

Burnout and pre-competition: A study of its occurrence in Brazilian soccer players

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BURNOUT AND PRE-COMPETITION: A STUDY OF ITS OCCURRENCE IN BRAZILIAN SOCCER PLAYERS

KEYWORDS: Burnout, Soccer, Professionals, Amateurs.

ABSTRACT: The objective of this study was to identify and interpret the occurrence of symptoms associated with the burnout syndrome during the pre-competition phase. A total of 134 male soccer players participated in the study: 71 professionals ($M_{age} = 22.77 \pm 3.98$ years) and 63 amateurs ($M_{age} = 17.18 \pm 0.84$ years) from three teams participating in the São Paulo State Championship, Series A-1 and A-2 (professional category) and the São Paulo Junior Soccer Cup (amateur category), organized by the São Paulo Soccer Federation, State of São Paulo, Brazil. In order to evaluate the Burnout Syndrome, a version of the *Athlete Burnout Questionnaire* (ABQ) was used, an instrument developed especially for the assessment of burnout in athletes. Values associated with greater vulnerability and, consequently, greater risk of evolving to the syndrome, were observed in a small portion of the players interviewed. The impact represented by the players with higher scores for burnout and the importance of such in relation to the team should be investigated.

The burnout syndrome is associated with the perception that personal resources are not sufficient or are inadequate to handle stress. As a result, the individual develops negative attitudes, conduct and feelings that entail problems associated with physical and emotional exhaustion in the work environment (Maslach and Jackson, 1981). Mainly diagnosed in professions that demand direct contact with its users and constant interpersonal relations, such as education, health and security, burnout is a psychological syndrome in response to chronic stressors that intervene in interpersonal relations at work (Maslach, Schaufeli and Leiter, 2001).

With its multidimensional nature, professional exhaustion involves three basic components: 1) emotional exhaustion, with feelings of extreme fatigue and perception of an inability to "give of oneself" in terms of affection; 2) depersonalization, with the development of cynical attitudes and negative feelings; 3) dissatisfaction with one's professional achievements, with the tendency to evaluate oneself negatively, especially in relations with users or clients, with feelings of unhappiness and dissatisfaction with one's achievements at work (Maslach and Jackson, 1981).

In the context of sports, burnout must be defined according to the athletes' performance, which is the fundamental element for these professionals (Hill and Appleton, 2001; Raedeke, 1997). For athletes, professional exhaustion can be the result of demands from training and competitions associated with a perception of poor professional performance in terms of athletic skills and yield (Kimberley et al., 2011; Raedeke, 1997).

Although Maslach and Jackson's (1981) definition of burnout is widely known, it was elaborated for occupations where relations between the professional and client are fundamental, such as health care services. When used for other contexts, it is necessary to consider specific dimensions, such as the objectives and responsibilities inherent to each profession.

Professional exhaustion in athletes has three important aspects: 1. report of emotional and physical exhaustion, resulting from excess demands imposed by training and competitions; 2. reduced sense of self-achievement, with the perception that objectives are unreachable; 3. devaluation and disinterest in the sport (Raedeke, 1997; Lemyre, Hall and Roberts, 2008; Gustafsson, Hassmén, Kentta and Johansson, 2008).

Some variables associated with burnout in the sports context include the trainer's style, high competitive demands, confrontation strategies, outside lifestyle, training monotony and lack of positive reinforcement. Considering these variables, researchers have suggested prevention and intervention programs in the sports context, focusing on aspects like a more rational structure of sports work, planning periods of mental practice and psychological training, modifying the social structure of competitive sports and increasing the minimum age for sports and competition (Arce, Francisco, Andrade, Arce and Raedeke, 2010; Hill and Appleton, 2011; Orlick, 2008; Yildiz, 2011).

Traditionally, the most used instrument for evaluating burnout has been the *Maslach Burnout Inventory*, or MBI, designed to evaluate several aspects of this syndrome in human service provider professionals (Maslach and Jackson, 1981). One specific

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psychometric instrument for measuring burnout in athletes, the Athlete Burnout Questionnaire, or ABQ, elaborated by Raedeke and Smith (2001), has been considered more appropriate for investigating burnout in the sports context.

