

Lifestyles and satisfaction with life of veteran athletes: a prospective test based on the theory of self-determination

Estilos de vida y satisfacción con la vida de los atletas veteranos: una prueba prospectiva basada en la teoría de la auto determinación

Marco Batista, Jorge Santos, Samuel Honório, João Rocha, João Serrano, João Petrica
Sport, Health & Exercise Research Unit (SHERU) - Instituto Politécnico de Castelo Branco (Portugal)

Abstract. The practice of sports by veteran athletes is a reality with an expansion perspective. The objective was to determine predictive variables of healthy lifestyles and satisfaction with life in veteran athletes, according to the Self-determination Theory (SDT). A structural equation model and a mediation model has developed. The number of participants were 680 Portuguese veteran athletes, aged between 30 and 90 years old ($M=43.78$ $DT=8.61$). The Basic Psychological Needs Exercise Scale, the Behavioral Regulation in Sport Questionnaire, the Healthy Lifestyles Questionnaire and the Life Satisfaction Scale were used. This model has shown the following adjustments indices: $\chi^2 = 729.116$, $p < .001$, $\chi^2/df = 4.41$, $CFI = .92$; $IFI = .92$; $TLI = .91$; $GFI = .91$; $RMSEA = .068$; $SRMR = .064$. As a conclusion, in veteran athletes, the perception of satisfaction of the basic psychological needs for autonomy, leads to autonomously motivated behaviours, promoting better eating and resting habits, as well as high satisfaction with life, and a lower consumption of tobacco. Autonomous motivation has not proved to be a significant mediating variable between the basic psychological need for autonomy, lifestyles and satisfaction with life.

Keywords: Self-determination, healthy lifestyle, life satisfaction, sports, veterans.

Resumen. La práctica de deportes por deportistas veteranos es una realidad evidente y con perspectivas de expansión. El objetivo de este estudio fue determinar las variables predictivas para estilos de vida saludables y satisfacción con la vida en deportistas veteranos, desde la Teoría de la Autodeterminación. Se desarrolló un modelo de ecuación estructural y un modelo de mediación. Participaron 680 deportistas veteranos portugueses, entre los 30 y 90 años ($M=43.78$ $DT=8.61$). Se utilizó la Escala de Necesidades Psicológicas Básicas, el Cuestionario de Regulación Comportamental en el Deporte, el Cuestionario de Estilos de Vida Saludables y la Escala de Satisfacción con la Vida. El modelo demostró los siguientes índices: $\chi^2 = 729.116$, $p < .001$, $\chi^2/df = 4.41$, $CFI = .92$; $IFI = .92$; $TLI = .91$; $GFI = .91$; $RMSEA = .068$; $SRMR = .064$. Como conclusiones, en los deportistas veteranos, la percepción de satisfacción de la necesidad psicológica básica de autonomía conduce a comportamientos motivados de manera autónoma, promoviendo estos, mejores hábitos de alimentación y descanso, alta satisfacción con la vida y menos consumo de tabaco. La motivación autónoma no demostró ser una variable mediadora significativa entre la necesidad psicológica básica de autonomía y estilos de vida y satisfacción con la vida.

Palabras clave: Autodeterminación, estilo de vida saludable, satisfacción con la vida, deporte, veteranos.

Introduction

Our society is constantly changing, and in the last decades an increase in life expectancy has been observed, accompanied by an increase in the percentage of individuals, above 35 years of age, participating in competitive and non-competitive physical activities (Zarauz-Sancho & Ruiz-Juan, 2015; Batista, Jimenez-Castuera, Leyton, Aspano, & Lobato, 2017; Batista, Leyton, Lobato, & Jiménez, 2019). Veteran sport is a sport activity practiced by athletes over 35 years of age, and in some sports the practice can begin in these classes from the age of 28.

It is very interesting to observe that veteran athletes are usually training and compete during practically all their lives (Ruiz-Juan, Zarauz-Sancho, & Giraldez, 2019), being naturally dependent on a motivational regulation that models their conduct.

