

ASSOCIATION OF PHYSICAL SELF-CONCEPT WITH PHYSICAL ACTIVITY, LIFE SATISFACTION AND MEDITERRANEAN DIET IN ADOLESCENTS

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Abstract:

The aim of this study was to examine the association between physical self-concept and physical activity, the intention to be physically active, life satisfaction, and adherence to the Mediterranean diet in adolescents. A total of 1,808 Spanish adolescents (12-16 years of age) participated in this cross-sectional study. *Physical Self Questionnaire*, *Moderate-to-Vigorous Physical Activity Screening Measure*, *Intention to be Physically Active Scale*, *Satisfaction with Life Scale*, and *Mediterranean Diet Quality Index* were administered. The boys with a lower physical self-concept showed higher odd ratios of being inactive, having low intentions of being physically active, poor life satisfaction and low adherence to the Mediterranean diet. Similarly, most of the associations were also statistically significant in girls as well. In conclusion, the study reveals that having a low level of physical self-concept increases the risk of being inactive and of having a low level of intention to be physically active, life satisfaction and adherence to the Mediterranean diet in adolescents.

Key words: *physical perceptions, intention to be physically active, subjective well-being, Mediterranean food, teenager*

Introduction

Physical self-concept or one's perceptions about his/her own abilities and physical appearance is a recognized health indicator particularly relevant during adolescence (Esnaola, Goñi, & Madariaga, 2008). Nowadays, having a positive physical self-concept is an essential resource for proper personal and social development, given that a weak physical self-concept is considered a predictor of certain psychological health problems such as anxiety about one's image and low self-confidence (Crocker, et al., 2003; Crocker, Sabiston, Kowalski, McDonough, & Kowalski, 2006; Delfabbro, Winefield, Anderson, Hammarström, & Winefield, 2011). In addition, physical self-concept is linked to healthy lifestyle habits and has proven to be inversely related to eating disorders (Crocker, et al., 2003, 2006; Goñi & Rodríguez, 2007) and positively linked to physical activity (PA) (Crocker, et al., 2003, 2006; Ruiz, García, García, & Bush, 2010). In this latter case the relationship appears more complex, with some gender differences (Moreno-Murcia, Hellín, González-Cutre, & Martínez-Galindo, 2011). How-

ever, to date, the association of physical self-concept with the intention to be physically active after secondary school, life satisfaction and adherence to the Mediterranean diet in adolescents of both sexes is less evident and the results are limited or contradictory.

The interest in exploring the complex relationship between physical self-concept and behaviours and future intentions of PA at these ages lies in the fact that PA is of fundamental importance for the maintenance of life functions and is an essential part of having a healthy lifestyle, as it has been proven to have a protective role against the development of cardiovascular disease, metabolic disorders, skeletal disorders and even mental illness (Andersen, 2009). However, evidence suggests that the levels of PA start to decrease consistently during adolescence (e.g. van der Sluis, et al., 2010). Several studies have researched the relationship between physical self-concept and current PA behaviours in adolescents (Moreno-Murcia, et al., 2011; Ruiz, et al., 2010), but few focused on its association with intentions or future PA behaviours (Crocker, et al.,

2003, 2006; Moreno-Murcia, et al., 2011). In this regard, in accordance with Moreno-Murcia et al. (2011), we believe that it would be interesting to study future intentions of PA, as well as current PA behaviours.

Equally, it is important to be aware of the association of physical self-concept with one of the most important indicators of psychological wellbeing, namely life satisfaction (Lovretić, Benjak, & Vuletić, 2013; Pavot, Diener, Colvin, & Sandvik, 1991). Longitudinal and cross-sectional studies have demonstrated the importance of life satisfaction for the correct growth and development of adolescents, favouring social relationships and preventing the development of psychological disorders and unhealthy habits (Valois, Zullig, Huebner, & Drane, 2004). Previous studies show a positive association between physical self-concept and life satisfaction and other factors of psychological wellbeing in adolescents (Delfabbro, et al., 2011; Rodríguez, 2005; Videra-García & Reigal-Garrido, 2013). However, the study of the relationship between physical self-concept and psychological wellbeing in adolescents of both sexes is relatively recent, and various authors advocate for further research in this area (Esnaola, et al., 2008; Rodríguez, 2005).

