

Development and Validation of the *Elite Athlete Commitment Scale*

Sílvia Ramadas*, Sidónio Serpa*, António Rosado*,
Esmeralda Gouveia* and João Maroco**

DEVELOPMENT AND VALIDATION OF THE ELITE ATHLETE COMMITMENT SCALE

KEY WORDS: Sport commitment, Psychological evaluation, Test validation.

ABSTRACT: Research has led to the development of a recent measure of sport commitment entitled the *Elite Athlete Commitment Scale* (EACS). This tool is based on three factors (school/employment dedication, social isolation and life discipline) and it was designed to assess to what extent athletes are willing to give up certain activities in order to increase their involvement in sport. In an initial study, a confirmatory factor analysis confirmed that these factors reflect the three different facets of the commitment construct. When a second-order factor (commitment) was added, the goodness-of-fit indexes still displayed very good values. In a second study, criterion and construct validity were assessed. The results represent a valid contribution to the field of sports psychology, bearing in mind this construct's discriminatory capacity at different levels of sports performance.

Elite competition is frequently assumed to be extremely demanding for those who aspire to reach the highest levels of sport performance. Setbacks like injuries, lack of confidence, performance disappointments or significant others demands are integral part of a typical elite career and may be considered just some of the adversities which athletes must deal with. Considering the high standards of elite sports, athletes need to dedicate a considerable amount of time to their specific field of activities (Bloom, 1985), which in turn has an impact on their daily routines. It is well known the difficulty that youth elite athletes feel when they need to conciliate a well succeed sport participation and the achievement of normative goals in academic or professional fields (Christensen and Sørensen, 2009). This topic is particularly crucial when they must face the normative transitions once these can be considered critical periods in what burnout and dropout concern.

Therefore, the management of their daily schedules requires high levels of commitment during a longitudinal development process and consequently this construct assumes to be a key point in the development of an elite career in fields like arts, science, music or sports (Csikszentmihalyi, Rathunde and Whalen, 1993). In what sport context concerns, this construct has been defined as a "psychological construct representing the desire and resolve to continue the sport participation" (Scanlan, Carpinter, Schmidt, Simons and Keeler, 1993, p. 6) and it had gained considerable interest of the scientific community once it's accepted that an athlete with high levels of sport commitment has fewer probabilities of dropout (Sousa, Torregrosa, Viladrich, Villamarín and Cruz, 2007; Weiss and Weiss, 2006).

Following Rusbult's investment model of commitment (Rusbult, 1980), Scanlan et al. (1993) proposed the sport commitment model (SCM). Generally, the test of the SCM shows promise results in youth sport cross-sectional studies, supporting the overall model, but some conclusions did not fit the integral model's assumptions, mostly the social constrains dimension which results have not proven the respective predictive relationship (Sousa et al., 2007; Weiss, Weiss and Amorose, 2010). Some items have also emerged as problematic (Sousa, Viladrich, Gouveia, Torregrosa and Cruz, 2008), with plausible explanations related to the characteristics of the sample, either because they were composed by youth amateur athletes or based on the fact that in specific samples the competitive level of the athletes does not put any constrains in conciliation with other activities.

Furthermore, the inconsistency of results may also lay on the fact that sport commitment model surveys have been limited by several conceptual and statistical research issues, namely the violation of the normal distribution assumptions using regression analytic techniques, as well as, the lack of determination of the conceptual validation according to different sports, age groups, cultural groups and gender (Crocker and Augaitis, 2010).

Although this line of investigation is undoubtedly pertinent in what this construct concerns, when we focus the attention on more specific samples other key questions can also be raised, particularly in the case of the youth elite athletes who need to face the demands of sport transitions. Hence, considering their elite sport participation, are they willing to discontinue their academic career? Are they willing to stay long periods of time far away

Correspondencia: Sidónio Serpa. Faculdade de Motricidade Humana - Universidade Técnica de Lisboa. Morada: Estrada da Costa, 1495-688, Cruz Quebrada, Lisboa, Portugal.
E-mail: sserpa@fmh.utl.pt

* Univ. Técnica de Lisboa. Faculdade de Motricidade Humana. Portugal.

** Instituto Superior de Psicologia Aplicada. Portugal.

— Fecha de recepción: 19 de Mayo de 2012. Fecha de aceptación: 13 de Febrero de 2013.

from their hometown and family? Are they willing to abdicate the dates on weekends because of competitions? Are they willing to renounce typical holidays with their families to prepare to or participate in national/international championships?

Making an allowance for the research gap on these crucial dimensions of elite sport commitment, current survey aims to present the development process of the elite athlete commitment scale (EACS), conceptualized to evaluate how much the athletes are willing to abdicate of several activities in a way to reinforce their elite sport participation.

Similar to other conceptual models, as it is the case of Rusbult's (1980) investment model of commitment and the Three-component model investment of organizational commitment (Meyer and Allen, 1991), current research also focuses on the antecedents of commitment and intents to contribute to a reliable multidimensional commitment assessment based on the dimensions presented below. These procedures constitute a first step to develop a more complex conceptual model that may include in the future the respective consequences of commitment in sports setting, such as the attitudes towards training effort or determination to succeed. Moreover, this tool might be useful to access burnout or dropout phenomena, particularly in youth elite athletes. Actually, possible diagnostics, as well as, educational programs guidelines related with both topics may constitute some of the utilities of this measure in a way to enhance elite athletes sport performance and well-being.

