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Validation of a French version of the Athlete Burnout Questionnaire:

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In Competitive Sport and Physical Education Context.

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## Abstract

The purpose of this research was to develop a psychometrically sound measure of the Athlete Burnout Questionnaire (ABQ, Raedeke & Smith, 2001) in French. First, a preliminary version was developed. Second, 895 French adolescents involved in competitive sport or physical education at school completed the survey. The results showed good internal consistency (all Cronbach's alphas  $> .75$ ). Confirmatory factor analysis with the three subscales of the ABQ (emotional and physical exhaustion, reduced sense of accomplishment, and devaluation) confirmed the structure of the instrument and good data fit (NNFI = .95, CFI = .96, GFI = .95, RMSEA = .07) in accordance with the results obtained in previous studies (e.g., Cresswell & Eklund, 2005a, 2005b; Raedeke & Smith, 2001). Furthermore, the patterns of relationships between the ABQ subscales and motivation, self confidence, and anxiety provide concurrent validity of the ABQ.

*Keywords:* ABQ, Burnout, French, competitive sport, physical education.

## Introduction

Athlete burnout is a subject of growing interest. In recent years, the media, sport organisations and researchers have highlighted that burnout is a real problem in this domain. Indeed, athletes and coaches often dedicate long hours of training that require substantial physical and mental energy, which can be associated with the pressure to perform. In addition, athletes are continually evaluated during training and competition; this can be very stressful for the athlete, especially when performance is not up to their expectations (Pensgaard & Ursin, 1998; Scanlan, Stein & Rainza, 1991). On the other hand, fear of not being selected or being excluded from the team for major competitions can also be added sources of stress for the athlete, especially if they rely on the sport as a source of income (Gustafsson, 2007; Noblet & Gifford, 2002).

### *General Burnout Concept*

The first conceptualisation of burnout was described by Freudenberger (1974) and applied to the workplace. He used the term *burnout* to describe the workers incapacity to effectively carry out their roles. Other theoretical models have emerged in line with this work. The Alienation Model (Berkeley Planning Associates, 1977) posits that an employee's commitment to work tends to decline when the context offers less and less support and assistance to complete tasks. Cherniss' model (1980) suggests young and new employees in a given job are at risk of experiencing burnout due to lack of recognition and rewards for tasks well done. This lack of recognition leads to a reduction in self-confidence and sometimes professional ability. In an another model, Edelwich and Brodsky (1980) proposed that burnout has four defined stages: Enthusiasm (i.e., resulting in a tendency to be excessively available and have unrealistic expectations about his work), Stagnation (i.e., expectations become more realistic and a certain staff discontent begins to surface), Frustration (i.e. as professional difficulties seem to multiply, the individual begins to question its competence), and Apathy

(i.e., characterized by a state of depression and indifference in response to repeated frustrations that are faced).

Of the models describing the effects of burnout, the "Attributional / Environmental" model (Maslach & Jackson, 1982) stands clearly apart from others as a reference for burnout research. In this model, burnout is defined as a multidimensional process with three main components: an emotional exhaustion (i.e., the individual feels that his energy reserves are completely exhausted), a state of depersonalization (i.e., the individual seems detached from the clients, patients or colleagues who eventually get treated like objects), and finally, a decreased sense of accomplishment and self-realization (i.e., the individual will carry a particularly negative and demeaning regard for his/her personal and professional achievements). In this framework, loss of confidence resulting from this type of attitude has been associated with depression and an inability to cope with professional duties. In order to facilitate empirical research on the phenomenon of burnout, Maslach developed a measurement scale - the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981) - that is based on this theoretical model. The MBI is a 22 item scale measuring the three dimensions of burnout. In the initial version there were both frequency (1: a few times a year to 6: every day) and intensity ratings (1: very mild to 7: very strong), although Maslach later suggested to use only the frequency ratings because of a high correlation between intensity and frequency (Maslach, 1993).

More recently, Demerouti, Bakker, Nachreiner and Schaufeli (2001) have developed the Job Demands-Resources model (JD-R model) which posits that burnout follows two processes. In the first process, the demanding aspects of work lead to constant overtaxing and to exhaustion. In the second process, there is a complication of the job demands by the lack of resources. This leads to withdrawal and eventually to disengagement from work. This model is consistent with the model proposed by Maslach and Jackson because exhaustion is

considered like the first symptom of burnout and it is a consequence of disengagement from work. Some of these models (Demerouti, et al., 2001; Maslach & Jackson, 1982) have been used in the sport domain in order to understand athlete burnout.