Many studies (Arce, Francisco, Andrade, Arce and Raedeke, 2010; Cresswell, 2009; Cresswell and Eklund, 2004; 2005a; 2005b; 2005c; 2006; Hill and Appleton, 2011; Lemyre, Roberts and Stray-Gundersen, 2007, Lemyre, Hall and Roberts, 2008; Lonsdale, Hodge and Rose, 2009) have observed the frequency of experiencing feelings related to burnout in several sports modalities, with professional and amateur athletes of both genders, using the instrument developed by Raedeke and Smith (2001), the *Athlete Burnout Questionnaire* (ABQ).

Besides elaborating and evaluating prevention and intervention programs, it is also extremely important for the early identification of signs of risk for burnout in athletes. These signs include, for example, persisting feelings of deception and mood swings as precursors to emotional exhaustion (Cresswell and Eklund, 2004; Hill and Appleton, 2011). Therefore, it is relevant to investigate stressors that can limit sports development in soccer players, aimed at identifying the negative consequences associated with discrepant levels of burnout, during the pre-competition phase, in the various phases of professional athlete formation and categories that represent the transition phase to professionalism.

Based on the considerations, study objectives were elaborated: identify the incidence of symptoms associated with burnout syndrome; and analyze the incidence of vulnerability to burnout among professional and amateur soccer players during the pre-competitive phase. This study's hypotheses take into account that: (1) amateur players have higher burnout scores because they are in the transition phase to professionalism because they are less experienced than professionals; (2) the burnout scores are higher during sports competition in relation to preparation phase, since the first, as per literature, is an important source of stress.

Method

In a prospective study, the sample choosing procedure was intentional and a criterion for choice was the fact that soccer players are part of a specific population with homogenous characteristics (ex. age, gender, sports modality and prerequisites for entering as an amateur or professional). The criteria used for including a player as an amateur was the lack of a professional contract and participation time, only in competitions organized by the Soccer Federations affiliated with the Brazilian Confederation of Soccer (CBF). Therefore, the sample choice is based on specific variables for study.

During the planning phase, it was determined that the study would encompass the population of players enrolled in the forty teams that participate in the professional category of the São Paulo State Series A1 and A2 Division Championship, and the athletes enrolled in the 88 Clubs that participate in the São Paulo Junior Soccer Cup. The population size and scope, however, entailed practical difficulties for collecting data, such as time, cost, distance, displacement, follow-up and athlete turnover. A convenience sample was thus chosen that would preserve the population's specific characteristics, with teams of professional and amateur soccer players in the city and region of São José do Rio Preto.

Subjects

A total of 134 male soccer players participated in the study, 71 professionals ($M_{age} = 22.77 \pm 3.98$ years) and 63 amateurs ($M_{age} = 17.18 \pm 0.84$ years) from three teams participating in the São Paulo State Championship, Series A-1 and A-2 (professional category) and the São Paulo Junior Soccer Cup (amateur category), organized by the São Paulo Soccer Federation, State of São Paulo, Brazil. The players answered the version of the *Athlete Burnout Questionnaire* (ABQ).

Procedure

The project was forwarded to and approved by the Ethics in Research Committee at the College of Medicine of São José do Rio Preto - FAMERP - protocol 6109/2006. Those responsible at the clubs also approved the study after receiving detailed information about the project.

The data were personally collected by the researcher during the pre-competition phase of the São Paulo First Division Championship for Series A-1 and A-2 (professional categories) and the São Paulo Junior Soccer Cup (amateur category). When invited to participate, the athletes were provided information about the study. Those who agreed to participate signed a Term of Informed Consent in advance. The athletes were evaluated individually. Those who fit the criteria for participating in the research were interviewed onsite and instructed to answer the questionnaire at the training site, before or after the training session, especially during the pre-competition phase.

