionist or a non-perfectionist. Some athletes will have higher levels of perfectionism and other athletes will have lower levels of perfectionism. Every other athlete will be somewhere in between. Moreover, while we can impose typologies to study perfectionism, these typologies offer investigative convenience at the expense of studying perfectionism is it occurs - a difference

in degree, rather than type. As such, rather than labelling athletes as “perfectionists,” it is more accurate and preferable to describe them as being more or less “perfectionistic” (Hill, 2016; Hill, Madigan, Smith, Mallinson-Howard, & Donachie, 2020).

There are two important ramifications of this realization. The first ramification is that perfectionism is relevant for everyone (because everyone has it to some degree). It is not a rare quality found mainly or only in the most talented or gifted. This incorrect notion should be avoided in sport and exercise psychology (e.g., Rees et al., 2016). Essentially, to study perfectionism is to study everyone. Some of the more revealing research on perfectionism that has taken place so far in sport has focused on non-elite samples. This includes research examining moral behavior in school and community-based junior sports participants (Mallinson, Hill, & Hall, 2019), burnout in sports coaches (Tashman, Tenenbaum, & Eklund, 2010), and parental origins of perfectionism (Olsson, Hill, Madigan, & Woodley, 2020).

The notion that we should seek to identify and study perfectionism only in specific types of people, and not others, would also do little to encourage research in more general settings. Exercise, for example, is an important setting to study perfectionism. Not least because people are bombarded with images of bodily perfection and shamed if they do not conform to body ideals no matter how unrealistic they are. Initial research in this area suggests that perfectionism may tell us a great deal about the experiences of exercisers. One of the most frequently examined relationships so far has been between perfectionism and exercise dependence with higher levels of perfectionism related to greater symptomology (e.g., Hill, Robson, & Stamp, 2015). More recently researchers have begun to examine other relationships. Notably, in one study it was found that perfectionism was related to how recreational runners coped with injuries (Jowett, Hill, Forsdyke, & Gledhill, 2018), for example.

The second ramification of the realization that perfectionists do not exist is that perfectionism is best examined using the entire continuum of scores. This is important in regard to how perfectionism is studied in sport and exercise psychology. Some models of perfectionism are typological and emphasize comparison of groups who have different mean levels of perfectionism (Tripartite Model of Perfectionism; Parker, 1997). Other models are continuum based and empathize the examination of perfectionism across all scores (2 × 2 Model of Perfectionism; Gaudreau & Thompson, 2010). The difference between the two models is exemplified in sport by research that has examined perfectionism and burnout with some studies comparing athletes with different types of perfectionism (e.g., parent-oriented perfectionists versus doubt-oriented perfectionists; Gotwals, 2011) and others examining how dimensions of perfectionism interact across all scores to determine the level of burnout (e.g., Hill, 2013). In the absence of meaningful cut-offs and thresholds, models of perfectionism that are continuum based are preferable to typological-based models (Hill & Madigan, 2017). Similarly, statistical analyses that allow examination of the effects of perfectionism across the whole range of scores offer greater insight into its likely consequences.

Myth 3: Perfectionism is necessary to be successful

Perhaps the most insidious perfectionism myth is that perfectionism is necessary to be successful. This myth is partly based on the issues discussed in myth one and confusion between being highly perfectionistic and simply having high or exceptionally high standards. Athletes can have exceptionally high standards and not be highly perfectionistic. One of the key differences between people who have exceptionally high standards and those who are highly perfectionistic are the features of the standards themselves. Perfectionistic standards are more rigid and unrealistic given the circumstances people find themselves in. This includes disregarding personal constraints (e.g., low ability, injury or illness) or situational constraints (e.g., task novelty or difficulty). Because of this feature, perfectionistic standards

deny people the opportunity to set goals that are optimally challenging and adjust their goals if necessary. This is something that is important for maintaining performance, motivation, and well-being over the long-term (Wrosch, Scheier, & Miller, 2013) and something particularly important for talent development (Chase & DiSanti, 2017).

