

Analysis of the psychometric properties of the Athlete Burnout Questionnaire (ABQ) in Mexican athletes

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Título: Análisis de las propiedades psicométricas del Athlete Burnout Questionnaire (ABQ) en deportistas mexicanos.

Resumen: El *Athlete Burnout Questionnaire* (ABQ) se ha convertido en el instrumento más utilizado para evaluar el *burnout* en el contexto deportivo, lo que ha permitido un incremento significativo en las investigaciones. A pesar de ello, una revisión en la literatura revela que no existen trabajos que proporcionen datos psicométricos del ABQ con muestra mexicana, por lo que el objetivo de la presente investigación fue analizar las propiedades psicométricas del *Athlete Burnout Questionnaire* en deportistas mexicanos. El análisis de los datos se desarrolló a través de 2 estudios, aplicando el cuestionario en el primero de ellos a una muestra de 464 jóvenes deportistas entre 13 y 18 años ($M = 14.85$, $DT = 1.45$). Los resultados del Análisis Factorial Confirmatorio (AFC) indicaron índices de ajuste aceptables ($\chi^2 = 176.7$; $\chi^2/df = 2.18$; $p < .01$; TLI = .93, IFI = .95, CFI = .95 y RMSEA = .05) así como cargas factoriales aceptables para la estructura trifactorial del cuestionario original. Para el segundo estudio se utilizó una muestra de 1009 deportistas mexicanos entre 12 y 39 años ($M = 17.28$, $DT = 2.98$). Los resultados del AFC encontraron suficiente evidencia para la validez de constructo ($\chi^2 = 419.5$; $\chi^2/df = 5.59$; $p < .01$; TLI = .94, IFI = .96, CFI = .96 y RMSEA = .07). Los resultados en el análisis de correlación entre el *Athlete Burnout Questionnaire* (ABQ) y el *Athlete Engagement Questionnaire* (AEQ) pueden considerarse como prueba favorable de la validez discriminante. En cuanto a la fiabilidad, se encontraron resultados aceptables en consistencia interna en ambas fases del estudio, concluyendo que el ABQ es una herramienta útil para evaluar el *burnout* en deportistas mexicanos.

Palabras clave: *Burnout*; ABQ; validez de constructo; deportistas mexicanos.

Abstract: The Athlete Burnout Questionnaire (ABQ) has become one of the most used tools to assess burnout in sport contexts. Despite a significant increase in research in this field, the literature has shown that there are no papers which provide psychometric data of the ABQ using a Mexican sample. Hence the objective of the present study was to analyze the psychometric properties of the Athlete Burnout Questionnaire of Mexican athletes. Data analysis was obtained using two studies. The first study consisted of 464 young athletes between 13 and 18 years old ($M = 14.85$, $SD = 1.45$). The results of the Confirmatory Factor Analysis (CFA) showed acceptable fit indices ($\chi^2 = 176.7$; $\chi^2/df = 2.18$; $p < .01$; TLI = .93, IFI = .95, CFI = .95 y RMSEA = .05) Acceptable results of factorial loads were also found for the original trifactorial questionnaire. A sample of 1009 Mexican athletes between 12 and 39 years of age ($M = 17.28$, $SD = 2.98$) were used for the second study. The results of the CFA found sufficient evidence for the construct validity ($\chi^2 = 419.5$; $\chi^2/df = 5.59$; $p < .01$; TLI = .94, IFI = .96, CFI = .96 and RMSEA = .07). The results in the analysis of correlation between the Athlete Burnout Questionnaire (ABQ) and the Athlete Engagement questionnaire (AEQ) can be considered as evidence of the discriminant validity. In regard to reliability, acceptable results were observed in internal consistency in both phases of the study, concluding that the ABQ is a useful instrument to evaluate burnout in Mexican athletes.

Keywords: *Burnout*; ABQ; construct validity; Mexican athletes.

Introduction

As a result of over 40 years dedicated to the study of burnout in the field of sports, several theoretical models have been developed which are considered to be traditional (Coakley, 1992; Hall, Cawthra & Kerr, 1997; Schmidt & Stein, 1991; Silva, 1990; Smith, 1986). Other proposals have arisen such as the biopsychological model of stress (Kallus & Kellmann, 2000; Kellman & Kallus, 2001), the failure adaptation model (Tenebaum, Jones, Kitsantas, Sacksand, & Berwick, 2003), the motivational model proposed from the theory of self-determination (Cresswell & Eklund, 2005; Lonsdale & Hodge, 2011; Lonsdale, Hodge, & Rose, 2009; Perreault, Gaudreau, Lapointe, & Lacroix, 2007) and the theo-

retical-descriptive model by Garcés de los Fayos and Canton (2007).

