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# Burnout in Elite Athletes: a Systematic Review

# Burnout en atletas de elite: Una revisión sistemática

# O burnout em atletas de elite: A systematic review

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**Abstract:** This systematic review analyzes studies on burnout in elite athletes and assesses the association between burnout and other psychological constructs for this group. The analysis of the studies is a descriptive semiquantitative review. The following databases were searched for studies published up to March 2016: DialNet, Lilacs, Portal CAPES, PsycNet, PubMed/Medline, Redalyc, SciELO, Scopus, SportDiscus, and Web of Science. The following descriptors were used: burnout, athletes, and elite (languages: English, Portuguese, Spanish). Seventy-two articles were included in this review. The results indicate a negative correlation between burnout and the self-determined motivation index, intrinsic motivation, identified regulation, autonomy, competence, relatedness, self-oriented perfectionism, parental expectations, personal standards, and harmonious passion. In addition, positive correlations were indicated between burnout and amotivation, socially prescribed perfectionism, and concern over mistakes. In conclusion, burnout in elite athletes is a variable different associated with various psychological constructs that are protective or catalyzing of burnout in this population.
**Keywords:** burnout syndrome, semi-quantitative review, sports, high performance.
**Resumen:** El propósito de esta revisión sistemática es analizar la investigación sobre burnout en deportistas de élite y verificar las asociaciones entre el burnout y otros constructos psicológicos para este grupo. Los análisis de estudio siguieron las recomendaciones de la revisión semicuantitativa. Se realizaron búsquedas en las publicaciones hasta marzo de 2016 la base: DialNet, lilas, Portal CAPES, PsycNet, PubMed / Medline, Redalyc, SciELO, Scopus, SportDiscus, Web of Science. Se utilizaron los descriptores: burnout, deportistas, élite en inglés, portugués y español. Se incluyeron en esta revisión 72 artículos. Los resultados indican una correlación negativa constante entre el burnout y la motivación autodeterminada, la motivación intrínseca, identificados motivación, la autonomía, la competencia, la relación, el perfeccionismo orientada hacia sí mismo, las expectativas de los padres, las normas personales regulados y pasión armoniosa; una correlación positiva constante entre el burnout y la desmotivación, el perfeccionismo socialmente prescrito y atención a los errores. Se concluye que el burnout en deportistas de élite es una variable con diferentes asociaciones entre diferentes constructos psicológicos y construye estos guardias u otros catalizadores de burnout en esta población.
**Palabras clave:** Síndrome de burnout, revisión semicuantitativa, despuerto, alto rendimiento.
**Resumo:** A proposta desta revisão sistemática é analisar as investigações sobre burnout em atletas de elite e verificar as associações entre burnout e outros constructos psicológicos para este grupo. Análises do estudo seguiram as recomendações da revisão semiquantitativa. Foram pesquisadas publicações até março de 2016 nas bases: DialNet, Lilacs, Portal CAPES, PsycNet, PubMed/Medline, Redalyc, SciELO, Scopus, SportDiscus, Web of Science. Foram utilizados os descritores: burnout, athletes, elite nos idiomas inglês, português e espanhol. Foram incluídos nesta revisão 72 artigos. Os resultados indicam correlação negativa consistente entre burnout e motivação autodeterminada, motivação intrínseca, motivação regulada identificada, autonomia, competencia, relacionamento, perfeccionismo auto-orientado, expectativa dos pais, padrões pessoais e paixão harmoniosa; Correlações positivas consistentes entre burnout e desmotivação, perfeccionismo socialmente prescrito e preocupação com os erros. Conclui-se que o burnout em atletas de elite é uma variável com associações distintas entre vários constructos psicológicos sendo estes constructos protetores ou outros catalisadores do burnout nesta população.
**Palavras-chave**: síndrome de burnout, revisão sistemática semiquantitativa, esporte, alto rendimento.

## Introduction

Burnout in sports is conceptualized a multidimensional cognitive-affective syndrome characterized by symptoms of emotional and physical exhaustion, reduced sense of accomplishment, and sport devaluation (Eklund & DeFreese, 2015; Fender, 1989; Raedeke, 1997; Raedeke & Smith, 2001).

The first literature review on athlete burnout was published by Fender (1989) to discuss the importance of studies about burnout in athletes in the sports environment. Subsequently Goodger, Gorely, Lavalle, and Harwood (2007a) published a systematic review of coaches and athletes in different sporting contexts. However the results of this research made no distinction between athlete profiles and coach profiles (i.e., elite vs. non-elite). Li, Wang, and Kee (2013) published a systematic review and meta-analysis that correlated burnout in athletes with the Self-Determination Theory (Deci & Ryan, 2000). Ultimately, Gustafsson, Hancock, and Côté (2014) analyzed studies on burnout in athletes using the citation-network analysis technique and draw attention to the small number of researchers who study burnout in athletes.

In every previously mentioned literature review there is

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no specific distinction on how burnout affects the life of elite athletes. It is known that these athletes live with very superior levels of internal pressure compared to non- elite athletes (Hill, Hall, Appleton, & Kozub, 2008; Raedeke & Smith, 2004). As a result there is need to evaluate burnout and the relation to other psychological constructs in the environment of competitive sports, since it is believed that burnout in elite athletes may not only harm the athlete's performance but also his mental healthiness (Gouttebarge, Frings-Dresen, & Sluiter, 2015; Gustafsson, Kenttä, & Hassmén, 2011b; Moen & Wells, 2016; Tenza, García, & Garcés de los Fayos Ruiz, 2016).

Recently, Swann, Moran, and Piggott (2015) in a literature review whose aim it was to define the term elite athlete showed that there is no literature with consensus in the definition of elite athletes. However, the authors affirm that there are a number of factors that comprise the definition of elite athletes, these are those athletes who demonstrate performance excellence in their age group and have been exposed to specialized coaching and high-performance development training in their chosen sport. Generally, these athletes compete in the world's most important competitions in their modalities, for instance, the Olympic Games, world championships, and the world's premiere sports leagues.

Elite athletes may reveal tenacious determination during training for competitions, which helps them persevere and endure rigorous and severe training conditions (Lemyre, Hall, & Roberts, 2008). However, for certain elite athletes, failure to achieve expected results and perceived setbacks may result in frustration (Lemyre et al., 2008). These failures perceived by these athletes cause them to approach burnout (Gustafsson, Hasmmén, Kenttä, & Johansson, 2008; Isoard-Gauther & Guilet-Descas, 2014; Smith, 1986).

Furthermore, elite athletes train close to their limits, strain themselves to highest achievements and are part of an especially prone population to have burnout due to chronic pressure and stress associated with competitive sport (Gustafsson, Kenttä, Hassmén, Lundovist, & Durand-Bush, 2007; Gustafsson, Skoog, Davis, Kenttä, & Harbel, 2015; Hill et al., 2008; Hodge, Lonsdale, & Ng, 2008).

Statistical evidences point out that in general 1 to 5% of athletes reveal burnout (Gustafsson et al., 2011b). For elite athletes these studies are not conclusive in relation to percentages and these indicators oscillate according to the characteristics of each research. Studies with Spanish elite taekwondo, weightlifting, handball and basketball athletes identified burnout in almost 10% of the elite athletes (Mojena & Ucha, 2002). Another study in the same country done with 397 elite athletes from 8 individual and collective modalities identified that adult and female elite athletes from collective modalities exhibit higher risk than their counterpart of contracting the syndrome and found values between 0.25 and 2.77% for the evaluated sample (Pedrosa & Garcia-Cueto, 2014). Analysing the researches done in the same country, it can be concluded that science is still far from establishing a parameter that may be used universally to set an incidence percentage of burnout in elite athletes.

In the first studies about elite athletes and burnout Gould, Udry, Tuffey, and Loehr, (1996a, 1996b) aimed to identify and psychologically describe burnout in tennis players and to compare these individual stop layers who did not burnout of junior tennis to find out more about the specific experiences of those who manifest the syndrome. The results showed that the elite tennis players with burnout were less externally motivated when compared to tennis players without burnout. The authors progressed in the knowledge of burnout in elite athletes by identifying an association of burnout with perfectionism, in a way that the elite tennis players were higher on perceived parental criticism and expectations, had higher needs for organization, experienced greater concern over mistakes, and had lower personal standards.