Another key difference between athletes who have exceptionally high standards and athletes who are highly perfectionistic is how they respond to not being perfect. People who are highly perfectionistic have harsh and strict evaluative tendencies and tend to respond to imperfection with severe criticism. The criticism is often directed towards themselves, rather than the performance, and extends beyond what most people would experience especially when underpinned by concerns regarding the expectations of others (Gilbert, Durrant, & McEwan, 2006). These harsh self-critical tendencies are a major source of performance and mental health difficulties for people who are highly perfectionistic (Dunley, Zuroff, & Blankstein, 2006; Powers, Koestner, & Zuroff, 2011).

This is not to say that there are no circumstances in which higher levels of perfectionism will contribute to better performance, at least in the short-term. People who are highly perfectionistic can be organised, hardworking, and dedicate considerable amounts of time and effort to performance tasks. There is evidence for this in other achievement domains such as education (e.g., Madigan, 2019). There are also a small number of studies in sport that illustrate that striving for perfection may contribute to better athletic performance (e.g., Madigan, Stoeber, Culley, Passfield, & Hill, 2018; Stoeber, Uphill, & Hotham, 2009; Stoll, Lau, & Stoeber, 2008). This includes when examining team level perfectionism and team performance (Hill, Stoeber, Brown, & Appleton, 2014). However, these effects are part of a complex set of behaviors that need to be viewed and studied holistically and over time. When perfectionism is studied in this manner, it is revealed to include a strong vulnerability to motivation, performance, and mental health issues for most people.

Colleagues and I have found evidence of the vulnerability that underlies perfectionism in a series of studies where we examined how student-athletes respond to personal and competitive failure (Hill, Hall, Duda, & Appleton, 2011; Curran & Hill, 2018; Lizmore, Dunn, Causgrove Dunn, & Hill, 2019). In the first study, we examined differences between student-athletes high and low in self-oriented perfectionism in their response to failing to meet a personally set goal on a cycle ergometer task (Hill et al., 2011). In three trials, participants set a personal target and received (false) feedback that they failed to meet their personal target. We found that failure on just one trial was enough to trigger differences in the two groups in self-reported threat, effort, and satisfaction with performance. This study provided one of the first indications in sport that perfectionism might be problematic for athletes when they encounter achievement difficulties.

In the second study, we examined the interaction between self-oriented perfectionism and socially prescribed perfectionism in determining responses to competitive failure, again, on a cycle ergometer task (Curran & Hill, 2018). Unlike in the first study, student-athletes competed against each other three times with all participants receiving (false) feedback that they had performed the worst. In this study, we found that following competitive failure, self-oriented perfectionism was related to a pronounced decrease in pride and socially prescribed perfectionism was related to a pronounced increase in shame. Both dimensions of perfectionism were related to a pronounced increase in guilt. We also found that a combination of high levels of both dimensions of perfectionism were related to higher guilt and higher shame following failure when compared to other combinations of perfectionism. The more negative response to failure associated with perfectionism therefore extends to competition with others and includes an array of emotions.

Finally, in the most recent study, we examined the interactive effects of perfectionistic strivings (a combination of perfectionism dimensions that measure personal strivings to

perfection) and perfectionistic concerns (a combination of perfectionism dimensions that measure evaluative concerns and negative reactions to imperfection) on athletic performance (golf putting) following competitive failure (Lizmore et al., 2019). We found that at lower levels of perfectionistic concerns, perfectionistic strivings had a significant positive relationship with performance. However, as levels of perfectionistic concerns increased, the effect became non-significant and was eventually reversed with perfectionistic strivings having a negative effect on performance. Surprisingly, the level of perfectionistic concerns that instigated the change in effect from significant to non-significant was below the mid-point on the response scale. In other words, only a small amount of perfectionistic concerns was required in order to subvert the performance benefits of perfectionistic strivings.