On the other hand, it is of interest to analyse the association between physical self-concept and one of the principal factors that contribute to the prevention of premature health problems, and to adherence to the Mediterranean diet (Tur, Romaguera, & Pons, 2004). This kind of diet is characterized as being rich in natural antioxidants, low in saturated fats and based on the consumption of fruit, vegetables, legumes, fish, dried fruit and olive oil. This diet plays a preventive role in the development of cardiovascular and cerebrovascular diseases, diabetes, obesity, oncological illnesses and neurodegenerative diseases (Bulló, Lamuela-Raventós, & Salas-Salvadó, 2011; Demarin, Lisak, & Morović, 2011). Likewise, adherence to the Mediterranean diet seems to be related to other healthy lifestyle habits in adolescents (Grao-Cruces, et al., 2013, Grao-Cruces, Fernández-Martínez, & Nuviala, 2014). We have not found any previous studies that have researched whether there is an association between physical self-concept and the adherence to Mediterranean eating habits, although the relationship between physical self-concept and eating habits does seem to be clear (Crocker, et al., 2003, 2006; Goñi & Rodríguez, 2007).

As a result this study proposes an analysis of the association of the physical self-concept with the current PA level, the intention to be physically active upon completion of secondary school (in Spain typically at age of 16), life satisfaction and adherence to the Mediterranean diet in adolescents.

Methods

Participants

The study was carried out during the 2011/2012 academic year. A total of 1,808 (924 boys and 884 girls) healthy Caucasian adolescents (age: 14.35 ± 1.31 years, 12-16 years; body mass index: 22.26 ± 4.32 kg/m²) took part in this study. Adolescents from 16 schools from all the Andalusian provinces (eight provinces in southern Spain) were surveyed. They were randomly selected by a two-stage cluster sampling, using the Autonomous Region of Andalusia's census database as a reference. The different strata were selected according to the geographic location, age and sex. The size of the sample, from the total of 367,384 secondary-education students in 2011/2012 (Regional Ministry of Education of Andalusia, 2012), enabled us to work with a sampling error that was under 2.5% and a confidence interval of 95%.

Measures and procedures

Prior to the study, we held an information session for adolescents, parents, teachers and the board of school principals in order to explain the nature and objectives of the study, requiring the informed consent of parents and adolescents. The study met the highest security and ethical standards, the regulations of the country in which it was carried out and the ethical rules established for these types of studies at the universities of the authors, and it was developed following the ethical principles set out in the Declaration of Helsinki.

Anthropometric measurements were taken of body weight [TANITA BC-420-S scales – class III (TANITA Corporation Inc., Arlington Heights, Illinois, United States)] and body height [portable stadiometer SECA 214 (SECA Ltd., Hamburg, Germany)], of the barefoot subjects wearing light clothing. The participants completed an anonymous questionnaire (average time to complete the test: 15 minutes) aimed at assessing physical self-concept, the current PA level, the intention to be physically active, life satisfaction and adherence to the Mediterranean diet. All the measurements were taken in the presence of trained researchers.

Physical self-concept. Physical self-concept was assessed using the *Physical Self Questionnaire* (PSQ), validated in Spanish adolescents by Moreno and Cervelló (2005). This instrument consisted of 30 items grouped in five factors: *Physical condition*, *Physical appearance*, *Athletic competence*, *Physical strength*, and *Self-confidence*. The participants answered the question *When I engage in physical activity...* using the items that make up the four-point Likert-type scale, in which 1 means *completely disagree* and 4 means *completely agree*.

The mean of the items that make up each of the dimensions was used to dichotomize the sample of participants into having either a high (>3) or low (1-3) level of physical self-concept. The internal consistency of the scale (Cronbach's $\alpha=.853$) and the factors that compose it (Cronbach's $\alpha=.794$, $.748$, $.807$, $.701$, and $.705$, respectively) was high.

