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Research Article

Psychometric Properties of a Greek Version of Athlete Burnout Questionnaire

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Abstract

The present study aims to investigate the psychometric properties of a Greek version of the Athlete Burnout Questionnaire [1] from a sample of 405 Greek athletes of varied sports. The original scale was developed to assess sport-specific burnout and includes three subscales consisting of fifteen items: (a) emotional/physical exhaustion (b) reduced sense of accomplishment and (c) sport devaluation. Initially, exploratory factor analysis had the GR-ABQ consisted of three factors consisting of 13 items that matched the hypothesized factor structure. Subsequently, confirmatory factor analysis results indicated a 1st order three factor model provided a very good fit to the data compared to alternative models. Also, moderate correlations between the ABQ subscales and anxiety, motivation, mood state, and self-confidence provided concurrent validity evidence. These findings provide evidence of the validity and reliability of GR-ABQ and an initial understanding of burnout in Greek athlete population.

Introduction

Burnout is considered a multidimensional syndrome consisting of extensive fatigue and frustration, and is believed to be the cause of multiple negative feelings and consequences defined burnout as an emotional, psychological, and at times physical withdrawal from a previously enjoyable activity [2]. Although his definition was frequently cited within sports, it proved to be controversial because it: (a) focuses on withdrawal from sports as the single result of a burnout process, (b) undermines complexity of burnout syndrome, and (c) disregards athletes who drop out from sports for other reasons than burnout feelings. As a result, advanced the research on athlete burnout, supporting that burned out athletes tend to work under high pressure with decreased benefits, lead themselves to extreme fatigue, and become entrapped within their sport or withdraw from it [3].

The most influential work on burnout research was carried out by Maslach and Jackson (1981-1990), who defined burnout as a debilitating psychological condition which can occur among individuals who work with other people in some capacity. Furthermore, they developed an instrument to assess burnout [4], consisting of 22 items and defining three unique dimensions (exhaustion, reduced accomplishment and depersonalization). In line with Maslach's rationale on occupational burnout [3] recognized that athlete burnout is a syndrome characterized by three dimensions: physical / emotional exhaustion (feelings of loss of energy and intense training), reduced sense of accomplishment (inability of achieving personal and professional goals and skills) and sport devaluation (loss of interest in sport, a desire to withdraw and an attitude of detachment) [3] supported that depersonalization, the third burnout element on Maslach's definition, could not represent athletes' negative feelings towards their sport. Thus, he replaced "depersonalization" with "sport devaluation" - a more sport specific manifestation of cynicism or disengagement towards sports.

During the last decades, researchers developed several instruments to assess negative feelings of athletes who suffer or risk suffering from burnout. These instruments mainly originated

from two different methodological approaches. On one side, researchers adapted professional burnout instruments on the athlete population (e.g. [5]) while, on the other side, researchers developed sport-specific burnout instruments [1]. Overall, Athlete Burnout Questionnaire has been proven to be the most popular instrument to assess burnout syndrome in active or non active athletes [6].

Specifically [1] based on [3] definition on athlete burnout, proposed an instrument measuring three burnout subscales: emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation. The Athlete Burnout Questionnaire contains 15 items (5 items on each dimension) rated from 1 (strongly disagree) to 5 (strongly agree). The content, factorial, and construct validity and reliability, were initially established through three different studies.

A variety of recent studies have supported the three-factor structure of ABQ and have demonstrated adequate cross-cultural acceptance [7-10,5,11-13]. All of the studies revealed acceptable factor structure and reliability, similarly to the original work. Moreover, factorial and structural validity revealed that the 1st order 3-factor model had the best fit to their data [12,1]. However, Isoard and colleagues [9] also confirmed a 2ndorder burnout latent variable as the most conceptually adequate model, assuming that the three burnout dimensions are proposed to be part of a common cause. Moreover, supporting evidence from previous research has considered burnout as a two multi-dimensional construct consisting of an affective component and an attitudinal component [14].