Although not without limitations, these three studies provide evidence that the consequences of perfectionism are likely to be complex and problematic if the intention is to develop resilient, high performing athletes. My view is that highly perfectionistic athletes are typically unprepared for achievement difficulties. This is because they invest their sense of self-worth heavily in their performances and curate their achievement experiences in a manner designed to protect themselves from achievement difficulties (Hill, Hall, & Appleton, 2011; Hill et al., 2011). There is evidence for this argument in studies outside of sport that have found a relationship between perfectionism and self-handicapping behaviors and procrastination that are indicative of a strong desire to avoid scenarios in which you might appear incompetent and perform less than perfectly (Kearns, Forbes, Gardiner, & Marshall, 2008; Sirois, Molnar, & Hirsch, 2017). These are hardly desirable features for anyone but particularly problematic for aspiring athletes.

What, then, should be made of the accounts of successful athletes who are identified as being perfectionistic (e.g., Gould, Dieffenbach, & Moffett, 2002)? First, it is important to note that the qualitative studies from which these accounts are drawn are not intended to

uncover causal relationships. Rather, studies that adopt interpretative perspectives aim to explore and better understand the lives and perspectives of the participants – a valuable goal. They tell us what athletes think may have been determining factors but cannot tell us what actually was. Second, when the focus of the discussion broadens outside of performance, qualitative accounts of perfectionism are more complex. In our own research adopting qualitative approaches, for example, successful athletes reported that the energizing aspects of perfectionism occur in tandem with an array of negative consequences, not least how athletes say they routinely sacrifice important aspects of their lives and their health in pursuit of their goals (Hill, Witcher, Gotwals, & Leyland, 2015).

There are also instances where research has found perfectionism to be higher among more elite athletes in comparison to less-elite counterparts (e.g., Rasquinha, Dunn, & Dunn, 2014). However, there are many reasons why perfectionism may be higher in more elite samples other than being a causal factor for success or "eliteness". With its focus on competition and objectively available criteria for perfection, some sports may attract those higher in perfectionism (attraction hypothesis). It is also possible that sport whittles out those who are less perfectionistic for similar reasons (rejection hypothesis). Finally, it is also possible that sport engrains perfectionism in its participants so that the longer people remain in sport the more perfectionistic they become (development hypothesis). We currently do not have sufficient tests of these alternative hypotheses. When weighing the evidence for and against perfectionism being a causal factor, I would argue that it is not perfectionism, per se, that distinguishes successful athletes from less successful athletes. More likely, it is that more successful athletes have not fully succumbed to the negative consequences of perfectionism that is the key difference.

Myth 4: Perfectionism is good for you

The final perfectionism myth is that perfectionism, or some form or type of perfectionism, can be good for your health. This is evident in the way perfectionism is labelled as functional, adaptive, or healthy (Enns, Cox, & Clara, 2002; Rhéaume et al., 2000; Stoeber & Otto, 2006). Labelling perfectionism in this way originates from outside of sport but there is now a trend towards doing so in sport psychology, too (e.g., Sarkar & Fletcher, 2014). The case against the notion of healthy perfectionists and perfectionism has been made by many researchers in this area. Some of the criticisms have been touched upon earlier. For example, if perfectionists don't exist, it is difficult to argue that healthy (or even unhealthy) perfectionists do. In addition, it is problematic to consider someone to be highly perfectionistic if they only have exceptionally high standards. On this latter point, Greenspon (2000, 2008) has been one of the strongest critics of the notion of healthy perfectionism and has argued that it is largely the result of conceptual confusion and that, essentially, there is little about healthy perfectionism that is perfectionistic. Others have made similar arguments (e.g., Flett & Hewitt, 2006; Hall, 2006; Hall, Hill, & Appleton, 2012)