Current PA level. PA was assessed by means of the tool *Moderate-to-Vigorous Physical Activity Screening Measure* developed by Prochaska, Sallis, and Long (2001). This tool consists of two items, where the participants were asked about the number of days they were physically active (from moderate to vigorous) for at least one hour over the past seven days and in a typical week. The response scale was the same for both items: 1=*none*, 2=*one day*, 3=*two days*, 4=*three days*, 5=*four days*, 6=*five days*, 7=*six days*, and 8=*seven days*. The mean of both items was used to dichotomize the subjects into inactive (1-5) and active (6-8). The internal consistency of the PA items was high (Cronbach's $\alpha=.861$).

Intention to be physically active. The intention to be physically active was assessed using the *Intention to be Physically Active* scale (Hein, M  ur, & Koka, 2004), adapted to Spanish by Moreno, Moreno, and Cervell   (2007) under the name of *Measurement of the Intention to be Physically Active* (MIFA). This instrument was comprised of five items aimed at measuring the individual's intention to be physically active following completion of secondary education. The items were preceded by the following sentence: *Regarding your intention of doing physical activity....* The answers were provided through a Likert-type scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). The final score was the mean of its items. The score was dichotomized into having a high (>4) or low (1-4) level of intention to be physically active. The internal consistency of the scale in the study sample was high (Cronbach's $\alpha=.820$).

Life satisfaction. Life satisfaction was assessed using the Spanish version, validated in adolescents, of the *Satisfaction with Life Scale* (SWLS) (Atienza, Pons, Balaguer, & Garc  a-Merita, 2000). This scale comprised five items, with answers ranging between 1 (*completely disagree*) and 5 (*completely agree*). The scale's final result was calculated as the sum of the scores obtained in each of its items, meaning that it could be anywhere between 5 and 25. The score was dichotomized into very happy (21-25) or unhappy (5-20). The internal consistency of the scale in the study sample was high (Cronbach's $\alpha=.824$).

Adherence to the Mediterranean diet. Adherence to Mediterranean eating habits was assessed using the *Adherence to the Mediterranean Diet Test* (KIDMED) (Serra-Majem, et al., 2004), successfully used in Spanish adolescents (Grao-

Cruces, et al., 2013; 2014; Serra-Majem, et al., 2004). This instrument was made up of 16 yes-or-no questions. The positive answers to the questions which represented a positive aspect regarding the Mediterranean diet (12 questions) added one point to the total score, while the positive answers to the questions which represented a negative connotation of the Mediterranean diet (four questions) deducted one point. Negative answers did not score any points. The total score produced the KIDMED index, according to which the participants were classified as having high (8-12) or medium-low (0-7) levels of adherence to the Mediterranean diet.

Statistical analysis

In order to carry out the analysis, we used IBM SPSS Statistics 20.0 for Windows (IBM Software Group, Chicago, Illinois, United States). The level of statistical significance was set as $\alpha=.05$. Comparisons between sexes and the anthropometric measurements, physical self-concept, current PA, intention to be physically active, life satisfaction and adherence to the Mediterranean diet were carried out using the Mann-Whitney U-Test.

We carried out binary logistic regression analyses in order to examine the association between a low level in different dimensions of physical self-concept (independent variables) and PA level (active [referent] vs. inactive), the intention to be physically active (high [referent] vs. low), life satisfaction (very happy [referent] vs. unhappy) and adherence to the Mediterranean diet (high [referent] vs. low) (dependent variables). All these analyses were performed separately for boys and girls and all of the models were adjusted by age and BMI.

Results

The boys showed significantly higher BMI, physical self-concept, PA levels, intention to be physically active after secondary school, and adherence to the Mediterranean diet than the girls (Table 1).

The male adolescents with a low level of self-perception of their *Physical condition*, *Physical appearance*, *Athletic competence*, *Physical strength* and *Self-confidence* had significantly greater odds ratios (OR) of being inactive, having little intention to be physically active, less life satisfaction and low adherence to the Mediterranean diet. In the case of the girls, those with low level of self-perception of their *Physical condition* and *Athletic competence* had more risk of being inactive. Likewise, the girls with a low level of self-perception of their *Physical condition*, *Athletic competence*, *Physical strength* and *Self-confidence* also showed greater ORs of having little intention to be physically active, less life satisfaction and low adherence to the Mediterranean diet (Table 2).

