

Athlete Burnout: What We Know, What We Could Know, and How We Can Find Out More

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Abstract

Although many, likely most, athletes will not experience burnout in any meaningful degree in their sport endeavors, it can be an important concern for the psychological health and well-being of some athletes choosing to invest intensely in highly demanding competitive sport environments. This aversive chronic experiential state is of interest to clinicians and researchers alike because of its impact on athletes experiencing its characterizing symptoms. The phenomenon of burnout has been discussed and investigated in broader professional environments since the early 1970s (Freudenberger, 1974), but has only been a construct of interest among sport scientists, professionals and participants for about the last 25-30 years (see Smith, 1986; Dale & Weinberg, 1990 for early discussions of athlete burnout). After approximately a quarter century of examination, it is appropriate to take stock of the accumulated research on the athlete burnout construct at large.

The purpose of the current review is threefold in nature. We start by remembering the important, groundbreaking athlete burnout research of the past but, guided by the prose of Walt Whitman, move on to outline potential future directions as “much unseen” remains relative to the understanding, conceptualization, and intervention/prevention of athlete burnout. Finally, we consider suggestions for how to unearth future burnout knowledge and/or implement the potential interventions outlined herein. So, while important conceptualizations and empirical studies in the area are reviewed, much of this information is delimited by reference to already available excellent reviews of athlete burnout research; although, some research emerging in the interim is also considered. Our goal is to take stock of the conceptual understanding and extant research on athlete burnout and to spark future research and practice as described herein by other researchers and clinicians. An endeavor of that sort inherently requires provision of some initial commentary on the construct and its development.

Key words: athlete, burnout, stress

Introduction

What We Know

Before its examination in the sport context, efforts to understand the burnout phenomenon began in the study

of populations of working professionals. Freudenberger (1974), a psychiatrist, may have been the first to formally coin the term “burnout” in the psychosocial literature in his observations about deterioration and workplace ineffectiveness among clinical staff working in alternative healthcare agencies; however, Maslach (1982), a social psychologist, is credited with establishing the construct as a multidimensional syndrome. She defined burnout as a syndrome involving

the dimensions of emotional exhaustion, depersonalization, and reduced personal accomplishment among individuals who work. As a syndrome, burnout consists of a constellation of symptoms which occur together functionally (Shirom, 2005) and are relevant to a variety of contexts including competitive sport (Raedeke & Smith, 2009).

Anecdotal accounts of this phenomenon in competitive sport (where physical exertion is a central feature of involvement), resulted in heightened empirical and practical interest in the burnout experience in athlete populations. To guide such work, an operational definition of the athlete burnout was needed. Raedeke (1997) adapted the burnout definition from Maslach's multidimensional framework to this end. This resulted in what is now the most widely used conceptualization of athlete burnout. This conceptualization is as a multidimensional cognitive-affective syndrome characterized by symptoms of emotional and physical exhaustion, reduced sense of accomplishment, and sport devaluation (Raedeke, 1997; Raedeke & Smith, 2009). Researchers of burnout in professional and occupational settings examined emotional exhaustion from work while both emotional and physical exhaustion were defined as characteristic of burnout in sport. Since its inception, Raedeke's (1997) conceptualization of athlete burnout has driven the empirical investigation of athlete burnout and his well-constructed measure, the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2009) has been the primary operationalization of the construct.