It is observed that within the sportive environment elite athletes need to administer pressure and external demands from directors, coaches and teammates to keep the high performance in training sessions and competitions (Bemfica, Fagundes, Pires, & Costa, 2013; Isoard-Gautheur, Trouilloud, Gustafsson, & Guillet-Descas, 2016). All those internal and external demands may lead to burnout when administered and controlled wrongly (Creswell & Eklund, 2006a; Hill et al., 2008).

At this time elite athletes have innumerable requirements in their carriers, they need to generate a series of activities linked to their job, such as taking part in promotional activities, meetings with sponsors, interviews, taking care of their image inside and outside the sport and their sports career (Gustafsson et al., 2011b; Jouper & Gustafsson, 2013).

In addition, there are still emotional factors that are experienced intensely by elite athletes, such as frustration with not winning an important competition, for which they have been training over a long period of time (Creswell & Eklund, 2006b). For the elite athlete the perception of not achieving their goal and the thought of imbalance between costs and benefits (exhausting training sessions without achieving satisfying results) lead to feelings of inability and emotional suffering which increases the risk of burnout (Gustafsson et al., 2008).

This systematic review seeks to strengthen the discussion on studies on burnout in elite athletes and describe the profile of studies that have been conducted on this group. The responses to psychological variables that are associated with burnout in elite athletes remain inconsistent. Therefore, the aim of this systematic review is to identify which variables are more strongly associated with burnout and how they manifest themselves in the behavior of such athletes. Thus, the

objectives of this review were to (a) analyze studies on burnout in elite athletes and (b) assess the association between burnout and other psychological constructs in such athletes.

## Methods

The search strategy was used to locate published articles on burnout in elite athletes in the sports context: searching for peer-reviewed original academic articles published up to March 2016 in the electronic databases DialNet, Lilacs, Portal CAPES, PsycNet, PubMed/Medline, Redalyc, SciELO, Scopus SportDiscus, and Web of Science.

Keywords combinations included the following descriptors/terms in Portuguese, Spanish, and English: burnout (*burn out*), athletes (*atletas*, *deportistas*), and elite. The keyword "burnout" was combined with the connector "AND" in double or triple combinations, as in the following examples: "burnout AND athletes" and "burnout AND athletes AND elite". The keywords were searched only in article titles.

To be included in this review, a study must have been (a) published in English, Portuguese, or Spanish; (b) conducted on elite athletes who compete in high performance sport; and (c) peer-reviewed and published in indexed journals up to march 2016.

The following studies were excluded: (a) annals and supplements from scientific meetings; (b) position statements, clinical reports, reviews, and instrument validation studies; and (c) duplicated studies (d) articles that do not allow to identify the athletes' level of performance or do not present elite athletes in their sample. Studies that appeared in more than one database or that failed to meet the predetermined inclusion criteria were excluded. At the end of this process, 770 articles were found. After the application of the inclusion and exclusion criteria, 72 articles were accepted for analysis in this systematic review (Figure 1).

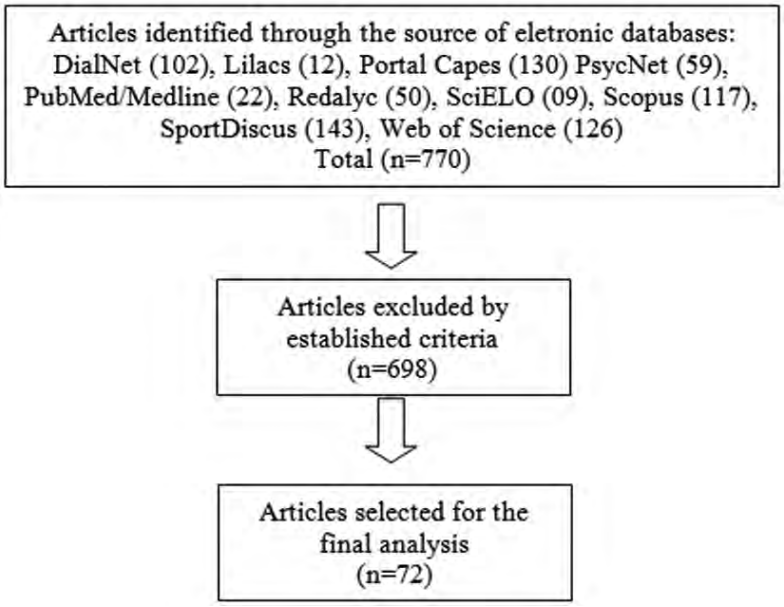


**Figure 1.** The procedures employed in the process of article selection.

## Procedures

Once selected, the studies were organized and numbered in ascending order by year of publication. Next, the analysis of the studies followed the descriptive semi-quantitative review protocol outlined by Sallis, Prochaska, and Taylor (2000), which was also followed by Goodger et al. (2007a). The articles that met all of the criteria are underlined in the reference list in Table 1. The results of each study were compiled, and independent samples (k) were used as analysis units. Studies that used the same independent sample were counted only once. Demographic data were organized in a summary table that describes the sample characteristics (e.g., gender, age), the experimental design (e.g., cross-sectional, longitudinal), the instruments (e.g., questionnaire, interview), the modality profile (e.g., individual, team), and the study population (e.g., nationality). Sample characteristics (i.e., age, gender) were summarized using a tallying system and resulted in total counts (table 1). A second table presents the data on burnout correlates.

**Table 1** Summary of the Sample Characteristics of the Studies on Burnout in Elite Athletes.

| Characteristic | Reference number | Sample k (%) |
|---|---|---|
| **Sample size** | | |
| **≥25** | 2*-3*-4-14-17-18-20-21-22-23-24-30-33-49-64-72 | 16 (22,22) |
| **25-50** | 6-15-35-39 | 4 (5,55) |
| **50-100** | 1*-7-9-13-44-52-57-59-61-65-71 | 11 (15,28) |
| **101-150** | 5-11-16-19-25-27-28-38-41-42-46-66 | 12 (16,66) |
| **151-200** | 8-12-26-36-48-50-58 | 7 (9,72) |
| **201-250** | 10-32-34-37-40-45-51-54-60-63-68 | 11 (15,28) |
| **251-300** | 31-43-62-67 | 4 (5,55) |
| **>300** | 29-47-53-55-56-69-70 | 7 (9,72) |
| **Sex** | | |
| **males only** | 6-8-11-12-16-17-18-24-26-27-36-37-39-42-43-44-48-50-58-59-61-65-67-72 | 24 (34,28) |
| **Females only** | 9-13-14-33-49-66 | 6 (8,57) |
| **Combined** | 1*-2*-3*-4-7-10-15-19-20-21-22-25-28-29-30-31-32-34-35-38-40-41-45-46-47-51-52-53-54-55-56-57-60-62-63-70 | 34 (48,57) |
| **Not identified** | 5-23-64-68-69-71 | 6 (8,57) |
| **Age, years** | | |
| **14-16** | 1*-2* -24-26-28-32-37-40-42-44-45-47-48-50-57-61-62 | 16 (22,53) |
| **17–19** | 3*-4-7-10-13-20#-27-29-35-43-46-51-52-54-55-56-58-59-60-66-68-71-72 | 23 (32,39) |
| **20-23** | 5-9-15-19-22-25-30-34-36-39-53-63-64-70 | 14 (19,71) |
| **24-27** | 8-11-12-14-16-17-18-21-23-38-41-65 | 12 (16,90) |
| **>27** | 31-67 | 2 (2,81) |
| **Not identified** | 6#- 33#-49-69 | 4 (5,63) |
| **Characterist of Sport** | | |
| **Team only** | 7-8-11-12-13-14-16-17-18-23-24-26-27-28-33-36-39-42-44-47-48-50-51-52-58-59-61-65-67 | 29 (41,43) |
| **Individual only** | 1*-2*-3*-4-15-19-20-22-25-32-40-49-57-62-64-68-69-72 | 16 (22,86) |
| **Combinated** | 5-6-9-10-21-29-30-31-34-35-37-38-41-43-45-46-53-54-55-56-60-63-66-70-71 | 25 (35,71) |
| **Design** | | |
| **Cross-sectional** | 1*-2*-3*-4-5-6-8-9-10-12-13-17-19-20-21-22-23-24-26-27-29-30-31-32-34-37-38-40-42-43-45-46-47-48-50-51-52-53-54-55-56-57-58-60-61-63-65-66-67-68-69-70-71 | 51 (72,86) |
| **Longitudinal** | 7-11-14-15-16-18-25-28-33-35-36-39-41-44-49-59-62-64-72 | 19 (27,14) |
| **Quantitative** | 1*-5-6-7-8-9-10-11-12-13-15-16-19-24-25-26-27-28-29-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71 | 59 (83,10) |
| **Qualitative** | 17-18-20-21-22 | 5 (7,05) |
| **Mixed method** | 2*-3*-4-14-23-30-48-72 | 7 (9,85) |
| **Data Collection** | | |
| **ABQ** | 8-11-12-15-16-19-23-24-25-26-27-28-30-34-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-58-59-60-61-62-64-65-68-70-71 | 45 (58,45) |
| **IBD-R** | 10-14-33-35-57-63-72 | 7 (9,10) |
| **MBI** | 6-31-66-69 | 4 (5,19) |
| **EADES/EABI** | 1*-2*-3*-4-29-32 | 4 (5,19) |
| **BIA** | 7-13 | 2 (2,60) |
| **S. B. Scale Health Professionals** | 5 | 1 (1,29) |
| **UBOS/MBI-HHS** | 67 | 1(1,29) |