One of the theories with most impact on motivational research in sport and exercise is the Theory of Self-determination (TSD) (Deci & Ryan, 1980, 2012), which explains that motivation is a continuous process characterized by different levels of self-determination which, from greater to less, distinguishes between self-determined and non-self-determined motivation.

According to Deci & Ryan (2000), within the concept of

the theory of Self-determination there are three needs for psychological growth and well-being, these are the basic psychological needs of psychological autonomy, personal competence and social bond, that is been revealed as an basic assessment for the development and maintenance of psychological health and/or personal well-being (Moreno-Murcia, Marzo, Martínez-Galindo & Marín, 2011).

It is of vital importance that former athletes, many of them current veterans, continue to find in sport a contextual dimension that provides them with a healthy lifestyle and high satisfaction with life. It has been investigated that according to the theoretical assumptions of the Hierarchical Model of Motivation (Vallerand, 2007, 2015), in which the perception of satisfaction of the basic psychological need for autonomy, can act as the main determinant of autonomous motivation. This study will highlight particularly for coaches, the importance of promoting self-determined motivation for the sports practice of veteran athletes, resulting in satisfaction with their lives and lifestyles.

Methods

Objective

The study purpose is to determine and analyse predictive variables of healthy lifestyles and life satisfaction of Portuguese veteran athletes, based on the theory of self-determination. The variables under study were autonomy perception, autonomous motivation, eating habits, resting habits, tobacco consumption and satisfaction with life.

Instruments and procedures

This is a cross-sectional study of observational context (Cubo-Delgado, Martín-Marin & Ramos-Sanchez, 2011).

The instruments used were the validated versions for the Portuguese language of the Basic Psychological Needs Exercise Scale-BPNES (Moutão, Cid, Alves, Leitão & Vlachopoulos, 2012), the Behavioral Regulation in Sport Questionnaire - BRSQ (Monteiro, Moutão & Cid, 2018), the Healthy Lifestyles Questionnaire - EVS (Batista, Jimenez Castuera, Leyton Roman, Lobato & Aspano, 2016c) and the Life Satisfaction Scale - SWLS (Neto, 1993).

Was performed a descriptive statistic of the variables under study, as well as the reliability indicators calculated by Cronbach's alpha (Nunnally, 1978) and McDonald's omega (McDonald, 1999). Based on the theory of self-determination, it was performed an application of a model of structural equation and a model of mediation.

Was also analysed structural equation models (Hu & Bentler, 1999) and mediation models proposed by Hayes (2013), using bootstrapping techniques for 10.000 cases.

This research was approved by the ethics committee of the Sports Faculty of the University of Extremadura, under the registration number R011-0322020.

Participants

The study sample was intentional, with 680 Portuguese veteran athletes of both genders, aged between 30 and 90 years ($M=43.78 / SD=8.61$), of whom 545 were male with $M=43.82 SD=8.62$ years and 135 were female with $M=40.26 SD=9.96$ years, being these athletes of several sports, with continuous practice of at least two years. These athletes register mostly between 3 to 5 hours of weekly training, with $M=19.5 SD=12.2$ years of practice, competitors of various sports. This study contains data referring to practitioners of collective sports, such as football, roller hockey, rugby, basketball, as well as individual sports, namely, tennis, judo, athletics, mountain biking, triathlon, horse riding or cycling. The type of sampling used for sample selection in the present study was intentional non-probabilistic (Cubo-Delgado, Martín-Marin & Ramos-Sanchez, 2011), since it is not based on a probabilistic basis, an intentional approach to subjects with certain specific characteristics. As inclusion criteria, participation in veteran training and competition was determined for at least two years. As exclusion criteria, athletes could not have participated in competitive competitions in the last two years, other than in the veteran class.

Results

In table 1 its observed that the highest values are related to autonomous motivation ($M=6.15$), and the value obtained in the basic psychological need for autonomy ($M=4.05$). In

Table 1
Descriptive statistics, reliability analysis of the variables basic psychological needs, autonomous motivation, lifestyles and life satisfaction.