Study 1: Confirmatory Factor Analysis

Method

Participants

A sample of 297 Portuguese athletes, aged between thirteen and forty ($M = 17.22$; $SD = 3.83$), participated in this research. Participants were involved in several sports and different levels of performance (237 competed at elite or sub-elite level and 60 at regional level). From those, 252 were male and 45 female.

Procedures

Players, parents, or legal representatives provided their consent to take part in the research and the athlete's participation was voluntary. The questionnaires were administered in the club auditorium before the training sessions with the presence of the researcher. The athletes took approximately 35 minutes to fill in the questionnaires and it was assured that their answers would remain confidential.

Data analysis

Confirmatory factor analysis (CFA) was conducted with Software Amos (v.18.0, IBM company) using maximum likelihood (ML) estimation.

Means and standard deviations were computed for all variables. Univariate and multivariate normality were assessed considering the absolute values of univariate skewness and kurtosis, as well as, the Mardia's multivariate kurtosis (Mardia, 1974), respectively.

To evaluate the fit of the data to the hypothesized three factor model several goodness-of-fit indexes were used, namely the chi-

square likelihood ratio statistic (χ^2), chi square to degrees of freedom ratio (χ^2/df), the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the parsimony comparative fit index (PCFI), and the goodness-of-fit index (GFI).

In a way to access construct validity, convergent and discriminant validities were considered. In the first case each latent construct was considered to process .50 or greater average variance extracted (AVE) as proposed by Hair, Anderson, Tatham and Black (1998). In the second case discriminant validity was considered if the AVE value of the latent construct was greater than the squared correlation between the factor and each of other constructs (Fornell and Larcker, 1981).

Cronbach's *alpha* (Cronbach, 1951) was used to test scale reliability. Additionally, considering Gadermann, Guhn and Zumbo (2012) suggestions, ordinal alpha was also estimated with software R (v. 2.15.1). According to these authors, this coefficient is suitable to evaluate data derived from ordered responses categories (e.g. Likert scale).

Measures

This research was completed through a four step multi-stage procedure. Firstly, a preliminary version was achieved based on a brainstorming session undertaken between a sport psychology researcher and eight elite athletes about the topic "Elite sport commitment: Demands and sacrifices". During the two hour activity participants were encouraged to present their ideas, discuss the topic or even clarify unfamiliar terms. Consensual position pointed out three main representative topics and definitions of elite athlete commitment: a) the willingness of the athletes to set aside school/work projects in order to pursue elite sport - school/employment dedication; b) the willingness of the athletes to renounce valued social activities in a way to reinforce their elite sport participation - social isolation; and c) the willingness of the athletes to engage in a lifestyle compatible with the elite sport demands - life discipline.

Secondly, the scale was refined to capture the specified domain and content validity assessed through a quantitative approach and expert review. Three experienced sport psychologists familiarized with elite athletes counseling and with the construct under investigation participated in the content evaluation procedures of the operational definitions. The analysis proceeds with the psychometric evaluation in larger samples of athletes. The tested version had 12 items and the answers were given on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) (appendix A).

Thirdly, an exploratory factor analysis was conducted considering a sample of 200 athletes, aged between fifteen and twenty five, involved in several sports and levels of performance. Principal component analysis with varimax rotation was used. The Kaiser-Meyer-Olkin found value was .74, and the Bartlett Test of Sphericity reached a statistical significant value of $p < 0.001$, $\chi^2(66, n = 200) = 618.67$. The results yielded a three-factor solution based on the selection of the eigenvalues larger than 1.0 which account for 55.39% of total variance explained.

The final step evaluated the proposed model using confirmatory factor analysis (CFA).

Model	Dimensions	Item	Skewness	Kurtosis	Cronbach Alpha	Ordinal Alpha	Global Cronbach Alpha	Global Ordinal Alpha	Mardia's value
EACS 12 Items	School Dedication	2	.68	-.53	.84	.88	.86	.89	37.86
		5	.12	-1.21					
		8	-.19	-.99					
		10	1.13	.44					
	Social Isolation	1	-.88	-.22	.83	.87			
		4	-.58	-.47					
		7	-.75	-.28					
		11	-.25	-1.00					
	Life Discipline	3	-.65	-.54	.69	.79			
		6	-.40	-.61					
		9	-2.61	6.26					
		12	-1.03	.32					
EACS 10 Items	School Dedication	2	.68	-.53	.84	.88	.85	.90	24.55
		5	.12	-1.21					
		8	-.19	-.99					
		10	1.13	.44					
	Social Isolation	1	-.88	-.22	.84	.79			
		4	-.58	-.47					
		7	-.75	-.28					
		11	-.25	-1.00					
	Life Discipline	3	-.65	-.54	.78	.81			
		6	-.40	-.61					
		9	-2.61	6.26					
		12	-1.03	.32					

Table 1. Scales reliability, univariate and multivariate normality.