In regards to research findings, the last few years has seen the publication of a large number of meta-analytical studies examining perfectionism and psychopathology that allow us to now better understand the likely consequences of being highly perfectionistic. *There is no evidence for healthy perfectionism in these studies*. Elements of perfectionism other than those that pertain to striving for perfection invariably emerge as highly problematic for mental health. There is evidence that perfectionistic concerns are related to higher levels of anxiety symptoms, bulimic symptoms, depressive symptoms, and suicidality (Kehayes, Smith, Sherry, Vidovic, & Saklofske, 2019; Smith, Vidovic, Sherry, Stewart, & Saklofske, 2018; Smith et al., 2016; Smith et al., 2018). Some of these findings are evident over time and after controlling for baseline levels of mental ill-heath. When focusing on dimensions that are the best candidates for healthy perfectionism (typically personal standards and self-

oriented perfectionism) no evidence can be found for any health benefits either. Like perfectionistic concerns, albeit to a smaller degree, they have positive relationships with anxiety symptoms, bulimic symptoms, depressive symptoms, and suicide ideation with an increase in anxiety and depression evident over time (Smith, et al., 2016, 2018). The relationship between perfectionistic strivings and eating disorder symptoms were especially large in one meta-analysis (Limburg, Watson, Hagger, & Egan, 2017) which we know may be more prevalent among athletes than non-athletes (Sundgot-Borgen, & Torstveit, 2004)

At this point, it is worth revisiting the difference between high standards and perfectionistic standards and the revealing findings of one particular study. Blasberg, Hewitt, Flett, Sherry, and Chen (2016) distributed different versions of the same questionnaires designed to measure perfectionism. The versions were altered so the items referred to either high standards or perfectionistic standards (e.g., "I have *high standards* for my performance at work or at school" versus "I have *perfectionistic standards* for my performance at work or at school"). They then examined levels of these variables and their relationship with various outcomes among three samples of university students. There were two key findings. First, students reported higher levels of high standards than perfectionistic standards (i.e., it is more common to have high standards than perfectionistic standards). Second, perfectionistic standards predicted greater depressive symptoms, lower self-esteem and lower life satisfaction whereas high standards predicted lower depressive symptoms (or did not predict them at all) and higher self-esteem and higher life satisfaction. Whether standards are perfectionistic or just high, again, clearly matters for mental health.

There is also a smaller but growing amount of research that implicates perfectionism in the development of physical ill-health and research that illustrates higher levels of perfectionism are related to difficultly living with chronic illness or disability. In regards to being a predictor of ill-health, there is evidence for perfectionism being related to headaches

and insomnia, for example (Bottos & Dewy, 2004; de Azevedo et al., 2009). In regards to adjustment difficulties to illness, this includes fibromyalgia, Crohn's disease and coronary artery disease (Molnar, Flett, Sadeva, & Colautti, 2012; Flett, Baricza, Gupta, Hewitt, & Endler, 2011; Dunkley et al., 2011). We have found this ourselves in our own work examining psychosocial adaptation to spinal cord injury (Read, Hill, Jowett, & Astill, 2019). There is great potential in examining similar issues in athletes such as susceptibility to illness and how athletes cope with injuries and life after sport which for many athletes involves living with debilitating long-term health conditions (e.g., osteoarthritis; Shepard, Banks & Ryan, 2003).

Research examining the relationship between perfectionism and mental and physical health is amongst the most important areas of future work. In time, this work will firmly debunk the healthy perfectionist myth. However, for now, we will need to draw on existing evidence outside of sport. In doing so, it is quite clear that perfectionism is related to poorer mental health and physical health, even dimensions of perfectionism that are typically considered more desirable. With this in mind, we need to be aware that by propagating the healthy perfectionism myth, we may inadvertently place athletes at risk to these outcomes. While we wait for research in sport to take place, or until compelling evidence can be provided that perfectionism does not have detrimental effect on the mental and physical health of athletes, a more conservative and cautious approach is required when labelling and discussing perfectionism in sport and exercise psychology.