### *Burnout in the sport context*

Research on burnout in sport settings was initially carried out on practitioners like coaches (*i.e.*, Caccese & Mayerberg, 1984) and used the conceptualisation of Maslach and Jackson (1982). In the 1990s, there was a shift to focus more on athletes. Because of the lack of an operational definition of the concept, it has led to confusion about what burnout actually is. Raedeke, Lunney and Venable (2002), suggested that without a clear definition, the use of the term burnout becomes meaningless. In fact, some authors have defined burnout as a withdrawal (Gould, Tuffey, Udry, & Loehr, 1996a, 1996b, 1997), a form of overtraining (Silva, 1990), or simply as dropout from the sport (Coakley, 1992). Raedeke (1997) suggested returning to the initial definition given by Maslach in the work setting. Accordingly, he has proposed a definition of burnout that is characterised by three dimensions, and adapted these dimensions to the sport domain. He replaced depersonalisation with sport devaluation, which represents a devaluation of the perceived benefits gained from sport involvement, and is arguably a sport-specific manifestation of the broader state of cynicism forwarded by Maslach, Schaufeli and Leiter (2001). The definition of athlete burnout is a syndrome characterised by: physical and emotional exhaustion, sport devaluation and reduced sense of accomplishment (Raedeke, 1997). Several studies based on this definition have shown that burnout is related to a feeling of being trapped (*i.e.*, lack of pleasure, lack of attraction for other activities, high social constraints, high costs, low benefice, high investments; Raedeke, 1997), a low self-determined motivation (Cresswell & Eklund 2005a, 2005b, Lemyre, Treasure & Roberts, 2006), dissatisfaction with the three basic psychological needs (*i.e.*, autonomy, competence, relatedness; Perreault, Gaudreau, Lapointe, & Lacroix 2007) and

maladapted perfectionism (i.e., concern over mistakes, high criticism and parental expectations, doubts about action and high personal standards; Lemyre, Hall & Roberts, 2008).

According to this definition and with other inventories like the Eades' Athlete Burnout Inventory<sup>1</sup> (EABI; Eades 1990) and the Maslach Burnout Inventory (MBI, Maslach, Jackson & Leiter, 1996), Raedeke and Smith (2001) developed a questionnaire designed to assess athletes' burnout: the Athlete Burnout Questionnaire (ABQ). The ABQ measures the three dimensions of burnout and is composed of 15 items (adapted from the EABI and the MBI): five items measuring each dimension of athlete burnout (i.e., physical and emotional exhaustion, reduced accomplishment, and sport devaluation). Participants respond on a five-point Likert-scale (1: almost never to 5: most of time). This frequency rating format was preferred because the format of the MBI and EABI makes it easier for participants of different ages to respond and because not all athletes train throughout the entire year (Raedeke & Smith, 2001). The ABQ displayed satisfactory discriminant and convergent validity (Cresswell & Eklund, 2006b; Raedeke & Smith, 2001). In fact, in a study that aimed to develop and validate the ABQ, Raedeke and Smith have established an internally consistent as well as content and factorially-valid athlete burnout measure with three subscales (i.e., physical and emotional exhaustion, reduced accomplishment, and sport devaluation). Moreover, they confirmed that the construct validity of the measure was supported by relationships observed between the burnout subscales and theoretically related constructs. In another study, Cresswell and Eklund (2006b) tested the convergent and discriminant validity of the ABQ and found it to have convergent validity with the MBI, and discriminant validity with the DASS (Depression Anxiety Stress Scale; Lovibond & Lovibond, 1995).

The purpose of this study is to validate a French version of the ABQ, using two phases on two samples, and to demonstrate that a model of burnout exists that comprises three first

order latent variables and a second order latent variable. According to Raedeke and Smith (2001), and to Cresswell and Eklund (2006b), the scale is intended for use in different contexts and in different sports. In one sample, the context is intensive training in the sport of handball, and the other context is school physical education. We consider that it is in keeping with the original version of the scale, and that the two samples were appropriate to test the validity of the scale. A first goal was to assess the factorial validity evidence of the three subscales of the French version. A second goal was to examine the scale reliability and to provide evidence of the construct validity by examining the relationship between burnout and self-determination, self confidence and anxiety in a competitive sport and physical education context.