Instrument

In order to evaluate the confrontation strategies, a version of the *Athlete Burnout Questionnaire* (ABQ) was used, an instrument developed especially for evaluating burnout in athletes by Raedeke and Smith (2001) and adapted to Portuguese by Pires, Brandão and Silva, 2006. The questionnaire is comprised of 15 items and three sub-scales that assess the frequency of burnout related feelings: (RA) reduced sense of accomplishment (it doesn't matter what I do, I don't execute as well as I should); (E) emotional/physical exhaustion (I am exhausted by the sport's physical and emotional demands); (D) devaluation (I have negative feelings about the sport). The answers are given in a Likert scale: 1) Almost never; 2) Rarely; 3) Sometimes; 4) Frequently; 5) Almost always.

Data Analysis

An univariate statistical analysis was performed. The analysis included descriptive statistics; one sample t-test for mean and two proportions z-test to compare professional and amateurs players related to value for burnout in the three sub-scales of the *Athlete Burnout Questionnaire* (ABQ). It was adopted .05 for significance level in all statistical tests (Zar, 1999).

Results

As a result of the lack of studies about the influence of the main burnout characteristics for developing this syndrome in soccer players, the t test was conducted for the averages (Tables 1 and 2) to establish a desirable value of reference for the manifestation of symptoms associated with the burnout syndrome, during the pre-competitive phase in the three sub-scales of the *Athletes Burnout Questionnaire* (ABQ). The averages for the three sub-scales were suspected to be under 2.5. Thus, the

following statistical hypotheses were formulated: $H_0: \mu \geq 2.5$ vs $H_1: \mu < 2.5$.

The score is interpreted by using the variation in feeling frequency. The average ($\mu \geq 2.5$) was adopted to indicate “low

vulnerability” and ($\mu < 2.5$) was used to indicate “high vulnerability” to burnout syndrome in the three sub-scales. Thus, the reference score 2.5 indicates a threshold for the tendency of vulnerability to burnout.

| Dimension | N | $\bar{x} \pm s$ | Minimum | Maximum | Test statistic t | Degree of freedom | P value |
|-----------|----|-----------------|---------|---------|------------------|-------------------|---------|
| E | 63 | 1.87 ± 0.44 | 1.21 | 2.93 | -11.33 | 62 | < .001 |
| RA | 63 | 2.07 ± 0.39 | 1.43 | 2.86 | -8.84 | 62 | < .0001 |
| D | 63 | 1.70 ± 0.53 | 1.00 | 2.83 | -11.99 | 62 | < .001 |

Notes: reduced sense of accomplishment (RA), emotional/physical exhaustion (E) and devaluation (D).

Table 1. One sample t-test results for reduced sense of accomplishment (RA), emotional/physical exhaustion (E) and devaluation (D) related to the amateurs players.

| Dimension | N | $\bar{x} \pm s$ | Minimum | Maximum | Test statistic t | Degree of freedom | P value |
|-----------|----|-----------------|---------|---------|------------------|-------------------|---------|
| E | 71 | 1.91 ± 0.52 | 1.00 | 3.21 | -9.64 | 70 | < .001 |
| RA | 71 | 2.08 ± 0.50 | 1.28 | 3.36 | -7.02 | 70 | < .001 |
| D | 71 | 1.77 ± 0.64 | 1.00 | 3.17 | -9.65 | 70 | < .001 |

Notes: reduced sense of accomplishment (RA), emotional/physical exhaustion (E) and devaluation (D).

Table 2. One sample t-test results for reduced sense of accomplishment (RA), emotional/physical exhaustion (E) and devaluation (D) related to the professional players.

The analysis of Table 1 (amateur players) and table 2 (professional players), conducted with the Student t test for a sample, indicated a statistically significant difference ($p < 0.001$) between the averages of the reduced sense of accomplishment (RA), emotional/physical exhaustion (E) e devaluation (D) for both categories. Upon analyzing the averages in the three sub-scales of the ABQ, low vulnerability for burnout ($\mu \geq 2.5$) was confirmed for the majority of athletes (amateur and professional) during the pre-competitive phase (table 1 and 2).