Concluding remarks

This chapter debunked a series of common perfectionism myths. Perfectionism was revealed to include more than just personal standards and exist in every athlete to some degree. It was also shown how perfectionism can contribute to better athletic performance on some occasions but also be problematic in various other ways. Motivationally, perfectionism

is exceedingly complex. In some instances, it may energise the intense pursuit of goal-directed behavior and better athletic performance. However, there is also evidence that an aversion to mistakes and competitive failure provides the basis for motivation and performance difficulties. Importantly, perfectionism is far from healthy with a large amount of research suggesting that higher levels of perfectionism will place athletes at greater risk to mental and physical health issues.

Will the myths surrounding perfectionism be fully dispelled? Myths can be challenged, subjected to empirical scrutiny, and their flaws exposed. However, unfortunately, myths can be stubborn and difficult to eliminate. Even formal training and education seems unable to eliminate some myths completely (see Macdonald, Germine, Anderson, Christodoulou, & McGrath, 2017). In my opinion, current misunderstanding of perfectionism in sport and exercise psychology may reflect a deeper-rooted set of beliefs. Specifically, it appears to be accepted wisdom in sport that exceptional feats of performance require great personal sacrifice and suffering, and that sacrifice and suffering are a price that must be paid for success. While people continue to believe that this is the case, it will be difficult to convince those in sport that perfectionism is problematic and should be discouraged among athletes who are aiming to reach its highest levels.

References

Bailey, R. P., Madigan, D. J., Cope, E., & Nicholls, A. R. (2018). The prevalence of pseudoscientific ideas and neuromyths among sports coaches. *Frontiers in psychology*, *9*, 641.

Blasberg, J. S., Hewitt, P. L., Flett, G. L., Sherry, S. B., & Chen, C. (2016). The importance of item wording: The distinction between measuring high standards versus measuring perfectionism and why it matters. *Journal of Psychoeducational Assessment*, *34*, 702-717.

Bottos, S., & Dewey, D. (2004). Perfectionists' appraisal of daily hassles and chronic headache. *Headache: The Journal of Head and Face Pain, 44*, 772-779.

Broman-Fulks, J. J., Hill, R. W., & Green, B. A. (2008). Is perfectionism categorical or dimensional? A taxometric analysis. *Journal of Personality Assessment, 90*, 481–490.

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

Campbell, J. D., & Di Paula, A. (2002). Perfectionistic self-beliefs: their relation to personality and goal pursuit. In G. L. Flett, & P. L. Hewitt (Eds.), Perfectionism: Theory, research, and treatment (pp. 181e198). Washington, DC: American Psychological Association.

Chase, M. A., & DiSanti, J. S. (2017). Talent development recommendations for coaches to consider. *Journal of Sport Psychology in Action*, *8*, 1-11.

de Azevedo, M. H. P., Soares, M. J., Carvalho Bos, S., Allen Gomes, A., Maia, B., Marques, M., ... & Macedo, A. (2009). Perfectionism and sleep disturbance. *The World Journal of Biological Psychiatry*, *10*(3), 225-233.

Dunkley, D. M., Schwartzman, D., Looper, K. J., Sigal, J. J., Pierre, A., & Kotowycz, M. A. (2012). Perfectionism dimensions and dependency in relation to personality

vulnerability and psychosocial adjustment in patients with coronary artery disease. *Journal of clinical psychology in medical settings, 19*, 211-223.

Dunkley, D. M., Zuroff, D. C., & Blankstein, K. R. (2006). Specific perfectionism components versus self-criticism in predicting maladjustment. *Personality and Individuals Differences, 40*, 665-676.

Ellis, A. (1958). Rational psychotherapy. *The Journal of General Psychology*, *59*(1), 35-49.

Enns, M. W., Cox, B. J., & Clara, I. (2002). Adaptive and maladaptive perfectionism: Developmental origins and association with depression proneness. *Personality and Individual Differences*, *33*, 921-935.

Flett, G. L., Baricza, C., Gupta, A., Hewitt, P. L., & Endler, N. S. (2011). Perfectionism, psychosocial impact and coping with irritable bowel disease: A study of patients with Crohn's disease and ulcerative colitis. *Journal of Health Psychology*, *16*, 561-571

Flett, G. L., & Hewitt, P. L. (2006). Positive versus negative perfectionism in psychopathology. *Behaviour Modification*, *30*, 472-495.