#### Factorial Validity Evidence of the French ABQ

##### *Participants:*

Four-hundred-thirty-four pupils aged from 11 to 19 yr (225 female and 209 male) studying in Years 7, 8, 11, 12, and 13, and 461 players of the French handball school aged from 13 to 18 yr (213 female and 248 male) participated in this study.

##### *Translation:*

The current study is the first validation of the ABQ in French. The original ABQ consists of 15 items that assess emotional and physical exhaustion, (e.g., “I feel so tired from my training that I have trouble finding energy to do other things”), reduced accomplishment, (e.g., “I am not achieving much in sport”) and sport devaluation, (e.g., “I feel less concerned about being successful in sport than I used to”) with 5 items measuring each dimensions in the initial version of the ABQ. Translation of the ABQ was conducted by a standardized back-translation procedure.



Three English teachers assisted with the initial translation of the questionnaire. Then a test population of 10 pupils aged from 11 to 13 and 12 players of a handball team aged from 12 to 16 responded to the questionnaire and determined if the items were clear (rated on a 5-point Likert scale; 1: not clear at all to 5: totally clear). Finally, four bilingual subjects (English teachers) answered the two questionnaires. Two subjects answered the French ABQ questionnaire then the English one. The other two subjects answered the English questionnaire first, followed by the French version.

With the three French translations of the questionnaire, the wording of different items was discussed and a consensus reached to develop a final single version. The test population revealed that all the items had a level of clarity greater than 4, except three items that have been removed of the analysis because there were considered as “not clear” (item 1, 12 and 15 of the ABQ). The results revealed a satisfactory concurrent validity between French and English subscales. The final scale is made of 4 items for each component of burnout; emotional and physical exhaustion (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), and sport devaluation (e.g., The effort I spend during PE classes/training sessions would be better spent doing other things). The 12 items of the French version of the ABQ (Raedeke & Smith, 2001) were rated on 5-point Likert-scale ranging from 1 = almost never to 5 = most of the time.

#### *Procedure:*

Following ethical approval from the institutional research ethics board, coaches of each team/athlete and teachers of each classroom were contacted to obtain permission to approach their athletes or students for participation in the study. Students and athletes’ participation was voluntary, written informed consent was obtained from the parents of the athletes and the pupils prior to data collection, and confidentiality was ensured.

*Data analysis:*

The precision of a measurement includes two ordered types of analyses: the estimation of factorial and construct validity. A confirmatory factor analysis with three first order factors (i.e., reduced sense of accomplishment, physical and emotional exhaustion, and sport devaluation) and one second order factor (i.e., burnout) was conducted. Consistent with the preliminary study of Raedeke and Smith (2001), only one model was tested in our study. In fact in the study of Raedeke and Smith, a three-factor first-order model and four alternative first-order models were tested and the analysis revealed that the three-factor first-order model had the best data fit. More recently, Cresswell and Eklund (2005a) tested models featuring a second-order burnout latent variable and first-order burnout latent variables relating to the three dimensions of ABQ. This second-order latent approach for burnout was conceptually warranted and consistent with previous research (Kelley, Eklund & Ritter-Taylor, 1999). Specifically, the three dimensions are proposed to be a part of the burnout syndrome. The syndrome assumes, at least conceptually, that manifestations or symptoms are the result of a common cause. The second-order latent burnout variable represents this common cause. The model was tested using maximum likelihood estimation on the covariance matrices with Lisrel 8.71 (Jöreskog & Sörbom, 2004). It is recommended to examine and report a range of fit indices to achieve a comprehensive evaluation of fit (Hu & Bentler, 1995). Based on the suggestions made by several researchers (Hu & Bentler, 1998, 1999; MacCallum & Austin, 2000) and to enable comparisons with previous studies, multiple fit indices were therefore chosen to assess model fit: the  $\chi^2$  ( $\chi^2$  (df)), the Bentler-Bonett non-normed fit index (NNFI), the comparative fit index (CFI), the goodness of fit index (GFI), and the root mean square error of approximation (RMSEA). Values between .90 and .94 for the CFI and NNFI indicate acceptable fit, whereas values of .95 and higher indicate relatively good fit. RMSEA values

less than .05 represent a close fit, whereas values greater than .10 are regarded as unacceptable. To test the reliability of the scale, we have computed coefficients of internal consistency and compared them with the original values of the ABQ. In the course of construct validation, the researcher seeks empirical evidence in support of hypothesized relations both among theoretically related constructs (convergent validity) and/or among unrelated constructs (discriminant validity). As previous study has supported convergent and discriminant validity of the ABQ (Cresswell & Eklund, 2006b), the present study focused solely on the convergent validity. Then, we examined the correlations between the three subscales of ABQ and theoretically related constructs (i.e., motivation, anxiety, and self-confidence).