For most of these models, burnout syndrome has a multicausal nature where the psychological aspects of stress are manifested in a series of symptoms such as emotional imbalance, low perception of achievement and devaluation of sport performance. As a whole, these symptoms can lead to a series of negative consequences, one of the most relevant and most worrying is withdrawal from sports practice (Garcés de los Fayos & Canton, 1995; Lopes, Nagamine, Micelli, De Marco, & De Oliveira, 2015). Part of the importance of studying burnout in the sporting context lies in the analysis of the negative consequences of the syndrome, in order to prevent, diagnose and effectively treat burnout (Akhrem & Gazdowska, 2016).

Burnout was first defined in the early Seventies by Freudenberger (1974) as a pattern of behavior manifested by volunteers from a New York Clinic for people with addictions. There was an evident sense of failure among the volunteers that included the progressive loss of energy, lack of

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motivation and interest in work. Raedeke (1997), based on the model of Maslach and Jackson (1986), it contributed to the most accepted definition in the sporting context based on a tridimensional model, describing it as a syndrome characterized by physical and emotional exhaustion, reduced sense of achievement and devaluation of sports practice. Physical and emotional exhaustion refers to a perception of "burnout" associated to the intensity of both training sessions and competitions. A reduced sense of achievement is related to skills and abilities that an athlete is unable to achieve; personal goals cannot be accomplished or they do not meet the expectations. The devaluation of sports practice refers to a loss of interest or the development of a negative attitude towards sports practice itself.

According to recent analysis of the literature, there are numerous publications around different constructs in regard to the burnout syndrome, several could be highlighted such as, the expectations of success (Sorkkila, Aunola, & Ryba, 2017), perfectionism (Appleton, Hall, & Hill, 2009; Gustafsson, Hill, Stenling, & Wagnsson, 2015; Hill, Hall, Appleton, & Kozub, 2008; Jowett, Hill, Hall, & Curran, 2016; Matellen, Stoeber, & Passfield, 2015; Matellen, Stoeber, & Passfield, 2017), motivation (Cheval, Chalabaev, Quested, Courvoisierand, & Sarrazin, 2017; Cresswell & Eklund, 2005; Harris & Watson, 2011; Lemyre, Treasure, & Roberts, 2006; Lonsdale & Hodge, 2011; Lonsdale et al., 2009), mindfulness (Gustafsson, Davis, Skoog, Kenttä, & Haberl, 2015; Zhang, Si, Chung, & Gucciardi, 2016), emotional intelligence (Defreese & Barczak, 2017; González, Ros, Jiménez, & Garcés de los Fayos, 2014), stress (Chyi, Lu, Wang, Hsu, & Chang, 2018; Raedeke & Smith, 2004), self-esteem (Crocker & Park, 2004), Anxiety (Vilela & Gomes, 2015) and optimism (Chen, Kee, & Tsai, 2008; Gustafsson, & Skoog, 2012). On the other hand, burnout is known to be an important predictor of other psychological disorders such as depression (De Francisco, Arce, Vilchez, & Vales, 2016). The above shows the importance of the study of burnout in the last 10 years. It should be noted that none of the aforementioned studies used a Mexican sample, partly due to the lack of psychometric instruments suitable for the evaluation of sports burnout.

There are sufficient instruments to measure burnout in the context of sport (García-Parra, González, & Garcés de los Fayos, 2016). In a systematic review of publications related to burnout in sports contexts, Goodger, Gorely, Lavalle, & Harwood (2007) indicated that in 27 studies conducted with athletes, eight different instruments were used to measure burnout, the Athlete Burnout Questionnaire ABQ (Raedeke & Smith, 2001) was outstanding with eight studies and the Eades Athletic Burnout inventory EABI (Eades, 1991) with eight studies. The other instruments were used less.

In the Spanish context, there is empirical evidence of the adaptation of the Maslach Burnout inventory MBI (Maslach & Jackson, 1981) which was coined burnout inventory in sport (IBD; Garcés de los Fayos, 1999), which has a revised version of 19 items (Garcés de los Fayos, De Francisco, &

Arce, 2012). On the other hand, there is also a Spanish adaptation of the ABQ in a generic version (Arce, De Francisco, Andrade, Seoane, & Raedeke, 2012), for soccer players (Arce, De Francisco, Andrade, Arce, & Raedeke, 2010) and reduced (De Francisco, 2015).