Previous research has related burnout to a variety of constructs across different sport and cultural disciplines [15]. Athletes, who suffer from chronic experiential state of burnout, have considered a variety of maladaptive factors (e.g. amotivation, chronic fatigue) as elements of a burnout process. Among others, burnout concept is related to: (a) anxiety and negative stress; athletes who experience anxiety or stress sources (physiological, psychological and social) might lead themselves to training maladaptation and burnout [15], (b) motivational variables; athletes who experience chronic frustration of basic psychological needs, lead themselves to external motivation and lack of motives and end up burned out [15] (c) psycho-social factors; products of the social organization of sport and coaches' behaviors, such as uni-dimensional identity, lack of personal control / decision making and lack of social support, might force athletes to abandon sports at the top of their career [1], (d) mood changes; mood disturbance is a strong symptom and potential consequence of burnout in athletes [15,16]. (e) low self-confidence; lack of recognition and rewards leads to a reduction in self-confidence (one's belief that he or she can successfully execute a desired behavior) and sometimes to low perceived professional ability and reduced sense of accomplishment [9].

Purpose of study

The assessment and recognition of burnout syndrome is crucial and the development of a sport-specific measurement [1] has advocated contemporary research on examining burnout syndrome in athletes. The present study purposed on adapting the Athlete Burnout Questionnaire to the Greek athletic population. It was hypothesized that the psychometric indices of the questionnaire will be acceptable (Study I) and the "three-factor" model will represent the data more adequately, comparing to competing models (Study II). It was also hypothesized that burnout will be significantly related with various other psychological concepts, such as anxiety, amotivation, mood disturbance, and self-confidence (Study II).

Study I - Initial construct validity

Methodology

Participants and procedure

Initially, the translation of the initial version of Athlete Burnout Questionnaire to Greek language and the examination of its content validity and readability were satisfactory. Following, to test the factor structure and reliability of the GR-ABQ, 142 active athletes volunteered to participate in study I. The sample consisted of 75 males and 57 females who ranged in age from 16 to 28 years (M = 19.07, SD = 3.87). Fifty six of the participants competed in individual sports (e.g. track and field, swimming, gymnastics, tennis) and seventy-six were from team sports (e.g. basketball, volleyball, handball, football, water polo). The sample consisted of athletes who competed at the National (n =110) to the International (n =32) level. As part of the informed consent process, athletes were informed of the purpose of the study, the confidential nature of the data, and the voluntary nature of their participation and they were asked to sign an informed consent form.

Measures

Following, they completed a package of two questionnaires before their training session.

Athlete Burnout Questionnaire

The ABQ consists of three subscales: emotional and physical exhaustion (e.g., "I feel overly tired from my [sport] participation"), reduced sense of accomplishment (e.g., "I am not achieving much in [sport]"), and sport devaluation (e.g., "I'm not into [sport] like I used to be"). The initial GR-ABQ version consisted of 18 items with six items per subscale. Fifteen items came from the original scale [1] and 3trial items1 were added, in case any core items performed poorly in accord with previous measurement research on the ABQ [12,1,17]. The items were rated on a 5-point Likert scale ranging from Almost never (1) to Almost always (5). All items were formulated in the same direction with high responses

indicating higher burnout, except for items 1, 14, and 18.

Social Desirability Scale

The Social Desirability Scale [18] examined the athletes' possible tendency to give socially desirable responses. The SDS scale includes 13 questions with a total score rated from 0 to 13 and a cut off value of nine was set to eliminate participants for social desirable bias.

Data Analysis

In order to examine whether the translated items assessed burnout in accordance with the proposed operational definition of burnout, an exploratory factor analysis was conducted (EFA) using the Statistical Package for Social Sciences (SPSS 21). Principal axis factoring with oblique rotation was conducted to determine the number of factors based on Eigenvalues that exceeded 1 and examination of percentage of variance explained. A primary factor loading criterion of .35 on the particular factor was employed and a cut off value of .30 was set for an item's communality. Also, reliability was examined with Cronbach alpha coefficient.