#### *Results:*

##### *Confirmatory factor analysis of the three subscales of the French version of the ABQ:*

Before carrying out factor analysis, we ensured the homogeneity of covariance structures for males and females. The test of variance revealed that the variance-covariance matrices of male and female are homogeneous (Box's M;  $F = .85$ ,  $df = 6$ ,  $p > .05$ ). We also ensured the invariance of the two sub-samples (pupils and handball players). We carried a test of invariance with the  $\chi^2$  difference's test (with Lisrel 8.71). The comparison of the equal and the unequal models revealed that the cross validation of the measurement model across samples is supported by the data of the two sub-samples (Difference between the two sub-samples;  $\chi^2 = 467.50$ ,  $df = 29$ ,  $p < .001$ )

In order to examine whether the translated items to assess emotional and physical exhaustion, reduced accomplishment and sport devaluation is conform to the proposed operational definition of burnout, a confirmatory factor analysis was conducted. Univariate normality was explored by calculating the skewness and kurtosis of each item. Muthèn and

Kaplan (1985) suggested that both skewness and kurtosis should have values lower than one in absolute value. The results showed that skewness and kurtosis ranged from .01 to .96.

Thus, there was no indication of a strong deviation from normality and the computation of a factor analysis using the maximum likelihood method was considered appropriate.

----- Insert figure 1 approximately here -----

The goodness-of-fit indices of the measurement model that specified the three first –order ABQ factors loaded on a single second-order factor reached acceptable values ( $\chi^2 (51) = 260.33$ , NNFI = .95, CFI = .96, GFI = .95, RMSEA = .07). Means and standard deviations for each dimension of the French ABQ are shown in table 1. The standardised factor loadings, error variances and correlations of the latent constructs (i.e., reduced accomplishment, sport devaluation, and physical and emotional exhaustion) with the burnout are shown in figure 1. All  $\lambda$  were significant at  $p < .05$  ( $t > 1.96$ ). These results, which were highly comparable with those observed by Raedeke and Smith (2001) on the three burnout subscales (i.e.,  $\chi^2 (87) = 189.9$ ,  $p < .01$ , NNFI = .93, CFI = .94, GFI = .90, RMSEA = .07), suggested that the hierarchical three factor model of the French ABQ provided acceptable data fit.

----- Insert table 1 approximately here -----

### Construct Validity Evidence

We assessed the reliability of the French ABQ by examining the Cronbach's alpha coefficients of the ABQ subscales. These results provided evidence for the adequate internal consistency of the three subscales of the French ABQ: with Cronbach alpha coefficients varying from .75 to .88 (see table 1). These results are above Nunnally (1978) and Henson's (2001) suggestions, so we sought reliability for our data and interpreted results in light of the previous validation of the original scale. In fact, Cresswell and Eklund (2006b), and Raedeke and Smith (2001) found that the burnout subscales' alphas ranged from .71 to .87 which is

close to our findings. However, we computed the item-total correlations, and found that values were all higher than .49, which is satisfactory (Kline, 2000). Acceptable reliability and factorial validity do not ensure that a scale is measuring the construct it is designed to measure. It is also important to specify the relations of the underlying constructs assumed to be measured by the scales with other theoretically related constructs (i.e., construct validity). In this study, convergent validity was assessed through correlations (characterized as small to large following Cohen recommendations, 1988) between specific constructs, i.e., motivation, self confidence and anxiety, and the subscales of the ABQ were theoretically expected to correlate. Several authors have examined the relations between motivation and burnout. Interested in the forms of motivation, some authors (Cresswell & Eklund, 2005a, 2005b, 2005c; Gustafsson, Hassmén, Kenttä, & Johansson, 2008; Lemyre & al., 2006, Raedeke & Smith, 2001) have shown that burnout is negatively related to self-determined motivation and positively related to the less self-determined forms of motivation. Also, anxiety is supposed to be related to the three dimensions of burnout. In fact, some authors have highlight that the burnout is linked to negative affects (Cresswell & Eklund, 2006a; Eklund & Cresswell, 2007; Hendrix, Acevedo, & Hebert, 2000; Raedeke & Smith, 2001, 2004). Moreover, competitive anxiety has been positively associated with the burnout dimensions (Vealey, Armstrong, & Comar, 1998; Wiggins, Crenades, Lai, Lee, & Erdmann, 2006). In regard to these results and in comparison with Raedeke and Smith's (2001) findings, analyses revealed that the three dimensions of burnout have moderate to large and positive correlations with the less self-determined forms of motivation (i.e., amotivation and external regulation) and to the two forms of anxiety; and have negative moderate to large correlations with the most self-determined forms of motivation (i.e., intrinsic motivation) and self-confidence.