Supporting these results, Akhrem and Gazdowska (2016) recently found that there are three suitable instruments to measure burnout in athletes: the MBI-GS (Maslach Burnout Inventory – General Survey), the Eades Athletic Burnout Questionnaire (EABI) and the Athlete Burnout Questionnaire (ABQ). The first instrument created to measure burnout specifically in the field of sport was the Eades Athlete Burnout Inventory (1991) however; its psychometric validation was insufficient and therefore has been used very little. Nevertheless, Gustafsson, Kenttä, Hassmén, Lundqvist, and Durand-Bush (2007) later confirmed its validity by supporting a theoretical model of four factors.

The Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001) is most probably the most popular instrument to measure burnout in sports. It was initially created based on the EABI but the items are more related to the dimensions proposed by Maslach and Jackson (1981) in the Maslach Burnout Inventory. The ABQ was elaborated taking as a reference the tridimensional definition of Raedeke (1997), hence it consists of 15 items organized in three factors: reduced sense of achievement, physical and emotional exhaustion and devaluation of sports practice. The ABQ has shown adequate psychometric properties with Canadian athletes (Dubuc-Charbonneau, Durand-Bush, & Forneris, 2014), Brazilians (Lopes et al., 2014), NewZealanders (Cresswell & Eklund, 2006) and Verdians (De Francisco, Lopes-Furtado, & Arce, 2018). Likewise, translations have been done in several languages, including German (Ziemainz, Abu-Omar, Raedeke, & Krause, 2004), Arabic (Altahayneh, 2005), Portuguese (Alvarez, Ferreira, & Borim, 2006), French (Isoard-Gauthier, Oger, Guillet, & Martin-Krumm, 2010; Perreault et al., 2007), Norwegian (Lemyre, Hall, & Roberts, 2008; Lemyre, Roberts, & Stray-Gundersen, 2007), Swedish (Gustafsson et al., 2007) and Chinese (Chen & Kee, 2008; Lu, Chen, & Cho, 2006).

In Mexico, there are no antecedents in regard to the psychometric study of ABQ. Given the relevance of the study of this construct that has arisen in the last 20 years (Carlin & Garcés de los Fayos, 2010) in the sport context, as well as the variety of countries that have provided translations of the questionnaire, knowledge in the field has become essential. The purpose of this research is to analyze the psychometric properties of the Athlete Burnout Questionnaire in Mexican athletes.

Study 1. Preliminary analysis of the psychometric properties of the ABQ

Method

Participants

The sample was selected using a non-probabilistic incidental method. It consisted of 464 athletes (men = 80%, women = 20%) between 13 and 18 years of age ($M = 14.85$, $SD = 1.45$). The athletes had practiced at least one team sport (basketball = 5.2%, baseball = 3.2%, soccer = 68.5%, American football = 16.8%, softball = 2.6% and volleyball = 3.7%), the average years practicing their sport was 5.08. The weekly training time was 5.91 hours.

Procedure

Different sport teams located in the city of Tijuana were contacted to invite them to participate in the study. Clubs, schools, associations and sporting entities were visited to present the objectives of the study. Data collection was performed after training sessions, collectively and self-administered. Emphasis was placed on the importance of voluntary participation, confidentiality of the information and the unlimited timeframe to complete the questionnaire. Each participant gave the main researcher informed consent forms signed by their parents.

Instruments

Parallel back-translation (Brislin, 1986), was used for the Spanish translation of the ABQ in which two professional translators translated the scale from English to Spanish and another two translators provided the Spanish-English translation, with no knowledge of the original version of the questionnaire. Once all of the versions were gathered, the researchers analyzed the conceptual and cultural equivalence of each of the items. The preliminary translated version of the ABQ consisted of 15 items.