The dispersion of results can be seen in Table 1 and 2. The behavior of data referring to the reduced sense of accomplishment (RA) dimension, divided by category, can be observed. Greater dispersion of data can be seen for professional than for amateur players. The extremes for professionals were 1.28 to 3.36 and for amateurs they were between 1.43 and 2.86. This result indicates

that amateur athletes express feelings about the evaluation of work conditions and their opinions are more similar to each other.

Observe the data inherent to the emotional/physical exhaustion (E) dimension. The category of professional players has greater dispersion, minimum (1.00) and maximum score (3.21). The varied opinions of these players lead to the supposition that there is no consensus about the perception of feelings related to physical and emotional fatigue;

Greater dispersion is again observed for professional players (0.64) when compared to amateurs (0.53) for the devaluation (D) dimension. Observing the results, the similarities in minimum score (1.00) values for both categories stands out. This result indicates the perception in relation to disbelief and the development of negative feelings tied to the sports modality converge for both categories (Table 1 and 2).

| Burnout | | | | | | | | |
|-----------|------------------------|-------------------|-------|-------|-------|---------|------------------|---------|
| Dimension | Category Vulnerability | Low Vulnerability | n_1 | High | n_2 | Total N | Test statistic z | P value |
| RA | Amateur | 85.7% | 54 | 14.3% | 09 | 63 | .42 | .678 |
| | Professional | 83.1% | 59 | 16.9% | 12 | 71 | | |
| E | Amateur | 90.5% | 57 | 9.5% | 06 | 63 | .58 | .564 |
| | Professional | 87.3% | 62 | 12.7% | 09 | 71 | | |
| D | Amateur | 92.1% | 58 | 7.9% | 05 | 63 | 1.35 | .178 |
| | Professional | 84.5% | 60 | 15.5% | 11 | 71 | | |

Notes: Significant differences ($p > .05$). Reduced sense of accomplishment (RA), emotional/physical exhaustion (E) and devaluation (D). N1: Low Vulnerability; N2: High Vulnerability

Table 3. Results of two proportions test to compare amateurs and professional related to high or low vulnerability for burnout.

Analyzing the results (Table 3 and Figure 1) observe that the indication of high vulnerability, that is, a burnout score greater than 2.5 in the three factors occurs in a small number of athletes. From the results obtained, approximately 17% of the athletes experience scores higher than 2.5, the value used as a reference

in this study. Among the 71 professional players, 12 (16.9%) presented reduced sense of accomplishment (RA) with a score above the reference value (2.5), whereas of the 63 amateurs this occurred in 9 cases (14.3%).

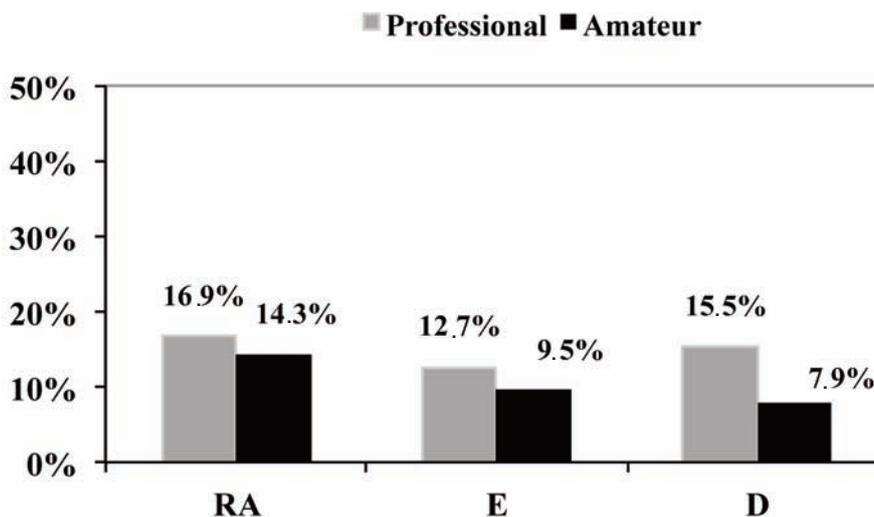


Figure 1. Indicative percent for vulnerability for burnout for each dimension in each player category (professional or amateur). Reduced sense of accomplishment (RA), emotional/physical exhaustion (E) and devaluation (D).