*In a Physical Education Context:*

*Participants and procedure:*

434 pupils aged from 11 to 19 (225 female and 209 male) studying in Year 7, 8, 11, 12, and 13. They voluntarily completed the questionnaire during a class at school. Their parents and the principal agreed with their participation to the study.

*Measure:**Motivation:*

A 16-item French language scale modified from the Sport Motivation Scale (EMSI-16, Guay, Vallerand, & Blanchard, 2000) and adapted to the school context was used. The EMSI-16 has originally been developed to measure the various types of motivation described in self-determination theory (Deci & Ryan, 1991). For the purpose of this investigation, three 4-item subscales representing polar ends of the self-determination continuum were selected for use and included in the questionnaire under the heading, “why do you participate in school?” These subscales measured: amotivation, external regulation, and related intrinsic motivation. Responses were provided on 7-point Likert scales anchored by “does not correspond at all” (1), and “corresponds exactly” (7). The alpha coefficients (from .71 to .83) were above Nunnally (1978) and Henson’s (2001) recommended standards.

*Results:*

As expected, significant relationships in the expected directions were observed between the ABQ subscales and motivation (see table 1).

The reduced accomplishment subscale correlated negatively and moderately ( $r = -.36$ ) with intrinsic motivation, had a positive and small correlation ( $r = .18$ ) with external regulation, and correlated positively and moderately ( $r = .47$ ) with amotivation. The physical and emotional exhaustion subscale had a negative and small correlation ( $r = -.25$ ) with intrinsic motivation, and correlated positively and moderately ( $r = .33$ ) with amotivation.

Finally, the sport devaluation subscale had a negative and small correlation ( $r = -.25$ ) with intrinsic motivation, and correlated positively and moderately ( $r = .41$ ) with amotivation.

*In competitive sport*

*Participants and procedure:*

461 players (213 female and 248 male) of the French handball school aged of 13-18 years ( $M = 15,68$ ;  $SD = 1,17$ ). They had an average of 12 hours of training of per week. Prior to the study we made contact with the coaches and athletes. The athletes were informed as to the general purpose of the study and parental consent was requested for under-age athletes. They completed the questionnaire after a training session at the handball school

*Measures:*

*Sport Motivation:*

Four subscales of The Sport Motivation Scale (SMS; Brière, Vallerand, Blais, & Pelletier, 1995) which measured a) amotivation (e.g., “I used to have good reasons for playing rugby, but now I am asking myself if I should continue doing it”), b) external regulation (e.g., “Because it allows me to be well regarded by people I know”), c) intrinsic motivation to know and toward accomplishment (e.g., “Because I feel a lot of personal satisfaction while mastering certain difficult training techniques”), and d) intrinsic motivation to experience stimulation (e.g., “For the excitement I feel when I am really involved in the activity”) were used. Responses were provided on 5-point Likert scales anchored by 1, “does not correspond at all” and 5, “corresponds exactly”. The alpha coefficients for amotivation ( $\alpha = .80$ ), external regulation ( $\alpha = .71$ ), intrinsic motivation to know and toward accomplishment ( $\alpha = .68$ ), and intrinsic motivation to experience stimulation ( $\alpha = .84$ ) subscales of the SMS were above Nunnally (1978) and Henson’s (2001) recommended standards.