| Characteristic | Reference number | Sample k (%) |
|---|---|---|
| **Burnout Questionnarie** | 9 | 1 (1,29) |
| **Interview** | 2*-3*-4-14-17-18-20-21-22-23-30-48-72 | 12 (15,60) |
| **Location** | | |
| **Europe** | 5-14-19-20-22-23-24-25-30-33-35-36-37-38-40-42-43-44-45-46-47-48-49-50-51-55-56-57-60-63-64-67*-68-70-71-72 | 36 (46,15) |
| **Oceania** | 8-11-12-16-17-18-21-26-27-31-41-67*-68-69* | 14 (17,94) |
| **North America** | 1*-2*-3*-4-7-13-15-34-53-54-66-67* | 12 (15,38) |
| **South America** | 33-52-58-59-61-65 | 6 (7,69) |
| **Asia** | 9-28-29-62 | 4 (5,12) |
| **Central America** | 6-69* | 2 (2,56) |
| **Africa** | 39-69* | 2 (2,56) |
| **Not Identified** | 10-32 | 2 (2,56) |
| **Year of publication** | | |
| **1996 – 2006** | 1*-2*-3*-4-5-6-7-8-9-10-11-12-13-14-15-16-17 | 17 (23,62) |
| **2007- 2016** | 18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72 | 55 (76,38) |

*Note*. k = number of sample populations.* Studies that present data from the same independent samples; #Studies with not report average age.

Athlete studies' reference numbers: 1= Gould, Udry, Tuffey, & Loehr (1996a); 2= Gould, Tuffey, Udry, & Loehr (1996b); 3= Gould, Tuffey, Udry, & Loehr (1997); 4=Udry, Gould, Dana-Bridges, Tuffey (1997) 5= Kjormo & Halvari (2002); 6= Mojena & Ucha (2002); 7= Lai & Wiggins (2003); 8= Cresswell & Eklund (2004); 9= Bar-Eli, Shirom, Nir, & Pines (2004); 10= Vives & Garcés de los Fayos Ruiz (2004) 11= Cresswell & Eklund (2005a); 12= Cresswell & Eklund (2005b); 13= Wiggins, Lai, & Deiters (2005); 14= Tutte, Blasco, & Feliu (2006); 15= Lemyre, Treasure, & Roberts (2006);16= Cresswell & Eklund (2006a); 17= Cresswell & Eklund (2006b); 18= Cresswell & Eklund (2007a); 19= Lemyre, Roberts, & Stray-Gundersen (2007); 20= Goodger, Wolfenden, & Lavallee (2007b); 21= Lonsdale, Hodge, & Raedeke (2007); 22= Gustafsson, Kentta, Hassmén, Lundovist, & Durand-Bush (2007); 23= Cresswell & Eklund (2007b); 24 =Llamas & Abello (2008); 25= Lemyre, Hall, & Roberts (2008); 26= Hill, Hall, Appleton, & Kozub (2008); 27= Hodge, Lonsdale, & Ng (2008); 28=Chen, Kee, & Tsai (2008a); 29=Chen, Kee,Chen, & Tsai (2008b); 30= Gustafsson, Hassmén, Kentta, & Johansson (2008); 31= Grylls & Spittle (2008); 32= Balaguer, Duda, Castillo, Moreno, & Crespo (2009); 33=Tutte Vallarino & Girardi (2009); 34= Lonsdale, Hodge, & Rose (2009); 35= Franco (2009); 36= Creswell (2009); 37 =Appleton, Hall, & Hill (2009); 38= Hill, Hall, Appleton, & Murray (2010b); 39= Grobbelaar, Malan, Steyn, & Ellis (2010); 40= Hill, Hall, & Appleton (2010a); 41= Lonsdale & Hodge (2011); 42= Curran, Appleton, Hill, & Hall (2011); 43= Gustafsson, Hassmén, & Hassmén (2011a); 44= Adie, Duda, & Ntoumanis (2012); 45= Appleton & Hill (2012); 46= Verkooijen, Van Hove, & Dik (2012); 47=Isoard-Gautheur, Guillet-Descas, & Lemyre (2012)

48= Hill (2013); 49= Jouper, & Gustafsson (2013); 50= Curran, Appleton, Hill, & Hall (2013); 51= Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson (2013); 52= Vieira, Carruzo, Aizava, & Rigoni (2013);53=Holmberg & Sheridan (2013), 54= DeFreese & Smith (2013); 55= De Francisco, Garcés de los Fayos, & Arce(2014); 56= Pedrosa & Garcia-Cueto (2014); 57= Martínez & Gómez-Mármol (2014); 58= Verardi, Nagamine, Neiva, Pessôa Filho, Domingos, Ciolac, & Miyazaki (2014a); 59= Verardi, Santos, Nagamine, Carvalho, & Miyazaki (2014b); 60= Moen, Federici, & Skaalvik (2014); 61= Giacomoni & Fonseca (2014); 62= Chen & Chang (2014); 63= González, Ros, Jiménez, & Garcés de los Fayos (2014); 64=Isoard-Gautheur & Guillet-Descas (2014); 65= Bim, Amorim, Vieira, &Vieira (2014); 66=Holden, Keshock, Forester, & Pugh (2014); 67=Gouttebarge, Frings-Dressen, & Sluiter (2015); 68=Gustafsson, Skoog, Davis, Kenttä, & Harbel (2015); 69=Katkat (2015); 70=Isoard-Gautheur, Trouilloud, Gustaffson, & Guillet Descas (2016); 71=Moen & Wells (2016); 72= Tenza, García, & Garcés de los Fayos Ruiz (2016).

## Analysis

The data analysis consisted of three stages. In the first stage, the characteristics of the selected sample were analyzed and the results categorized in spreadsheets, as recommended by the Sallis, et al. (2000) protocol. Thus, to identify a correlation and determine an association in this study, three or more available comparisons should exist for the evaluation in the selected articles (e.g., if the investigated variable appeared in three or more different samples). In the second stage, the direction of associations between psychological constructs and burnout was analyzed. In this stage, the independent results for each association were evaluated and coded as positive (+), negative (-), or no association (0) with burnout and as undetermined (?) when the nature of the association was unclear. Last, a summary of the literature for each correlate was determined through a calculation of the percentage of independent samples supporting associations. The final classification was based on the coding system presented by Sallis et al. (2000) and described as follows: 0-33% = no association, 34-59% = undetermined or inconsistent, and 60-100% = positive or negative association.

To ensure the quality of this literature review, three experts in the field of burnout research with expertise in the use of the protocol adopted in this systematic review participated in the evaluation process. After discussion, a consensus was reached. The final data coding is shown in Table 2.

