ORIGINAL

CONSTRUCT VALIDITY OF THE SCALE OF CAUSES OF ATTRITION FROM SPORT CENTRES

VALIDEZ DE CONSTRUCTO DE LA ESCALA MOTIVOS DE ABANDONO DE CENTROS DEPORTIVOS

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ABSTRACT

Withdrawal from sport centers is a social and economic problem. Having valid and reliable tools allows rigorous research. The aim of this study was to confirm the validity of the withdrawal rate from sport centers. A confirmatory factor analysis was carried out using AMOS. 20 software. Later the discriminant validity was verified by means of three different procedures with SPSS. 20 and AMOS. 20 software programs: calculating correlation between factors,

constructing confidence intervals of the factor correlation at 95% confidence level and estimating alternative models. The final result consists of twelve questions (items) and answers. The answers are rated on five levels (factors) that meet the validity and reliability requirements needed in a research tool.

KEY WORDS: Attrition, sports centre, loyalty, marketing, motivation, validity.

RESUMEN

El abandono de los centros deportivos es un problema social y económico. Disponer de instrumentos válidos y fiables permite la realización de investigaciones rigurosas. El objetivo del estudio fue constatar la validez de la escala de abandono de centros deportivos. Se ha realizado un análisis factorial confirmatorio con el programa AMOS. 20. Posteriormente se ha constatado la validez discriminante mediante tres procedimientos diferentes con los programas SPSS. 20 y AMOS. 20: cálculo de correlaciones entre factores, construcción de intervalos de confianza de la correlación de factores al 95% de confianza y estimación de modelos alternativos. El resultado final ha sido una escala de cinco factores y doce ítems que cumple con los requisitos de validez y fiabilidad exigibles en un instrumento de investigación.

PALABRAS CLAVE: Abandono, centro deportivo, fidelidad, marketing, motivación, validación.

INTRODUCTION

The high prevalence of physical inactivity is now a major public health problem in industrialized countries (Guthold, Ono, Strong, Chatterji, and Morabia, 2008). They have made economic efforts to promote the practice of physical activity (PA) among citizens (Limstrand and Rehrer, 2008). Several programmes have been designed and implemented with that purpose. But the high attrition rates of these programmes indicate that the promotional plans are not being effective (Haase and Kinnafick, 2007). In fact, sports attrition is the main concern in the sport and physical practice (Gonçalves, Fingueiredo, and Silva, 2007).

Sports dropout causes worry particularly to sports centres managers, whose clients are increasingly demanding (Martins and O'Neill, 2010) and preventing membership cancellation is one of the most important achievements in any company (Bodet, 2012), specially in an emerging and competitive sector as the sports one (Langvieniene and Sekliuckiene, 2008). It is essential to establish strategies to get satisfied clients that do not leave the organization (Morales, Hernández-Mendo, and Blanco, 2005).

Knowledge of the causes that lead to the dropout of the sport service is essential to improve managing a complex problem like client fidelity in sports centres (Martínez and Martínez, 2009; Nuviala, Grao-Cruces, Pérez-Turpin, and

Nuviala, 2012a). Listening to the clients' experiences is fundamental for implementing any type of service that seeks to improve the efficiency and effectiveness of its management and to obtain the users' loyalty (Martínez and Martínez, 2008). So it is not surprising that studies interested in knowing the attitudes and behaviours of sports centres clients have appeared in recent years (Martínez and Martínez, 2009; Muyor, Águila, Sicilia, and Orta, 2009).

Revising the literature, studies on the dropout of the sport practice can be found, in which they show several reasons that influence the dropout (Bara and Guillén, 2008; Ruiz, García, and Díaz, 2007). The barrier that the lack of time represents for the sport and physical practice is the most argued cause of attrition in previous studies (Gómez-López, Granero-Gallegos, Baena-Extremera, and Ruiz-Juan, 2011; Macarro, Romero, and Torres, 2010; Ruiz et al., 2007). The lack of time shares prominence with the studies when the dropout reasons among the younger school students are analyzed (Bara and Guillén, 2008; Palou, Ponseti, Gili, Borras, and Vidal, 2005). Another main reason for dropping out is the preference for different leisure activities (Bara and Guillén, 2008; Macarro et al., 2010; Palou et al., 2005; Ruiz et al., 2007). Laziness and apathy is also noted as one of the reasons with more impact on physical and sport practice attrition. (Macarro et al., 2010; Ruiz et al., 2007).