Raedeke's (1997) operational definition of athlete burnout and the associated ABQ measure (Raedeke & Smith, 2009) have both been integral to careful examination of the construct by sport scientists. This conceptualization of the burnout construct differs from others such as Silva's (1990) psychophysiological "burnout" construct and other distinct but sometimes related constructs like sport dropout. Moreover, a variety of theoretical explanations have guided investigations on the occurrence of athlete burnout and contributed to present understandings of factors involved in the

development of the phenomenon in athlete populations. Several well-established reviews of the athlete burnout literature exist which outline these alternative explanations (e.g., Cresswell & Eklund, 2006a; DeFreese, Smith & Raedeke, 2015; Eklund & Cresswell, 2007); thus our explanation here is relatively brief. In short, explanations for the occurrence of athlete burnout implicate athletes' chronic perception of stress and motivation characterized by increased levels of amotivation. Smith (1986) conceptualized burnout to occur as a potential (but not the sole) outcome for an athlete who is unable to effectively cope with the chronic psychosocial stress involved in sport training and competition. Coakley's (1992) sociological explanation, involved the speculation that the broader structure of highly competitive youth sport disempowers young athletes and causes them to develop narrow, sport-centered identities. He believed that too many young athletes ultimately "burnout" of sport (i.e., withdraw) to exercise personal autonomy and explore new self-dimensions rather than continuing to deal with circumstances regarded to be aversive. Raedeke (1997) took into account sport stress and motivation when utilizing commitment theory (Schmidt & Stein, 1991) to establish that entrapped patterns of athlete commitment (i.e., high investments in sport with few alternatives) can result in the occurrence of burnout. More contemporary motivational research on burnout has often been grounded in self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000). Cumulatively, many sport scientists have utilized these theoretical conceptualizations in tandem (as opposed to as counterfactual positions) to build the knowledge base on antecedents impacting the occurrence of burnout in athletes. Along this line, other researchers have even posited an integrated burnout model (Gustaffson, Kenttä, & Hassmén, 2011), which includes many of the antecedents (i.e., perceived sport stress, unidimensional athletic identity/entrapped sport commitment, less adaptive forms of sport motivation) posited across other individual conceptualizations for burnout occurrence and

development.

A number of foundational cross-sectional studies on athlete burnout have been conducted suggesting that the cognitive-affective experience of burnout is associated with a variety of psychological constructs. Goodger, Gorely, Lavallee, and Harwood's (2007) systematic review, for example, revealed athlete burnout to be positively associated with elevated stress perceptions, mood disturbances, and anxiety and to be negatively associated with perceived sport control, social support, coping skills, and sport motivation and enjoyment. Burnout has also been observed to have some striking symptomological similarities with depression (Glass & McKnight, 1996) but these positively associated constructs are identifiably different in both conceptual and empirical terms (Cresswell & Eklund, 2006b). Athlete burnout has been routinely found to be positively associated with amotivation and negatively associated with more autonomous (i.e., self-determined) forms of motivation as well as the satisfaction of three motivationally salient psychological needs of competence, autonomy and competence (see Li, Wan, Pyun & Kee 2013 for a review). Additionally, multi-time point studies further support that trends toward amotivation and less self-determined forms of motivation over the course of a season for collegiate athletes (Lemyre, Treasure & Roberts, 2006; Lonsdale & Hodge, 2011), as well as lower endorsement of psychological need satisfaction, tending to precede higher levels of burnout (Quested & Duda, 2011).

Cross-sectional investigations following Raedeke's (1997) formalization of the definition of the athlete burnout syndrome have contributed meaningfully to the knowledge base and our understanding the core antecedents of athlete burnout. Relatively few multi-time point studies, however, have been conducted but they have generally provided temporal sequencing of associations consistent with causal hypotheses (e.g., Cresswell & Eklund, 2005; Lemyre et al., 2006; Lonsdale & Hodge, 2011; Quested & Duda, 2011). As a consequence, meaningful tests of causality have tended

to be a notable limitation of much of the extant research on athlete burnout (Eklund & Cresswell, 2007; Udry, Gould, Bridges, & Tuffey, 1997). Moreover, examination of dispositional predictors of athlete burnout such as perfectionism have been relatively limited until fairly recently, often because of measurement challenges, even though discussed in early descriptions of burnout etiology (Gould, 1996). In addressing these knowledge gaps when building upon these historical burnout conceptualizations and research designs, contemporary athlete burnout research has utilized an established athlete burnout definition and longitudinal designs to examine aforementioned antecedents with a particular focus on dispositional factors like perfectionism.