Flett, G. L., & Hewitt, P. L. (2007). When does conscientiousness become perfectionism. *Current Psychiatry*, *6*(7), 49.

Gaudreau, P., & Thompson, A. (2010). Testing a 2× 2 model of dispositional perfectionism. *Personality and Individual Differences*, *48*(5), 532-537.

Gilbert, P., Durrant, R., & McEwan, K. (2006). Investigating relationships between perfectionism, forms and functions of self-criticism, and sensitivity to put-down. *Personality and Individual Differences*, *41*(7), 1299-1308.

Gotwals, J. K. (2011). Perfectionism and burnout within intercollegiate sport: A person-oriented approach. *The Sport Psychologist*, *25(4)*, 489-510.

Gotwals, J. K. (2016). The tripartite model of perfectionism: Evidence from research in sport and dance. In *The psychology of perfectionism in sport, dance and exercise* (pp. 166-189). Routledge.

Gotwals, J. K., Dunn, J. G., Dunn, J. C., & Gamache, V. (2010). Establishing validity evidence for the Sport Multidimensional Perfectionism Scale-2 in intercollegiate sport. *Psychology of Sport and Exercise, 11*, 423-432.

Gotwals, J. K., Stoeber, J., Dunn, J. G., & Stoll, O. (2012). Are perfectionistic strivings in sport adaptive? A systematic review of confirmatory, contradictory, and mixed evidence. *Canadian Psychology, 53*, 263.

Greenspon, T. S. (2000). "Healthy perfectionism" is an oxymoron!: Reflections on the psychology of perfectionism and the sociology of science. *Journal of Secondary Gifted Education, 11*, 197-208.

Greenspon, T. S. (2008). Making sense of error: A view of the origins and treatment of perfectionism. *American Journal of Psychotherapy, 62*, 263-282.

Hall, H. K. (2006). Perfectionism: a hallmark quality of world class performers, or a psychological impediment to athletic development? In D. Hackfort, & G. Tenenbaum (Eds.), Perspectives in sport and exercise psychology. Essential processes for attaining peak performance, Vol. 1 (pp. 178e211). Oxford, UK: Meyer & Meyer Publishers.

Hall, H. K., Hill, A. P., & Appleton, P. R. (2012). Perfectionism: A foundation for sporting excellence or an uneasy pathway toward purgatory? In R. C. Roberts & D. Treasure (Eds.), *Advances in Motivation in Sport and Exercise* (pp. 129-168). Champaign, IL: Human Kinetics Publishers. ISBN-13: 978-0736090810

Haslam, N., Holland, E., & Kuppens, P. (2012). Categories versus dimensions in personality and psychopathology: a quantitative review of taxometric research. *Psychological Medicine, 42*(5), 903-920.

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.

Hill, A. P. (2013). Perfectionism and burnout in junior soccer players: A test of the 2× 2 model of dispositional perfectionism. *Journal of Sport and Exercise Psychology*, *35*(1), 18-29.

Hill, A. P. (2014). Perfectionistic strivings and the perils of partialling. *International Journal of Sport and Exercise Psychology, 12*, 302-315.

Hill, A. P. (2016). Conceptualizing perfectionism: An overview and unresolved issues. In The psychology of perfectionism in sport, dance and exercise (pp. 19-46). Routledge.

Hill, A. P. (2017). Real and imagined perils: A reply to Stoeber and Gaudreau (2017). *Personality and Individual Differences, 108,* 220-224.

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

Hill, A. P. & Grugan, M. (2019). Introducing Perfectionistic Climate. *Perspectives in Early Childhood Psychology and Education, 4,* 263-275.

Hill, A. P., Hall, H. K., & Appleton, P. R. (2010). A comparative examination of the correlates of self-oriented perfectionism and conscientious achievement striving in male cricket academy players. *Psychology of Sport and Exercise*, *11*(2), 162-168.