Results

Preliminary analyses

Ten participants were initially excluded from the analyses because they exceeded the cut-off criterion of nine in the SDS scale ending to 134 athletes finally included in present study. Results from testing the homogeneity of covariance (Box's M; F = .85, df= 6, p > .05) and the normality of the data (skewness ranged from 0.14 to 1.36 and kurtosis ranged from 0.020 to 2.19) showed that item 15 ("I have negative feelings toward [sport]") had to be excluded from further examination (7.6 for kurtosis and 2.53 for skewness). Barlett's test of sphericity (812.96, df 153, p<.000) and Kaiser Meyer Olkin (KMO) measure of sampling adequacy (81) further ensured that the sample data met the factor analysis criteria. Barlett's test of sphericity specifies that the variables are not related, thus, unsuitable for structure revealing. Small values of the significance level indicate that a factor analysis may be useful with the data. The KMO indicates the amount of variance in the variables that might be caused by underlying factors. High values normally indicate that a factor analysis may be useful with the data.

Exploratory Factor Analysis

The EFA revealed a three factor structure model with eigenvalues of 5.88, 2.02, and 1.51 which accounted for 44.01% of the total variance (the three factors accounted for 29.92%, 8.24% and 5.85% of the total explained variance, respectively). The communalities of the items ranged from .04 to .69. As shown in (Table 1), four items were excluded because of low factor loadings and cross-loadings, naming 3, 13, (core items) and 16, 17 (trial items). As a result, an additional EFA was conducted to reanalyze the thirteen remaining items (Table 2). The results indicated that the Barlett's test of sphericity was significant (586.04, df78, p<.000), and the Kaiser Meyer Olkin measure of sampling adequacy was high (.81). The final version of ABQ consisted of 13 items: with 5 items each assessing physical / emotional exhaustion (EE) and reduced sense of accomplishment (RA) and 3 items measuring sport devaluation (DE). Results of EFA indicated that two core items DE3, RA13should be removed". Specifically, item 3 ("The effort I spend in [sport] would be better spent doing other things") loaded less than .30 on devaluation factor, while, item 13 ("It seems that no matter what I do, I don't perform as well as I should") loaded higher on EE than RA.This item was replaced by one trial item 18 ("I feel I have done well in [sport]").

ABQ Item	Factor loadings			Communalities (h²)
	I	II	III	
EE4	**.865**	-.066	-.116	.647
EE12	**.694**	.104	.056	.582
EE10	**.683**	.028	.054	.514
EE2	**.653**	.036	.065	.483
EE8	**.648**	.158	.213	.690
EE16	.562	-.058	.329	.541
RA13	.344	.256	.199	.365
DE17	.217	.021	-.070	.043
RA18	-.088	**.759**	-.053	.525
RA14	.037	**.726**	-.078	.531
RA5	.161	**.563**	.099	.455
RA 7	-.045	**.544**	.191	.350
RA 1	.051	**.405**	-.071	.293
DE6	-.157	.119	**.808**	.617
DE9	.097	-.074	**.679**	.503
DE11	.201	.002	**.601**	.498
DE3	.247	.014	.265	.187
% Variance	29.923%	38.161%	44.011%	
Eigenvalue	5.878	2.021	1.511	

Notes: Principal axis factoring with oblique rotation. EE = emotional/physical exhaustion, RA = reduced accomplishment, DE = sport devaluation. Items with loadings above the .35 cut-off in bold. Core item 3 loads slightly below the cut-off .35 in the devaluation factor. Core items 13 and 15 exhibited loading in other factors.

Table 1: Exploratory Factor Analysis: Factor loadings, Communalities, Eigenvalues and percentage of explained variance of Athlete Burnout Questionnaire.