Other secondary reasons coexist along with these main ones. Health reason is one of them (Macarro et al., 2007; Ruiz et al., 2007), with more impact as the individual grows older (Ruiz et al., 2007); as well as the related to the dissatisfaction with the development of the practice and with the different resources surrounding it (Evans, 2008; Macarro et al., 2010; Ruiz et al., 2007). Aspects related to the economic cost of the physical and sport practice are also relevant (Ruiz et al., 2007). While the lack of enjoyment (Evans, 2008; Macarro et al., 2010; Palou et al., 2005) and family, friends or partner's influence (Macarro et al., 2010; Ruiz et al., 2007) are also reasons to be considered.

Most of these studies have been focused on the attrition of the competitive PA practice (Almagro et al., 2010; Jõesaar and Hein, 2011a), giving priority to the works in which the population object of study is adolescence (Cervelló, Escartí, and Guzmán, 2007; Jõesaar, Hein, and Hagger 2011b). However, the studies on the reasons that lead users to cancel membership in sports centres and organizations, without entailing dropping out from PA, are limited. Therefore, Nuviala, Teva-Villén, Grao-Cruces, Pérez-Ordás, García-Fernández and Nuviala (2012b) designed and validated a scale to know the causes for which the users of sports centres cancel their membership. However, despite the goodness of the instrument it is necessary to keep on confirming its validity. Since the instrument was only subjected to an exploratory factor analysis, its construct validity is susceptible to ratification. The construct validity is, according to Messick (1980), the main type of validity. Among the statistical techniques or procedures used to improve this validity, the confirmatory factor analysis stands out (Messick, 1995; Pérez-Gil, Chacón and Moreno, 2000). This type of analysis allows a verification of the studied model, and a possible reduction of items (Nuviala, Pérez-Turpin, Tamayo and Fernández-Martínez,

2011). In addition to this statistical analysis, the construct validity can be determined by correlational methods. In this regard Campbell and Fiske (1959) propose the possibility of calculating the discriminant validity using correlations, reflected through a low correlation between elements, proving that they are similar constructs but conceptually distinct. (Nuviala, Tamayo, Nuviala, González and Fernández, 2010). Based on the above, the aim of this study was to verify the construct validity of the scale of the causes of attrition from sports centres.

MATERIAL AND METHODS

Participants

The sample consisted of 642 people who had dropped out from a sports centre of a large Spanish city. Of them, 55.4% were men and 44.6% were women, with an average age of 30.1±9.8. 79.2% have university studies and only 1.3% stated having elementary school studies. 59.8% declared that their weekly practice was two or three times a week and 25.8 % stated that they did sport practice 4 or more times a week. Finally, the most common practice time was between 60 and 90 minutes for a 44.4%, followed by 30 to 60 minutes for the other 25.2%. 85.2% of the subjects were part of the sample from Nuviala et al. (2012b).

Instrument

The used instrument was the scale of causes of attrition from sports centres (Nuviala et al. 2012b). For its design, three different phases were followed: 1) Bibliographical research on sports dropout; 2) Conducting a discussion group with professionals from the sector and with experts in the construction of research instruments; 3) Carrying out a pilot study with 50 clients of sport services that had left the sport practice.

The resulting Likert scale from 1 (strongly disagree) to 5 (strongly agree) consisted of 7 factors and 52 items that could cause the sports attrition. A statistical analysis of the items of the attrition from sports centres questionnaire was carried out (Mean, Standard deviation, skewness, Kurtosis and the corrected item-total correlation coefficient), proceeding to a first selection of items according to the following criteria: 1) removal of those items whose mean was at a greater distance of plus/ minus a standard deviation of the mean of the scale; 2) removal of those items with a reduced standard deviation (SD < 0.5); 3) exclusion of those elements with a skewness and kurtosis higher than the value +/-1.96; 4) exclusion of those items with a total-item correlation less than 0.35. The result was a 22 items scale with a reliability of 0.89, which the exploratory factor analysis grouped in 5 dimensions with an explained variance of 65.55%.

Procedure

The field work was carried out through a questionnaire administered by a group of pollsters previously trained. Participants were asked to cooperate and to ask any doubt they had about the items. The time spent on its completion was about 10 minutes. Before data collection, permission was asked to the people in charge of the different organizations participating in the study. Likewise, all the users voluntarily agreed to participate in the study.

Data Analysis

Before the analysis of the model estimation, Mardia's coefficient was calculated to ensure the presence of multivariate normality in the obtained data. An exploratory factor analysis was not needed since there were previous results on the construct structure (Nuviala et al., 2012b).