For the E factor (emotional/physical exhaustion), the values above 2.5 represented 9 cases (12.7%) for professionals and 6 (9.5%) for amateurs. In relation to the D (devaluation) factor, there were 11 professionals (15.5%) and 5 (7.9%) amateurs. The comparison per category is in Figure 1, which shows that the differences between categories are not very accentuated, since the (statistic $z = .42$; $p = .678$ for RA (reduced sense of accomplishment); (statistic $z = .58$; $p = .564$) for E and (statistic $z = 1.35$; $p = .178$) for D, as per the comparison test statistic z of two proportions (Table 3).

Discussion

There does not seem to exist in literature any consensus in relation to the criteria for interpreting these scores, creating doubts in the burnout diagnosis. The magnitude of the *Athletes Burnout Questionnaire* (ABQ) scores associated with negative consequences of the burnout syndrome, still needs to be established. Thus, any interpretive analysis of this diagnosis must be done with caution (Cresswell and Eklund, 2006).

In the initial hypothesis of this study, it was believed that during the pre-competition phase, the average score in the three dimensions of burnout would not be high. It is believed that competition is a source of stress for athletes of any age, thus influencing their performance (Hill and Appleton, 2011).

Raedeke (1997) compared four groups of swimmers (discontent, enthused, obliged and indifferent). The author proposed the following magnitude of average scores associated with the possible negative consequences of burnout: low (average

between 1.45 and 1.97), average (average between 2.19 and 2.63), moderately high to high (average between 2.68 and 2.94) and high (2.97 and 3.40). Eklund and Cresswell (2007) present a frequency distribution of burnout scores in a study using the Athletes Burnout Questionnaire (ABQ) on 392 amateur rugby players, between 18 and 42 years of age. Frequencies: “almost never” to “rarely” (average score > 2); “rarely” to “sometimes” (average score between 2 and 3); “sometimes” to “often” (average score between 3 and 4) and “often” to “most of the time” (average score ≥ 4).

The average value adopted in this study to indicate low frequency in feelings related to the burnout syndrome in the three sub-scales, was based on the proposals presented by Raedeke (1997) and Eklund and Cresswell (2007).

Based on Raedeke’s (1997) proposal, the frequency interval for feelings inherent to the three dimensions of burnout found in this study were classified as low, ranging between “almost never and rarely”. Comparing these results to the Cresswell and Eklund (2006) study during the pre-competition phase, the data revealed the professional rugby players had higher values in the three sub-scales: RA (2.09); E (2.57); D (1.82).

Table 1 and 2 shows that the variation in maximum scores informed by the athletes is between 2.83 and 3.36 for both categories. The professional category stands out, where maximum average values reached: for reduced sense of accomplishment (3.36), emotional/physical exhaustion (3.21) and devaluation (3.17). These scores are interpreted as high (Raedeke, 1997) with a frequency interval of “sometimes to often”, so that the athletes sometimes or often notice negative feelings related to the three sub-scales.

The data presented in Tables 1, 2 and 3 represent the scores obtained by the sample and represent, in terms of burnout, worrisome data, especially due to their dynamic characteristic and because it is a process that establishes itself gradually. Values associated with greater vulnerability and, consequently, greater risk of evolving to the syndrome, were observed in a small portion of those players interviewed. This result corroborates the studies by Cresswell and Eklund (2006) and Cresswell (2009), conducted on professional rugby players. Based on average scores, part of the athletes studied by these authors reported burnout in the three sub-scales at a frequency described as high.

According to the literature, players who eventually inform scores of 3 and 4 or higher, probably already present symptoms and the negative consequences associated with burnout. (Cresswell, 2009; Cresswell and Eklund, 2006; Raedeke and Smith, 2001; Raedeke, 1997). For professional players and for other athletes, professional exhaustion syndrome, or burnout, is associated with more frequent injuries and depression. Furthermore, players with more experience and more victories report more stress and exhaustion (Cresswell and Eklund, 2005c; Kimberley et al., 2011).