ABQ Item	Factor loadings			Communalities (h²)
	I	II	III	
EE4	**.871**	-.062	-.120	.661
EE10	**.730**	-.005	.065	.577
EE2	**.702**	.016	.052	.532
EE12	**.669**	.130	.035	.549
EE8	**.646**	.173	.210	.692
RA18	-.096	**.795**	-.039	.578
RA14	.054	**.732**	-.071	.548
RA5	.153	**.545**	.108	.429
RA 7	-.031	**.473**	.216	.297

RA 1	.062	**.401**	-.082	.212
DE6	-.138	.089	**.848**	.679
DE9	.134	-.101	**.641**	.468
DE11	.231	.012	**.576**	.483
% Variance	**32.60%**	**43.15%**	**51.27%**	
Eigenvalue	**4.24**	**1.37**	**1.06**	
Notes: Principal axis factoring with oblique rotation. EE = emotional/physical exhaustion, RA = reduced accomplishment, DE = sport devaluation. Items with loadings above the .35 cut-off in bold.				

Table 2: 2nd Exploratory Factor Analysis: Factor loadings, Communalities, Eigenvalues and percentage of explained variance of Athlete Burnout Questionnaire.

Study II - Further Factorial and Structural Validity

Methodology

The next study (II) focused on further examination of the GR-ABQ structure on a new sample of athletes. Specifically, we examined the structure of the scale through confirmatory factor analysis. In addition, external validity evidence was examined through the correlations of the GR-ABQ and theoretically related constructs.

Participants and procedure

A total of 250 athletes volunteered to participate in study II. Seventeen athletes were excluded from further analysis because they indicated higher scores in Social Desirability Scale. The remaining sample was consisted of 233 athletes (112 males and 121 females), ranged from 13 to 35 years (Mage = 18.97, SD= 5.3). One hundred and seven (45.92%) athletes were recruited from individual sports (e.g. track and field, swimming, gymnastics, tennis), while 126 (54.08%) athletes were recruited from team sports (e.g. basketball, volleyball, handball, football, polo). On average, participants were greatly involved in their sport, as apparent by an average of over 8 years (SD = 3.20) of involvement in sports and over 13.0 hours per week (SD = 3.4) in training. Permission was secured through contact with their coaches. Informed consent was received from all participants in the study. The aims and confidentiality of the research was explained prior to their participation and questionnaires were administered before their training session. In order to examine test-retest reliability, a sub-sample of 43 athletes completed the ABQ questionnaire one more time, 20 - 30 days after the initial completion.

Measures

Athlete Burnout Questionnaire

The ABQ scale is consisted of 13 items (Study I) which are divided into three components. Physical / emotional exhaustion consists of 5 items (e.g., "I feel so tired from my PE classes/ my training sessions that I have trouble finding energy to do other things"), Reduced sense of accomplishment (e.g., "I'm not achieving much during PE classes/training sessions") consists of 5 items and sport devaluation (e.g., "The effort I spend during PE classes/training sessions would be better spent doing other things") consists of 3 items. Participants were asked to answer on a 5-point Likert scale anchored by "almost never" (1) and "almost always" (5).

State-Trait Anxiety Inventory

The State–Trait Anxiety Inventory is a self report questionnaire comprises is a commonly used measure of trait and state anxiety [19]. The Greek version of A-Trait subscale includes 20 items (e.g. "I lack self confidence"), measured in a 4-Likert scale, which measures the general tendency towards stressful conditions and evaluate "how responders feel generally",

Sport Motivation Scale

The Sport Motivation Scale (SMS) is a self report questionnaire that measures seven forms of motivation: amotivation, external regulation, introjected regulation, identified regulation and intrinsic motivation to know, to accomplish and to experience stimulation [20]. The Gr-SMS consists of seven 4-item subscales measuring different types of motivation proposed by the Self-Determination Theory [21,22]. Athletes were asked to rate the extent to which items corresponded to reasons for which they have been practicing their sport on a 7-point Likert scale anchored by 1 (does not correspond at all) to 7 (corresponds exactly). For the present purpose, we regrouped the seven subscales of SMS into three: intrinsic motivation, extrinsic motivation.

Profile of Mood States

The Profile of Mood States POMS is a self report questionnaire comprises is a psychological rating scale used to assess transient, distinct mood states [23]. The Gr-POMS contains 65 words/statements and consists of six subscales (tension,

depression, anger, vigor, fatigue and confusion) [24]. Athletes described their feelings in respect to the word/statement and answered on a 4-point Likert scale ranging from 0 (not at all) to 4 (extremely). Present research also employed the Total Mood Disturbance (TMD) score.