A Confirmatory Factor Analysis was performed using AMOS 20.0 programme in order to test whether the exploratory factor structure presents correct fit indices and if not, proceeding to the modification of the model in order to obtain the best possible model. The maximum likelihood estimation method was used to assess the models. During the procedures, the model fit was assessed through the significance of the estimated coefficients and the degree of overlap between the original variance-covariance matrix and the represented matrix with respect to the indicators of the goodness of fit. To evaluate the goodness of fit, ten indicators were reviewed: chi-squared statistic (χ^2); the reason between χ^2 and the number of degrees of freedom (χ^2/df); other absolute fit indices: goodness of fit index (GFI), root mean square residual (RMR) and root mean square error of approximation (RMSEA); and incremental fit indices: adjusted goodness of fit index (AGFI), normed fit index (NFI), Tucker-Lewis index (TLI), comparative fit index (CFI) and incremental fit index (IFI). Besides, with the objective of following Byrne´s directions (2001) we attached Aiken information criterion (AIC) and the expected cross-validation index (ECVI).

Finally the reliability of the resulting instrument was calculated using Cronbach's alpha coefficient and the discriminant validity. This type of validity assesses that the degree in a measure does not correlate with the measures with which it is supposed to differ (Churchill, 1979). To that end three different procedures have been used: calculation of the correlation between factors, estimation of alternative models and construction of confidence intervals of the factors correlation at 95% confidence.

RESULTS

There was multivariate normality in the data obtained since the resulting Mardia's coefficient was 227.23 that according to Bollen (1989), is less than p (p+2), where p is the number of observed variables.
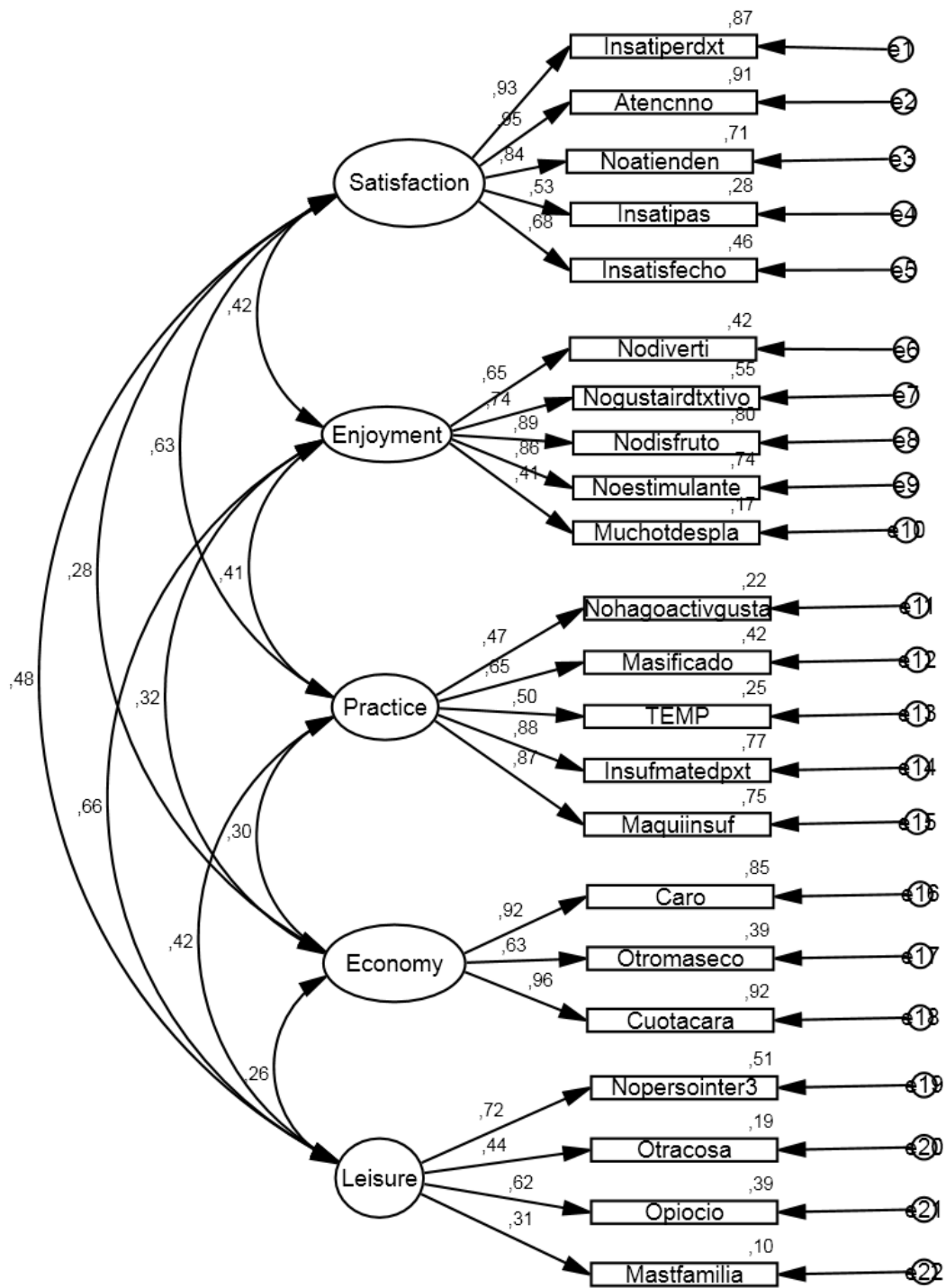
Figure 1. Theoretical Model resulting from the Exploratory Factor Analysis