Therefore, the interpretation of scores obtained through the *Athletes Burnout Questionnaire* (ABQ) is fundamental for intervention and the elaboration of prevention programs. The early identification of signs and symptoms of burnout can be an important indicator that athletes are at risk of experiencing this syndrome (Cresswell, 2009; Cresswell and Eklund, 2004).

In conclusion, during the pre-competition phase, most athletes presented reduced rates indicating burnout. The incidence, and consequently the vulnerability, to burnout were identified in a portion of the athletes during the pre-competition phase. It is opportune to point out that the professional players informed maximum average scores related to burnout in the three dimensions, according to literature classified as high. The impact represented by the players with higher scores for burnout and the importance of such in relation to the team should be investigated.

Future studies should seek to determine the negative consequences associated with high scores indicative of burnout, measured by the *Athletes Burnout Questionnaire* (ABQ) during the pre-competition and competition phases.

BURNOUT Y PRE-COMPETICIÓN: UN ESTUDIO DE SU INCIDENCIA EN LOS JUGADORES DE FÚTBOL BRASILEÑOS

PALABRAS CLAVE: *Burnout*, Fútbol, Profesionales, Aficionados.

RESUMEN: El objetivo del estudio actual fue identificar e interpretar la incidencia de la manifestación de los síntomas asociados al síndrome de burnout, durante la fase pre-competitiva. Participaron 134 jugadores de fútbol del sexo masculino, siendo 71 profesionales (edad = 22.77 ± 3.98 años) y 63 aficionados (edad = 17.18 ± 0.84 años) de tres equipos participantes del Campeonato Paulista de las Series A-1 y A-2 (categoría profesional) y Copa Sao Paulo de Fútbol Junior (categoría aficionados), organizado por la Federación Paulista de Fútbol del Estado de Sao Paulo, Brasil. Para evaluar el Síndrome de *Burnout* fue utilizado el Cuestionario de *Burnout* para Atletas (CBA), una versión del *Athlete Burnout Questionnaire* (ABQ); instrumento original desarrollado especialmente para evaluar el *Burnout* en atletas. En una pequeña parte de los jugadores entrevistados, fueron observados valores asociados a una mayor vulnerabilidad y, consecuentemente, mayor riesgo de desarrollar el síndrome. Se debe investigar el impacto representado por los jugadores con puntajes más elevados para el *burnout* y su importancia en relación al equipo.

BURNOUT E PRÉ-COMPETIÇÃO: UM ESTUDO SOBRE A SUA INCIDÊNCIA EM JOGADORES DE FUTEBOL BRASILEIROS

PALAVRAS-CHAVE: *Burnout*, Futebol, Profissionais, Amadores.

RESUMO: O objetivo do atual estudo foi identificar e interpretar, a incidência da manifestação dos sintomas associados à síndrome de *burnout*, durante a fase pré-competitiva. Participaram 134 jogadores de futebol do sexo masculino, 71 profissionais (idade = 22.77 ± 3.98 anos) e 63 amadores (idade = 17.18 ± 0.84 anos) de três equipes participantes do Campeonato Paulista das Séries A-1 e A-2 (categoria profissional) e Copa São Paulo de Futebol Júnior (categoria amador), organizado pela Federação Paulista de Futebol, Estado de São Paulo, Brasil. Para avaliar a Síndrome de *Burnout* foi utilizado o Questionário de Burnout para Atletas (QBA), uma versão do *Athlete Burnout Questionnaire* (ABQ), instrumento original desenvolvido especialmente para avaliar *Burnout* em atletas. Para uma pequena parcela dos jogadores entrevistados, observou-se valores associados a maior vulnerabilidade e, consecuentemente, maior risco de evoluir para a síndrome. Deve-se investigar o impacto representado pelos jogadores com escores mais elevados para *burnout* e a sua importância em relação a sua equipe.