Trait-Sport Confidence Inventory

The Trait-Sport Confidence Inventory TSCI is a self report questionnaire comprises is designed to assess how confident an athlete "generally" feels [25]. The Gr-TSCI contained 13 questions, consisting of a unique factor using a 7-point Likert scale ranging from "low" to "high".

Data Analysis

Confirmatory Factor Analysis (CFA) was conducted to examine whether the three-factor model fits the proposed data structure. Moreover, concurrent was examined to evaluating whether GR-ABQ scores relate to theoretically relevant variables in a meaningful way. Finally, the internal consistency (Cronbach's alpha) and stability (test-retest reliability) were examined to evaluate the GR-ABQ reliability.

Confirmatory Factor Analysis.

CFA was conducted using Structural Equation Modeling with EQS software program [26]. CFA tested the structural validity of the GR-ABQ measure as drawn from study I, and further compared three models (the proposed 1st order 3-factor model, a 1st order 2-factor model and a 2nd order one-factor model). In order to achieve a comprehensive evaluation of the models' fit, a variety of fit indices were assessed: (a) the ratio of the χ^2 statistic, the Satorra-Bentler χ^2/df, with values over 2.0 to be accepted, (b, c) Comparative Fit Index and the non – normed Fit Index (both CFI and NNFI indices range from 0 to 1 with values above .90-.95 representing an acceptable fit), (d) the Goodness of Fit Index, and (e, f) the Standardized Root Mean Squared Residual and the Root Mean Square Error of Approximation with cut off criteria to SRMR is close to .080 and for RMSEA is close to .060 [26,27].

Concurrent Validity Evidence

To evaluate whether GR-ABQ scores are related in a meaningful fashion to theoretically relevant external variables, correlation analyses were computed. The magnitude of the correlations were interpreted using [28] criteria (i.e., small < .30; medium = .30 to .50; large > .50)

### Results

Confirmatory Factor Analysis of the GR-ABQ

A multivariate test for normality (mardia's coefficient) and examination of item normality was used to determine which method of analysis to use for the CFA. Mardia's coefficient revealed acceptable multivariate kyrtosis among the items (23.77< 195). The univariate normality of the data was examined through skewness and kurtosis, where values between -2 and +2 are regarded as acceptable in order to obtain normal univariate distribution [29]. The results showed that skewness ranged from .00 to 1.40 and kurtosis ranged from .04 to 1.16, meaning that maximum likelihood estimation can be demonstrated (Table 3).

Factors	Items	Mean (SD)	Skewness	Kurtosis
Physical/emotional Exhaustion	EE 2	2.55 (1.04)	.22	-.55
	EE 4	2.04 (1.01)	.51	-.82
	EE 8	1.85 (.91)	.75	-.42
	EE 10	2.15 (1.02)	.44	-.75
	EE12	1.85 (.89)	.87	.18
	TEE	2.09 (.77)		
Reduced Accomplishment	RA 1	2.32 (.73)	.02	-.32
	RA 5	2.41 (.93)	.12	-.41
	RA 7	2.97 (1.08)	.06	-.61
	RA 14	2.53 (.87)	.34	.04
	RA 18	2.26 (.86)	.45	.06
	TRA	2.50 (.67)		

Sport Devaluation	DE 6	1.69 (.97)	1.4	1.14
	DE 9	1.86 (1.08)	1.15	.47
	DE 11	1.80 (1.11)	1.40	1.16
	TDE	1.79 (.86)		

Table 3: Descriptive statistics and CFA estimations for the 13-item GR-ABQ.