The resulting hypothesized theoretical model from the Exploratory Factor Analysis conducted by Nuviala et al. (2012b) in a less numerous sample (Figure 1), consisting of 5 factors and 22 items got disparate results. The incremental fit indices offered excellent values (AGFI=0.85; NFI=0.88; TLI=0.89; CFI=0.91; IFI=0.91). On the other hand, the absolute fit indices showed different values

since RMR gave an unacceptable value (0.11) and on the contrary RMSEA and GFI offered good values (0.07 and 0.89 respectively). Finally AIC, ECVI and the quotient χ^2/df presented optimal values: 987.11; 1.54 and 4.41 respectively.
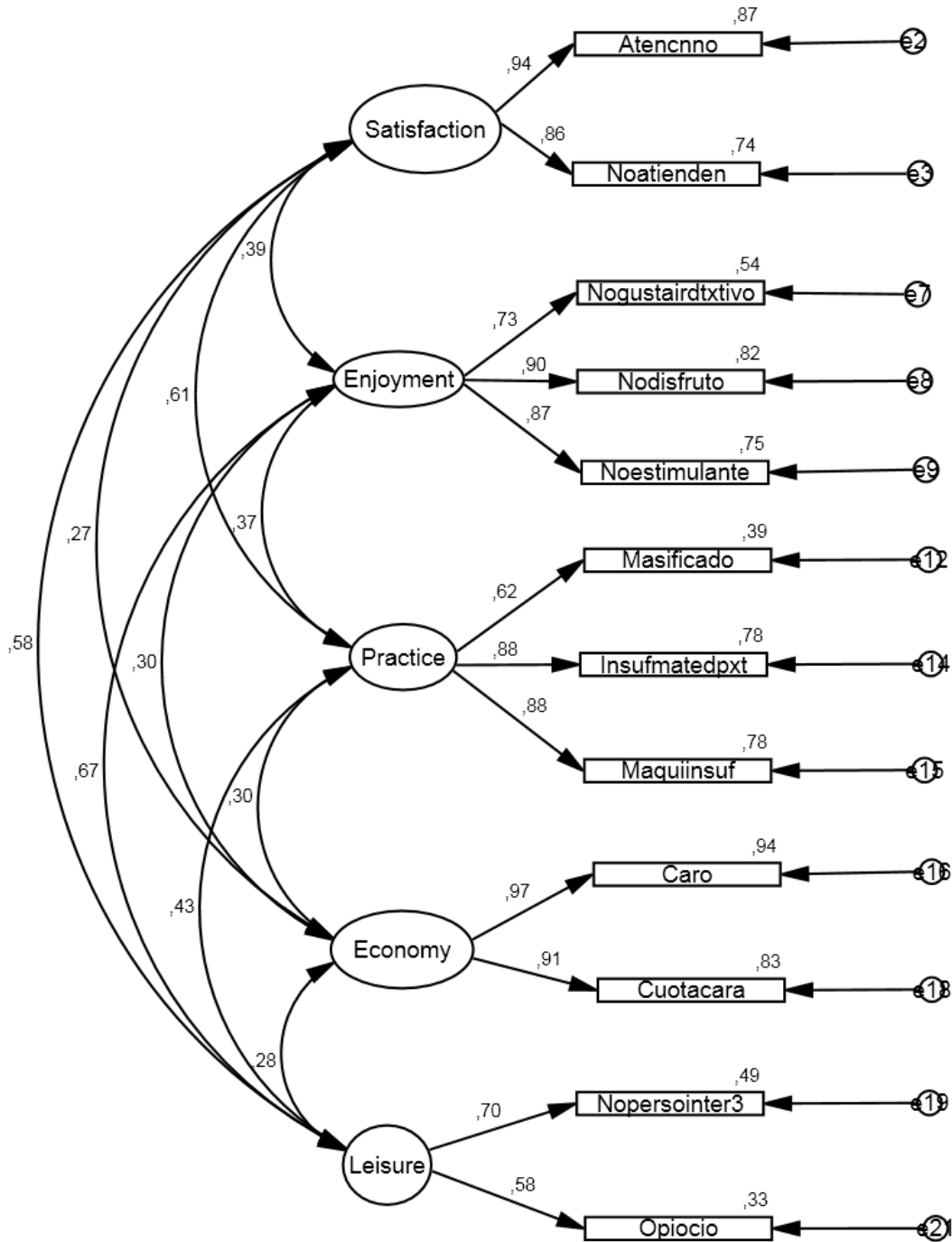