Results

The results confirm the univariate normality assumptions (Table 1), taking into account that absolute values of skewness and kurtosis are below 3 and 7 respectively (Kline, 2004). Yet, Mardia's coefficient indicated a lack of multivariate normality (37.863).

To deal with this assumption, the bootstrap procedure was used. According to Efron (1982), this is one of the most appropriate procedures when the multivariate normality is not met and the researchers wish to use the ML estimation method. The initial CFA did not show a good fit of the three factor structures to the variance-covariance data matrix: Scaled χ^2 (51, $n = 297$) = 196.95, $p < .01$, $\chi^2/df = 3.85$; RMSEA = .09, CFI = .90, GFI = .90, PCFI = .69, SRMR = .078. To improve the model fit and revise the factor structure, additional analysis were

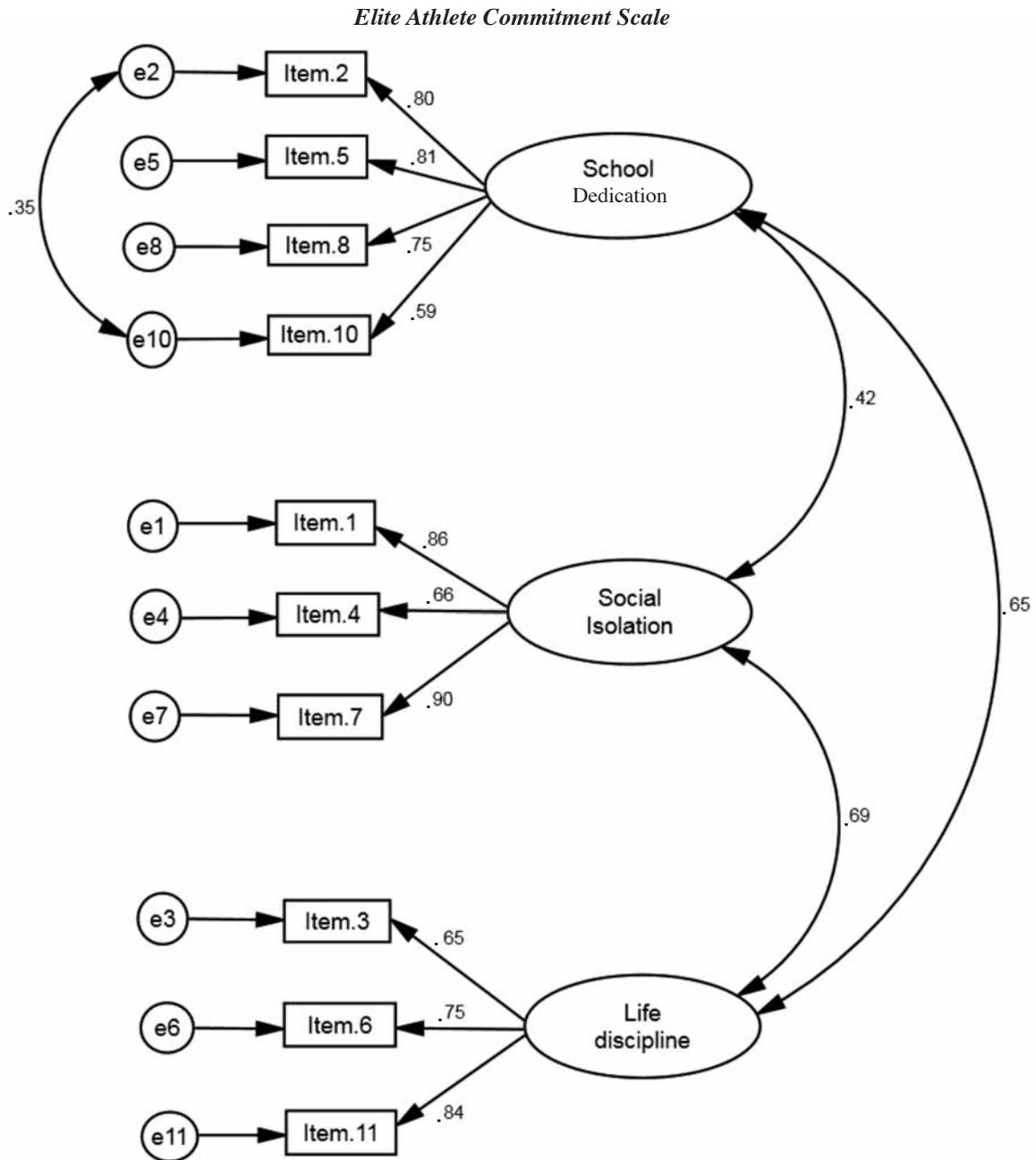
conducted based on the modification indices (MI), factor loadings, convergent validity and discriminant validity. Consequently, two items were dropped from the original model (Appendix A), namely the item 12 and the item 9. Truly, also the respective standardized residuals covariances achieved acceptable results (Item 9, between -1.86 and 1.38; Item 12, between -1.38 and 2.56), these two items reached low factor loadings, namely $\chi = .40$ (item 9) and $\chi = .51$ (item 12).