Variable	Scale	min	max	M	SD	α	ω
1-Autonomy perception	1-5	2.00	5.00	4.05	0.59	.78	.78
2 - Autonomous motivation	1-7	1.00	7.00	6.15	0.76	.90	.84
3 - Eating habits	1-5	1.13	5.00	3.75	0.70	.80	.75
4 - Resting habits	1-5	1.00	5.00	3.42	0.97	.84	.78
5 - Tobacco consumption	1-5	1.00	4.40	1.61	0.91	.91	.92
6 - Satisfaction with life	1-7	1.00	7.00	5.09	0.97	.87	.87

* $P < .05$. ** $P < .01$.

Legend: Values of scale, minimum, maximum, mean, standard deviation, Cronbach alfa and Macdonald omega in variables in study.

lifestyles, the highest values were for eating habits ($M=3.75$), resting habits ($M=3.42$) and tobacco consumption ($M=1.61$). The value obtained in the variable satisfaction with life was high ($M=5.09$).

All dimensions revealed a α of Cronbach above 0.70 (Nunnally, 1978), as well as the McDonald omega (McDonald, 1999).

The model's goodness test showed the following adjustment indices: $\chi^2 = 729.116$, $p < .001$, $\chi^2/df = 4.41$, CFI = .92; IFI = .92; TLI = .91; GFI = .91; RMSEA = .068; SRMR = .064. The model revealed that the perception of autonomy predicts positively and significantly the autonomous motivation. Also, this predicts positively and significantly life satisfaction, eating habits and resting habits. Tobacco consumption is predicted negatively and significantly by autonomous motivation.

Figure 1 presents the tested model and the mediation effects of autonomous motivation on the consequence variables, according to Hayes (2013). The models revealed that autonomous motivation proved to be a mediating variable between the basic psychological need for autonomy, eating and resting habits, not for life satisfaction and tobacco consumption.

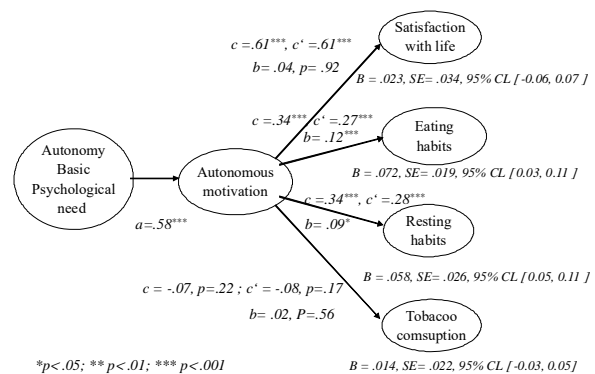


Figure 1
Model of mediation of autonomous motivation between the perception of autonomy, healthy lifestyles and satisfaction with life.

Discussion

The main objective of this study was to determine predictive variables of lifestyles and satisfaction with the lives of Portuguese veteran athletes, based on the theory of self-determination, through the application of models of structural equations and models of mediation.

The model of structural equation tested infers that the perception of autonomy it is a positively and significantly predictor of the autonomous motivation. Gonzalez-Cutre et al. (2014) tells us that the basic psychological need for autonomy is a very important variable with high predictive power in the context of self-determination. In the same study context of Sánchez-Oliva et al. (2017) in an educational environment demonstrated that a greater perception of the basic psychological need for autonomy promotes a higher autonomous motivation, the basic psychological need being the one that most predicts the most self-determined motivation. Batista et al. (2016b) with a sample of active adults, obtained identical indicators, highlighting a higher perception of basic psychological need for autonomy by women.

Our model of structural equation has revealed that

autonomous motivation predicts eating habits and resting habits positively and significantly. Ng et al. (2012), in a meta-analysis with mostly non-experimental studies, determined that there is a strong relationship between TSD and positive health behaviours. The studies by Chacón-Cuberos et al. (2018) and Leyton et al. (2018) found a relationship between motivation for physical activity and eating habits. Not many studies relate motivation for physical activity to resting habits. Batista et al. (2018b) in a study of active adults with regular exercise, found where autonomous motivation significantly predicted resting habits as well as eating habits. Leyton et al. (2017), also highlight that intrinsic motivation is crucial for the development of healthy habits, such as adequate eating and resting habits, particularly of adult and elderly women. In our study it was also observed that tobacco consumption was predicted negatively and significantly by autonomous motivation, such as those obtained by Batista et al. (2018b).