Confirmatory factor analysis examined the suggested 1st order three-factor model with correlated factors (M3) and indicated a good fit to the data, with all fit indices reaching the criteria. In the first-order measurement models, factors for model identification were fixed at 1.00 and covariances were freely estimated. A variety of fit indices were examined to evaluate the overall fit of the proposed measurement model and enable comparisons with previous research (Table 4). All the goodness-of-fit indices reached acceptable values (Ratio of the χ^2 statistic = 100.29, Satorra-Bentler χ^2/df, = 1.60, CFI = .97 and NNFI = .96), GFI = .94, SRMR = .060, and the RMSEA = .051). Standardized factor loadings ranged from .56 to .82, error variances revealed adequate indices ranging from .57 to .83 and correlations between burnout subscales were significant (ranging from .22 to .41) (Figure1).
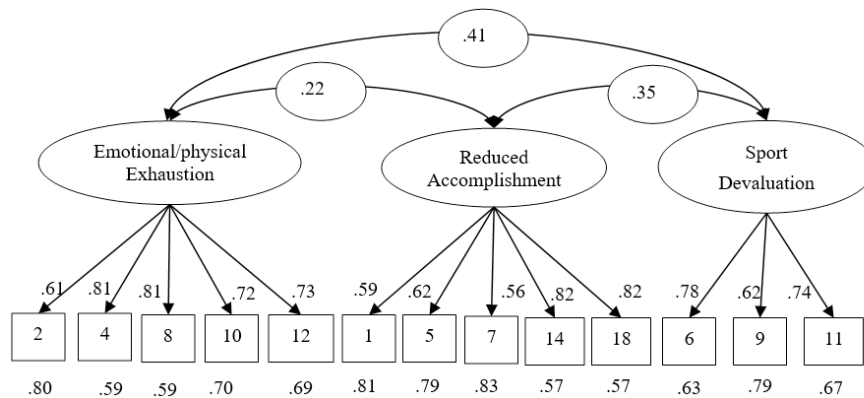
Figure 1: Confirmatory factor analysis: Model M3 represents the 1st three-factor model, with factor loadings, error variances of the items and correlations among factors of ABQ.

To further examine the factor structure of the ABQ, two alternative models were tested and compared with the 1st-order three factor proposed model (M3): (1) a higher-order single-factor model (M4), proposing that a higher order factor was set to explain the inter-correlations among the three first-order burnout factors and (2) a two-factor model in which the emotional exhaustion and devaluation items loaded on the same latent factor and the personal accomplishment items comprised a unique - separate factor. The results indicated that M3 revealed the best fit to the data (Table 4). Following, M4 showed good fit to the data, whereas, the two factor model revealed poor fit to the data

Model	Scaled χ^2	Df	χ^2/df	CFI	GFI	NNFI	RMSEA	90% RMSEA	SRMR
M3	100.29	63	1.60	.966	.936	.958	.051	.031-.068	.060
M4	103.53	58	1.79	.973	.921	.964	.058	.039-.076	.060
M2	246.62	65	3.79	.834	.845	.800	.110	.095-.124	.108

Table 4: Fit indices for the four competing models of the Athlete Burnout Questionnaire.

Correlations among ABQ subscales and related constructs.

Results indicated that burnout subscales were significantly correlated with all the related variables in the expected directions (Table 5). Specifically, results revealed (a) positive correlations between the ABQ total scale and trait anxiety (.39), amotivation (.49), negative mood (.42) and (b) negative correlations between ABQ total scale and intrinsic motivation (-.20) and self-confidence (-.23).

Moreover, ABQ subscales showed significant correlations with most of the aforementioned related variables. For example, emotional / physical exhaustion was mostly related to negative mood (.40), reduced accomplishment was mostly related with self-confidence (-.44) and sport devaluation was mostly related to amotivation (.43).

Variables	Total Athlete Burnout	Emotional / physical Exhaustion	Reduced Accomplishment	Sport Devaluation
Trait Anxiety	.39**	.28**	.31**	.22**
Amotivation	.49**	.37**	.27**	.43**
Intrinsic motivation	-.20**	-.11	-.17*	-.15*
Negative mood	.42**	.40**	.20**	.25**
Self-confidence	-.23**	-.05	-.44**	.01
Notes: Pearson product moment r's appear below the diagonal of the matrix. ** p<.01, * *p<.05*				

Table 5: Correlations among athlete burnout and other variables

Scale Reliability

Internal consistency indices for the three factors of the ABQ indicated that all alpha coefficients were acceptable and ranged from .72 to .87. Further reliability examination was conducted assessing test-retest reliability. Results showed that test - retest reliability (intraclass correlation coefficients) indicated satisfactory scores, ranging from .73 to .81 for the three factors and .84 for the total burnout scale.

