



ORIGINAL ARTICLE

Antecedents and consequences of burnout in athletes: Perceived stress and depression



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KEYWORDS

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Abstract *Background/Objective:* The aim of this study was to investigate the relationship among perceived stress, burnout and depression in a sample of athletes. It was hypothesized that stress is an antecedent of burnout and depression a possible consequence of both stress and burnout. *Method:* A sample of 453 athletes participated in the study. Stress and depression were measured with Depression Anxiety Stress Scales (DASS) and athlete burnout with Athlete Burnout Questionnaire (ABQ). Data analysis was conducted under the approach of structural equation modelling (SEM). *Results:* The direct effects of stress on burnout and depression were .66 and .24, respectively, and the direct effect of burnout on depression .53, all of them significant ($p < .001$). Stress accounted for 43% of the variance of burnout, and jointly stress and burnout for 50% of the variance of depression. Indexes of overall model fit were: $\chi^2(224) = 520.881$ ($p < .001$), $\chi^2/df = 2.32$, Goodness of fit index (GFI) = .91, Comparative fit index (CFI) = .89, Root mean square error of approximation (RMSEA) = .054 (90% confidence interval, .048-.060), and Standardized Root Mean Square Residual (SRMR) = .063. *Conclusions:* This study provides evidence of the relationship among stress, burnout and depression in an only model. © 2016 Asociación Española de Psicología Conductual. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

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PALABRAS CLAVE

Burnout;
depresión;
estrés;
deportistas;
estudio descriptivo
de encuesta

Antecedentes y consecuencias del burnout en deportistas: estrés percibido y depresión

Resumen *Antecedentes/Objetivo:* El objetivo fue investigar la relación entre estrés percibido, burnout y depresión en deportistas. Se presenta el estrés como antecedente del burnout y la depresión como consecuencia de ambos. *Método:* Participaron en el estudio 453 deportistas. Estrés y depresión fueron medidos con *Depression Anxiety Stress Scales* (DASS) y burnout en deportistas con *Athlete Burnout Questionnaire* (ABQ). Los datos fueron analizados desde la perspectiva de modelos de ecuaciones estructurales (SEM). *Resultados:* El efecto directo del estrés sobre el burnout y la depresión fue de 0,66 y 0,24, respectivamente y el del burnout sobre la depresión de 0,53; todos ellos significativos ($p < 0,001$). El estrés explica el 43% de la varianza del burnout y el estrés conjuntamente con el burnout, el 50% de la varianza de la depresión. Los índices de ajuste del modelo fueron: $\chi^2(224) = 520,881$ ($p < 0,001$), $\chi^2/df = 2,32$, el índice de bondad de ajuste (GFI) = 0,91, el índice de bondad de ajuste comparativo (CFI) = 0,89, la raíz del residuo cuadrático promedio de aproximación (RMSEA) = 0,054 (90% intervalo de confianza, 0,048-0,060) y raíz cuadrada de la media cuadrática del residual estandarizado (SRMR) = 0,063. *Conclusiones:* Este estudio permite conocer la relación existente entre estrés, burnout y depresión en un único modelo.

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Considerable effort in sport and exercise psychology has been devoted to identifying personal and situational factors that contribute to athlete burnout (Madigan, Stoeber, & Passfield, 2015). Burnout was defined for the first time in the early 1970s by Freudenberger (1974) as a behavioral pattern suffered by volunteers of the Free Clinic of New York for drugs addicts. This pattern included progressive loss of energy, demotivation, lack of all interest in work until arriving at exhaustion. Forty five years later the syndrome has become a popular topic among athletes and coaches. Consequently, sport area should keep assessing burnout in separate than workplace because there are many variables that are not the same (Vargas, Cañadas, Aguayo, Fernández, & De la Fuente, 2014). After numerous definitions of the syndrome in the sport context, currently Raedeke's definition is the most accepted in this context (Goodger, Gorely, Lavallee, & Harwood, 2007). Raedeke (1997) established burnout as a psychological syndrome composed by three dimensions: (a) physical/emotional exhaustion, (b) reduced sense of accomplishment and (c) sport devaluation. Raedeke's definition derives from Maslach and Jackson (1981) description of this syndrome in human services where burnout is characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment. Raedeke (1997) modified Maslach and Jackson (1981) definition in order to adjust to particularities of sport. He added physical exhaustion to emotional exhaustion because of physical load in sport, he redefined reduced personal accomplishment in terms of sport performance and ability instead of relationship, and he stood out devaluation over depersonalization because devaluation represents negative attitudes toward sport, the most important in this particular domain: sport and not clients such as labor context.