Burnout. The Mexican version of the Athlete burnout Questionnaire was used to measure burnout in sports. The original version of the ABQ was created by Raedeke and Smith (2001). It consists of 15 items where the athlete is asked to indicate how often the symptoms occur, registering their responses using a Likert scale that oscillates between 1(not often) and 5 (very often). The structure of the questionnaire is trifactorial (devaluation of sports practice, reduced sense of achievement and physical and emotional exhaustion). An example of the devaluation of sports practice is "I 'm not as concerned about my sport performance as I used to be". Reduced sense of achievement is reflected in items such as "I am not reaching important goals with the sport." Physical and emotional exhaustion is represented by five items (e.g., I feel physically and emotionally "worn out"

by sport). Different studies have proven the validity and reliability of the ABQ (Arce et al., 2010; Raedeke & Smith, 2001).

Data Analysis

A preliminary study of the psychometric properties of the 15 items of the ABQ was conducted. The descriptive analysis, internal consistency and correlation of Pearson were performed using the statistical program SPSS 23.0. The Confirmatory Factor Analysis (CFA) was conducted using the program AMOS 16.0, where the construct validity was studied. To evaluate the fit of the tri-factorial model of the ABQ, several fit indices were used: Chi square divided by the degrees of Freedom (χ^2/df); A χ^2/df ratio of less than 3 indicates a good fit of the model (Kline, 2005); The incremental fit index (IFI) indicates improvements in the model fit by degrees of freedom compared to the independent baseline model.

Values equal to or greater than .90 are considered acceptable (Bollen, 1989). The comparative fit index (CFI) is used to contrast theoretical models using samples of over 100 subjects. Values equal to or higher than .90 are recommended to obtain a good fit (Hu & Bentler, 1999). The Tucker-Lewis index (TLI) is an index that considers the degrees of freedom of the proposed and null model. Values equal to or higher than .90 indicate a good fit of the model (Schumacher and Lomax, 1996). The root mean square error of approximation (RMSEA) verifies the degree of mismatch of the residues of the matrices of covariance of the theoretical and empirical model. Values between .05 and .10 are considered acceptable (Cole & Maxwell, 1985).

The Cronbach's alpha coefficient (Cronbach, 1951) was used to evaluate the internal consistency. Alpha values equal to or higher than .70 are considered acceptable (Nunnally, 1978)

Results

Study 1

The descriptive statistics (mean, typical deviation, asymmetry and kurtosis) of the 15 items of the ABQ are shown in Table 1. The young athletes presented low levels of burnout obtaining average scores between 1.42 (item 15) and 2.32 (item 7). In addition, low levels of dispersion were found in the responses, the typical deviations oscillated between .85 (item 15) and 1.16 (items 5 and 6). The scores obtained in asymmetry were between .53 (item 7) and 2.40 (item 15). The values of Kurtosis oscillated between .05 (item 2) and 5.82 (item 15). According to the criteria of univariate normality (Curran, West and Finch, 1996), in order to comply with this normality, asymmetry must be below the absolute value 2 and kurtosis below the absolute value 7. Based on the aforementioned, the structure of the data proved to be symmetrical, within statistical normality except for item 15

which showed a slightly abnormal score in asymmetry (2.40). Finally, the values obtained in alpha, when the item is eliminated, showed acceptable results that indicate that each item

contributes to the reliability of the questionnaire. The alpha value of the total score (.83) can be seen in table 3.

Table 1. Descriptive statistics of ABQ items.

	Factor	<i>M</i>	<i>SD</i>	Asymmetry (E. T = .113)	Kurtosis (E. T = .226)	Alpha when the item is eliminated
1. I am performing many worthwhile things in the sport	RSA	1.84	.86	.95	.96	.82
2. I feel so tired from the training that I do not find the energy to do other things.	PEE	2.07	.99	.70	.05	.82
3.The effort I need to put into sport would be better used in more productive activities	DSP	1.70	.97	1.34	1.20	.82
4. I feel extremely tired from the sport participation	PEE	1.95	.98	.82	.12	.81
5. I am not reaching important goals with the sport	RSA	1.95	1.15	.94	-.16	.82
6. I am not as concerned about my sport performance as I used to be	DSP	1.73	1.16	1.51	1.22	.81
7. I am not performing up to my ability in the sport	RSA	2.32	1.16	.53	-.56	.82
8. I feel physically and emotionally worn out by sport	PEE	1.63	.90	1.63	2.67	.81
9. I am not as interested in sport as I used to be	DSP	1.60	1.09	1.92	2.80	.81
10. I am physically exhausted by sport	PEE	1.66	.89	1.51	2.34	.81
11. I am not as worried about being successful at sports as I used to be.	DSP	1.84	1.08	1.24	.88	.82
12. I feel exhausted by the physical and mental demands of the sport	PEE	1.69	.93	1.40	1.74	.81
13. It seems that no matter what I do, I don't perform as well as I should	RSA	1.86	1.03	1.07	.47	.81
14. I feel successful at sports	RSA	2.07	1.03	.78	.15	.82
15. I have negative feelings and thoughts towards my sport activity	DSP	1.42	.85	2.40	5.82	.82