Researchers have examined the association of athlete burnout with perfectionism, after such an association was posited in earlier burnout work with elite tennis players (Gould, Udry, Tuffey, & Loehr, 1996). Perfectionism is a personality trait that is broadly considered to reflect the compulsive pursuit of exceedingly high standards and a tendency to engage in overly critical accomplishment appraisals (Hewitt & Flett, 1991; Flett & Hewitt, 2002). Perfectionism may be broadly classified by the source of the implicated and characteristic high standards. Posited in the framework of Hewitt and Flett (1991), self-oriented perfectionism is characterized by a desire to uphold extremely high self-standards while socially prescribed perfectionism is characterized by a desire to uphold extremely high standards imposed by others. Extant work has broadly shown self-oriented perfectionism to be negatively associated and socially prescribed perfectionism to be positively associated with athlete burnout perceptions (Appleton, Hall, & Hill, 2009; Hill & Appleton, 2011; Hill, Hall, & Appleton, 2010; Hill, Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010).

Perfectionism has also been categorized relative to whether or not one's perfectionistic strivings (i.e., pursuit of high standards) are accompanied by more maladaptive perfectionistic concerns (i.e., critical

self-evaluations and evaluative fears). Utilizing this framework, Gustafsson and colleagues (in press) utilized a person-centered approach to examine patterns of perfectionism (i.e., personal standards and concerns over mistakes) and parent-initiated motivational climates and their association with burnout in junior athletes. Results of this study suggest that highly perfectionistic athletes in environments where parents supported both ego-oriented and task-oriented motivational climates exhibited the highest burnout scores.

Multi-time point (i.e., longitudinal) studies have also been conducted to explore the association of athlete perfectionism with selected athlete outcomes. Gaudreau and colleagues (2008) examined perfectionism (conceptualized as personal standards and evaluative concerns) and its association with self-determined and non-self-determined motivation, coping and life satisfaction in a sample of 186 French Canadian athletes. Across a two time-point (i.e., pre- to post-competition) sample, this study broadly showcased that personal standards perfectionism was positively associated with life satisfaction and this association was partially mediated by more self-determined forms of motivation, task-oriented coping and goal attainment. Moreover, evaluative concerns perfectionism was negatively associated with life satisfaction; whereas, this association was partially mediated by non-self-determined forms of motivation disengagement- and distraction-oriented coping and goal attainment. This study largely supports existing models of perfectionism while also supporting its links to several outcomes of psychological health and motivation.

Madigan, Stoeber and Passfield's (2015) recently reported longitudinal study examining the perfectionism-burnout link provides a useful framework to guide future research in the area. Utilizing the strivings/concerns framework, they examined the perfectionism and burnout relationship in a sample 101 junior athletes and across a three month study window. Structural equation modeling results showcased perfectionistic concerns to predict increases in athlete burnout over

time while perfectionistic strivings predicted longitudinal decreases in burnout. Reciprocal (i.e., burnout impacting perfectionism) relationships, however, were not supported by study findings. Though limited in scope by its two wave study design, this is one of the first studies to predictively support both exacerbating and protective effects of perfectionism on athlete burnout over time. This idea merits additional study in designs folding in other key burnout antecedents (i.e., perceived stress, sport motivation) across long study windows and with more assessment points.

Nordin-Bates and colleagues (2014) also employed a longitudinal design utilizing the perfectionistic strivings and perfectionistic concerns framework while focusing on the association of perfectionism with factors affecting individual motivation. They examined the directionality of the perfectionism-motivational climate relationship across time. In a sample of 271 elite, junior dancers, cross-lagged analysis found perfectionistic concerns to be associated with increased perceptions of an ego-involving and decreased perceptions of a task-oriented motivational climates over time. Moreover, results across study waves highlight that perfectionism concerns may influence athlete perceptions of training environments such that they are deemed more ego- and less task-involving in nature. Collectively, study results showcase that the causal associations among burnout and motivation are in achievement contexts are likely both complex and bi-directional in nature.