Moreover, a covariance between the errors for the items 2 and 10 was added (MI = 11.191), which can be explained by the fact that both items compose the same dimension (school/employment dedication). Finally, according to data the item 11 has better loadings with life discipline factor (MI = 51.41). Although this scenario usually leads to an item dropping, it is important to consider that these changes are data-driven and therefore, based

on the respective construct relevance, this item was maintained, this time associated with life discipline factor.

These modifications lead to a considerable improvement of the model and all indices were according to the recommended

rules of thumb (Brown, 2006; Maroco, 2010) meeting very good criteria standards goodness of fit: Scaled χ^2 (31, $n = 297$) = 54.293, $p < .01$, $\chi^2/df = 1.75$, RMSEA = .05, CFI = .98, GFI = .96, PCFI = .67, SRMR = .0387.



Note. χ^2 (31) = 54.293; $p = .006$; $\chi^2/df = 1.751$; CFI = .984; PCFI = .678; GFI = .964; RMSEA = .50; p (RMSEA < 0.05 = .461).

Figure 1. EACS first order model.

The factor loadings between latent and observed variables are all greater than .59 which is considered good to excellent (Tabachnick and Fidell, 2007).

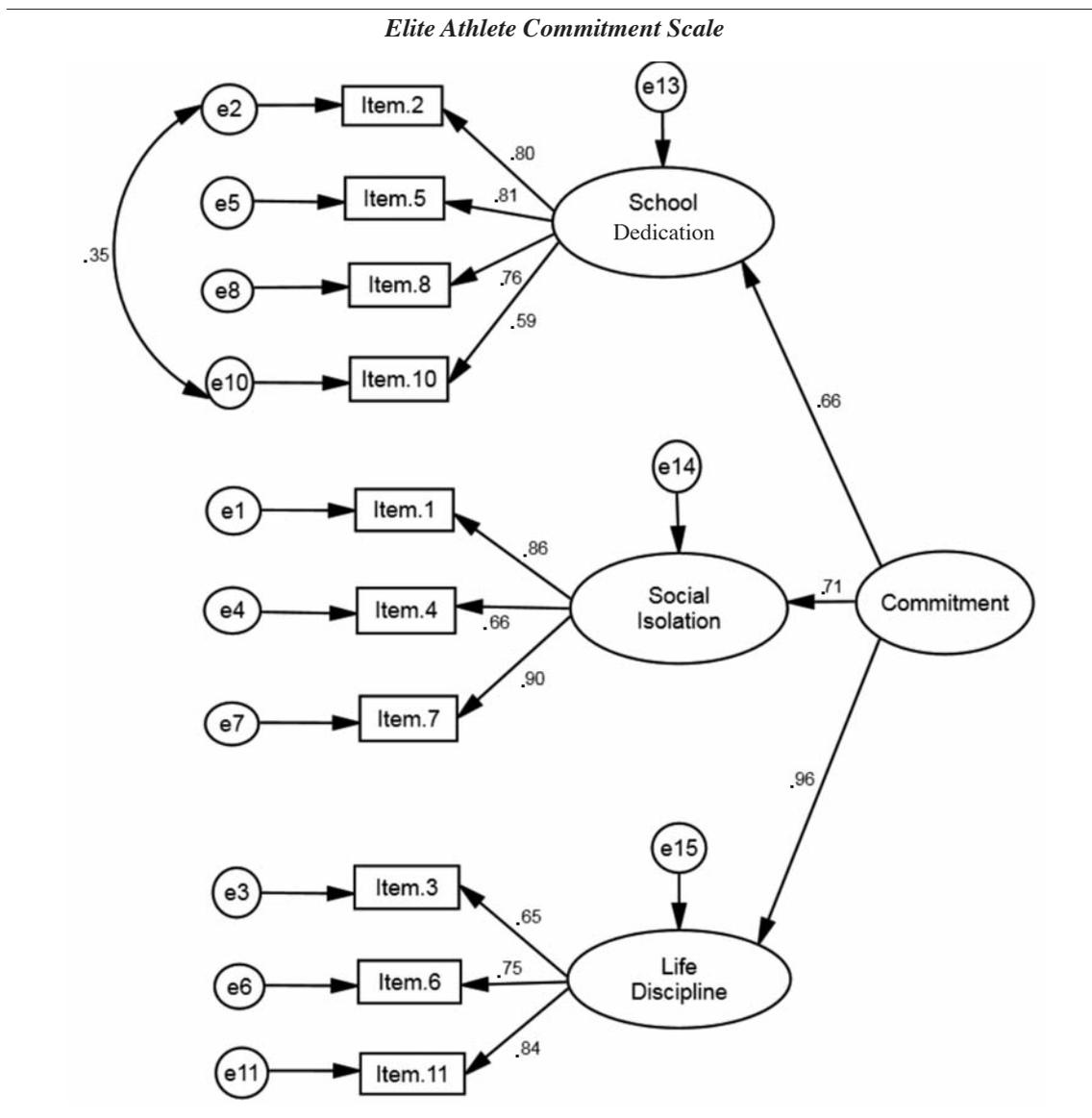
Additionally, as shown in Table 2 the scale indicates convergent validity once AVE values of latent constructs, range

between .55 (school/employment dedication) and .66 (social isolation). In what discriminant validity concerns, results provide evidence that all constructs are unique from one another taking into account that the values of AVE for the three factors are greater than their squared correlations.