*Competitive anxiety state:*

A scale of competitive anxiety state responses (EEAC; Cury, Sarrazin, Pérès, & Famose, 1999) was used and comprised of 17 items which measured a) self confidence (e.g., “I’m confident I can meet the challenge”), b) somatic anxiety (e.g., “I feel tense in my stomach”) and c) cognitive anxiety (e.g., “I’m concerned that others will be disappointed with my performance”) with 5, 7 and 5 items respectively. Responses were provided on 5-point Likert scales anchored by 1, “does not correspond at all” and 5, “corresponds exactly”. The alpha coefficients for self confidence ( $\alpha = .79$ ), somatic ( $\alpha = .74$ ), and cognitive anxiety ( $\alpha = .79$ ) were above Nunnally (1978) and Henson’s (2001) recommended standards.

*Results:*

*Motivation*

As we had highlighted earlier, motivation appear to be associated with burnout. Significant relationships in the expected directions were observed between the ABQ subscales and motivation (see table 1).

The reduced accomplishment subscale had (1) negative and small correlation ( $r = -.17$ ) with intrinsic motivation to know and toward accomplishment, (2) a negative and small correlation ( $r = -.18$ ) with intrinsic motivation to experience stimulation, (3) a positive and small correlation ( $r = .21$ ) with external regulation, and (4) a positive and moderate correlation ( $r = .45$ ) with amotivation. The physical and emotional exhaustion subscale had a positive and small correlation ( $r = .15$ ) with extrinsic motivation external regulation, and had a positive and small correlation ( $r = .12$ ) with amotivation. Finally, the sport devaluation subscale correlated negatively and moderately ( $r = -.29$ ) with intrinsic motivation to know and toward accomplishment; had a small and negative correlation ( $r = -.13$ ) with intrinsic motivation to experience stimulation; correlated positively and moderately ( $r = .34$ ) with extrinsic motivation external regulation; and correlated positively and moderately ( $r = .49$ ) with amotivation.



*Anxiety*

Anxiety and self confidence have been found to be correlated to the subscales of the ABQ (see table 1). The reduced accomplishment subscale correlated negatively and moderately ( $r = -.45$ ) with self confidence, had a positive and small correlation ( $r = .12$ ) with somatic anxiety, and correlated positively and moderately ( $r = .40$ ) with cognitive anxiety. The physical and emotional exhaustion subscale had a positive and small correlation ( $r = .17$ ) with somatic anxiety. Finally, the sport devaluation subscale had a negative and small correlation ( $r = -.14$ ) with self confidence.

In summary, the correlations between the ABQ subscales and the SMS and the EEAC in physical education and competitive sport context support the construct validity of the French ABQ.

## Discussion:

Due to pressures from the media, sport organisations, and training and competition schedules, athlete burnout has been a subject of research interest over the past ten years. The increasing demands on athletes associated with the pressure to perform can lead them to experience negative states such as burnout. In fact, more and more specialists of sport use burnout to explain some diminished performance by athletes. A valid measure of this phenomenon has been developed by Raedeke and Smith (2001) but at this day no translation in French has been made. The aim of this research was the validation of a French version of the Athlete Burnout Questionnaire.

The validity of the French ABQ was supported by two sources of evidence. First the confirmatory factor analysis supports the three-factor model of the ABQ proposed by Raedeke and Smith (2001). Moreover, our results also confirm a hierarchical model with three first order latent variables and a second order latent variable, according to previous

research which has used the English version of the ABQ (Cresswell & Eklund, 2005a). These authors have used a hierarchical model with a second-order factor and three first-order factors, and found good data fit with of this model.

Secondly, acceptable reliability has been demonstrated by the analysis of the internal consistency coefficients. Relationships between burnout subscales and theoretically related constructs confirm previous research on athletic burnout (Cresswell & Eklund, 2006b). In fact, Cresswell and Eklund have shown that the ABQ has both convergent and discriminant validity because it's related to the MBI and not related to scores on the DASS. The French ABQ subscales are related to other variables in accordance with the theoretical expectations and previous findings. In the physical education context, burnout subscales showed small-to-moderate and negative relationships with intrinsic motivation and moderate and positive relationships with amotivation. These results support the findings of the literature, that is the less self-determined forms of motivation are negatively linked, and the most self-determined forms of motivation are positively linked, to burnout (Cresswell & Eklund, 2005a, 2005b; Martin-Krumm, Oger, & Sarrazin, in press). In the competitive sport context, burnout subscales showed small to moderate and negative relationships with intrinsic motivation and self-confidence and small to moderate and positive relationships with external regulation, amotivation and anxiety. These results confirm previous findings; the most self-determined forms of motivation are negatively linked to the three dimensions of burnout (Cresswell & Eklund, 2005a, 2005b). Some studies have also shown that the burnout is positively linked to anxiety and negatively related to self confidence (Guillet & Gauthier, 2008; Raedeke & Smith, 2004; Wiggins, Crenades, Lai, Lee, & Erdmann, 2006).