Perfectionism has also been examined as a team construct in a notable longitudinal study. Hill, Stoeber and colleagues (2014) examined how athlete perfectionism at the team level predicted performance in a sample of 231 competitive rowers from 36 boats. Using the tri-partite model of perfectionism, self-oriented perfectionism was included in the current study but the social forms of perfectionism were adapted. Specifically, other-oriented perfectionism was adapted to team-oriented perfectionism and socially-prescribed perfectionism was adapted to team-prescribed perfectionism. Participants completed measures of perfectionism at one time point

before competition began; team performance (i.e., changes in boat rankings) were assessed across five time points (i.e., starting day position and final ranking following four separate competition days). Two-level latent growth curve modeling showcased only team-oriented perfectionism to have nesting effects and to predict improved rowing performance. Self-oriented perfectionism also predicted better performance but did not vary across boats. Finally, team-prescribed perfectionism did not predict performance nor exhibit any nesting effects. In conclusion, study findings provided support that team oriented- perfectionism and self-oriented perfectionism may impact athletic performance. The impact of team-oriented perfectionism may be distinct depending on the team investigated. This provides some evidence for the impact of perfectionism, at the team level, to group performance.

Overall, recent studies of links between perfectionism and athlete burnout have been revealing. Building on this work, future studies should continue to examine the potential impacts of perfectionism on athlete burnout, and other psychological factors, over time. Such work can certainly contribute to the knowledge base developing on athlete burnout grounded in various temporal/longitudinal models.

Beyond those informed by perfectionism, several other notable longitudinal burnout studies also merit review to inform future work. DeFreese and Smith (2014) examined athlete burnout over time, including its temporal associations with perceived stress, social interaction constructs (i.e., perceived social support, negative social interactions) and well-being in a sample of collegiate swimming/diving and track/field athletes. Using a four-wave study design, American collegiate athletes ($n=465$) completed measures of the aforementioned constructs as well as sport motivation and measures of dispositional negative affect and optimism. After controlling for correlates identified by previous work (i.e., perceived stress, sport motivation, dispositional factors), social support was found to be negatively associated with athlete burnout and negative

social interactions were found to be positively associated with athlete burnout across the competitive season. Upon further examination of study findings at the dimensional, as opposed to the global burnout level, results suggest social support and negative social interactions may be primarily associated with the burnout dimension of emotional and physical exhaustion, rather than reduced accomplishment or sport devaluation. Moreover, a negative association was found between athlete burnout and well-being across the assessment window, though the nature of this relationship did differ across athletes sampled. This study supported the longitudinal importance of athlete social perceptions to the development of athlete burnout perceptions as well as the negative impact of athlete burnout on overall well-being. Considering that many important burnout antecedents were accounted for, this study made an important contribution to the longitudinal athlete burnout knowledge base. However, it is important to consider whether these findings may extend beyond the current sample to additional sport types, competitive levels and/or age groups.

Further examining athlete burnout development over time, Isoard-Gautheur and colleagues (2015) conducted one of the most comprehensive longitudinal burnout studies in an adolescent athlete sample. Handball players ($n=895$) enrolled in elite training centers, completed measures of athlete burnout twice a year across the study period in a five-wave longitudinal study design. Both developmental and gendered contributions to changes in burnout over time were examined using multi-level modeling techniques in this relatively large sample. The analyses showcased complexity in the development of burnout among adolescents over the five-year time-period. As examples, decreases in the burnout relative to the symptom of reduced accomplishment were observed over time but to different extents across gender with the effect being most pronounced for girls. A significant quadratic term indicated initial increases in emotional and physical exhaustion followed by decreases at older ages,.