	Items	Loadings	AVE	Φ^2
School/employment Dedication	2	.80	.55	.63
	5	.81		.65
	8	.75		.56
	10	.59		.34
Social Isolation	1	.86	.66	.73
	4	.66		.43
	7	.90		.81
Life Discipline	3	.65	.56	.42
	6	.75		.56
	11	.84		.70

Note. Φ^2 indicates squared Pearson correlations.

Table 2. Convergent and discriminant validity of EACS measures.



Note. $\chi^2 (32) = 55.987; p = .005; \chi^2/df = 1.750; CFI = .983; PCFI = .699; GFI = .964; RMSEA = .050; p (RMSEA < .05) = .463.$

Figure 2. EACS second order model.

The data analysis proceeds in an attempt to fit a second order factor model. Consequently, we hypothesized that the first order factors are explained by some higher order structure which in the case of the EACS is a single second order factor named commitment. Considering the goodness-of-fit statistics presented in Figure 2, we can conclude that the hypothesized model fits the data very well.

Additionally, multiple-group CFA, with bootstrap procedures, was employed to test the model's invariance (Brown, 2006). Two random subgroups, namely the test sample ($n = 149$) and external validation sample ($n = 148$), were generated from the original

sample. Moreover, performance level (elite/sub-elite) and age (under 18/up to 18) variables invariance was also tested according to the same procedures. The respective nested model comparisons are presented in Table 3. Based on these findings, the results validate the measurement invariance across the different groups, confirming that EACS items are measuring the same construct in the same way in all tested variables. Although the structural invariance for the age and performance level variables was not confirmed, this heterogeneity in the latent constructs is not indicative of a problem with the instrument under study (Wang and Wang, 2012).

Invariance					NFI	IFI	RFI	TLI
variable	Model	df	CMI	p	Delta-1	Delta-2	rho-1	rho2
Split-half (Random)	Measurement weights (1)	7	6.47	.48	.00	.00	-.00	-.00
	Structural weights (2)	13	19.66	.10	.01	.01	.00	.00
	Structural residuals (3)	2	1.58	.45	.00	.00	-.00	-.00
	Measurement residuals (4)	1	1.168	.19	.00	.00	.00	.00
Age (Under18/ Up18)	Measurement weights (1)	7	9.36	.22	.00	.00	-.00	-.00
	Structural weights (2)	13	44.24	.00	.02	.03	.01	.01
	Structural residuals (3)	2	6.31	.04	.00	.00	.00	.00
Performance Level (Elite/ Sub-elite)	Measurement residuals (4)	1	.84	.35	.00	.00	-.00	-.00
	Measurement weights (1)	7	9.83	.19	.00	.02	-.00	-.00
	Structural weights (2)	13	29.08	.00	.02	.02	.00	.00
	Structural residuals (3)	2	6.03	.21	.00	.00	.00	.00
	Measurement residuals (4)	1	2.84	.09	.00	.00	.00	.00

Note. (1) Assuming model unconstrained to be correct; (2) Assuming model measurement weights to be correct; (3) - Assuming model structural weights to be correct; (4) Assuming model structural residuals to be correct.

Table 3. EACS nested model comparisons.

Study 2. Criterion and Construct Validity

For further document EACS validity evidence, criterion and construct validity were assessed.

In the first case inter-scale correlations were assessed between the EACS factors and two other commitment subscales (concurrent validity), namely the sport commitment measure (SCM) and involvement alternatives (IA) proposed by Scanlan et al. (1993). Theoretically, individuals who are more committed with specific programs are also more willing to abdicate from several activities in a way to reinforce their sport participation. Therefore, we hypothesized positive inter-scales correlation between EACS and SCM and negative correlation between EACS and IA.

To access predictive validity of the scale over the performance level, a binary logistic regression analysis was conducted. Actually, some authors suggest a link between commitment and performance level, with an evident stronger commitment usually expressed by high skilled players (Sánchez, Izquierdo and González, 2009). Following this path, we hypothesized that EACS scores may predict performance level.

In the second case, a multivariate analysis of variance (MANOVA) was used to test the scale sensitivity across different levels of performance (construct validity).

Methods

Participants and procedures

A sample of 120 youth football players from an elite Portuguese club, aged between 13 and 19 ($M = 15.86$; $SD = 1.61$) and currently competing at national ($n = 83$) or international level ($n = 37$) participated in this study.

Participants filled in the EACS, the SCM and the IA subscales in the same questionnaire application session.

Data analysis

To examine the concurrent validity, Pearson correlations were used. Additionally, a binary logistic regression analysis was conducted to determine whether EACS index (mean value of the three subscales) predicts the performance level (elite/sub-elite level). Moreover, a MANOVA was implemented.

All the statistical procedures mentioned above were assessed with Statistical Package for Social Sciences (v.18.0, IBM Company).

Measures

Elite athlete commitment scale

The final version of EACS (Appendix B) was used. All the answers were given on a five-point Likert scale.