In conclusion, the results of this study advance previous athlete burnout research by showing that the French ABQ has acceptable psychometric properties and is a reliable and valid tool to estimate burnout in young athletes and students in physical education classes.

The large sample size in our study adds to the validity of our findings. However, further research could confirm the validity of the French ABQ using indices of external validity and assessing its reliability and validity with an even larger sample. More validation studies are required to evaluate whether the results are invariant across type of sport, context or age.

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## Appendix: Questionnaire du Burnout Sportif

Presque jamais	Rarement	Quelquefois	Fréquemment	Très souvent
1	2	3	4	5

*Dimension « Epuisement » :*

1. Je suis tellement fatigué(e) à la sortie de mon entraînement/ mon cours d'EPS que j'ai du mal à trouver l'énergie de faire autre chose après

3. Je me sens très fatigué(e) par l'entraînement/ les cours d'EPS

6. Je me sens crevé(e) lorsque je sors de l'entraînement/ du cours d'EPS

8. Je suis physiquement épuisé(e) par l'entraînement/ les cours d'EPS

*Dimension « Dévalorisation » :*

2. Les efforts que je fournis à l'entraînement /mon cours d'EPS seraient mieux utilisés à faire autre chose

7. Je ne suis plus autant impliqué(e) dans le handball/ dans mon travail en EPS qu'auparavant.

9. C'est moins important pour moi de réussir dans le handball qu'avant/ Le fait de réussir en EPS ne m'intéresse pas plus que ça, pourtant je devrais y faire attention

11. Je me soucie moins de ma performance à l'entraînement qu'auparavant/ le travail en EPS ne m'intéresse pas trop, pourtant je devrais faire plus d'efforts pour m'y intéresser.

*Dimension « Accomplissement » :*

4. Je n'ai pas l'impression de réussir à l'entraînement/ en cours d'EPS

5. Compte tenu de ce que je suis capable de faire à l'entraînement/ en EPS, je n'obtiens pas les résultats que je devrais obtenir

10. Il me semble que quoi que je fasse, je n'obtiens pas les résultats que je devrais obtenir à l'entraînement/ en EPS

12. Je me sens en réussite à l'entraînement (IR)/ J'ai beau faire beaucoup d'efforts en EPS, je n'arrive pas à avoir les résultats que je voudrais avoir

Footnote

<sup>1</sup> The EABI is an instrument from an unpublished master's thesis which has evident problems because it is not theoretically grounded and no rigorous empirical evaluation has been reported. However this measure is grounded in the work of Maslach and Jackson (1981).