## Results

### General Findings

A total of 72 studies on burnout in elite athletes were identified. To analyze and discuss the studies, they were separated according to the type of experimental design: qualitative (N = 5), quantitative (N = 59), and mixed method (N = 7[1]). Table 1 presents a description of the selected studies in relation to the characteristics of the elite athletes. Table 2 shows the results found for the correlations between the psychological constructs and burnout.

### Sample Characteristics of the Studies on Burnout in Elite Athletes

The majority of the studies were conducted with samples smaller than 150 athletes (59.71%). The studies preferentially analyzed mixed gender samples (48.57%). Regarding age range, the majority of the studies were on elite athletes younger than 23 years old, i.e., athletes in the formation process or with little experience (less than 5 years) as sport professionals (74.63%). Only a few studies analyzed elite athletes with 24 to 27 years old (16.90%) and over 27 years old (2.81%). Team sports represented 41.43% of the total sample, and individual sports represented 22.86%. Studies with mixed modality samples represented 35.71% of the total.

The majority of the studies on burnout in elite athletes are cross-sectional (72.86%). Longitudinal studies represent a minority (27.14%). Regarding experimental design, 83.10% are quantitative studies, and only 7.05% are qualitative or combined. The instrument most often used to evaluate burnout was the ABQ (58.45%) followed by different types of interview (15.60%). Instruments such as the Burnout in Sport Revised Questionnaire/IBD-R (9.10%), Burnout Inventory for Athletes/BIA (2.60%), Eades Athlete Burnout Inventory/ EABI (5.19%), and the Maslach Burnout Inventory/ MBI (5.19%) were little used.

1 Two studies presented data arose from the same independent sample (studies number 2 and 3). In this case, they were only booked once.

### Correlations Between Psychological Constructs and Burnout in Elite Athletes

**Motivation** Table 2 shows a negative association between the self-determined index and total burnout (60%) as well as a negative association between the self-determined index and the burnout dimensions of reduced sense of accomplishment (83.33%), depersonalization (80%), and emotional exhaustion (83.33%). The associations of intrinsic motivation and identified regulated extrinsic motivation with all burnout dimensions were 100% negative. In contrast, 100% positive associations were identified for amotivation and the burnout dimensions. Contrasting results were found between introjected regulation and the burnout dimensions. Positive associations were identified for the dimensions of reduced sense of accomplishment (60%) and emotional exhaustion (100%), and there was a negative association for depersonalization (80%). Additionally, the associations between external regulation and the burnout dimensions were negative for reduced sense of accomplishment (40%) and positive for emotional exhaustion (60%) and depersonalization (60%). Collectively, in elite athletes, the self-determined index is negatively associated with burnout as a whole and with intrinsic motivation and extrinsic identified regulation. In contrast, amotivation is positively associated with the burnout dimensions. The results are insufficient for drawing definite conclusions regarding the association between burnout and the introjected and external regulations dimensions (Table 2).

**Three Basic Needs Theory** A 100% negative association was observed between autonomy, competence, relatedness, and total burnout in elite athletes.

**Perfectionism** A 100% negative association was observed between self-oriented perfectionism and the reduced sense of accomplishment and depersonalization dimensions, and an 80% negative association was observed between self-oriented perfectionism and the emotional exhaustion dimensions. A 100% negative association was found between parental standards and total burnout, and a 100% positive association was found between concern over mistakes and total burnout. Regarding parental expectations, a 66.66% negative association was found with total burnout. In sum, total burnout is negatively correlated with self-oriented perfectionism, parental standards, and personal standards in elite athletes. In contrast, a positive correlation was found between total burnout and socially prescribed perfectionism and concern over mistakes. The burnout dimensions correlated negatively with self-oriented perfectionism and positively with the socially prescribed perfectionism dimension in elite athletes. It was also observed that there is a 100% negative correlation of bunrout with negative effect and a 100% correlation of burnout with positive.

**Table 2** Summary of the Correlations between Psychological Constructs and Burnout in Elite Athletes

| | Athlete-burnout Correlates | # of studies | k | % k Supporting Associations | | | |
|---|---|---|---|---|---|---|---|
| | | | | + | - | 0 | Sum code |
| MOTIVATION | Self-Determined Index-BT | 7 | 5 | 40 | 60 | | - |
| | Self-Determined Index-RA | 7 | 6 | 16.66 | 83.33 | | - |
| | Self-Determined Index-D | 7 | 5 | 20 | 80 | | - |
| | Self-Determined Index-EE | 7 | 6 | 16.66 | 83.33 | | - |
| | Intrinsic Motivation-RA | 7 | 7 | | 100 | | - |
| | Intrinsic Motivation-D | 7 | 7 | | 100 | | - |
| | Intrinsic Motivation-EE | 7 | 7 | | 100 | | - |
| | Introject Regulation-RA | 7 | 5 | 60 | 40 | | + |
| | Introject Regulation-D | 7 | 5 | 20 | 80 | | - |
| | Introject Regulation-EE | 7 | 5 | 100 | | | + |
| | Identified Regulation-RA | 7 | 5 | | 100 | | - |
| | Identified Regulation-D | 7 | 5 | | 100 | | - |
| | Identified Regulation-EE | 7 | 5 | | 100 | | - |
| | External Regulation-RA | 7 | 5 | 40 | 60 | | - |
| | External Regulation-D | 7 | 5 | 60 | 40 | | + |
| | External Regulation-EE | 7 | 5 | 60 | 40 | | + |
| | Amotivation-RA | 7 | 5 | 100 | | | + |
| | Amotivation-D | 7 | 5 | 100 | | | + |
| | Amotivation-EE | 7 | 5 | 100 | | | + |
| TBPN | Autonomy-BT | 4 | 4 | | 100 | | - |
| | Competence-BT | 4 | 4 | | 100 | | - |
| | Relatedness-BT | 4 | 4 | | 100 | | - |
| PERFECCIONISM | Self-oriented perfectionismo-RA | 5 | 4 | | 100 | | - |
| | Self-oriented Perfectionismo-D | 5 | 4 | | 100 | | - |
| | Self-oriented Perfectionismo-EE | 5 | 4 | 20 | 80 | | - |
| | Socially Prescribed Perfec.-RA | 4 | 4 | 100 | | | + |
| | Socially Prescribed Perfec.-D | 4 | 4 | 100 | | | + |
| | Socially Prescribed Perfec.-EE | 4 | 4 | 100 | | | + |
| | Parental expectations-BT | 3 | 3 | 33.33 | 66.66 | | - |
| | Personal Standarts- BT | 3 | 3 | | 100 | | - |
| | Concern over mistakes-BT | 3 | 3 | 100 | | | + |
| | Negative Affect-RA; D | 3 | 3 | 100 | | | + |
| | Negative Affect-EE | 3 | 3 | 80 | 20 | | - |
| PASSION | Harmonious passion-RA | 3 | 3 | | 100 | | - |
| | Harmonious passion-D | 3 | 3 | | 100 | | - |
| | Harmonious passion-EE | 3 | 3 | | 100 | | - |
| | Obsessive Passion-RA | 3 | 3 | 66.66 | 33.33 | | + |
| | Obsessive Passion-D | 3 | 3 | 33.33 | 66.66 | | - |
| | Obsessive Passion-EE | 3 | 3 | 100 | | | + |

*Note*: k = number of sample populations. Sum code = summary code. BT=Burnout Total. RA= Reduce Sense of Accomplishment. EE= Emotional Exhaustion. D= Sport Devaluation. TBPN= Three Basic Psychological Needs.

**Passion** A 100% negative association was observed between harmonious passion and all burnout dimensions in elite athletes. There was a 66.66% positive association between obsessive passion and reduced personal accomplishment, and a 100% positive association was observed between obsessive passion and the physical and emotional exhaustion dimensions. Obsessive passion associated negatively (66.66%) with the burnout devaluation dimension. In sum, harmonious passion is negatively associated with burnout, whereas obsessive passion is positively associated with the dimensions of reduced self-accomplishment and physical and emotional exhaustion as well as negatively associated with the burnout devaluation dimension in elite athletes.