General Discussion

The first aim of this study was to conduct a preliminary examination of the factor structure of ABQ on a Greek sample consisting of athletes with different characteristics (gender, age, sport, competitive level). Studies I and II confirmed the three factor-structure of the Athlete Burnout Questionnaire in Greek athletes. Specifically, content validity and construct validity (Exploratory Factor Analysis) revealed three unique burnout subscales and supported previous research on psychometric properties of ABQ across different cultural contexts [12,5,9]. Physical / emotional exhaustion, reduced sense of accomplishment and sport devaluation were identified as separate and unique burnout dimensions of burnout for the Greek sample.

The factor structure of the final GR-ABQ consisted of 13 items: 5 items for physical / emotional exhaustion, 5 items for reduced accomplishment and 3 items for sport devaluation subscale, respectively. Three core items were removed from the original version of ABQ, item 3 ("The effort I spend in [sport] would be better spent doing other things"), item 13 ("It seems that no matter what I do, I don't perform as well as I should") and item 15 ("I have negative feelings toward [sport]"), while, the trial item 18 was added (I feel I have done well in [sport]). The decision of removing three core items was based on two reasons. Initially, previous research has suggested that deleting problematic items leads to a more satisfactory consistency. For example, Isoard-Gauther and colleagues (2010) resulted in removing three of the fifteen items (1, 12, and 15) from the Fr-ABQ because they were considered as "unclear". As a result, the final Fr-ABQ scale consisted of 4 items for each component of burnout. Also, the Chinese version found that four of the original items of Ch-ABQ had to be deleted from further examination and suggested that they should be content re-examined and revised [8].

Devaluation factor of burnout exposed the lowest reliability and structure indices, probably because its appearance is ambiguous and hindered when athletes present low to medium levels of total burnout [30]. Similarly, Portuguese version [31] found that three (items 3, 9, 15) of the five questions belonging on "sport devaluation" factor needed modifications so as to represent more adequately their respective subscales. A second reason for deleting core items of GR-ABQ is the notion mentioned by Raedeke and Smith [1,17], that trial items might be useful while they might satisfactory replace core items that would perform poorly.

Overall, ABQ scale has rejected three core items of the original scale and added one trial item, similarly to other psychometric trials. Similarly, Arce and colleagues (2012) included three alternative statements (one for each dimension of the Spanish version of ABQ), which replaced three original items, respectively. However, scale development is an on-going process. Although results reveal that the Greek version of the scale has validity evidence supporting its use in Greek athletes, future research might explore the three core items from the original English version of the ABQ that did not fit well with the present Greek sample. One possibility is that the items have a different

meaning when applied outside the United States and English speaking cultures. Alternatively, it could be that the items could be further improved through additional translation work. Future cross-cultural research could facilitate the knowledge base on burnout measurement to see if the meaning of items and burnout is invariant across cultures as well as cultural differences in the meaning and experience of burnout.

The second aim of the present study was to explore the construct's factor structure. Findings from CFA supported the factorial validity of the ABQ in a sample of 233 Greek athletes. Additionally, the proposed three-factor model (M3) provided a better fit to the data compared to alternative models (a 2nd-order factor model and a two- factor model). The proposed three-factor model (M3) showed acceptable fit indices, consistent with the original model [1] and with previous efforts of validating ABQ in other countries [9,32]. However, the 2ndorder model of ABQ revealed good fit to the data as well; a result which underpins the existence of a hierarchical structure of the ABQ, leading researchers to use both individual subscales and a second-order factor of burnout [9]. Regarding its psychometric quality, acceptable internal consistency coefficients and test-retest correlation indices of the three subscales supported the reliability of the GR-ABQ scale; similarly to the original version of [1] and other transcultural versions [12, 32,10].