Based on the definition proposed, Raedeke and Smith (2001, 2009) proposed the Athlete Burnout Questionnaire (ABQ), for measuring these three dimensions.

Regarding explanatory models of burnout, one of the first theoretical models about the origin of athlete burnout has been the cognitive-affective stress model proposed by Smith (1986). Smith, Gustafsson and Hassmén (2010) display it as the most influential theory on burnout. Also it has been showed empirically shone to be the best explicative model in comparison with other classic models like Coakley's social model and Silva's model (Gould, Tuffey, Udry, & Loerh, 1996). Smith (1986) defined the syndrome like a response before chronic stress. Specifically, Smith conceptualized burnout as a process with four components. The first component involves the imbalance between demands and resources. When the sport demands exceed athlete's resources, the situation may be perceived as stressful. This is the second component of the process which is cognitive appraisal of the situation. This component is influenced by a variety of personality and motivational factors. The third component is physiological responses that can reaffirm the appraisal of stress. The fourth component is behavioural responses, task behaviours and coping responses, including decreased performance, interpersonal difficulties and also withdrawal of sport domain. Applying this model to burnout, the situation would be characterized by high demands or in conflict with resources, low social support, low autonomy, scarce reward or low demands that take to the boredom. All these factors cause an imbalance between demands and resources. If this imbalance is maintained for long period of time it leads to a valuation of perceived overload and learned defencelessness. This model is reminiscent of transactional model of stress proposed by Lazarus and Folkman

(1984) just like Márquez (2006) indicates because when an event is categorized as stressful, its cognitive assessment could classify it as a producer of damage, threat or challenge. After almost thirty years, this model is supported by numerous investigations. Stress is an important construct researched by literature from many decades ago because of its influence on mental health (Schonfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016). Even some researchers have found that stress has remarkably similar symptom manifestations reported by individuals with syndrome of chronic fatigue syndrome (Loew, Marsh, & Watson, 2014). In another hand, it has been suggested that stress itself has suffered from a lack of clarity in relation to whether it is a stimulus, response or indeed an interaction between both concepts (Olusoga et al., 2009, cited in Wilding, 2014).

About this relation between stress and burnout, all studies show stress to be a predictor of burnout (Cohn, 1990; Kallus & Kellman, 2000; Kelley & Gill, 1993; Malinauskas, Malinauskiene, & Dumciene, 2010; Martin, Kelley, & Eklund, 1999; Molinero, Salguero, & Márquez, 2012; Raedeke & Smith, 2004; Silva, 1990) or a predictor of its dimensions (Kania, Meyer, & Ebersole, 2009; Kelley, 1994; McLaine, 2005; Smith et al., 2010), being organizational stress experiences of competitive athletes a popular area of research for sport psychologists over the past decade (Didymus & Fletcher, 2014). Although Ursin and Eriksen (2004) define stress neutrally (stress by itself is not good or bad), when stress has been analysed jointly with burnout, it has been considered harmful (Moen, Federici & Abrahamsen, 2015). Malinauskas et al. (2010) determined the association between perceived stress and burnout with an odd ratio of 1.92 in logistic regression. So, 44.3% of university coaches from the sample with high levels of perceived stress experienced burnout. Kelley et al. (Kelley, 1994; Kelley & Gill, 1993) studied if perceived stress predicted the three burnout dimensions among coaches. The results indicate a significant relationship, where higher perceived stress (with more coaching issues and greater coaching problems) predicted higher levels in the three dimensions. With path analysis, perceived stress explained 50% and 43% of the variance in emotional exhaustion for males and females, respectively; 24% and 14% in depersonalization (equivalent dimension to sport devaluation in athletes) and 23% and 10% in personal accomplishment (Kelley, 1994). Using multiple regression, Kania et al. (2009) found stress levels in athletic trainers presented b values of .62 for emotional exhaustion, .41 for depersonalization, and -.29 for personal accomplishment. This research supports that a stress perspective on the burnout syndrome is viable and necessary for sport psychology, as Moen et al. (2015) has done.