## Discussion

It is known that elite athletes train near their limits, strive to achieve the highest level of performance, and are part of a population that is particularly susceptible to burnout, given the pressure and chronic stress that are associated with high-performance sports (Gustafsson et al., 2007; Hill et al., 2008; Hodge et al., 2008; Gustafsson et al., 2015). A study on elite athletes found that in a sample of 40 athletes from different athletic modalities, 10% suffered from burnout (Mojena & Ucha, 2002). In a study on 397 elite athletes from different modalities, it was found that 0.25% to 2.77% of athletes are at risk of developing burnout (Pedrosa & Garcia-Cueto, 2014). A low feeling of personal accomplishment was identified in elite athletes (Creswell & Eklund, 2005b, 2007b; Goodger, Wolfenden, & Lavallee, 2007b; Gustafsson et al., 2015; Katkat, 2015; Lemyre et al., 2008; Mojena & Ucha, 2002; Tutte, Blasco, & Feliu, 2006), as well as symptoms of depersonalization (Goodger et al., 2007b; Gustafsson et al., 2015; Katkat, 2015; Lemyre et al., 2008) and emotional exhaustion (Cresswel & Eklund, 2007b; Goodger et al., 2007b; Gustafsson et al., 2015; Katkat, 2015; Lemyre et al., 2008). The analyzed evidence indicated that elite athletes are more susceptible to developing burnout than athletes who compete on lower sports-performance levels (Gould et al., 1996b; Grylls & Spytlle, 2008; Lemyre, Treasure, & Roberts, 2006; Raedeke & Smith, 2004). In contrast, studies of specific cases with elite athletes of individual and collective sports showed that psychological intervention was effective to reduce the athletes' burnout levels (Gustafsson et al., 2007; Isoard-Gautheur et al., 2016; Tenza et al., 2016).

Regarding demographic variables, Pedrosa and Garcia-Cueto (2014) observed that women, adult elite athletes, and elite athletes who practice team sports are more susceptible to burnout. Isoard-Gautheur et al. (2016) also identified a higher preponderance of burnout in female athletes. Regarding gender, only five studies were conducted on female elite athletes (Bar-Eli, Shirom, Nir, & Pines, 2004; Holden, Keshock, Forester, & Pugh, 2014; Jouper & Gustafsson, 2013; Tutte et al., 2006; Tutte Vallarino & Girardi, 2009; Wiggins, Lai, & Deiters, 2005), which indicates the need for additional studies to understand burnout in female athletes. Studies on burnout in elite athletes are based on small samples probably due to the difficulty of finding access to this athlete profile (Gouttebarge et al., 2015). Bemfica et al. (2013) claimed that there is low interest from clubs, coaches, and athletes in participating in these studies. Another notable deficit was the lack of studies on elite athletes during the final phase of the athletic career. At this stage, athletes experience issues related to the athletic career transition process, which may increase the probability of developing burnout (Park, Lavallee, & Tod, 2013; Gouttebarge et al., 2015). In addition, researchers paid less attention to the evaluation of burnout in individual sports compared with team sports.

There is a three-fold predominance of cross-sectional studies compared with longitudinal studies, which indicates the difficulty that researchers face in longitudinally following the emergence, development, and peak of burnout in elite teams and athletes. A large part of this difficulty might be due to the obstacles found in repeating measurements throughout the season and to the restricted access to this group of athletes. It is important to note that the ABQ is the most-used instrument in the evaluation of burnout in elite athletes. The majority of the studies on burnout in elite athletes used only one psychometric instrument, which renders the analysis deficient in measuring a multifactorial variable, such as burnout. Future studies should use a larger number of instruments that facilitate a more comprehensive evaluation that involves psychological, social, and biological factors to obtain a better understanding of all of the facets of burnout.

A recent increase in the number of studies on elite athletes in Europe was observed (De Francisco, Garcés de Los Fayos, & Arce, 2014; González, Ros, Jiménez, & Garcés de los Fayos, 2014; Gustafsson et al., 2015; Isoard-Gautheur & Guillet-Descas, 2014; Isoard-Gautheur, et al., 2016; Martínez & Gómez-Mármol, 2014; Moen, Frederici, & Skaalvik, 2014; Moen & Wells 2016; Pedrosa & Garcia-Cueto, 2014; Tenza et al., 2016), which surpassed the number of studies from other continents during the entire period analyzed in this review. Consistent with this finding, a small number of studies from regions such as South America (Bim, Nascimento, Amorim, Vieira, & Vieira, 2014; Giacomoni & Fonseca, 2014; Verardi et al., 2014a; Verardi, Santos, Nagamine, Carvalho, & Miyazaki, 2014b; Vieira, Carruzo, Aizava, & Rigoni, 2013; Tutte Vallarino & Girardi, 2009), Central America (Mojena & Ucha, 2002; Katkat, 2015), Asia (Bar-Eli et al., 2004, Chen, Kee, & Tsai, 2008a; Chen, Kee, & Tsai, 2008b; Chen & Chang, 2014), and Africa (Grobbelaar,

Malan, Steyn, & Ellis, 2010; Katkat, 2015) was observed. It is believed that the more precarious the conditions provided by a country to its elite athletes for training and competition are (e.g., the perception of funding difficulties) the greater the susceptibility to developing athletic burnout (Creswell & Eklund, 2004; 2009). However, a number of research gaps exist: What are the factors related to the socioeconomic condition of a country/sport that increase the predisposition of elite athletes to develop burnout? Are there universal factors of athletic burnout in elite athletes? What is the harm caused to elite athletes by these burnout factors related to the socioeconomic context that drastically interfere in their athletic career? How can burnout in elite athletes be prevented, considering each country's socioeconomic conditions? These and several other questions require additional research in which the socioeconomic and cultural contexts are considered when evaluating burnout in elite athletes.

**Psychological Correlations with Burnout in Elite Athletes**

The results of the analyses indicated correlations between burnout in elite athletes and motivation, the basic needs theory, perfectionism, and passion (Table 2).

Studies found a negative correlation when analyzing the association between the self-determined index and burnout such that the more self-determinate that the motivation of the elite athlete is, the further this athlete will be from developing burnout (Isoard-Gautheur, Guillet-Descas, & Lemyre, 2012; Lemyre et al., 2006; Lemyre, Roberts, & Stray-Gundersen, 2007; Lonsdale et al., 2009; DeFreese & Smith, 2013). Intrinsic motivation had a negative correlation with burnout. This factor is related to the athlete's desire to participate in a high-performance sport, which imparts feelings of accomplishment, satisfaction, and pleasure (Moen, et al., 2014). Thus, intrinsically motivated elite athletes have a lower chance of developing burnout (Apleton & Hill, 2012; Creswell & Eklund, 2005a, 2005b; Isoard-Gautheur & Guillet-Descas, 2014; Lonsdale et al., 2009; Lonsdale & Hodge, 2011).

Regarding extrinsic motivation, there was consensus that a negative correlation exists between identified regulation and burnout. The active behavior of elite athletes in their respective sport modality, in which they view their participation as an opportunity for personal growth, may decrease their chance of developing burnout. In contrast, regarding external and introjected regulations, the contradictory results found in the reviewed studies do not enable a consensus on how these two variables relate to burnout in elite athletes. To establish a parameter for this association, additional studies are required.

In the reviewed studies, a consensus was reached regarding the positive correlations found between burnout and amotivation. These two variables are found to occur together, and both hinder the careers of elite athletes (Isoard-Gautheur & Guillet-Descas, 2014; Lemyre et al., 2006; Lonsdale et al., 2009). The results reinforce the claim that elite athletes who develop burnout exhibit characteristics of increased amotivation, poor or ineffective coping skills, elevated stress perception, increased anxiety, mood swings associated with inadequate recovery, and poor performance in training and competitions (Appleton & Hill, 2012; Creswell & Eklund, 2005a, 2005b; Katkat, 2015; Lonsdale et al., 2009; Lonsdale & Hodge, 2011).

Strong evidence was found regarding the correlation between the basic psychological needs and burnout in elite athletes (Adie, Duda & Ntoumanis, 2012; Hodge et al., 2008; Lonsdale et al., 2009). Moen et al. (2014) claim that behavior based on autonomy, competence, and relatedness is associated with intrinsic motivation and decreases the chance of elite athletes developing emotional exhaustion and consequently burnout. Gustafsson et al. (2015) showed that elite athletes who demonstrated higher levels of positive affect were also more distant of burnout. Thus, elite athletes who face their challenges, seek to develop their skills, and feel competent performing athletic tasks have a lower chance of developing burnout.