References

- Arce, C., Francisco, C., Andrade, E., Arce, I. and Raedeke, T. (2010). Adaptación española del Athlete Burnout Questionnaire (ABQ) para la medida del burnout em futbolistas. *Psicothema*, 22(2), 250-255.
- Cresswell, S. L. and Eklund, R. C. (2004). The athlete burnout syndrome: possible early signs. *Journal of Science and Medicine in Sport*, 7, 481-487.
- Cresswell, S. L. and Eklund, R. C. (2005a). Changes in athlete burnout and motivation over a 12-Week League Tournament. *Medicine and Science in Sports and Exercise*, 37, 1957-1966.
- Cresswell, S. L. and Eklund, R. C. (2005b). Motivation and burnout among top amateur rugby players. *Medicine and Science in Sports and Exercise*, 37, 469-477.
- Cresswell, S. L. and Eklund, R. C. (2005c). Motivation and Burnout in Professional Rugby Players. *Research Quarterly for Exercise and Sport*. 76, 370-376.
- Cresswell, S. L. and Eklund, R. C. (2006). Changes in athlete burnout over a thirty-week "rugby year". *Journal of Science and Medicine in Sport*, 9, 125-134.
- Cresswell, S. L. (2009). Possible early signs of athlete burnout: A prospective study. *Journal of Science and Medicine in Sport*. 12, 393-398.

- Eklund, R. C. and Cresswell, S. L. (2007). Athlete Burnout. In G. Tenenbaum and R. C. Eklund (Eds.). *Handbook of Sport Psychology* (pp. 621-639). Hoboken: John Wiley.
- Gustafsson, H., Hassmén, P., Kentta, G. and Johansson, M. (2008). A qualitative analysis of burnout in elite Swedish athletes. *Psychology of Sport and Exercise, 9*, 800-816.
- Hill, A. P. and Appleton, P. R. (2011). The predictive ability of the frequency of perfectionistic cognitions, self-oriented perfectionism, and socially prescribed perfectionism in relation to symptoms of burnout in youth rugby players. *Journal of Sports Sciences, 29*(7), 695-703.
- Kimberley, J., Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Jos, A., Bosch, J. A. and Thøgersen-Ntoumani, C. (2011). Self-Determination Theory and Diminished Functioning: The Role of Interpersonal Control and Psychological Need Thwarting. *Personality & Social Psychology Bulletin, 37*, 1459-1473.
- Lemyre, P. N., Hall, H. K. and Roberts, G. C. (2008). A social cognitive approach to burnout in elite athletes. *Scandinavian Journal of Medicine & Science in Sports, 18*, 221-234.
- Lemyre, P. N., Roberts, G. C. and 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.
- Lonsdale, C., Hodge, K. and Rose, E. (2009). Athlete burnout in elite sport: A self-determination perspective. *Journal of Sports Sciences, 27*, 785-795.
- Maslach, C. and Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour, 2*, 99-113.
- Maslach, C., Schaufeli, W. B. and Leiter, M. P. (2001). Job Burnout. *Annual Review of Psychology, 52*, 397-422.
- Orlick, T. (2008). *In pursuit of excellence*, 4th ed. Champaign, IL: Human Kinetics.
- Pires, D. A., Brandão, M. R. F. and Silva, C. B. (2006). Validação do questionário de burnout para atletas. *Revista da Educação Física/UEM, 17*, 27-36.
- Raedeke, T. D. and Smith, A. L. (2001). Development and preliminary validation of an athlete burnout measure. *Journal of Sport & Exercise Psychology, 23*(4), 281-306.
- Raedeke, T. D. (1997). Is athlete burnout more than just stress? A sport commitment perspective. *Journal of Sport & Exercise Psychology, 19*, 396-417.
- Yildiz, S. M. (2011). Relationship between leader-member exchange and burnout in professional footballers. *Journal of Sports Sciences, 29*(14), 1493-1502.
- Zar, J. H. (1999). *Biostatistical analysis*, 4th Ed. New Jersey, NJ: Prentice Hall.