The development of burnout may result in many symptoms at the physiologic (headaches, insomnia, fatigue, poor appetite, illness susceptibility), psychological (increased negative self-talk, depression, difficulty in interpersonal relationships), and/or behavioral (decreased performance, withdrawal from activity, attrition, rigid behavior) levels (Dubuc-Charbonneau & Durand-Bush, 2015; Kania et al., 2009; Smith, 1986). So consequences of burnout can affect all levels of person (De la Fuente et al., 2015).

Some studies have pointed out depression as a psychological consequence of burnout (Smith; 1986; Vealey, Udry, Zimmerman, & Soliday, 1992), and some investigators have even shown depression to be a major outcome of burnout (Kania et al., 2009), like in other scopes outside the sport (Bullard & Hosoda, 2015). Even Rössler (2014) affirmed that burnout can be a mediator for a clinically to be diagnosed depression or similar disorders. This matter is important to assess because exercise for its own has been associated with changes in depression (Annesi, 2010). This author in his sample interpreted that even the low volume of exercise completed was associated with improvements in mood. Nonetheless, this study tries to assess if those athletes with burnout could present also depression.

Markser (2011) affirms that depression is one of the most common mental disorders in the field of sport and there is evidence to suggest that depression can be seen as a mental answer to physical stress. Gerber et al. (2013) affirmed that burnout is considered an antecedent of depressive disorders. However, Hakanen, Schaufeli, and Ahola (2008) assert that the causal relationship between burnout and depression is not clear. There is a conceptual overlap between burnout and depression because of shared symptomatology (Bianchi, Schonfeld, & Laurent, 2015; Leiter & Durup, 1994; Taris, 2006). Cresswell and Eklund (2006) with multi-trait/multi-method approach assessed discriminant validity between the burnout and depression scales. Correlations between subscales of burnout and depression were all low to moderate, with values between $|.32|$ and $|.57|$. These results support that burnout and depression are similar but separate constructs. Furthermore, Hakanen et al. (2008) has established that burnout has a positive cross-lagged effect on depression three years later ($b = .16, p < .001$).

In summary, studies about the origin of burnout in sport have allowed the establishment of burnout as the consequence of a process of chronic stress. Empirically it has also been possible to establish positive relations between depression and burnout. Still, there is no literature where these constructs have been analysed together to establish clear relationships between them. Moreover, there is no evidence about the form and the degree of the relationship between these variables. In this study, we hypothesize: 1) stress has a positive direct effect on burnout in sport context, 2) burnout has a positive direct effect on depression in sport context too, and 3) stress has two kinds of effects on depression, one direct and the other indirect via burnout (Figure 1 reflects the structure of the relationship among three psychological constructs).

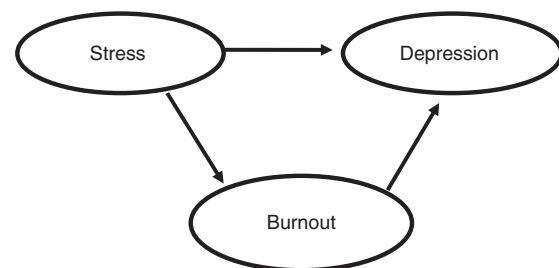


Figure 1 Hypothetical model.