Figure 2. Model resulting from the Confirmatory Factor Analysis

Therefore it was necessary to modify the previous model in order to get a model that met the criteria for a good goodness of fit. This respecification was made

based on the following criteria: (1) the significance of factor loadings, (2) the information provided by the residual matrix and (3) the modification indices offered by the programme. The result was the removal of the items e1, e4, e5, e6, e10, e11, e13, e17, e20 and e22.

The modifications were carried out at successive steps paying attention after each of the modifications to both the reliability indices and the cross loadings. A respecified model was made consisting of 12 items grouped into 5 factors (Figure 2). All the fit indices proposed for this new model were correct: GFI=0.97; AGFI=0.95; NFI=0.97; TLI=0.96; CFI=0.98; IFI=0.97; RMR=0.06; RMSEA=0.04; AIC=171.56; ECVI=0.26; χ^2=103.56; χ^2/df=2.35.

The reliability of the final instrument was measured with Cronbach's alpha coefficient giving a value of 0.86.

The discriminant validity of the scale was checked in three different ways. The traditional way is to calculate the correlation matrix between the items of the scale. As it can be seen in Table 1, there was a significant, positive and moderate correlation between all the factors that make up the scale, which proved this type of validity.

Table 1. *Correlation between the resulting factors. Reliability on the diagonal.*

	Satisfaction	Enjoyment	Practice	Economy	Leisure
Satisfaction	(0.904)	0.352[**]	0.575[**]	0.254[**]	0.414[**]
Enjoyment		(0.881)	0.360[**]	0.285[**]	0.493[**]
Practice			(0.832)	0.295[**]	0.340[**]
Economy				(0.945)	0.226[**]
Leisure					(0.585)

** It denotes that the correlation is significant at level .01 (bilateral)

A modified version of the above procedure recommended by Burnkrant and Page (1982) is currently used. Alternative models are estimated so that the restriction, the correlation between each pair of dimensions equals 1, is introduced in each of them, and a chi-square difference test is performed to each of them to compare the models in order to assess if they were significantly different. Table 2 shows that the difference between chi-square was always significant, consequently the dimensions of the scale of attrition from sports centres were significantly different among each other, confirming the discriminant validity.

As a third way to ensure this type of validity, all the possible correlations between the factors have been calculated, which has allowed building the confidence interval of the correlations among all the dimensions. As shown in Table 2, the discriminant validity of the scale can be confirmed since none of the confidence intervals of those correlations contain the value 1 at 95% confidence.

Table 2. *Discriminant validity. χ2 difference test. Confidence intervals of the correlations between dimensions*

	Differential of χ2 (*d.f.*)	P	Confidence interval
Satisfaction/Enjoyment	201.47(45)-103.56(44) = 97.90(1)	p<0.001	(0.26 – 0.44)
Satisfaction/Practice	127.14(45)-103.56(44) = 23.57(1)	p<0.001	(0.51 – 0.65)
Satisfaction/Economy	144.96(45)-103.56(44) = 41.40(1)	p<0.001	(0.16 – 0.33)
Satisfaction/Leisure	175.91(45)-103.56(44) = 71.53(1)	p<0.001	(0.32 – 0.49)
Enjoyment/Practice	239.26(45)-103.56(44) = 135.69(1)	p<0.001	(0.27 – 0.45)
Enjoyment/Economy	190.15(45)-103.56(44) = 86.58(1)	p<0.001	(0.20 – 0.37)
Enjoyment/Leisure	235.77(45)-103.56(44) = 132.20(1)	p<0.001	(0.39 – 0.57)
Practice/Economy	161.23(45)-103.56(44) = 57.66(1)	p<0.001	(0.27 – 0.38)
Practice/Leisure	243.42(45)-103.56(44) = 139.86(1)	p<0.001	(0.25 – 0.42)
Economy/Leisure	210.33(45)-103.56(44) = 106.76(1)	p<0.001	(0.14 – 0.30)

DISCUSSION

The main contribution of the results of this study is to improve the scale of causes of attrition from sports centres (Nuviala et al., 2012b), obtaining an instrument with similar psychometric properties as the original one but with a reduction of items. This reduction could lead to a quicker and affordable application for the sports centres, without necessarily meaning a loss of validity or reliability in any of its constructs.