Nonetheless, significantly different rates of change in exhaustion were also observed in interactions with sport devaluation with, interestingly, exhaustion being attenuated at times of higher levels of sport devaluation. Sport devaluation, however, tended to increase over the five-year period and to a greater degree among girls than for boys. Ultimately, this study provided evidence that the burnout dimensions of emotional and physical exhaustion (i.e., remained relatively stable) and reduced accomplishment (i.e., decreased) developed in an adaptive manner across adolescence even though sport devaluation exhibited an overall (albeit inconsistent) increase across the period of adolescence. The gender differences showcased in the analyses highlight the importance of consideration of this factor in the study of burnout in elite youth sport. This study is very important to the burnout knowledge base as it was, to our knowledge, the first study to examine burnout among elite adolescent athletes from a developmental perspective. We feel it provides an excellent template for future investigations of athlete burnout.

In conclusion, the emergence of a standardized operational definition of athlete burnout has allowed research in the area to flourish in recent decades. This research has been grounded in a variety of different conceptual/theoretical models. Much of the research has been cross-sectional in nature although a burgeoning longitudinal knowledge base on athlete burnout is now becoming manifest. Overall, burnout research continues to develop and extend in terms of both rigor and data analytic approaches. However, as Whitman said, "much unseen is also here." Moving forward, the potential to advance understanding of burnout in both the sport and work realms via a continued focus on longitudinal work as well as a continued linkage of burnout to other psychological constructs and health and performance behaviors exists, and we urge sport scientists to continue your pursuit of knowledge in the area. Such work will enhance burnout diagnostic pursuits while also aiding in successful development and evaluation of empirically grounded and athlete-centered burnout prevention and

treatment strategies.

What We Could Know

Building on extant work, the possibilities for what we could know about athlete burnout are vast. Yet, a few key areas of inquiry could positively add to our understanding of the burnout construct. Review of such areas represents an important area for discussion. Moreover, taking stock below in what we could know helps to lay the groundwork for how we might find out such information in continued, well-designed athlete burnout research efforts.

First, continued understanding of athlete burnout development is warranted and necessitates well-designed longitudinal study designs. Such work may benefit from building on the aforementioned studies as well as carefully considering additional psychological constructs which may help to better explain how athlete burnout develops over time (e.g., within and across competitive seasons, across training periods) with respect to other key markers of the athlete experience (e.g., engagement, confidence, performance appraisals). At the same time, adding new constructs to the burnout picture should be done thoughtfully and via careful extension of the conceptualizations which have been so useful to its understanding to date.

Second, we know little about how this psychological syndrome is associated with potentially related behavioral outcomes (e.g., nutrition behaviors, sleep, physiological markers of stress/fatigue and recovery, performance). Careful consideration of these and other (e.g., substance abuse, interpersonal violence) potential outcomes of athlete burnout is needed. Specifically, the association of some of these aforementioned variables with burnout could be twofold in that 1) the chronic, maladaptive experience of these behaviors may precede the athlete burnout experience and/or 2) experiencing athlete burnout may result in maladaptive athlete experiences such as the aforementioned behaviors. Research to

further understand the occurrence of burnout relative to potential behavioral antecedents and/or outcomes could serve to further establish validity for common suppositions regarding the occurrence and long term outcomes for athletes experiencing burnout.

Third, such work is also necessary for establishing early groundwork for sub-clinical cut-offs differentiating among degrees of the burnout experience for athletes. The validation of sub-clinical cut-offs via behavioral outcomes would represent a beneficial step beyond current burnout severity cut-offs specified by catalogued reports of global and dimensional ABQ scores (Raedeke & Smith, 2009). This important first step toward sub-clinical diagnostic criteria for athlete burnout necessitates much further seminal work to afford criteria feasible for informing treatment interventions.