Hill, A. P., Hall, H. K., & Appleton, P. R. (2011). The relationship between multidimensional perfectionism and contingencies of self-worth. *Personality and individual differences*, *50*(2), 238-242.

Hill, A. P., & Madigan, D. J. (2017). A short review of perfectionism in sport, dance and exercise: Out with the old, in with the 2× 2. *Current Opinion in Psychology, 16*, 72-77.

Hill, A. P., Madigan, D, J., Smith, M. M., Mallinson-Howard, S. H., & Donachie, T. C. Perfectionism in Sport. To appear in R. J. Schinke & D. Hackfort (Eds.), *Encyclopaedia of Sport Psychology*. Accepted 15-11-2019.

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.

Hill, A. P., Robson, S. J., & Stamp, G. M. (2015). The predictive ability of perfectionistic traits and self-presentational styles in relation to exercise dependence. *Personality and Individual Differences*, *86*, 176-183.

Hill, A. P., Stoeber, J., Brown, A., & Appleton, P. R. (2014). Team perfectionism and team performance: A prospective study. *Journal of Sport and Exercise Psychology*, *36*(3), 303-315.

Hill, A. P., Witcher, C. S., Gotwals, J. K., & Leyland, A. F. (2015). A qualitative study of perfectionism among self-identified perfectionists in sport and the performing arts. *Sport, Exercise, and Performance Psychology*, *4*(4), 237.

Jowett, G. E., Hill, A. P., Forsdyke, D., & Gledhill, A. (2018). Perfectionism and coping with injury in marathon runners: A test of the 2× 2 model of perfectionism. *Psychology of Sport and Exercise*, *37*, 26-32.

Kehayes, I. L. L., Smith, M. M., Sherry, S. B., Vidovic, V., & Saklofske, D. H. (2019). Are perfectionism dimensions risk factors for bulimic symptoms? A meta-analysis of longitudinal studies. *Personality and Individual Differences*, *138*, 117-125.

Kearns, H., Forbes, A., Gardiner, M., & Marshall, K. (2008). When a High Distinction Isn't Good Enough: A Review of Perfectionism and Self-Handicapping. *Australian Educational Researcher*, *35*(3), 21-36. Madigan, D. J. (2019). A meta-analysis of perfectionism and academic achievement.

Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (2017). The relationship between perfectionism and psychopathology: A meta-analysis. *Journal of Clinical Psychology*, *73*(10), 1301-1326.

Madigan, D. J., Stoeber, J., Culley, T., Passfield, L., & Hill, A. P. (2018). Perfectionism and training performance: The mediating role of other-approach goals. *European journal of sport science*, *18*(9), 1271-1279.

Mallinson-Howard, S. H., Hill, A. P., & Hall, H. K. (2019). The 2× 2 model of perfectionism and negative experiences in youth sport. *Psychology of Sport and Exercise*, *45*, 101581.

Macdonald, K., Germine, L., Anderson, A., Christodoulou, J., & McGrath, L. M. (2017). Dispelling the myth: Training in education or neuroscience decreases but does not eliminate beliefs in neuromyths. *Frontiers in psychology*, *8*, 1314.

Molnar, D. S., Flett, G. L., Sadava, S. W., & Colautti, J. (2012). Perfectionism and health functioning in women with fibromyalgia. *Journal of psychosomatic research*, *73*, 295-300.

Olsson, L. F., Hill, A. P., Madigan, D. J., & Woodley, G. (2020). Development of perfectionism in junior athletes: Examination of actual and perceived parental perfectionism. *Journal of Sports Sciences*, 1-7.

Pacht, A. R. (1984). Reflections on perfection. *American Psychologist*, *39*, 386-390.

Parker, W. D. (1997). An empirical typology of perfectionism in academically talented children. *American Educational Research Journal*, *34*(3), 545-562.

Powers, T. A., Koestner, R., Zuroff, D. C., Milyavskaya, M., & Gorin, A. A. (2011). The effects of self-criticism and self-oriented perfectionism on goal pursuit. *Personality and Social Psychology Bulletin*, *37*(7), 964-975.