The results of this systematic review indicate a consensus regarding the positive correlation between burnout and socially prescribed perfectionism (Appleton, Hall, & Hill, 2009; Hill et al., 2008; Hill, Hall, Appleton, & Murray, 2010b). Thus, it is possible to affirm that elite athletes who score high on socially prescribed perfectionism are more susceptible to burnout. Therefore, elite athletes who evaluate their self-esteem based on high externally perceived standards engage in intense efforts, which may cause psychological impairment and distress (Hill et al. 2008). The results indicated a negative correlation between burnout and self-oriented perfectionism although a consensus was not reached (Appleton et al., 2009; Appleton & Hill, 2012; Hill et al., 2008; Hill, Hall, & Appleton, 2010a; Hill et al., 2010b). According to Hill (2013), this association may be due to the pursuit of unreasonably high standards in addition to harsh, potentially debilitating self-criticism in athletes who score high on self-oriented perfectionism. The results regarding the correlations between burnout and parental expectations (-), personal standards (-), and concern over mistakes (+) indicated that parental expectations might negatively influence burnout in elite athletes. Burnout athletes who received greater criticism from their parents were more concerned over their mistakes and scored low on personal standards (Chen, Kee, Chen, & Tsai, 2008; Gould et al., 1996b; Lemyre et al., 2008).

The negative correlation between harmonious passion and burnout appears to foster a spiral of positive affect and well-being, which decreases the chance of burnout in elite athletes

(Gustafsson et al., 2011). Regarding obsessive passion, there was a consensus on a positive correlation between burnout and the emotional exhaustion dimension, a strong positive correlation with reduced sense of accomplishment, and a negative association with depersonalization. That obsessive passion is associated with thoughts related to ego-investment, heightened self-awareness, and rigid task engagement favors the development of burnout in elite athletes (Curran et al., 2011; Curran, Appleton, Hill, & Hall, 2013; Gustafsson et al., 2011).

This literature review has several limitations that should be acknowledged. The low number of studies on burnout in elite athletes did not facilitate an expansion of the analyses of the associations between burnout and other psychological constructs because of the methodological criteria that we adopted. Thus, there may be psychological constructs (e.g., anxiety, stress) that were not evaluated in this review but that the literature (Gustafsson & Skoog, 2012; Katkat, 2015; Smith, 1986; Wiggins et al., 2005) claims are factors that increase the potential for athletic burnout.

Another limitation was the use of different instruments to measure burnout in the selected studies and the limited amount of information regarding sample characteristics, rigor, data-collection procedures, and the stage of the athlete's career during the collect. All of these elements must be addressed so that appropriate precautions may be taken in the interpretation of the results.

However, because there is no specific review of the literature on elite athletes in the context of high-performance sports, this study contributes to an improved understanding of burnout in such athletes. The prevention and control of burnout in elite athletes will only be possible when all of the characteristics of this syndrome in sports and the relationship of burnout to other psychological constructs that might increase its potential or minimize its development are known.

Finally, future studies on burnout in elite athletes must consider the length of time that these athletes have been practicing their respective sports and the adoption of a longitudinal design. This type of experimental design would facilitate a more accurate analysis of burnout and of the variations of this syndrome during the different stages of the respective sports season. Future studies must also address socioeconomic and cultural contexts because these variables tend to interfere in the associations between psychological constructs and burnout in elite athletes. Although there is no consistent evidence in the literature regarding the effect of these variables, it is assumed that the socioeconomic and cultural context of each country's athletic structure may contribute to the emergence or disappearance of new factors associated with burnout. In addition, the development and validation of intervention programs and the fight against burnout in elite athletes must be encouraged by the scientific community with the objective of minimizing the effect of this syndrome, which affects not only an athlete's individual athletic performance but also other areas of his/her personal and professional life.

## Conclusion

In sum, intrinsic motivation is a protective variable that prevents elite athletes from developing burnout. In relation to extrinsic motivation, it was impossible to identify a gold-standard behavior except for the identified regulation variable, which acts protectively. Regarding the other variables, although there is a trend toward a catalyzing role, additional studies on elite athletes are needed to establish a more reliable conclusion.

The strong association between amotivation and burnout indicates that these variables interact and negatively affect one another. Non-motivated elite athletes who have developed burnout syndrome are potential candidates to abandon their sport.

The basic psychological needs were found to be blockers of burnout in elite athletes. Thus, elite athletes who have high competence, autonomy, and relatedness have a lower chance to develop burnout.

Because demands from the group, coaches, and family might cause elite athletes to approach burnout, socially prescribed perfectionism and concern over mistakes are important predictors of burnout in such athletes. In contrast, self-oriented perfectionism and personal standards are protective factors against burnout in elite athletes because such athletes are not influenced by external demands and attempt to establish goals and guide their objectives based on their sense of self-criticism.

Finally, the feeling of harmonious passion results in an increase in the capacity of resilience in elite athletes to the development of burnout. When the athletes love what they do, they have a lower chance of developing burnout. In contrast, obsessive passion tends to expose the athlete to burnout because it makes them suffer from the training process, competitive results, and their own demands regarding their performance.