Confirmatory Factor Analysis (CFA)

The results obtained by the CFA indicated acceptable goodness-of-fit indices ($\chi^2 = 176.7$; $\chi^2/GL = 2.18$, $p < .01$; TLI = .93, IFI = .95, CFI = .95 and RMSEA = .05), values of RMSEA ranged from .040 to .061. These results support

the tridimensional model of the ABQ. Table 2 shows the standardized factorial loads for each of the items in the ABQ, finding values between 0.35 (item 1) and .74 (items 4 and 12). All factorial charges were significant, with the exception of item 1 ($\lambda = .35$).

Table 2. ABQ Factorial loads (λ).

	Study 1 (<i>n</i> = 464) CFA	Study 2 (<i>n</i> = 1009) CFA
Physical and Emotional exhaustion (PEE)		
4. I feel extremely tired from the sport participation	.74	.83
10. I am physically exhausted by sport	.73	.83
2. I feel so tired from the training that I do not find the energy to do other things.	.64	.72
12. I feel exhausted by the physical and mental demands of the sport	.74	.85
8. I feel physically and emotionally worn out by sport	.55	.82
Devaluation of sports practice (DSP)		
9. I am not as interested in sport as I used to be	.68	.79
6. I am not as concerned about my sport performance as I used to be	.68	.69
11. I am not as worried about being successful at sports as I used to be.	.59	.76
3.The effort I need to put into sport would be better used in another activity	.44	.72
15. I have negative feelings and thoughts towards my sport activity	.44	.73
Reduced sense of achievement (RSA)		
14. I feel successful at sports	.44	.40
1. I am performing many worthwhile things in the sport	.35	.30
7. I am not performing up to my ability in the sport	.65	.80
13. It seems that no matter what I do, I don't perform as well as I should	.69	.86
5. I am not reaching important goals with the sport	.56	.75

Internal consistency and bivariate correlation analysis

The results of the correlation analysis indicate that the three factors of burnout correlate positively and significantly

with each other. The most significant correlation was found between reduced sense of achievement and devaluation of sports practice ($r = .45$, $p < .01$). Positive correlations between the total burnout score and the three individual fac-

tors are also shown in table 3. The most important correlation was observed in the devaluation of sports practice ($r = .45, p < .01$).

In regard to the analysis of internal consistency, the results showed satisfactory alpha coefficients of Cronbach in all cases, not only in the total score ($\alpha = .83$), but also in the three factors of burnout: devaluation of sports practice ($\alpha = .70$), reduced sense of achievement ($\alpha = .71$), and physical and emotional exhaustion ($\alpha = .81$).

Table 3. Internal consistency and bivariate correlation analysis of the factors of Burnout.

	α	1	2	3	4
1. Physical and Emotional exhaustion	.81				
2. Reduced sense of achievement	.71	.32**			
3. Devaluation of sports practice	.70	.40**	.45**		
4. Burnout total	.83	.74**	.77**	.80**	

Note: ** $p < .01$

Study 2: Analysis of construct validity of the ABQ

Method

Participants

The sample was selected using a non-probabilistic incidental method. It consisted of 1009 Mexican athletes (men = 66%, women = 34%) between 12 and 39 years of age ($M = 17.28, SD = 2.98$). The athletes had practiced the following sports: athletics (0.5%), basketball (6.3%), Handball (0.2%), baseball (1%), cycling (0.2%), Combat sports (0.5%), soccer (55.3%), American football (10.2%), flag football (12.5%), gymnastics (0.3%), swimming (0.3%), softball (1.6%), tennis (1.4%) and volleyball (9.7%), the average years practicing their sport was 5.05 ($SD = 4.27$) as well as an average of 3 days weekly training ($SD = 1.46$) and 2.11 hours of daily training ($SD = 1.02$).

Procedure

Data collection was performed after training sessions in the changing rooms; it was done collectively and it was self-administered. The main researcher was present and emphasis was placed on the confidentiality of the information provided. The informed consent forms, signed by the participants or their parents if necessary, were collected by the main researcher.