Finally, little is known about how athlete burnout perceptions at or near the end of one's career may contribute to overall athlete psychological health and well-being following athletic career transition/retirement. For example, Ogilvie and Taylor (1994) propose a conceptual model of athlete retirement whereby the quality of adaptation to athletic retirement is a result of factors influencing retirement adaptation (i.e., self-identity, perceptions of control, social identity) and available resources (i.e., coping skills, social support, pre-retirement planning). A need has been posited to further understand non-normative athlete transitions (Wylleman, Alfermann, & Lavallee, 2004). Therefore, future examinations of athlete retirement should consider whether athlete burnout prior to retirement is an additional factor negatively influencing retirement adaptation as well as what specific available resources may be helpful in combatting these post-retirement psychological responses. Alternatively, retirement could be 'adaptive' for some burned-out athletes in that it may be perceived as providing a socially acceptable avenue for some individuals to withdraw from sport while also relieving those athletes of exposure to the sport-based antecedents influencing their development of burnout, and hence, help to mitigate its existence.

Regardless, this potential impact of athlete burnout on athlete psychological health and well-being post-career merits empirical attention and could be a potentially fruitful means to expand the knowledge base.

These aforementioned potential future directions are meant to spark future research efforts and empirical directions. However, this is not meant to be an exhaustive list nor do we suggest that filling these and other knowledge gaps relative to the understanding of athlete burnout will be quick or easy. Arguably it is much easier to postulate the need for future work than it is to design and execute exemplary studies. Accordingly, some specifics relative to the execution of some of these study ideas are outlined below.

How We Can Find Out

To best systematically understand the prevalence and development of athlete burnout (Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007), further knowledge on its association with important athlete behavioral outcomes and utilize this information to inform development of important diagnostic criteria, large scale epidemiological studies of athlete burnout are necessary. However, despite several efforts to crystallize understanding of the burnout construct, collectively, no large scale epidemiological studies on athlete burnout have been conducted with broad public health impact. For example, Raedeke & Smith (2009) have cataloged athlete burnout in groups of athletes of various ages as a means to validate the ABQ measure. Yet, even this important work is not broad enough in scope to inform the aforementioned knowledge gaps. Thus, continued development of large databases of athlete burnout perceptions will further the knowledge base. Such efforts may require collaborative partnerships between athlete burnout researchers and community and national sport leagues and associated governing bodies

The knowledge available in epidemiological databases should be augmented by purposeful, systematic, and in

depth follow-up case studies of athletes identified as having the potential to further explicate understanding of this aversive experiential state. This targeted case study strategy has been previously utilized to further the knowledge base on both athlete burnout development (e.g., Gustafsson, Hassmén, Kenttä, & Johansson, 2008; Gustafsson, Kenttä, Hassmén, Lundqvist, & Durand-Bush, 2007) and potential strategies for recovery (Jouper & Gustafsson, 2013). Greater exploitation of mixed-methods combinations of large scale epidemiological survey studies and follow-up qualitative case studies represents the best means to add to the knowledge base on both burnout prevalence as well as manifestations and development of athlete burnout across individuals. Mixed-methods approaches allow such design flexibility as to elucidate both types of information concurrently. Such work also informs other growing areas of athlete burnout research, namely biomarker- and wearable technology-bases projects.

Studies examining the link of athlete burnout to biological markers of stress, fatigue and/or recovery represent a key growth area for athlete burnout research moving forward. In extant work, salivary cortisol has been examined as a potential biological marker of stress relative to sport and exercise performance research (Quested, Bosch, Burns, Cumming, Ntoumanis, & Duda, 2011). Such work has linked cortisol responses to elite dancers' anxiety and psychological need satisfaction levels (a psychological correlation of motivation). But this method has notable limitations as well. Specifically, researchers in occupational settings (e.g., Koh & Koh, 2007), suggest that the efficacy of cortisol studies may in fact be limited to acute time frames with healthy individuals (i.e., athletes) as cortisol responses can be unreliably related to heightened stress and/or stress related experience like athlete burnout. Thus, it may represent a feasible (and potentially cost effective) biological marker of the training and psychosocial stress which may precede burnout. However, longitudinal salivary cortisol collection is not likely a feasible means to examine the long-term association of stress and

athlete burnout in and of itself.