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## References


1. Adie, J.W., Duda, J.L., & Ntoumanis, N. (2012). Perceived coach-autonomy support, basic need satisfaction and the well- and ill-being of elite youth soccer players: A longitudinal investigation. *Psychology of Sport and Exercise*, *13*(1), 51-59.
2. Appleton, P.R., Hall, H.K., & Hill, A.P. (2009). Relations between multidimensional perfectionism and burnout in junior-elite male athletes. *Psychology of Sport and Exercise*, *10*(4), 457-465.
3. Appleton, P.R., & Hill, A.P. (2012). Perfectionism and athlete burnout in junior elite athletes: The mediating role of motivation regulations. *Journal of Clinical Sport Psychology*, *6*(2), 129-145.
4. Balaguer, I.S., Duda, J.L., Fernández, I.C., Sigüenza, Y.M., & Crespo, M. (2009). Interacciones entre las perspectivas situacionales y disposicionales de meta y el burnout psicológico de los tenistas junior de la élite internacional. *Acción Psicológica*, *6*(2), 63-75.
5. Bar-Eli, M., Shirom, A., Nir, M., & Pines, A.M. (2004). Role conflict and burnout among elite Israeli female athletes engaged in "Feminine" and "Non-feminine" sports. *Women in Sport & Physical Activity Journal, 13*(2), 39-50.
6. Bemfica, T.E.B., Fagundes, L.H.S., Pires, D.A., & Costa, V.T.Da (2013). Efeito da temporada sobre a percepção da síndrome de burnout por atletas de futebol profissional. *Revista Brasileira de Ciência e Movimento*, *21*(4), 142-150.
7. Bim, R.H., Nascimento Junior, J.R.A.Do., Amorim, A.C., Vieira, J.L., & Vieira, L.F. (2014). Estratégias de coping e sintomas de burnout em atletas de futsal de alto rendimento. *Revista Brasileira de Ciência e Movimento*, *22*(3), 69-75.
8. Chen, L.H., & Chang, Y-P. (2014). Cross-Lagged Associations between Gratitude and Adolescent Athlete Burnout. *Current Psychology*, *33*(4), 460-478.
9. Chen, L.H., Chen, M.Y., Kee, Y.H., & Tsai, Y.M. (2008b). Relation Of Perfectionism With Athletes'burnout: Further Examination. *Perceptual and Motor Skills*, *106*(3), 811-820.
10. Chen, L.H., Kee, Y.H., & Tsai, Y.M. (2008a). Relation of dispositional optimism with burnout among athletes. *Perceptual and Motor Skills*, *106*(3), 693-698.
11. Cresswell, S.L. (2009). Possible early signs of athlete burnout: A prospective study. *Journal of Science and Medicine in Sport*, *12*(3), 393-398.
12. Cresswell, S.L., & Eklund, R.C. (2004). The athlete burnout syndrome: Possible early signs. *Journal of Science and Medicine in Sport*, *7*(4), 481-487.
13. Cresswell, S.L., & Eklund, R.C. (2005a). Changes in Athlete Burnout and Motivation over a 12-Week League Tournament. *Medicine & Science in Sports & Exercise*, *37*(11), 1957-1966.
14. Cresswell, S.L., & Eklund, R.C. (2005b). Motivation and Burnout in Professional Rugby Players. *Research Quarterly for Exercise & Sport, 76*(3), 370-376.
15. Cresswell, S.L., & Eklund, R.C. (2006a). Changes in athlete burnout over a thirty-week "rugby year". *Journal of Science and Medicine in Sport*, *9*(1-2), 125-134.
16. Cresswell, S.L., & Eklund, R.C. (2006b). The nature of player burnout in rugby: Key characteristics and attributions. *Journal of Applied Sport Psychology*, *18*(3), 219-239.
17. Cresswell, S.L., & Eklund, R.C. (2007a). Athlete burnout: A longitudinal qualitative study. *The Sport Psychologist*, *21*(1), 1-20.
18. Cresswell, S.L., & Eklund, R.C. (2007b). Athlete burnout and organizational culture: An English rugby replication. *International Journal of Sport Psychology*, *38*(4), 365-387.
19. Curran, T., Appleton, P.R., Hill, A.P., & Hall, H.K. (2011). Passion and burnout in elite junior soccer players: The mediating role of self-determined motivation. *Psychology of Sport and Exercise*, *12*(6), 655-661.
20. Curran, T, Appleton P.R, Hill A.P., & Hall H.K. (2013). The mediating role of psychological need satisfaction in relationships between types of passion for sport and athlete burnout. *Journal of Sports Sciences*, *31*(6), 597-606.
21. Deci, E.L., & Ryan, R.M. (2000). The'what' and'why' of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227-268.
22. De Francisco, C., Garcés de Los Fayos R.E.J., & Arce, C. (2014). Burnout en deportistas: Prevalencia del síndrome a través de dos medidas. *Cuadernos de psicología del deporte, 14*(1), 29-38.
23. DeFreese, J.D., & Smith, A.L. (2013). Teammate social support, burnout, and self-determined motivation in collegiate athletes. *Psychology of Sport and Exercise*, *14*(2), 258-265.
24. Eklund, R.C., & DeFreese, J.D. (2015). Athlete Burnout: What We Know, What We Could Know, and How We Can Find Out More. *International Journal of Applied Sports Sciences*, *27*(2), 63-75.
25. Fender, L.K. (1989). Athlete burnout: Potential for research and intervention strategies. *The Sport Psychologist, 3*(1), 63-71.
26. Franco, C. (2009). Modificación de los niveles de burnout y de personalidad resistente en un grupo de deportistas a través de un programa de conciencia plena. *Anuario de Psicologia*, *40*(3), 377-390.
27. Giacomoni, C., & Fonseca, G.M.M. (2014). Principais indicadores de burnout em jovens atletas de futebol. *Revista Mackenzie de Educação Física e Esporte*, *13*(2), 106-123.
28. González, J., Ros, A.B., Jiménez, M.I., & Garcés De Los Fayos, E. (2014). Análisis de los niveles de burnout en deportistas en función del nivel de inteligencia emocional percibida: el papel moderador de la personalidad. *Cuadernos de Psicología del Deporte*, *14*(3), 39-48.
29. Goodger, K., Gorely, T., Lavalle D., & Harwood, C. (2007a). Burnout in sport: A systematic review. *The Sport Psychologist*, *21*, 127-151.
30. Goodger, K., Wolfenden, L., & Lavallee, D. (2007b). Symptoms and consequences associated with three dimensions of burnout in junior tennis players. *International Journal of Sport Psychology*, *38*(4), 342-364.
31. Gould, D., Udry, E. Tuffey, S., & Loehr, J. (1996a). Burnout in Competitive Junior Tennis Players: I. A Quantitative Psychological Assessment. *The Sport Psychologist*, *10*(4), 322-340.
32. Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996b). Burnout in competitive junior tennis players: II. Qualitative analysis. *The Sport Psychologist*, *10*, 341-366.
33. Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1997). Burnout in competitive junior tennis players: III. Individual differences in the burnout experience. *The Sport Psychologist*, *11*(3), 257-276.
34. Gouttebarge, V., Frings-Dresen, M.H.W., & Sluiter, J.K. (2015). Mental and psychosocial health among current and former professional footballers. *Occupational medicine*, *65*(3), 190-196.
35. Grobbelaar, H.W., Malan, D.D.J., Steyn, B.J.M., & Ellis S.M. (2010). Factors affecting the recovery-stress, burnout and mood state scores of elite student rugby players. *South African Journal for Research in Sport Physical Education and Recreation*, *32*(2), 41-54.
36. Grylls, E., & Spittle, M. (2008). Injury and burnout in Australian athletes. *Perceptual and Motors Skills*, *107*(3), 873-880.
37. Gustafsson, H., Hancock, D.J., & Côté, J. (2014). Describing citation structures in sport burnout literature: A citation network analysis. *Psychology of Sport and Exercise*, *15*(6), 620-626.
38. Gustafsson, H., Hassmén, P., & Hassmén, N. (2011a). Are athletes burning out with passion? *European Journal of Sport Science*, *11*(6), 387-395.
39. Gustafsson, H., Hassmén, P., Kenttä, G., & Johansson, M. (2008). A qualitative analysis of burnout in elite Swedish athletes. *Psychology of Sport and Exercise*, *9*(6), 800-816.