Instruments

Burnout. The ABQ (Raedeke & Smith, 2001) was used to assess sport burnout. The ABQ consists of 15 items which are organized into three factors: reduced sense of achievement, physical and emotional exhaustion and devaluation of

sports practice. A Likert-type scale of five options was used to register the responses (1 = almost never, 2 = rarely, 3 = sometimes, 4 = frequently and 5 = almost always).

Engagement. The Mexican version of Athlete Engagement Questionnaire (AEQ) was used to measure engagement. It consists of 16 items distributed into four factors, each of which contain four items: confidence, dedication, enthusiasm and vigor. Athletes responded by using a five-point Likert scale (1 = almost never, 2 = rarely, 3 = sometimes, 4 = frequently, and 5 = almost always). An example of an item of each factor is "I feel energetic when I participate in my sport" (vigor), "I am dedicated to my sport" (dedication), "I believe I am capable of achieving my goals in sport" (confidence) and "I am enthusiastic about my sport" (enthusiasm). The original version of this questionnaire (Lonsdale, Hodge, & Jackson, 2007) demonstrated appropriate fit of the factorial model of the AEQ, as well as its reliability and construct validity.

Data Analysis

In order to evaluate the factorial structure of the questionnaire, a confirmatory factorial analysis (CFA) was performed using the maximum likelihood method. The CFA was conducted testing two models: the original trifactorial structure of the ABQ and an alternate unifactorial model. Different goodness-of-fit indices were used to evaluate the quality of the measurement models: Chi square divided by the degrees of Freedom (χ^2/GL), the incremental fit index (IFI), the comparative fit index (CFI), the Tucker-Lewis index (TLI) and the root mean square error of approximation (RMSEA).

Correlations were made between the factors of the Athlete Burnout Questionnaire (ABQ) and the Athlete Engagement Questionnaire (AEQ) in order to verify discriminant validity, hypothesizing negative correlations. The alpha coefficient of Cronbach was used to evaluate internal consistency.

Results

ABQ factorial validity

A model fit comparison of two models of the ABQ was performed using confirmatory factorial analysis. One of the models in question was unidimensional and the other was tridimensional. First of all, CFA was performed using the original 15 item model as a reference. These 15 items were distributed into three factors. The fit indices of the trifactorial model of the ABQ met the criteria required to prove good fit ($\chi^2 = 419.5; \chi^2/GL = 5.59, p < .01; TLI = .94, IFI = .96, CFI = .96$ and $RMSEA = .07$), with the exception of the ratio χ^2/GL (5.59) which presented a score outside the recommended limits. The values of RMSEA oscillated between .06 and .07. The trifactorial model was over identified with

36 estimated parameters. The estimates for the correlation coefficients were as follows: between physical and emotional exhaustion and devaluation of sport practice .94 ($t = 14.80$), between reduced sense of achievement and physical and emotional exhaustion .91 ($t = 7.24$) and between devaluation of sports practice and reduced sense of achievement .85 ($t = 7.20$), significant values were obtained in all cases.

The unifactorial model of the ABQ was tested given the high estimated correlation coefficients obtained in the trifactorial model. Acceptable values were found in regards to the different goodness-of-fit indices used ($\chi^2 = 557.1$; $\chi^2/GL = 7.43$ $p < .01$; TLI = .91, IFI = .94, CFI = .94 and RMSEA = .08), except for those obtained for the ratio χ^2/GL (7.43) which presented severe abnormality according to the recommended scores. The interval for the RMSEA oscillated between .07 and .09. Although both models showed a good fit, the trifactorial model of the ABQ presented better results in the different goodness-of-fit indices.

As shown in table 2, values obtained for the estimated factorial loads of the 15 ABQ items were between .30 (item 1) and .86 (item 13). The only item that presented factorial load below the established criteria ($\lambda = .30$), was Item 1.

Internal consistency and discriminant validity of the ABQ

In order to study the discriminant validity of the ABQ, the Pearson's correlation coefficients were calculated between the subscales of the ABQ and the AEQ. According to this analysis, negative and significant correlations were found in all cases which confirmed the expectations given that burnout is considered a construct which is opposed to engagement. As shown in table 4, the most significant correlations are those between reduced sense of achievement (RSA) and the four factors of AEQ (Enthusiasm: $r = -.52$, $p < .01$, Confidence: $r = -.51$, $p < .01$, Dedication: $r = -.50$, $p < .01$ and Vigor: $r = -.50$, $p < .01$). The correlations between the factors of burnout were positive and significant. The relationship between physical and emotional exhaustion and devaluation of sports practice proved to be the most significant ($r = .84$, $p < .01$).