A third aim of the present study was to further examine the concurrent validity of ABQ in a different cultural context. According to the results, all three ABQ subscales displayed significant relationships with matching subscales confirming further construct validity. Specifically, we confirmed the hypothesis that the three burnout subscales would show positive significant relationships with trait anxiety, amotivation and mood disturbance, and negative significant relationships with intrinsic motivation and self-confidence. Previous research has revealed that burnout concept, although theoretically distinguishable, is conceptually associated with a variety of other ill-being constructs, such as, mood disturbance (e.g. depression, fatigue), and anxiety [31, 5, 33]. Moreover, previous research has revealed that burnout concept is significantly related to other constructs which are characterized as core symptoms of burnout feelings (e.g. lack of motives, low intrinsic motivation, and low self-confidence) [13,1]. It is assumed that concurrent validity of ABQ with matching dimensions is fully supported.

Practical applications/ recommendations/ limitations

The purpose of this study was to examine the psychometric properties of the Athlete Burnout Questionnaire [1] in a Greek sample of a total of 405 athletes in three studies. Our results add evidence for a valid and reliable Greek version of ABQ through factorial / construct validity and reliability, and offer a psychometrically sound instrument available for further research

designs in the Greek athletic population.

Present research revealed a medium score of reduced sense of accomplishment (a failure to achieve results), a medium to low score of emotional and physical exhaustion(feelings of loss of energy and intense training) and a low score of sport devaluation (negative feelings about sport involvement that athletes have when experiencing burnout), similarly to previous research [31,12, 9,13]. Trying to explain and compare the aforementioned scores of the three burnout subscales, it is supported that (a) reduced sense of accomplishment is an early sign of burnout occurrence and thus its score was the highest, (b) chronic emotional and physical exhaustion is regarded as a core burnout component exposing medium levels and (c) devaluation is lastly appearing in a theoretically proposed progression of burnout occurrence and probably serves a protective function for the player's self-esteem; thus its' mean score was low [30,15].Thus, it would be of great interest to further examine the sequence of evolution of the three burnout characteristics and its relative antecedents and consequences within a longitudinal mixed method design [34,35].

Greek ABQ version has the advantage that it can be used with a variety of athletes, as the sample used covered a broad spectrum with regard to the sport, the age of athletes and the gender. Also, the present evidence was received across athletes' competitive season for most of the sports and thus it should be considered as a representative season for burnout signs. Thus, the psychometric properties of GR-ABQ can be used in the scientific and professional settings with sufficient psychometric guarantees. However, a limitation of the present study is the lack of supply a more sufficient additional insight regarding the comparability of the translated scale to the original scale – e.g. through establishing measurement invariance.

According [15] burnout can lead to maladaptive behaviors (affective, cognitive, motivational, and behavioral) and thus its prevention would be ideally preferred to be considered from early stages. Although athletes might not express feelings of burnout in a same way or do not react to symptoms of burnout similarly, a valid and reliable burnout questionnaire would enhance detecting active burnout athletes across different cultures. In most of the burnout cases, the accurate administration of ABQ would display athletes' burnout statement and protect them from possible withdrawal, which would be otherwise irreversible. The recognition and understanding of the symptoms and the coping strategies of burnout syndrome is necessary for future research on burnout and it is recommended that symptoms and coping factors should be simultaneously examined.

Conclusion

Overall, present research facilitates an initial understanding of burnout in Greek athletes which has been undermined by the lack

of a valid instrument in Greek population. The presence of a valid instrument will advocate research in preventing Greek athletes from truly burned out – a situation that might result in irreversible experience and complete loss of appetite for competitive sports.

Notes

1Trial items included: "I feel emotionally drained from [sport]" (item 16, emotional/physical exhaustion), "I wonder if [sport] is worth all the time and energy I put into it" (item 17, sport devaluation), and "I feel I have done well in [sport]" (item 18, reduced sense of accomplishment)

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