Sport commitment measure

SCM developed by Scanlan et al. (1993) was used to evaluate the athletes desire to continue sport participation. This scale yields five items recorded on a five-point Likert-type scale.

Involvement alternatives

IA developed by Scanlan et al. (1993) were used to evaluate the athletes desire to continue sport participation. Four questions assessed the degree to which other activities seem more attractive than playing football. The items were anchored on a five-point Likert-type scale.

Results

Results confirm the proposed hypothesis. In fact, significant and positive correlations were found between the EACS and the SCM (Table 4). In what EACS and IA association concerns, with the exception of school/employment dedication dimension, the expected significant and negative correlations were also identified.

	SDT	SI	LD	SCM	IA
School/employment Dedication	1.00	-	-	-	-
Social Isolation	.430**	1.00	-	-	-
Life Discipline	.68**	.79**	1.00	-	-
Sport Commitment Measure	.19*	.36**	.38**	1.00	-
Involvement Alternatives	-.09	-.27**	-.24**	-.26**	1.00

Note. ** $p < .01$; * $p < .05$

Table 4. Pearson correlations between EACS and SCM and IA sub-scales.

Predictive validity results also support the proposed hypothesis, once logistic regression reveals that EACS overall index is a significant predictor of performance level (Table 5).

Moreover, the sensitivity of EACS to performance level was confirmed as well. The test of the equality of covariance matrices revealed no significant differences for the three dependent variables (Box's $M = 6.17$; $F_{6,320} = .99$, $p = .42$).

MANOVA provided a significant multivariate statistic effect ($F_{3,116} = 2.60$, $p = .05$, $\eta^2_p = .063$) and the follow-up univariate F-tests (Table 6) conducted across the three subscales were all significant: life discipline ($F_{1,118} = 7.58$, $p = .007$, $\eta^2_p = .060$); social isolation ($F_{1,118} = 6.10$, $p = .015$, $\eta^2_p = .049$); school/employment dedication ($F_{1,118} = 3.92$, $p = .05$, $\eta^2_p = .032$).

Omnibus tests of model coefficients			Model summary			Hosmer and Lemeshow test			Variables in equation				Predicted overall percentage	
χ^2	<i>df</i>	<i>p</i>	-2 LL	R ² _{CS}	R ² _N	χ^2	<i>df</i>	<i>p</i>	B	SE	Wald	<i>df</i>	<i>p</i>	
7,781	1	0,05	140.481	.063	.089	2.849	8	.943	8.118	3.087	6.915	1	.009	70.8%

Table 5. Binary logistic regression.

Dimension	Performance Level	<i>n</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	η^2_p	Observed Power
School Dedication	Sub-elite	83	2.64	.13	3.92	.050*	.032	.50
	Elite	37	3.35	.28				
Social Isolation	Sub-elite	83	3.64	.15	6.10	.015*	.049	.68
	Elite	37	4.27	.24				
Life Discipline	Sub-elite	83	4.08	.12	7.58	.007*	.060	.78
	Elite	37	4.55	.15				

Note. * $p \leq .05$

Table 6. Means, standard deviations, F-values, level of significance, Eta squared and observed power of EACS dimensions.

General Discussion

It seems consensual that the achievement of the highest levels of elite performance has considerable time-consuming costs. In fact, the talent development requires giving up some aspects of social life (Gould, Dieffenbach and Moffett, 2002) and therefore athletes must learn to manage other potential pleasurable activities, which might “push” them from the high demands of elite sport.

Although the valid and reliable psychometrics properties of EACS are indicative of the relevance of this tool considering the evaluation of fundamental components of commitment, it is clear that this model needs to be improved. Truly, item 11 (Appendix A), contrasts with other items which question the athletes about abdicating short term activities like dates or parties. This construct relevance suggests that present participants are sensitive to this distinction and consequently, it makes sense to add new items related with long-term commitment in future analysis. Really, either in classical studies (e.g. Bloom, 1985) or in more recently published papers (e.g. Holt and Dunn, 2004), it is well documented the necessity of staying long periods of time far from hometown and family in a way to benefit from expert coaches and adequate facilities, usually available only in larger geographic areas.

Despite two items were dropped, the final version (Appendix B) reveals very good fit indices. It is possible that the content covered by the item 9 and item 12 was already interiorized by the athletes and accordingly these items are not interpreted as constrains to their sport participation.

Presented correlations between the EACS and other measures are significant, nevertheless, they are not too high, which might reveal similar but different facets of sport commitment. On the one hand, the SCM items question the athletes in a broader manner about their sport participation (e.g. “I am dedicated to continue playing football”) and on the other hand, EACS items confront the athletes with specific scenarios which they usually need to face in more advanced phases of their careers (e.g. “I am willing to renounce social gathering”).