Method

Participants

Four hundred and fifty three Spanish athletes participated in the study. It was held an incidental sampling with the following inclusion criteria: athletes with a minimum age of 13 years old, who were competing and training a minimum of 9 months per season. They were practicing some of the following sport modalities of the time of research: track and field (3.3%), basketball (9.4%), cycling (1.8), fencing (1.3%), soccer (22.1%), indoor soccer (19.4%), hockey (2.2%), judo (1.5%), karate (0.2%), swimming (6.6%), canoeing (2.6), rowing (23.4%), taekwondo (5.5%), and kick boxing (0.7%). Of them 68.7% were male and 31.3% female ranging from 13 to 29 years of age ($M=18.94$, $SD=3.85$). The number of practices per week ranged between 1 and 10 ($M=4.56$, $SD=1.80$), with a duration of 60 to 240 minutes for each session ($M=113.08$, $SD=30.37$). The mean length of athlete's competitive career was 7.23 years ($SD=4.34$). Different competitive levels were represented in the sample: 19.6% of athletes competed at local level, 35.1% at regional level, and finally 45.3% at national level.

Instruments

- Athlete Burnout Questionnaire (ABQ). To measure the degree of burnout experienced by athletes we have used the ABQ (Raedeke & Smith, 2001, 2009), which contains 3 subscales and a total of 15 items, 5 of them to measure emotional and physical exhaustion (associated with demands of training and competition; e.g. "I feel overly tired from my sport participation"), 5 for devaluation (devaluation and detachment from what is important in sport domain: sport practice; e.g. "The effort I spend in sport would be better spent doing other things"), and 5 for reduced sense of accomplishment (in terms of sport abilities and achievement; e.g. "I am not achieving much in sport"). Athletes responded to the items on a 5-points Likert scale with anchors of (1) "almost never", (2) "rarely", (3) "sometimes", (4) "frequently", and (5) "most of the time". In this study we have used a reduced form of nine items (3 per subscale) of the Spanish version of ABQ (Arce, De Francisco, Andrade, Seoane, & Raedeke, 2012; De Francisco, 2015) with Cronbach alpha coefficients of [.80-.81], .77 and [.64-.71] for emotional and physical exhaustion, devaluation and reduced sense of accomplishment, respectively. With the data of this study the estimated values for these coefficients were .76, .77, and .65 for emotional and physical exhaustion, devaluation and reduced sense of accomplishment, respectively.
- Depression Anxiety Stress Scales (DASS-21). To measure the severity of the states of depression and perceived stress in athletes we have used two subscales of the short Spanish version of DASS (named DASS-21; Bados, Solana, & Andrés, 2005), the depression subscale with 7 items (e.g. "I was unable to become enthusiastic about anything"), and the stress subscale with 7 items (e.g. "I was intolerant of anything that kept me from getting on with what I was doing"). A Likert four points response scale was used,

Table 1 Descriptive statistics for the items of Depression, Stress and ABQ subscales.

Items	Mean	Standard Deviation	Skewness	Kurtosis
Depression1	0.45	0.80	1.83	2.51
Depression2	0.57	0.74	1.20	0.92
Depression3	0.40	0.69	1.82	2.90
Depression4	0.74	0.79	0.95	0.50
Depression5	0.36	0.70	2.10	4.03
Depression6	0.23	0.57	2.76	7.93
Depression7	0.15	0.47	3.88	16.73
Stress1	0.72	0.84	1.08	0.55
Stress2	0.89	0.88	0.67	-0.38
Stress3	1.25	0.96	0.24	-0.92
Stress4	0.88	0.91	0.75	-0.35
Stress5	0.85	0.90	0.82	-0.17
Stress6	0.99	0.99	0.61	-0.73
Stress7	1.09	1.02	0.55	-0.83
E1	1.93	1.03	1.01	0.41
E2	2.03	1.03	0.90	0.35
E3	2.00	1.00	0.89	0.29
D1	1.83	1.19	1.32	0.63
D2	1.61	1.04	1.81	2.59
D3	1.91	1.17	1.17	0.35
R1	2.17	1.20	0.80	-0.27
R2	2.62	1.19	0.24	-0.84
R3	2.13	1.11	0.91	0.26