In regard to the analysis of reliability, the results showed satisfactory alpha coefficients of Cronbach in all cases, not only for the factors of the ABQ (reduced sense of achievement .74, physical and emotional exhaustion .91 and devaluation of sports practice .85) but also for the factors of the AEQ (confidence .83, dedication .87, vigor .86 and enthusiasm .83). As shown in table 4, acceptable values in Cronbach's alpha were obtained for the total scale of the ABQ ($\alpha = .74$) and for the total scale of the AEQ ($\alpha = .96$).

Table 4. Internal consistency and correlation analysis of the subscales of the ABQ and AEQ.

	□	1	2	3	4	5	6	7	8
1 RSL	.74								
2 AFE	.91	.69**							
3 DPD	.85	.76**	.84**						
4 Total Burnout	.94	.87**	.93**	.95**					
5 Confidence	.83	-.51**	-.29**	-.36**	-.42**				
6 Dedication	.87	-.50**	-.29**	-.38**	-.42**	.86**			
7 Vigor	.86	-.50**	-.29**	-.37**	-.42**	.86**	.87**		
8 Enthusiasm	.83	-.52**	-.34**	-.43**	-.47**	.84**	.86**	.86**	
9 total engagement	.96	-.53**	-.32**	-.41**	-.46**	.94**	.95**	.95**	.94**

Note: ** $p < .01$; RSA = Reduced sense of achievement; PEE = Physical and emotional exhaustion; DSP = Devaluation of sports practice.

Discussion

The objective of the present study was to analyze the psychometric properties of the Athlete Burnout Questionnaire with Mexican athletes. For this purpose, the study was structured into two independent samples in order to analyze reliability in depth using Cronbach's alpha, construct validity and discriminant validity.

The results of the confirmatory factorial analysis, performed in both phases of the study, supported the original 15 item structure of the ABQ, which consisted of three factors which were each represented by five items. Acceptable fit indices were found in both phases, which is considered sufficient evidence to support the tridimensional structure proposed in the original version of the ABQ (Raedeke & Smith, 2001). These results are consistent with findings of previous researchers who verified the construct validity of the ABQ

(Maple et al., 2012; Cresswell & Eklund, 2006; Lemyre et al., 2008; Perreault et al., 2007). In regard to the factorial loads of the items, the results in both phases indicated good discriminant capacity of the items, with the exception of item 1. Athletes may have difficulty understanding this item given its inverse nature. Future research should adjust this item to improve the quality of the factor it belongs to (reduced sense of achievement).

Positive and significant correlations were observed among the three dimensions of the ABQ. The highest Pearson coefficient was found between reduced sense of achievement and devaluation of sports practice. These results coincide with previous findings (Hill et al., 2008; Perreault et al., 2007; Raedeke & Smith, 2001), as well as with those in Spanish adaptations (Arce et al., 2010; De Francisco, 2015). The latter explain the association between reduced sense of achievement and devaluation of sports practice de-

pending on the attitudinal nature of these two dimensions of the syndrome in opposition to the factor of physical and emotional exhaustion, which is of psychological nature. Acceptable data was observed for the reliability of the ABQ in terms of internal consistency in the three dimensions of the questionnaire in both phases. The results improved considerably in the case of devaluation of sports practice which showed a Cronbach's alpha value of .70, increasing 15 decimals in Phase 2 (devaluation of sports practice $\alpha = .85$). The aforementioned is most probably a result of adjustments made to some of the items in study 1 which improved the version of the ABQ used in study 2.

These results confirm that the Mexican version of the Athlete Burnout Questionnaire has adequate psychometric properties and therefore can be used for the measurement of

burnout in young athletes and adults, both female and male. This contribution could help increase the number of papers devoted to the study of burnout in sport using Mexican samples and, consequently, obtain better understanding of the variables associated with burnout.

Although the present study was performed with participants who practiced individual and team sports, the majority of the athletes practiced team sports hence further research is required using more individual sport participants. Further research is also recommended of the convergent validity and reliability in terms of temporal stability (test-retest). Further studies of invariance are required to increase the scope of the ABQ, extending the sample to discriminate differences in gender, sport modality, level of performance, among other aspects.

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