The model of structural equation revealed that autonomous motivation predicts life satisfaction positively and significantly, in agreement with the studies of Batista et al. (2016a) and Batista et al. (2016b) who recorded that the increase in weekly exercise hours promotes an increase in life satisfaction and positive affections, with benefits for individuals who exercise in group and individual contexts. It is also important to highlight the study by Batista et al. (2018a), with institutionalized adults, which also showed that autonomous motivation promotes a high level of life satisfaction. With this work, important indicators were obtained for coaches, in the sense of adequate promotion of the basic psychological need for autonomy, as a predictor of autonomous motivation for the sporting practice of veteran athletes.

Conclusions

Given the objective of the study, the results were positive that, in veteran athletes, the perception of satisfaction of the basic psychological need for autonomy leads to behaviours motivated autonomously, promoting these, better eating habits and rest, as well as high satisfaction with life, and a lower consumption of tobacco. Autonomous motivation has not proved to be a significant mediating variable between the basic psychological need for autonomy and lifestyles and satisfaction with life.

References

Batista, M., Leyton, M., Lobato, S., & Jimenez, R. (2019) Modelo Transcontextual de la Motivación en la Predicción de Estilos de Vida Saludables / Transcontextual Model of Motivation in the Prediction of Healthy Lifestyles. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte*, 19 (75), 463-488. DOI: 10.15366/rimcafd2019.75.006

Batista, M., Martinho, J., Santos, J., Mesquita, H., Duarte-Mendes, P., & Paulo, R. (2018a). Self-determined motivation and life satisfaction of elderly for the supervised physical activity practice. *BMC Health Services Research*, 18 (2), 50. DOI: 10.1186/s12913-018-3444-8.

Batista, M., Leyton, M., Lobato, S., Aspano, M., & Jimenez-Castuera, R. (2018b). Application of the transcontextual model of motivation in the prediction of healthy lifestyles of active adults. *BMC Health Services Research*, 18 (2), 50. DOI: 10.1186/s12913-018-3444-8.

Batista, M., Jimenez Castuera, R., Leyton, M., Aspano, M., & Lobato, S. (2017). Self-determined motivation and life satisfaction in Portuguese veterans athletes. *Retos*, 32, 124-129. ISSN: Edición impresa: 1579-1726. Edición Web: 1988-2041.

Batista, M., Faustino, R., Mesquita, H., Faustino, A., Santos, J., & Honório, S. (2016a). Life satisfaction of working adults due to the volume

of hours of weekly exercise. *BMC Health Services Research*, 16 (3), 102. DOI: 10.1186/s12913-016-1423-5.

Batista, M., Jimenez Castuera, R., Petrica, J., Serrano, J., Honório, S., Paulo, R., & Mendes, P. (2016b). Self determined motivation and well being in Portuguese active adults of both genders. *BMC Health Services Research*, 16 (3), 103. DOI: 10.1186/s12913-016-1423-5

Batista, M., Jimenez Castuera, R., Leyton Roman, M., Lobato, S., & Aspano, M. (2016c). Adaptation and validation of the portuguese version of the healthy lifestyles questionnaire. *Ponte – International Scientific Researches Journal*, 72 (9), 145-158. ISSN: 0032-423x. DOI: <http://dx.doi.org/10.21506/j.ponte.2016.9.11>.

Chacón-Cuberos, R., Zurita-Ortega, F., Puertas P, Knox, E., Cofré, C., Vicianá, V., & Muros, J. (2018). Relationship between healthy habits and perceived motivational climate in sport among university students: a structural equation model. *Sustainability*, 10(4), 938. <https://dx.doi.org/10.3390/su10040938>.