Note. E= Emotional and Physical Exhaustion, D= Devaluation, R= Reduced Sense of Accomplishment.

ranging from 0 ("did not apply to me at all" in the last seven days) to 3 ("applied to me very much or most of the time" in the last seven days). Regarding the stress subscale, subjects were instructed to make their judgments limited to the sport setting in order to obtain a sport specific measure of stress. For this study, subscales showed Cronbach alpha coefficients of .84 and .82 for depression and stress, respectively.

Procedure

All study procedures received ethics committee approval of Catholic University of Murcia. The data was collected in accordance with Spanish norms of privacy and data protection. The procedure began with establishing telephone contact with team managers and coaches of the clubs asking them for their collaboration to contact with athletes and request them for informed consent. Data was collected in the sports facilities of each club before training sessions. Athletes responded through a booklet containing the items and the instructions for ABQ and DASS-21 questionnaires and other matters relating to age of participants, sex, sport, club, number of practices per week, and duration of each practice. Data was collected by three psychologists who had been previously instructed by members of the research team for this and who have used a standardized protocol to ensure maximum equality in athletes receiving instructions.

Design

The design was ex post facto, where researchers only select values of the dependent variable and look for possible explanations. Following the classification proposed by [Montero and León \(2007\)](#) specifically, it is a simple retrospective design with one group.

Results

In the first place, exploratory data analysis was performed which allowed to researchers to verify that there were no answers out of range or missing values in any of the observed variables. Then the basic descriptive statistics were computed: mean, standard deviation, skewness and kurtosis. Finally, an structural equation modeling (SEM) approach was used to test the hypothesized model by using the IBM SPSS Amos 21 computer program.

Descriptive statistics

[Table 1](#) provides the descriptive statistics (mean, standard deviation, skewness and kurtosis) for each of the items of the subscales of DASS-21 and the ABQ. The means of the items of DASS-21, measured in a 0-3 scale, ranged from .15 for

item 7 of the depression subscale to 1.25 for item 3 of the stress subscale. The item that showed the greatest skewness and kurtosis is number 7 of the depression subscale with values of 3.88 and 16.73, respectively. With respect to ABQ, the means of the items, measured in a 1-5 scale, ranged from 1.61 for the item 2 of devaluation subscale to 2.62 for the item 2 of reduced sense of accomplishment. Item 2 of devaluation subscale presents the highest values of skewness and kurtosis with values of 1.81 and 2.59, respectively.

Structural equation modeling

We began specifying the covariance structure model of [Figure 2](#), which contains three measurement submodels and the structural relationships between them. Two measurement models (stress and depression) are single-factor with seven indicators each of them. Stress is an exogenous factor, while burnout and depression are endogenous and therefore contain a residual error. The measurement model for burnout contains three primary factors (emotional and physical exhaustion, devaluation and reduced sense of accomplishment, with three indicators each of them) that are grouped into a single second-order factor (burnout). Stress has a direct effect on depression and other indirect