A potential longitudinal alternative exists via additional immunological biomarkers representing stress and fatigue. Such markers merit consideration within prospective athlete burnout designs. For example, Cresswell and Eklund (2007) examined the association of the biomarker Immunoglobulin-A (IgA) with athlete burnout across three seasonal time points in a sample of five purposely selected New Zealand rugby players. Study results, though correlational and drawn from a very small sample, suggest the ability of IgA or other immunological biomarkers to aid in the continued understanding of the impact of long term stress exposure to athlete burnout experiences. Detailed explanation of assessment procedures are beyond the scope of the current review and the training of the respective authors. Thus, we feel that long-term interdisciplinary partnerships could represent a key benchmark in the study of burnout development in sport. Accordingly, building on the burgeoning longitudinal athlete burnout knowledge base, such studies should assess the stress-burnout relationship using multi-time point designs within well-defined training and competition windows. Being mindful of biological maturity and development, changes in these biomarkers across the lifespan and, potentially moderated by biological sex, should be carefully considered during study conceptualization.

Wearable technologies are also becoming increasingly more prevalent in both recreational and competitive exercise and athletic settings. Based on their ability to monitor and catalogue objective measurements of sleep and physical activity as well as to easily integrate with self-report nutrition and hydration assessments, they represent a unique opportunity to examine how a variety of behavioral/recovery markers as associated with athlete burnout. Additionally, their logistic feasibility makes them both more portable and feasible for athletes to wear for long stretches between (and potentially during) training and competition sessions. Such work could form the foundation for a new frontier in athlete burnout

research, as a better understanding of burnout's association with activity, sleep, hydration and nutrition (i.e., important markers of recovery) will be useful for both burnout diagnostic development as well as intervention development.

Targeted psychosocial interventions represent one specific means by which to both prevent and mitigate athlete burnout. Such interventions could target organizational antecedents (e.g., the organizational structures of sport at various levels, the resulting motivational climates, the coaching behaviors athletes are exposed to), individual (athlete level) antecedents (e.g., coping strategies, perfectionistic tendencies, optimism) and/or address organizational and individual antecedents simultaneously. True organizational interventions may be relatively rare if only because clinicians and athletes typically have very little ability to affect change at the organizational level. Interventions targeting how the individual athlete perceives or personally interacts/manages the sporting environment, however, are often seen as more viable and perhaps easier to accomplish. Nonetheless, considering organizational, individual and/or combined antecedents provides those interested in preventing and/or mitigating burnout a conceptual starting point for targeted intervention efforts. Successful athlete burnout interventions depend on the clinician's or the individual athlete's ability to influence the athletic environment and/or individual tendencies and sport-related responses. Ultimately, the ability to address these antecedents could reasonably vary across sports and/or training and competition environments.

For example, in the broadest terms, sport scientists (e.g., Coakley, 1992; 2009) may recommend vastly overhauling the structure of athletic environments to provide more athlete autonomy, choice and control to athletes within them as a means to foster multidimensional athlete identities. Ultimately, such changes may not be feasible in the short or long term as other sport-based social actors (e.g., coaches, administrators, and parents) may see less value and hence have less interest such changes, at least in the

foreseeable future. A related strategy, however, may be to promote autonomy supportive coaching (Mageau & Vallerand, 2003) strategies as a means to improve the psychosocial structure of training and competitive environments without completely overhauling sport structures. Such interventions would require both well-designed coaching education and implementation strategies and require careful program design and assessment. However, when strategies to change the organizational structure or coaching behaviors are not deemed feasible or acceptable by key stakeholders (e.g., coaches, administrators, parents) individual burnout prevention strategies are warranted.