A confirmatory factor analysis was carried out to check the factor structure of the scale consisting of 5 factors and 22 items. The first model proposed met the requirements established by Bollen (1989), according to which the existence of at least three items for each factor is ideal for this type of analysis. In the same way, the size of the sample exceeds the requirements set by several authors under whom the minimum number would be 200 subjects when the number of items is 3 for each factor or latent variable (Anderson and Gerbing, 1984) and even higher if the number of items decreases in latent variable (Marsh, Balla, and McDonald, 1988).

The parameters were estimated using the maximum likelihood method meeting the two assumptions of normality. In the case of the univariate, it can be stated that the skewness and kurtosis indices of the items were close to zero and below the value two (Nuviala et al, 2012b), as recommended by Bollen and Long (1993), denoting resemblance to the normal curve in the univariate data. According to Bollen (1989) there is multivariate normality if the Mardia's coefficient is less than p (p + 2), where p is the number of observed variables. Given that in this study there were 22 observed variables and the Mardia's coefficient provided by the AMOS programme was equal to 227.23, the existence of multivariate normality can be confirmed, since the value provided by the programme is less than the product 22(22+2) = 528. The presence of normality in the data confirms the suitability of choosing this method.

A joint assessment of a group of indices was chosen to evaluate the adequacy of the tested model. The fit indices proposed by Byrne (2001) were selected, considering acceptable the values of GFI, AGFI, NFI, IFI, TLI y CFI, above .90; of RMR and RMSEA, between .05 and .08; in the quotient between $\chi 2/df,$ a model considered perfect in which its value would be 1.00 and the ratios below 2.00 will be considered as indicators of a very good fit of the model, while values below 5.00 will be considered as acceptable (Hu and Bentler, 1999). Likewise, the AIC, which reports a greater parsimony of the model as its value decreases (Akaike, 1987), and ECVI, which constitutes an approximation to the goodness of fit which the model would get in a different sample, were added to the indices set. A lower value in this index determines a better fit. (Weston and Gore, 2006).

The results obtained in the initial model, the one extracted from the exploratory factor analysis, do not provide optimal results in some of the indices (GFI, AGFI, NFI, TLI y RMR), and for the quotient $\chi^2/df.$ On the other hand the index AIC showed a very high value and ECVI was greater than 1. The model had to be corrected to get acceptable results. That respecification was carried out following the proposed criteria by Rial, Varela, Abalo and Lévy (2006). The final model was equally composed of 5 dimensions and only 12 items, showing correct fit indices. Thus RMSEA y RMR showed values below the criterion of .08 and the GFI, AGFI, NFI, TLI, CFI, IFI goodness of fit indices of the model showed values above .90. Therefore the fit indices of the model led to the decision of accepting the model according to Arbuckle's criteria (2007). Similarly, AIC and ECVI indices and the quotient χ^2/df showed lower values that meant a better fit of the model (Jöreskog and Sörbom, 1993; Weston and Gore 2006).

The discriminant validity of the scale is given by the contrast between the different factors that comprise it. If the concepts that form it are really different and at the same time they are related, then we can talk about this type of validity. (Lehmann, Gupta, and Steckel, 1999). To ensure it, several ways have been calculated. The first and traditional one is to correlate the scale factors and check if their relationship is significant, positive and moderate. The obtained results give rise to confirm this type of validity. However, at present it is checked by two other ways. The first one is the proposed by Burnkrant and Page (1982), which tries to estimate alternative models so that a restriction in which the correlation between each pair of dimensions equals 1 is introduced in each of them and performing with each of them a chi-square difference test to compare the models in order to assess if they were significantly different. The results have proved that the differences between chi-square were always significant; therefore the dimensions of the scale of attrition from sports centres were different among them, confirming the discriminant validity.

The third and last of the ways consists in calculating the possible correlations between the factors and building confidence intervals of the correlations among all the dimensions. The results have also shown this type of validity since none

of the confidence intervals of those correlations contain the value 1 at 95% confidence (Anderson and Gerbing, 1984).

The main limitation of the study was that the sample consisted of clients that cancelled their membership in a sports centre in one single city (chosen by convenience). Another limitation derives from the improvement of the scale which is given by a confirmation of its validity and reliability, accompanied by a reduction of items that makes it more practical but which does not mean a substantial improvement of its psychometric properties. On the other hand, although the number of participants does not reach a thousand, it is also true that the strong point of the study is having a considerable sample of subjects that have dropped out of sports centres, subjects that are difficult to be reached and whose personal information is not usually provided by the sports centres.

The practical application of the study is to present a tool which allows sports centres managers to know the causes of the users' attrition. It improves the applicability of the previous tool (Nuviala et al., 2012b) without diminishing its psychometric properties. Future studies could contrast the cross-validation of the scale of causes of attrition from sports centres in other sport organizations, public and private, with different market strategies, in different places and cultures.