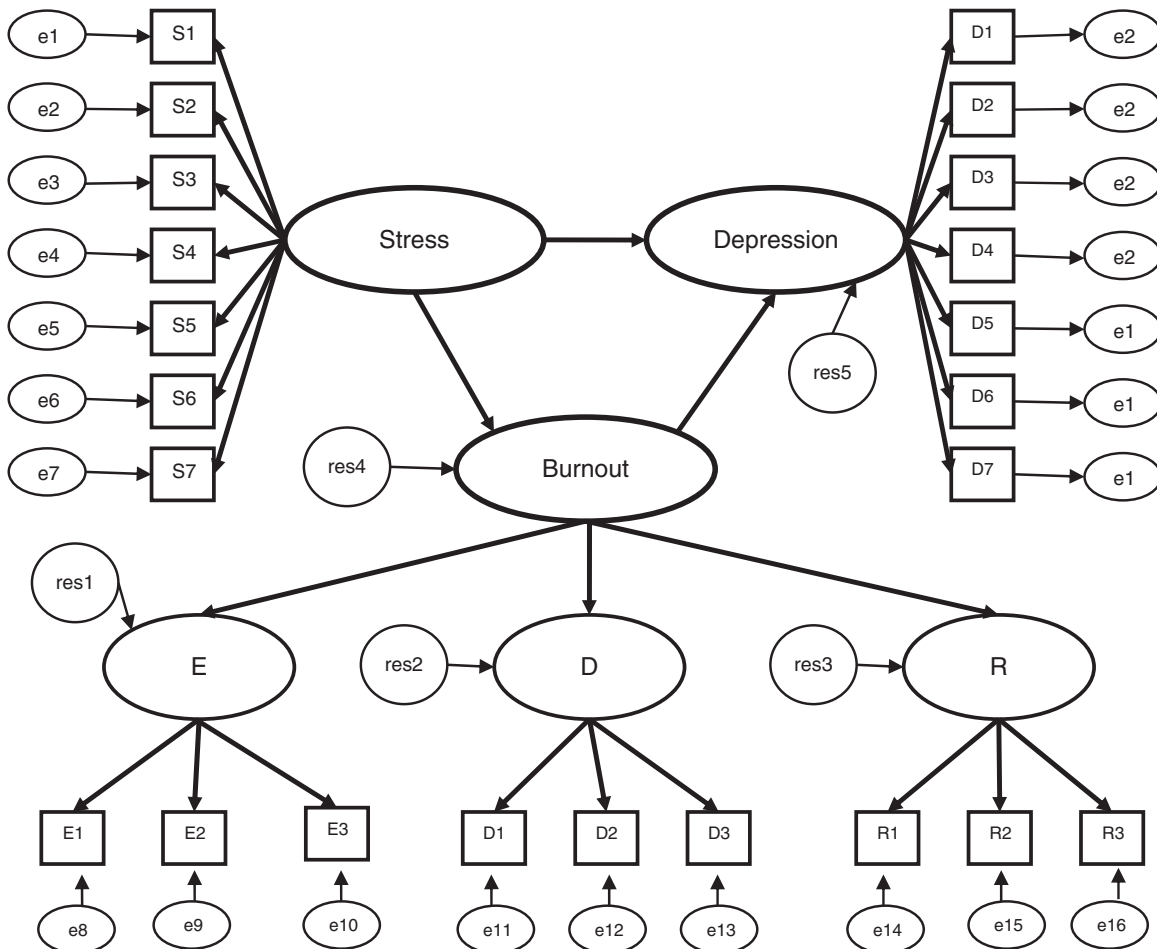


Figure 2 Hypothesized model with the structure relations between stress, burnout and depression.