Cubo-Delgado, S., Martín-Marín, B., & Ramos-Sanchez, J. (2011). *Métodos de Investigación y Análisis de Datos en Ciencias Sociales y de la Salud*. Madrid: Pirámide.

Deci, E. & Ryan, R. (2012). Self-determination theory. In A. W. Kruglanski, P. A. M. Van Lange, & E. T. Higgins (Eds.), *Handbook of theories social psychology* (pp. 416-437). London: Sage.

Deci, E. & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: human needs and the self-determination of behaviour. *Psychol Inq*, 11, 227–68.

Deci, E., & Ryan, R. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 39-80). New York: Academic Press.

González-Cutre, D., Sicilia, À., Beas-Jiménez, M., & Hagger, M.S. (2014). Broadening the trans-contextual model of motivation: A study with Spanish adolescents. *Scandinavian Journal of Medicine Science in Sports*, 24: 306–319 doi: 10.1111/sms.12142

Hayes, A. (2013). *Methodology in the social sciences. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY, US: Guilford Press.

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

Leyton, M., García, M., Fuentes, G., & Jiménez, C. (2018). Analysis of motivational variables and healthy lifestyles in sports center practitioners by gender. *Retos: Nuevas Tendencias en Educación Física, Deporte y Recreación*, 34(1), 166-171.

Leyton, M., Batista, M., Lobato, S., Aspano, M., & Jiménez, R. (2017). Application of two intervention programs in order to optimize motivation and to improve eating habits in adult and elderly women. *Journal of Human Kinetics*, 59(1), 131-142. <https://dx.doi.org/10.1515/hukin-2017-0153>.

McDonald, R. (1999). *Test theory. A unified treatment*. Mahwah, NJ: Lawrence Erlbaum Associates.

Monteiro, D., Moutão, J., & Cid, L. (2018). Validation of the Behavioral Regulation Sport Questionnaire in Portuguese athletes. *Revista de psicologia del Deporte*, 27 (1), 145-150.

Moreno-Murcia, J., Marzo, J., Martínez-Galindo, C. & Marín, L. (2011). Validación de la Escala de Satisfacción de las Necesidades Psicológicas Básicas y del Cuestionario de la Regulación Conductual en el Deporte al contexto español al contexto español. *International Journal of Sport Science*, 7, 355-369.

Moutão, J., Cid, L., Alves, J., Leitão, J., & Vlachopoulos, S. (2012). Validation of the Basic Psychological Needs in Exercise Scale in a Portuguese Sample. *The Spanish Journal of Psychology*, 15(1), 399-409.

Neto, F. (1993). The Satisfaction with Life Scale: Psychometrics Properties in an Adolescent Sample. *Journal of Youth and Adolescence*, 22(2), 125-134.

Ng, J., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E., Ryan, R., Duda, J., & Williams, G. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science*, 7(4), 325-340. <https://dx.doi.org/10.1177/1745691612447309>.

Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.

Ruiz-Juan, F., Zarauz-Sancho, A., & Giráldez, V. (2019). Addiction to athletics in master athletes: A study with psychological variables and training habits. *Retos*, 35, 201-207.

Sánchez-Oliva, D., Pulido-González, J. J., Leo, F.M., González-Ponce, I., & García-Calvo, T. (2017). Effects of an intervention with teachers in the physical education context: a self-determination theory approach. *PLoS ONE*, 12(12), e0189986. <https://dx.doi.org/10.1371/journal.pone.0189986>.

Vallerand, R. (2015). *The psychology of passion: A dualistic model*. Oxford University Press.

Vallerand, R. (2007). A hierarchical model of intrinsic and extrinsic motivation for sport and physical activity. In M. S. Hagger, & N. Chatzisarantis, *Intrinsic motivation and self-determination in exercise and sport* (pp. 255-280). Champaign: Human Kinetics.

Zarauz-Sancho, A. & Ruiz-Juan, F. (2015). Factores determinantes de la motivación en atletas veteranos españoles. *Revista Latinoamericana de Psicología*, 47(1), 34-42.