Table 1

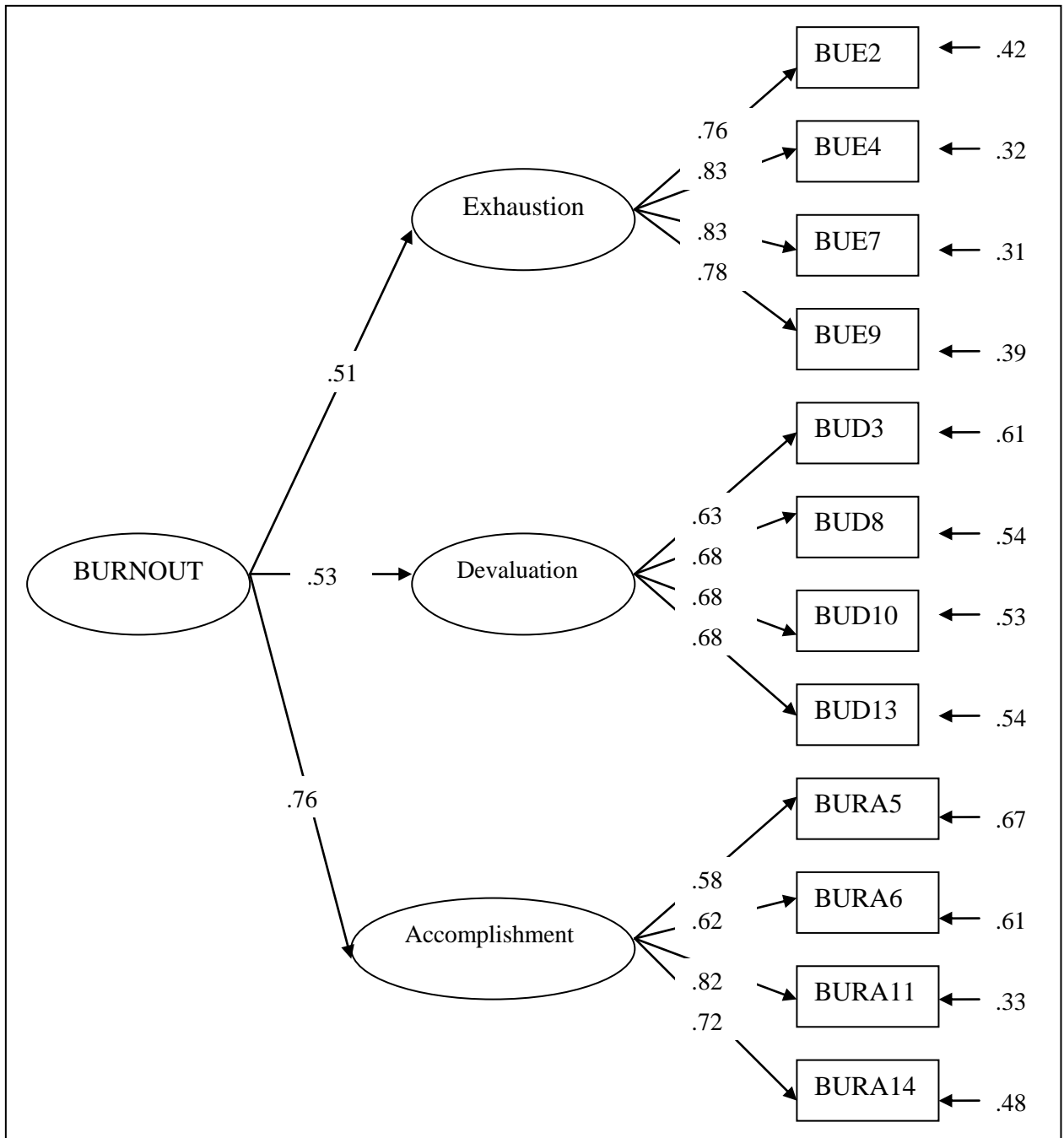
*Means, standard deviations, Cronbach alphas and correlations between the French ABQ subscales and motivation, self confidence and anxiety.*

	<i>Reduced Accomplishment</i>	<i>Exhaustion</i>	<i>Sport Devaluation</i>
Mean	2.73	2.65	2.02
SD	.91	.99	.91
Cronbach's alpha	.77	.88	.75
<i>Intrinsic Motivation</i>			
in PE context	-.36*** <i>M</i>	-.25*** <i>S</i>	-.25*** <i>S</i>
to know and to accomplish in CS context	-.17*** <i>S</i>		-.29*** <i>M</i>
to experience stimulation in CS context	-.18*** <i>S</i>		-.13** <i>S</i>
<i>Extrinsic Motivation</i>			
external regulation in PE context	.18** <i>S</i>		
external regulation in CS context	.21*** <i>S</i>	.15** <i>S</i>	.34*** <i>M</i>
<i>Amotivation</i> in PE context	.47*** <i>M</i>	.33*** <i>M</i>	.41*** <i>M</i>
<i>Amotivation</i> in CS context	.45*** <i>M</i>	.12** <i>S</i>	.49*** <i>M</i>
<i>Somatic Anxiety</i> in CS context	.12* <i>S</i>	.17*** <i>S</i>	
<i>Cognitive Anxiety</i> in CS context	.40*** <i>M</i>		
<i>Self confidence</i> in CS context	-.45*** <i>M</i>		-.14** <i>S</i>

Note: PE = physical education, CS = competitive sport, *S* = small:  $.10 < r < .30$ , *M* = moderate:  $.30 < r < .50$ , *L* = large:  $r > .50$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Figure captions

*Figure 1: Hierarchical Confirmatory Factor Analysis of the three dimensions of burnout*



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