Current results also reveal lower correlations between school/employment dedication dimension and all other subscales. Actually, we need to consider that, compared with other factors, the mean obtained in this dimension is also considerable lower (Table 6) denoting that athletes from present sample are not willing to set aside school/work as they are ready to renounce family celebrations or dates with boyfriend/girlfriend. These

differences may lay upon on societal and families pressure once the socio-cultural values usually define an ideal picture of combination between a favorable sport career development and academic success. Additionally, a non-significant and negative correlation between IA and SDT (school dedication) was identified. In fact, IA measures the most preferred alternative to continued participation in sport, and consequently as higher the IA, lower is the commitment. On the other hand, SDT tests the players about a fundamental setting of their lives, which is usually preserved, particularly in early ages. As such, the opposite signs confirm the expected direction of influence of each measure.

The discriminant power of this construct in what different levels of sports performance concerns needs to be interpreted with caution, due to the poor R^2 Nagelkerke value achieved in the logistic regression, as well as, the small effect sizes and power effect identified in MANOVA. Possible justification may rely on the fact that these athletes play in the same club and share equal environment philosophy and ethics. They have to correspond to identical demands and they establish similar goals. In this context it’s conceivable some homogeneity of results, that is, it is possible that a considerable number of sub-elite athletes score higher in this commitment scale compared with their elite counterparts and vice-versa.

Although results provide some support to EACS psychometric characteristics, some limitations need to be acknowledged regarding present research. Firstly, gender invariance has not been tested, once only a few female athletes participated in current study. Additionally, it would be crucial to add new items in a way to increase the discriminant power of the scale. In fact, also we may conclude that youth elite athletes are particularly sensitive to school setting and long-term commitment, there still is a long path to go until we know sufficiently about the real boundaries of sport commitment in youth sport.

This research may also wind up potential areas of intervention considering the correlations between athlete’s commitment profiles and other pertinent psychological sports setting constructs like positive parental support or high levels of intrinsic motivation (Weiss and Weiss, 2006), as well as, the preventive function of sport commitment in what dropout phenomenon concerns (Sousa et al., 2007; Torregrosa et al, 2011). Hence, these last topics generate important areas of intervention in sport psychology field, particularly in youth sports, once these athletes need to learn how to deal with the typical and non-normative transitions and socio-cultural dilemmas in a way to maintain their effort to continuously improve in sport according to their own will.

DESARROLLO Y VALIDACIÓN DE LA ESCALA DE COMPROMISO DE DEPORTISTAS DE ÉLITE

PALABRAS CLAVE: Compromiso con el deporte, Evaluación psicológica, Validación de tests.

RESUMEN: La escala de compromiso del deporte de élite se compone de tres factores (dedicación al estudio / trabajo, aislamiento social y disciplina de la vida) y fue creado con el objetivo de evaluar la disponibilidad de los deportistas a renunciar a diversas actividades con el fin de favorecer su participación en el deporte. En el primer estudio, el análisis factorial confirmatorio prueba la bondad de ajuste del modelo. Además, cuando se añadía un factor de segundo orden (compromiso), los índices de ajuste mantienen valores muy buenos. En el segundo estudio, la validez de criterio y validez de constructo fueron evaluadas. Los resultados constituyen una contribución válida en el contexto de la psicología del deporte teniendo en cuenta la capacidad discriminativa de lo compromiso en distintos niveles de rendimiento.

DESENVOLVIMENTO E VALIDAÇÃO DA ESCALA DE COMPROMISSO DO DESPORTO DE ELITE

PALAVRAS CHAVE: Compromisso no desporto, Avaliação psicológica, Validação de testes.

RESUMO: A escala de compromisso do desporto de elite é composta por três fatores (secundarização dos estudos/trabalho, isolamento social e disciplina de vida) e foi desenvolvida com o objetivo de avaliar a disponibilidade dos atletas para abdicar de diversas atividades, no sentido de reforçar a sua participação desportiva. No primeiro estudo, a análise fatorial confirmatória permitiu constatar a qualidade de ajustamento do modelo. Adicionalmente, com a inclusão de um fator de segunda ordem (compromisso), os índices de ajustamento mantiveram valores muito bons. No segundo estudo, foram avaliadas a validade concorrente e a validade preditiva. Os resultados constituem um contributo válido no âmbito da psicologia desportiva, tendo em consideração o poder discriminativo deste construto no que diz respeito aos diferentes níveis de prestação.