In conclusion, after the confirmatory factor analysis of the scale of causes of attrition from sports centre, a reduced questionnaire has been obtained that meets the validity and reliability criteria. The final instrument consists of five dimensions and twelve items which means a reduction of 45.45% of the items without altering the psychometric properties of the scale.

BIBLIOGRAPHICAL REFERENCES

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52*, 317–332. http://dx.doi.org/10.1007/BF02294359

Almagro, B. J., Sáenz-López, P., y Moreno, J. A. (2010). Prediction of sport adherence through the influence of autonomy-supportive coaching among Spanish adolescent athletes. *Journal of Sports Science and Medicine, 9*, 8-14.

Anderson, J. C., y Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika, 49*, 155−173. http://dx.doi.org/10.1007/BF02294170

Arbuckle, J. L. (2007). *Amos16.0 User's Guide*. Chicago, IL: SPSS Inc.

Bara, M. G., y Guillén, F. (2008). Motivos do abandono no esporte competitivo: um estudo retrospectivo. *Revista Brasileira de Educação Física e Esporte, 22*(4), 293-300.

Bodet, G. (2012). Loyalty in sport participation service: An examination of the mediating role of psychological commitment. *Journal of Sport Management, 36*, 30-42.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York: John Wiley y Sons. http://dx.doi.org/10.1002/9781118619179

Bollen, K. A., y Long, J. S. (1993). *Testing Structural Equation Models*. Sage: Newbury Park, CA.

Burnkrant, R. E., y Page, T. J. (1982). An examination of the convergent, discriminant and predictive validity of Fishbein´s behavioral intention model. *Journal of Marketing Research, 19* (4), 526-550. http://dx.doi.org/10.2307/3151726

Byrne, B. M. (2001). *Structural Equation Modeling with AMOS. Basic Concepts, Applications, and Programmin*. Londres: LEA

Campbell, D. T., y Fiske, D. W. (1959). Convergent and discriminant validation by the multitreat-multimethod matrix. *Psychological Bulletin, 56*, 81-105. http://dx.doi.org/10.1037/h0046016

Cervelló, E. M., Escartí, A., y Guzmán, J. F. (2007). El abandono del deporte en jóvenes desde la Teoría de las metas de logro. *Psicothema, 19*, 65-71.

Churchill, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research, 16* (1), 64-73. http://dx.doi.org/10.2307/3150876

Evans, K. (2008). Dropping out and hanging out: Girls and organised sports participation. *Australasian Parks and Leisure, 11*(2), 44-48.

Gómez-López, M., Granero-Gallegos, A., Baena-Extremera, A., y Ruiz-Juan, F. (2011). The abandonment of an active lifestyle within university students: Reasons for abandonment and expectations of re-engagement. *Psychologica Belgica, 51*(2), 155-175. http://dx.doi.org/10.5334/pb-51-2-155

Gonçalves, C. E., Fingueiredo, A., y Silva, M. J. C. (2007). Multidimensional analysis of dropout in youth basketball: 2-Year follow-up among Portuguese initiates. *Acta Kinesiologiae Universitatis Tartuensis, 12,* 90-91.

Guthold, R., Ono, T., Strong, K. L., Chatterji, S., y Morabia, A. (2008) World-wide variability in physical inactivity: A 51-country survey. *American Journal of Preventive Medicine, 11*(2), 44-48.

Haase, A. M., y Kinnafick, F. E. (2007). What factors drive regular exercise behaviour?: Exploring the concept and maintenance of habitual exercise. *Journal of Sport Exercise Psychology, 29*, S165.

Hu, L., y Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6* (1), 1-55. http://dx.doi.org/10.1080/10705519909540118

Jõesaar, H. y Hein, V. (2011a). Psychosocial determinants of young athletes' continued participation over time. *Perceptual Motor Skills, 113*, 51-66. http://dx.doi.org/10.2466/05.06.13.PMS.113.4.51-66

Jõesaar, H., Hein, V., y Hagger, M.S. (2011b). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise, 12*, 500-508. http://dx.doi.org/10.1016/j.psychsport.2011.04.005

Jöreskog, K., y Sörbom, D. (1993). *LISREL 8: User's reference guide*. Chicago, IL: Scientific Software International.

Langviniene, N., y Sekliuckiene, J. (2008). Assessment of SPA services quality in Lithuania: Customer's viewpoint. *Amfiteatru Economic, 10*(SUPPL. 2), 230-241.

Lehmann, D. R., Gupta, S., y Steckel, J. H. (1999). *Marketing Research*. New York: Addison-Wesley.