Table 1. Mean and standard deviation for anthropometric measurements, physical self-concept dimensions, level of physical activity, intention to be physically active after secondary school, life satisfaction, and adherence to the Mediterranean diet

	Boys			Girls			p
	n	M	SD	n	M	SD	
Age (years)	924	14.41	1.33	884	14.29	1.29	.067
Body weight (kg)	924	63.31	15.03	884	56.09	12.01	<.001
Body height (cm)	924	167.12	9.26	884	159.40	6.68	<.001
BMI (kg/m ²)	924	22.53	4.55	884	21.98	4.06	.012
Self-perception of physical condition (1-4)	918	2.89	.62	880	2.47	.62	<.001
Self-perception of physical appearance (1-4)	917	2.82	.58	880	2.62	.68	<.001
Self-perception of athletic competence (1-4)	917	2.79	.59	879	2.25	.60	<.001
Self-perception of physical strength (1-4)	917	2.75	.59	880	2.44	.58	<.001
Self-perception of self-confidence (1-4)	919	3.06	.65	880	2.80	.63	<.001
Physical activity (days a week)	918	4.19	1.88	884	3.17	1.79	<.001
Intention to be physically active (1-5)	918	4.16	.85	879	3.56	.94	<.001
Life satisfaction (1-25)	918	19.44	4.49	878	19.09	4.67	.149
Adherence to the Mediterranean diet (0-12)	916	6.44	2.38	880	5.95	2.42	<.001

Note. Physical activity (days a week) – average number of days with at least 1 hour of moderate-to-vigorous physical activity within the previous week and in a usual week.

Table 2. Odds ratio (OR) and 95% confidence interval (CI) for low physical self-concept according to physical activity level, the intention to be physically active after secondary school, life satisfaction and adherence to the Mediterranean diet in adolescents

		Boys			Girls		
		n	OR	95% CI	n	OR	95% CI
Self-perception of physical condition							
Physical activity	Active	478	1	Referent	273	1	Referent
	Inactive	440	3.502	2.634-4.656	607	3.169	2.269-4.425
Intention to be physically active	High	575	1	Referent	289	1	Referent
	Low	343	8.220	5.691-11.871	590	5.325	3.662-7.745
Life satisfaction	Very happy	428	1	Referent	374	1	Referent
	Low	490	2.457	1.852-3.258	504	2.857	1.980-4.122
Adherence to the Mediterranean diet	High	327	1	Referent	241	1	Referent
	Low	589	2.352	1.757-3.149	638	2.675	1.853-3.860
Self-perception of physical appearance							
Physical activity	Active	477	1	Referent	273	1	Referent
	Inactive	440	1.534	1.153-2.039	607	.808	.577-1.132
Intention to be physically active	High	573	1	Referent	286	1	Referent
	Low	340	2.299	1.675-3.155	590	1.364	.992-1.875
Life satisfaction	Very happy	426	1	Referent	373	1	Referent
	Low	487	3.683	2.727-4.974	503	3.338	2.437-4.572
Adherence to the Mediterranean diet	High	326	1	Referent	241	1	Referent
	Low	586	2.128	1.581-2.865	636	1.978	1.425-2.743
Self-perception of athletic competence							
Physical activity	Active	477	1	Referent	272	1	Referent
	Inactive	440	2.381	1.776-3.191	607	2.170	1.360-3.463
Intention to be physically active	High	573	1	Referent	286	1	Referent
	Low	340	7.423	4.975-11.075	590	9.430	5.384-16.526