Rees, T., Hardy, L., Güllich, A., Abernethy, B., Côté, J., Woodman, T., ... & Warr, C. (2016). The great British medalists project: A review of current knowledge on the development of the world's best sporting talent. *Sports Medicine*, *46*, 1041–1058.

Read, D. J., Hill, A. P., Jowett, G. E., & Astill, S. L. (2019). The relationship between perfectionistic self-presentation and reactions to impairment and disability following spinal cord injury. *Journal of health psychology*, *24*, 362-375.

Rhéaume, J., Freeston, M. H., Ladouceur, R., Bouchard, C., Gallant, L., Talbot, F., & Vallières, A. (2000). Functional and dysfunctional perfectionists: Are they different on compulsive-like behaviors?. *Behaviour Research and Therapy*, *38*, 119-128.

Sarkar, M., & Fletcher, D. (2014). Psychological resilience in sport performers: a review of stressors and protective factors. *Journal of Sports Sciences*, *32*(15), 1419-1434.

Shepard, G. J., Banks, A. J., & Ryan, W. G. (2003). Ex-professional association footballers have an increased prevalence of osteoarthritis of the hip compared with age matched controls despite not having sustained notable hip injuries. *British journal of sports medicine*, *37*(1), 80-81.

Sirois, F. M., Molnar, D. S., & Hirsch, J. K. (2017). A meta-analytic and conceptual update on the associations between procrastination and multidimensional perfectionism. *European Journal of Personality*, *31*(2), 137-159.

Smith, M. M., Sherry, S. B., Chen, S., Saklofske, D. H., Mushquash, C., Flett, G. L., & Hewitt, P. L. (2018). The perniciousness of perfectionism: A meta-analytic review of the perfectionism–suicide relationship. *Journal of Personality*, *86*(3), 522-542.

Smith, M. M., Sherry, S. B., Rnic, K., Saklofske, D. H., Enns, M., & Gralnick, T. (2016). Are perfectionism dimensions vulnerability factors for depressive symptoms after controlling for neuroticism? A meta-analysis of 10 longitudinal studies. *European Journal of Personality*, *30*(2), 201-212.

Smith, M. M., Vidovic, V., Sherry, S. B., Stewart, S. H., & Saklofske, D. H. (2018). Are perfectionism dimensions risk factors for anxiety symptoms? A meta-analysis of 11 longitudinal studies. *Anxiety, Stress, & Coping*, *31*(1), 4-20.

Sundgot-Borgen, J., & Torstveit, M. K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical journal of sport medicine*, *14*(1), 25-32.

Stoeber, J. (2011). The dual nature of perfectionism in sports: Relationships with emotion, motivation, and performance. *International Review of Sport and Exercise Psychology, 4*, 128–145.

Stoeber, J., & Gaudreau, P. (2017). The advantages of partialling perfectionistic strivings and perfectionistic concerns: Critical issues and recommendations. *Personality and Individual Differences, 104,* 379-386.

Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and social psychology review*, *10*, 295-319.

Stoeber, J., Otto, K., & Stoll, O. (2006). Multidimensional Inventory of Perfectionism in Sport (MIPS): English Version. School of Psychology, University of Kent. (Unpublished).

Stoeber, J., Uphill, M. A., & Hotham, S. (2009). Predicting race performance in triathlon: The role of perfectionism, achievement goals, and personal goal setting. *Journal of Sport & Exercise Psychology, 31*, 211-245.

Stoll, O., Lau, A., & Stoeber, J. (2008). Perfectionism and performance in a new basketball training task: Does striving for perfection enhance or undermine performance? *Psychology of Sport and Exercise*, *9*, 620-629.

Wrosch, C., Scheier, M. F., & Miller, G. E. (2013). Goal adjustment capacities, subjective well-being, and physical health. *Social and Personality Psychology Compass*, *7*(12), 847-860.