40. Gustafsson, H., Kenttä, G., & Hassmén, P. (2011b). Athlete burnout: An integrated model and future research directions. *International Review of Sport and Exercise Psychology*, *4*(1), 3-24.
41. Gustafsson, H., Kenttä, G., Hassmén, P., Lundovist, C., & Durand-Bush, N. (2007). The process of burnout: A multiple case study of three elite endurance athletes. *International Journal of Sport Psychology*, *38*(4), 388-416.
42. Gustafsson, H., & Skoog, T. (2012). The mediational role of perceived stress in the relation between optimism and burnout in competitive athletes. *Anxiety, Stress and Coping*, *25,* 183-199.
43. Gustafsson, H. Skoog, T., Davis, P., Kenttä G., & Harbel, P. (2015). Mindfulness and Its Relationship With Perceived Stress, Affect, and Burnout in Elite Junior Athletes. *Journal of Clinical Sport Psychology*, *9*(3), 263-281.
44. Gustafsson, H., Skoog, T., Podlog, L., Lundqvist, C., & Wagnsson, S. (2013). Hope and athlete burnout: Stress and affect as mediators. *Psychology of Sport and Exercise*, *14*(5), 640-649.
45. Holmberg, P.M., & Sheridan, D.A. (2013). Self-determined motivation as a predictor of burnout among college athletes. *Sport Psychologist*, *27*(2), 177-187.
46. Holden, S.L., Keshock, C.M., Forester, B.E., & Pugh, S.F. (2014). Athlete Burnout: Is the Type of Sport a Factor? *Sport Journal*, p1.
47. Hill, A.P. (2013). Perfectionism and burnout in junior soccer players: A test of the 2 x 2 model of dispositional perfectionism. *Journal of Sport & Exercise Psychology*, *35*(1), 18-29.
48. Hill, A.P., Hall, H.K., & Appleton P.R. (2010a). Perfectionism and athlete burnout in junior elite athletes: the mediating role of coping tendencies. *Anxiety, Stress and Coping*, *23*(4), 415-30.
49. Hill, A.P., Hall, H.K., Appleton, P.R., & Kozub, S.A. (2008). Perfectionism and burnout in junior elite soccer players: The mediating influence of unconditional self-acceptance. *Psychology of Sport and Exercise*, *9*(5), 630-644.
50. Hill, A.P., Hall, H.K., Appleton, P.R., & Murray, J.J. (2010b). Perfectionism and burnout in canoe polo and kayak slalom athletes: The mediating influence of validation and growth-seeking. *The Sport Psychologist*, *24*(1), 16-34.
51. Hodge, K., Lonsdale C., & Ng, J.Y. (2008). Burnout in elite rugby: relationships with basic psychological needs fulfilment. *Journal Sports Sciences*, *26*(8), 835-44.
52. Isoard-Gautheur, S., & Guillet-Descas, E. (2014). Athlete burnout and motivational dynamics: A multiple case follow-up study among elite BMX riders. *Journal of Human Sport and Exercise, 9*(1), 31-42.
53. Isoard-Gautheur, S., Guillet-Descas, E., & Lemyre, P.N. (2012). A prospective study of the influence of perceived coaching style on burnout propensity in high level young athletes: using a self-determination theory perspective. *Sport Psychologist*, *26*, 282-298.
54. Isoard-Gautheur, S., Trouilloud, D., Gustafsson, H., & Guillet-Descas, E. (2016). Associations between the perceived quality of the coach–athlete relationship and athlete burnout: An examination of the mediating role of achievement goals. *Psychology of Sport and Exercise, 22*, 210-217.
55. Jouper, J., & Gustafsson, H. (2013). Mindful recovery: A case study of a burned-out elite shooter. *The Sport Psychologist*, *27*(1), 92-102.
56. Katkat, D. (2015). Level of Anxiety and Burnout among Martial Athletes into 17th Mediterranean Games. *Anthropologist*, *19*(3), 673-678.
57. Kjormo, O., & Halvari, H. (2002). Relation of burnout with lack of time for being with significant others, role conflict, cohesion, and self-confidence among Norwegian olympic athletes. *Perceptual And Motor Skills*, *94*(3), 795-804.
58. Lai, C., & Wiggins, M.S. (2003). Burnout Perceptions Over Time in NCAA Division I Soccer Players. *International Sports Journal*, *7*(2), 120-127.
59. Llamas, C.A.S, & Abello, A. (2008). Burnout y pensamientos irracionales en deportistas de alto rendimiento. *Psychología: Avances de la Disciplina*, *2*(1), 49-78.
60. Lemyre, P.N., Hall, H.K., & Roberts, G.C. (2008). A social cognitive approach to burnout in elite athletes. *Scandinavian Journal of Medicine & Science in Sports*, *18*(2), 221-234.
61. Lemyre, P.N., Roberts, G.C., & Stray-Gundersen, J. (2007). Motivation, overtraining, and burnout: Can self-determined motivation predict overtraining and burnout in elite athletes? *European Journal of Sport Science*, *7*(2), 115-126.
62. Lemyre, P.N., Treasure, D.C., & Roberts, G.C. (2006). Influence of variability in motivation and affect on elite athlete burnout susceptibility. *Journal of Sport & Exercise Psychology*, *28*(1), 32-48.
63. Li, C., Wang, C.J., & Kee, Y.H. (2013). Burnout and its relations with basic psychological needs and motivation among athletes: A systematic review and meta-analysis. *Psychology of Sport and Exercise*, *14*(5), 692-700.
64. Lonsdale, C., & Hodge, K. (2011). Temporal ordering of motivational quality and athlete burnout in elite sport. *Medicine & Sciences in Sports & Exercise*, *43*(5), 913-921.
65. Lonsdale, C., Hodge, K., & Raedeke, T.D. (2007). Athlete engagement: I. A qualitative investigation of relevance and dimensions. *International Journal of Sport Psychology*, *38*(4), 451-470.
66. Lonsdale, C., Hodge, K., & Rose, E. (2009). Athlete burnout in elite sport: a self-determination perspective. *Journal of Sports Sciences*, *27*(8), 785-795.
67. Martínez, B.J.S.A., & Gómez-Mármol, A. (2014). Prevalencia del síndrome de Burnout en tenistas según su orientación motivacional. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, *9*(1), 111-122.
68. Moen, F., Federici, R.A., & Skaalvik, E.M. (2014). Junior Athletes' Goal Orientation, Motivation, and Emotional and Physical Exhaustion. *International Journal of Coaching Science*, *8*(2), 25-41.
69. Moen, F., & Wells, A. (2016). Can the Attention Training Technique Reduce Burnout in Junior Elite Athletes? *International Journal of Coaching Science*, 10(1)
70. Mojena, G.M., & Ucha, F.E.G. (2002). Burnout, locus de control y deportistas de alto rendimiento. *Cuadernos de Psicología del Deporte*, *2*(2), 29-40.
71. Park, S., Lavallee, D., & Tod, D. (2013). Athletes' career transition out of sport: a systematic review. *International Review of Sport and Exercise Psychology*, *6*(1), 22-53.
72. Pedrosa, I., & Garcia-Cueto, E.G. (2014). A Study of the Burnout Syndrome in Sports people: Prevalence and Relationship to the Body Image. *Universitas Psychologica, 13*(1), 135-143.
73. Raedeke, T. (1997). Is athlete burnout more than just stress? A sport commitment perspective. *Journal of Sport and Exercise Psychology, 19*(4), 396-417.
74. Raedeke, T., & Smith, A. (2001). Development and preliminary validation of an athlete Burnout measure. *Journal of Sport and Exercise Psychology, 23*(4), 281-306.
75. Raedeke, TD., & Smith, A.L. (2004). Coping resources and athlete burnout: an examination of stress mediated and moderation hypotheses. *Journal of Sport & Exercixe Psychology*, *26*, 525-541.
76. Sallis, J.F., Prochaska, J.J., & Taylor, A.C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, *32*, 963-975.
77. Smith, R.E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of Sport Psychology*, *8*, 36-50.
78. Swann, C., Moran, A., & Piggott, D. (2015). Defining elite athletes: issues in the study of expert performance in sport psychology. *Psychology of Sport and Exercise*, *16*, 3-14.
79. Tenza, E. O., García, J.J.L., & Garcés de los Fayos Ruiz, E.J. (2016).

Entrenamiento psicológico en tiro olímpico: Estudio de un caso. *Revista De Psicología del Deporte*, *25*(1), 131-135.
80. Tutte, V., Blasco, T., & Feliu, J.C. (2006). Evolución de los índices de burnout en un equipo femenino de baloncesto. *Cuadernos de Psicología del Deporte*, *6*(1), 21-35.
81. Tutte Vallarino, V., & Girardi, M.S. (2009). Compromiso deportivo, juicio de control y burnout en dos equipos deportivos femeninos. *Ciencias Psicológicas*, *3*(1), 17-28.
82. Udry, E., Gould, D., Bridges, D., & Tuffey S. (1997). People helping people? Examining the social ties of athletes coping with burnout and injury stress. *Journal of sport & exercise psychology*, *19*, 368-395.
83. Verardi, C.E.L., Nagamine, K.K., Neiva, C.M., Pessôa Filho, D.M., Domingos, N.A.M., Ciolac, E.G., & Miyazaki, M.C.O.S. (2014a). Burnout and playing position: a study of brazilian soccer players. *Journal of Physical Education & Sport, 14*(3), 324-330.
84. Verardi, C.E.L., Santos, A.B., Nagamine, K.K., Carvalho, T., & Miyazaki, M.C.O.S. (2014b). Burnout and coping among football players: before and during the tournament. *Revista Brasileira de Medicina do Esporte*, *20*(4), 272-275.
85. Verkooijen, K.T., Van Hove, P., & Dik, G. (2012). Athletic identity and well-being among young talented athletes who live at a Dutch Elite Sport Center. *Journal of Applied Sport Psychology, 24*(1), 106-113.
86. Vieira, L.F., Carruzo, N.M., Aizava, P.V.S., & Rigoni, P.A.G. (2013). Análise da síndrome de "burnout" e das estratégias de "coping" em atletas brasileiros de vôlei de praia. *Revista Brasileira Educação Física e Esporte*, *27*(2), 269-276.
87. Vives, L., & Garcés de Los Fayos Ruiz, E.J. (2004). Incidencia del síndrome de burnout en el perfil cognitivo en jóvenes deportistas de alto rendimiento. *Cuadernos de Psicología del Deporte*, *4*(1-2), 29-43.
88. Wiggins, M.S., Lai C., & Deiters, J.A. (2005). Anxiety and burnout in female collegiate ice hockey and soccer athletes. *Perceptual and Motor Skills*, *101*, 519-524.