Based on the broad impact of stress perceptions to the occurrence of athlete burnout (i.e., Smith, 1986), teaching athletes adaptive coping strategies (i.e., arousal-regulation techniques, proper sleep hygiene, proper nutrition, utilization of social support resources) to minimize the impact of sport stress represents a key means to promote burnout from an individual perspective. Moreover, the promotion of other aspects of individual identity beyond sport (e.g., academic, social, artistic) represents another means by which to deter unidimensional athlete identities and/or entrapped patterns of sport commitment which may promote burnout-related perceptions for athletes. Certainly, these only represent a few specific, individual antecedents which could be targeted and many others could be fruitful to examine systematically. As with the organizational interventions proposed, strategies targeting individual athletes should also be carefully vetted and their outcomes empirically assessed as a means to understand both their efficacy and feasibility relative to athlete burnout prevention.

Based on the dynamic nature of competitive sport, many practical intervention strategies will likely target burnout antecedents which span both organizational and individual/ athlete levels. One such construct which could be promoted at either the organizational or individual/athlete level is athlete engagement. Athlete engagement (see Lonsdale, Hodge & Raedeke, 2007 for a review) is a distinct, yet positive psychosocial construct

which could be promoted as a means to deter burnout (DeFreese & Smith, 2013). Conceptual models of professional burnout and engagement suggest that more congruent scores between a worker and an organization on a key set of variables (i.e., areas of worklife) would promote engagement and simultaneously deter burnout (Leiter & Maslach, 2004; Maslach & Leiter, 2008). Based on the guiding organizational literature as well as the positive association of the ‘areas of sportlife’ with athlete engagement and the negative association of these antecedents with burnout in one early study (DeFreese & Smith, 2013), promoting this more positive athlete psychological outcome serves the dual purpose of protecting against burnout while also maintaining relevancy to all members of a team or athletic program. Specifically, those athletes struggling with burnout could experience interventions with other teammates and not be removed from the athletic environment to receive treatment. Moreover, interventions targeting change to the broader athletic environment could also be an effective burnout prevention or treatment option. The areas of worklife model, borrowed from organizational psychology, may represent a means by which to accomplish this. See DeFreese, Smith & Raedeke (2015) for suggestions.

There are many inherent barriers to projects addressing many of the aforementioned future directions, chief among them the ability to secure funding from sources open to supporting burnout research. The linking of athlete burnout to a biopsychosocial model of stress should provide impetus for continued fundability of this work to both community (e.g., local sport associations and leagues) and national funding agencies (e.g., Amateur Athletic Union (AAU), collegiate and professional sport organizations). Moreover, wearable technology and biomarker technology companies may represent fruitful funding source and means by which to further our understanding of athlete burnout via a combination of self-report and objective, biologically-based assessments. Ultimately, moving athlete burnout research forward may be best

accomplished via interdisciplinary research which links sport and exercise psychology, biology, sports medicine and exercise physiology.

Conclusion

In sum, since the early studies in the 1990s, the knowledge base of athlete burnout has developed dramatically, leading to a solid, foundational understanding of this how cognitive-affective syndrome manifests in athlete via understanding of its key characteristics and central antecedents. Longitudinal studies have furthered this work but still merit further utilization and development. To further uncover the “much unseen” relative to athlete burnout, continued longitudinal assessment of the construct and additional key psychosocial antecedents is needed. Moreover, its association with neuroendocrine and/or immunological biomarkers and the impact that wearable technologies may have on the understanding of athletes’ burnout experiences highlight a potentially fruitful set of research pathways. Such work will not only inform burnout etiology but also inform future burnout interventions and treatments. Concomitantly, such work furthers the ultimate goal of minimizing the prevalence of burnout-related perceptions in athletes of all ages who choose to invest time and effort into their sport participation.

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