References

- Bloom, B. S. (1985). Generalizations about talent development. In B. S. Bloom (Ed), *Developing talent in young people* (pp. 507-549). New York: Ballantine Books.
- Brown, T. A. (2006). *Confirmatory Factor Analysis for Applied Research*. New York: The Guilford Press.
- Christensen, M. K. and Sørensen, J. K. (2009): Sport or school? Dreams and dilemmas for talented young Danish football players. *European Physical Education Review*, 15(1), 115-133.
- Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-37.
- Crocker, P. R. E. and Augaitis, L. (2010). Commitment in Age Class Adult Triathletes: Examining Gender Differences in the Sport Commitment Model. *International Journal of Sport Psychology*, 41, 177-194.
- Csikszentmihalyi, M., Rathunde, K. and Whalen (1993). *Talented teenagers - the roots of success and failure*. New York: Cambridge University Press.
- Efron, B. (1982). *The Jackknife, the Bootstrap and Other Resampling Plans*. CBMS-NSF Regional Conference Series in Applied Mathematics, Monograph 38, SIAM, Philadelphia.
- Fornell, C. and Larcker, D. F. (1981) 'Evaluating structural equation models with unobservable variables and measurement error'. *Journal of Marketing Research*, 18(35), 39-50.
- Gadermann, A. M, Guhn, M. and Zumbo, B. D. (2012). Estimating ordinal reliability for Likert-type and ordinal item response data: A conceptual, empirical, and practical guide. *Practical Assessment, Research & Evaluation*, 17(3), 1- 13.
- Gould, D., Dieffenbach, K. and Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, 14, 172-204.
- Hair, J., Anderson, R., Tatham, R. and Black, W. (1998). *Multivariate data analyses* (5th ed.). Upper Saddle River: Prentice-Hall.
- Holt, N. L. and Dunn, J. G. H. (2004). Toward a grounded theory of the psychosocial competencies and environmental conditions associated with soccer success. *Journal of Applied Sport Psychology*, 16, 199-219.
- Kline, R. B. (2004). *Principles and Practice of Structural Equation Modeling* (2nd ed.). New York: Guilford Press.
- Mardia, K. V. (1974). Applications of some measures of multivariate skewness and kurtosis in testing normality and robustness studies. *Sankhya*, B36, 115-128.
- Maroco, J. (2010). *Análise de Equações Estruturais: Fundamentos teóricos, Software e Aplicações*. Pêro Pinheiro: Report number, Ltd.
- Meyer, J. P. and Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resources Management Review*, 1(1), 61-89.
- Rusbult, C. E. (1980). Commitment and satisfaction in romantic associations: A test of the investment model. *Journal of Experimental Social Psychology*, 16, 172-186.
- Sánchez, J., Izquierdo, D. and González, F. (2009). Personalidad resistente en maratonianos: un estudio sobre el control, compromiso y desafío de corredoras y corredores de maratón. *Revista de Psicología del Deporte*, 18(2), 217-234.
- Scanlan, T. K, Carpinter, P. J., Schmidt, G. W., Simons, J. P. and Keeler, B. (1993). An introduction to the sport commitment model. *Journal of Sport & Exercise Psychology*, 15, 1-15.
- Sousa, C., Torregrosa, M., Viladrich, C., Villamarín F. and Cruz J. (2007) The commitment of young soccer players. *Psicothema*, 19(2), 256-262.
- Sousa, C., Viladrich, C., Gouveia, M. J., Torregrosa, M. and Cruz J. (2008). Estrutura interna da versão portuguesa do Sport Commitment questionnaire (SCQ) e Funcionamento Diferencial dos Itens (DIF) com a versão espanhola. *Revista Portuguesa de Ciências do Desporto*, 8(1), 22-33.
- Tabachnick, B. G. and Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed). Boston, MA: Allyn and Bacon.
- Torregrosa, M., Viladrich, C., Ramis, Y., Azócar, F., Latinjak, A. and Cruz, J. (2011). Efectos en la percepción del clima motivacional generado por los entrenadores y compañeros sobre la diversión y el compromiso. Diferencias en función de género. *Revista de Psicología del Deporte*, 20(1), 243-255.
- Wang, J. and Wang, X. (2012). *Structural Equation Modeling Applications Using Mplus*. West Sussex: Wiley.
- Weiss, W. M. and Weiss, M. R. (2006). A longitudinal analysis of commitment among competitive female gymnasts. *Psychology of Sport and Exercise*, 7, 309-323.
- Weiss, W. M., Weiss, M. R. and Amorose, A. J. (2010). Sport commitment among competitive female athletes: Test of an expanded model. *Journal of Sports Sciences*, 28(4), 423-434.

Appendix A

Elite Athlete Commitment Scale factors and associated items

Scale	Items
Factor 1: School/employment Dedication	Item 2. Set aside school/work Item 5. Miss school/work Item 8. Take more time to finish school/project Item 10. Quit school/work
Factor 2: Social Isolation	Item 1. Renounce social gathering (e.g. parties, cinema, going out at night, etc.) Item 4. Renounce family celebrations (e.g. Baptisms, Birthdays, festivities, etc.) Item 7. Renounce leisure trips (e.g. Senior graduation trips, Holidays) Item 11. Stay long periods of time far from people I love (relatives, friends, boyfriend/girlfriend, husband/wife etc.)
Factor 3: Life Discipline	Item 3. Avoid eating things I like Item 6. Miss school/work Item 9. Avoid unhealthy substances (tobacco, alcohol, drugs etc.) Item 12. Train a lot of hours per week

Appendix B***Elite Athlete Commitment Scale (Final version)***

	For sports I am willing to:	Totally disagree	Disagree	Neither agree/ nor disagree	Agree	Totally agree
1	Renounce social gathering (e.g. parties, cinema, going out at night, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Set aside school/work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Avoid eating things I like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Renounce family celebrations (e.g. Baptisms, Birthdays, festivities, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Miss school/work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Renounce dates with boyfriend/girlfriend or husband/wife.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Renounce leisure trips (e.g. Senior graduation trips, Holidays)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Take more time to finish school/project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Quit school/work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Stay long periods of time far from people I love (relatives, friends, boyfriend/girlfriend, husband/wife etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>