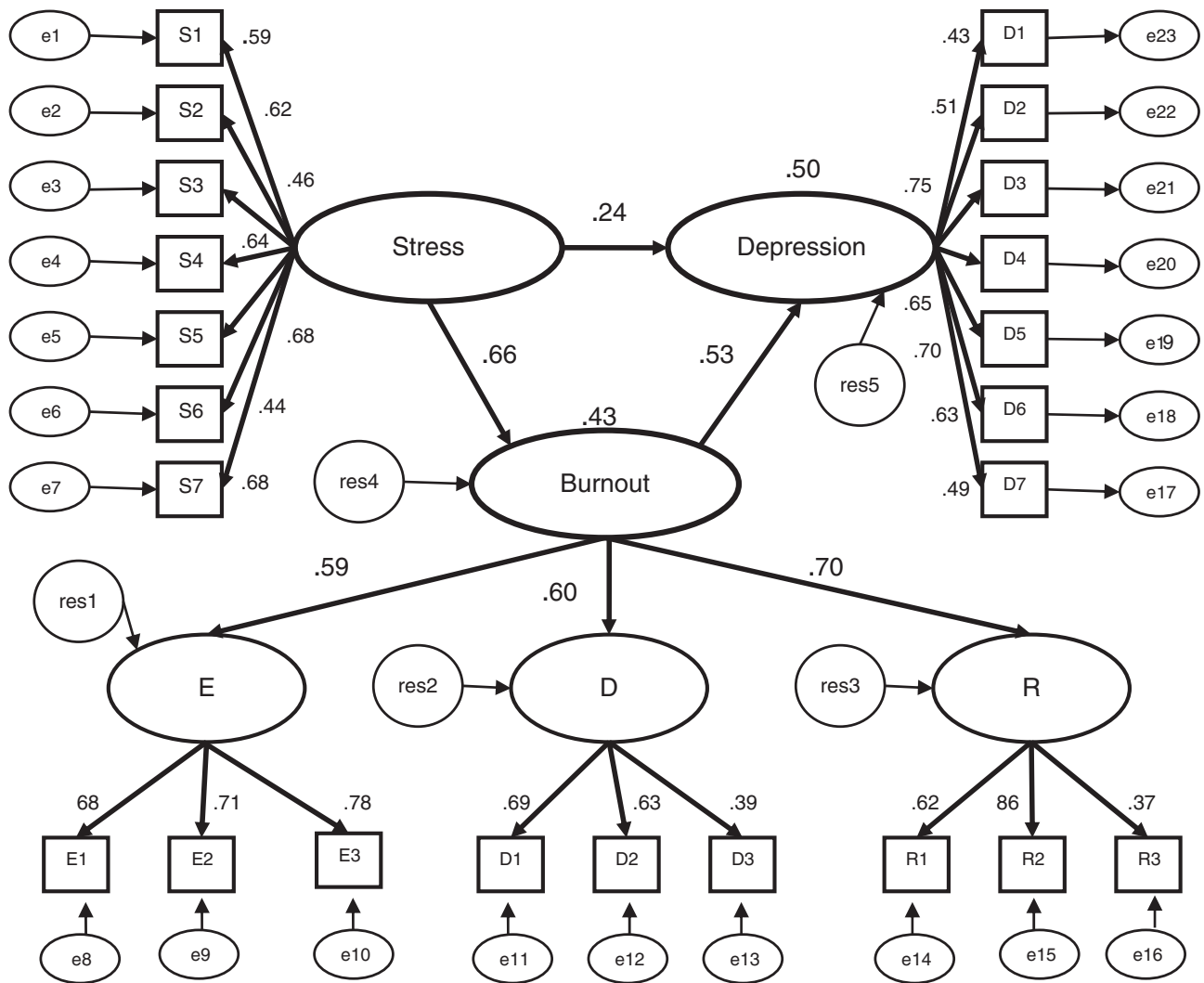


Figure 3 Parameters estimates of the final model relating stress, burnout, and depression.

effects via burnout, which partially mediate the relationship between stress and depression. All the observed variables (items of the questionnaires) contain an error term.

The specified model has 276 distinct sample moments, 52 parameters to be estimated and 224 degrees of freedom. A first estimate of the parameters by maximum likelihood (ML) was conducted. The results suggested using ML for parameter estimation and bootstrap to calculate their standard errors, since the coefficient of multivariate kurtosis was extremely high with a value of 159.18 ($Z=49.95, p<.001$). The overall fit for the model was as follow: $\chi^2(224) = 520.88$ ($p<.001$), $\chi^2/df = 2.32$, GFI = .91, CFI = .89, RMSEA = .054 (90% CI, .048- .060), and SMSR = .063.

The standardized residuals covariance ranged from -2.59 (for items 1 of emotional and physical exhaustion and 3 of reduced sense of accomplishment) to 5.48 for items 2 of emotional and physical exhaustion and 3 of stress.