Limstrand, T., y Rehrer, N. J. (2008). Young people's use of sports facilities: a Norwegian study on physical activity. *Scandinavian Journal of Public Health, 36*(5), 452-459. http://dx.doi.org/10.1177/1403494807088455

Macarro, J., Romero, C., y Torres, J. (2010). Reasons why higher secondary school students in the province of Granada dropout of sports and organized physical activities. *Revista de Educación, 353*, 495-519.

Marsh, H. W., Balla, J. R., y McDonald, R. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 103,* 391−410. http://dx.doi.org/10.1037/0033-2909.103.3.391

Martin, D. S., y O'Neill, M. (2010). Scale development and testing: A new measure of cognitive satisfaction in sports tourism. *Event Management, 14*, 1-15. http://dx.doi.org/10.3727/152599510X12724735767471

Martínez, J. A., y Martínez, L. (2008). Measuring perceived service quality in sports services; a first person approach. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte, 8*(31), 244-255.

Martínez, J. A., y Martínez, L. (2009). A customer management model in sports services; a system dynamics approach. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte, 9*(36), 431-453.

Messick, S. (1980). Test validity and ethics of assessment. *American Psychologist, 35*, 1012-1027. http://dx.doi.org/10.1037/0003-066X.35.11.1012

Messick, S. (1995). Standards of validity and the validity of standards in performance assessment. *Educational Measurement: Issues and Practice, 15*, 5-12.

Morales, V., Hernández-Mendo, A., y Blanco, A. (2005). Evaluación de la calidad de los programas de Actividad Física. *Psicothema, 17,* 311-317.

Muyor, J. M., Águila, C., Sicilia, A., y Orta, A. (2009). Assessing user's motivation in sport centers. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte, 9*(33): 67-80.

Nuviala, A., Grao-Cruces, A., Pérez-Turpin, J.A. y Nuviala, R. (2012a). Quality, satisfaction and perceived value in groups of users of sports organisations in Spain. *Kinesiology 44*(1), 94-103.

Nuviala, A., Pérez-Turpin, J. A., Tamayo, J. A., y Fernández-Martínez, A. (2011). School-Age Involvement in Sport and Perceived Quality of Sport Services. *Collegium Antropologicum, 35*(4), 1023-1029

Nuviala, A., Tamayo, J.A., Nuviala, R., González, J.A., y Fernández, A. (2010). Propiedades psicométricas de la escala de valoración de organizaciones deportivas EPOD. *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación, 18*, 82-87.

Nuviala, A., Teva-Villén, M. R., Grao-Cruces, A., Pérez-Ordás, R., García-Fernández, J., y Nuviala, R. (2012b). Validity, reliability and exploratory factor analysis of the dropout scale in sport centres. *Journal of Human Sport and Exercise, 7*(1), 275-286. http://dx.doi.org/10.4100/jhse.2012.71.06

Palou, P., Ponseti, X., Gili, M., Borras, P. A., y Vidal, J. (2005). Motivos para el inicio, mantenimiento y abandono de la práctica deportiva de los preadolescentes de la isla de Mallorca. *Apunts. Educación Física y Deportes, 81,* 5-11.

Pérez-Gil, J.A., Chacón, S. y Moreno, R. (2000). Validez de Constructo: el Uso de Análisis Factorial Exploratorio-Confirmatorio para Obtener Evidencias de Validez. *Psicothema, 12* (2), 442-446

Rial, A., Varela, J., Abalo, J., y Lévy, J.P. (2006). El Análisis Factorial Confirmatorio. En J.P. Lévy y J. Varela (coord.). *Modelización con Estructuras de Covarianzas en Ciencias Sociales. Temas Esenciales, Avanzados y Aportaciones Especiales* (pp.119-154) A Coruña: Netbiblo.

Ruiz, F., García, M. E., y Díaz, A. (2007). Análisis de las motivaciones de práctica de actividad física y de abandono deportivo en la Ciudad de La Habana (Cuba). *Anales de Psicología, 23,* 152-166.

Weston, R., y Gore, P. A. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist, 34*(5), 719-751. http://dx.doi.org/10.1177/0011000006286345

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Annex 1. Items of the scale of causes of attrition after the Confirmatory Factor Analysis and the factors to which they belong

Factor	Item
Satisfaction	Because the sports centre staff do not pay enough attention to the users
	Because I do not receive enough attention in the classes and/or fitness rooms
Enjoyment	Because I do not like going to the sports centre
	Because I do not enjoy coming to the sports centre
	Because coming to the sports centre does not motivate me
Practice	Because it is very crowded
	Because there is not enough sports equipment
	Because the strength training and cardiovascular machines are insufficient.
Economy	Because I think the price is expensive
	Because I think the membership fee is expensive
Leisure	Because I have not met anyone interesting
	Because I have other more interesting leisure options