All factor weights of the items in their respective factors were statistically significant ($p<.001$) as were all the error and residual terms, and the factor weights of the primary factors of ABQ on the general factor of burnout, with values of .59 ($p<.001$), .60 ($p<.001$), and .70 ($p<.001$) for

emotional and physical exhaustion, devaluation and reduced sense of accomplishment, respectively.

Also statistically significant were all the paths between factors and in the expected direction under hypothesis. According to hypothesis 1, stress has a positive direct effect on burnout of .66 ($p<.001$), according to hypothesis 2 burnout has a positive direct effect on depression of .53 ($p<.001$), and according to hypothesis 3 stress has two effects on depression, one direct of .24 ($p<.001$) and other indirect via burnout of .349 ($p<.001$). The model, with the specified structural relations, accounts for 43% of the total variance of burnout ($R^2 = .43, p<.001$), and for 50% of the total variance of depression ($R^2 = .50, p<.001$). Figure 3 provides all model estimates.

Discussion and conclusions

The present study was planned in order to elaborate on a model that establishes relations among perceived stress, burnout and depression. These three constructs have high interest in the context of sports and their relationship has

been partially studied, only being tested by bivariate relations.

The first conclusion is in agreement with the results of other many studies: perceived stress is a trustworthy predictor of burnout. With higher perceived stress, there is a greater likelihood of suffering burnout (Cohn, 1990; Kallus & Kellman, 2000; Kania et al., 2009; Kelley, 1994; Kelley & Gill, 1993; Malinauskas et al., 2010; McLaine, 2005; Martin et al., 1999; Moen et al., 2015; Raedeke & Smith, 2004; Silva, 1990; Smith et al., 2010). Several studies show burnout as a possible consequence of a prolonged stress period and its intensity could depend on physical and/or psychological load (Moen et al., 2015). In the same way, any factor that influences stress reduction could potentially prevent burnout in athletes (Gustafsson, Skoog, Davis, Kenttä, & Haberl, 2015).

Concerning the relationship between burnout and depression there is more uncertainty. Some sources indicate that depression can be a psychological (Kania et al., 2009; Smith, 1986; Vealey et al., 1992) or physiological (Dubuc-Charbonneau & Durand-Bush, 2015) consequence of burnout, but other authors argue this causal relation is not so clear (Hakanen et al., 2008). A possible conceptual overlap between burnout and depression could be the reason because they share some symptoms (Leiter & Durup, 1994; Taris, 2006). The present study exhibits favorable evidence about burnout as a positive predictor of depression. Other studies support proof in the same line. Cresswell and Eklund (2006) found moderate relations between burnout and depression; Grobelaar, Malan, Steyn, and Ellis (2011) pointed out a clear relationship between different subscales of burnout and mood state (mood state included depressive mood); and Hakanen et al. (2008) note a small longitudinal effect, statistically significant, between burnout and depression.

Finally, this study shows how perceived stress can be predictor of depression, as well as direct effect as indirect effect through burnout. Recent studies have indicated that depression frequently co-occurs with posttraumatic stress disorder (Rogers, Mallinson, & Peppers, 2014) or increases the risk of suffering both (Markser, 2011), but the relationship of depression with stress load in the daily life of athletes with burnout should be researched further. There is not enough research about stress, depression and burnout all together. For example, Gerber, Brand, Elliot, Holsboer-Trachsler, and Pühse (2014) affirmed that aerobic exercise training has positive effects on perceived stress and symptoms of burnout and depressive symptoms. For this reason, this study supports evidence about three variables that could be interesting to consider together on any intervention with athletes. Moen et al. (2015) proposed that while burnout research has had a greater focus on psychosocial factors, stress has been associated with maladaptation and under-performance. They state that it is necessary to conduct more investigations about the relationship between both variables in the future with different contexts and situations in order to establish stronger conclusions.

Lastly, the present study has a limitation which must be insinuated. The design was cross-sectional, all measures were conducted at the same time. To conclude causal relationships, a longitudinal study must be designed (DeFreese & Smith, 2014; Gustafsson et al., 2015) where it is measured first perceived stress, then burnout and finally, depression.

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