Life satisfaction	Very happy	426	1	Referent	372	1	Referent
	Low	487	2.459	1.838-3.291	503	2.076	1.294-3.329
Adherence to the Mediterranean diet	High	326	1	Referent	241	1	Referent
	Low	586	2.158	1.608-2.895	635	2.503	1.564-4.005
Self-perception of physical strength							
Physical activity	Active	477	1	Referent	273	1	Referent
	Inactive	440	1.784	1.329-2.396	607	1.258	.836-1.895
Intention to be physically active	High	573	1	Referent	286	1	Referent
	Low	340	3.595	2.514-5.139	590	2.261	1.529-3.343
Life satisfaction	Very happy	426	1	Referent	373	1	Referent
	Low	487	2.066	1.534-2.782	503	1.641	1.114-2.419
Adherence to the Mediterranean diet	High	326	1	Referent	241	1	Referent
	Low	586	1.777	1.320-2.391	636	1.990	1.336-2.966
Self-perception of self-confidence							
Physical activity	Active	478	1	Referent	273	1	Referent
	Inactive	440	1.322	1.015-1.723	607	.976	.716-1.331
Intention to be physically active	High	574	1	Referent	286	1	Referent
	Low	340	2.928	2.200-3.898	590	1.685	1.250-2.271
Life satisfaction	Very happy	427	1	Referent	373	1	Referent
	Low	487	2.033	1.550-2.665	503	1.883	1.414-2.508
Adherence to the Mediterranean diet	High	326	1	Referent	241	1	Referent
	Low	587	1.626	1.230-2.150	636	1.635	1.200-2.229

Note. ORs were adjusted by age and body mass index.

Discussion and conclusions

This study has analysed the association between physical self-concept and PA, the intention to be physically active upon completion of secondary school, life satisfaction and adherence to the Mediterranean diet in adolescents. In both sexes, those with lower levels of self-perception had a significantly greater risk of having low level of PA, little intention to be physically active, low life satisfaction and low adherence to the Mediterranean diet.

All dimensions of physical self-concept (*Physical condition*, *Physical appearance*, *Athletic competence*, *Physical strength*, and *Self-confidence*) were positively associated with the current PA level in boys and the intention to be physically active after secondary school in adolescents of both sexes. Similarly, Moreno-Murcia et al. (2011), in a sample of 472 Spanish youngsters between 16-20 years of age, found that the physical self-concept factors of *Athletic competence* and *Physical appearance* have a positive correlation with the current PA level and the intention to be physically active in adolescents, regardless of sex. Likewise, the longitudinal studies carried out by Crocker et al. (2003, 2006) on 631 and 501 Canadian female adolescents, respectively, established that physical self-concept can predict PA behaviours for a period of at least two or three years. However, the association between physical

self-concept and intention to be physically active was not significant for the dimension *Physical appearance* in the female adolescents. Likewise, the positive relationship between physical self-concept and current PA in girls was only significant in their dimensions *Physical condition* and *Athletic competence*. These results match those which claim that a high level of perception of *Physical appearance* in girls does not favour the practice of PA and could even have the opposite effect (Moreno & Cervelló, 2005; Moreno-Murcia, et al., 2011). In any case, there is currently a lack of consensus or a unique explanation about this finding, which is why it should be interpreted with caution (Moreno-Murcia, et al., 2011).

A positive association was found between all dimensions of physical self-concept (*Physical condition*, *Physical appearance*, *Athletic competence*, *Physical strength*, and *Self-confidence*) and life satisfaction in male and female adolescents, in accordance with previous studies. Videra-García and Reigal-Garrido (2013), in a sample of 1,648 Spanish adolescents between 14-16 years of age, observed a direct association between physical self-concept and its different dimensions, and life satisfaction in both sexes. Rodríguez (2005), in a sample of 540 Spanish youngsters between 12-23 years of age, revealed that psychological wellbeing is related to physical self-concept and its component

factors, regardless of gender. Delfabbro et al. (2011), in a sample of 1,281 Australian adolescents between 13-17 years of age, found a positive association between perceived physical appearance and life satisfaction, although it was only significant for the female sex. This positive relationship between physical self-concept and life satisfaction (Goñi & Infante, 2010) has recently also been found in older age groups.

The results suggest that a low self-concept in any of its dimensions represents a significant risk of lack of adherence to the Mediterranean diet in adolescents of both sexes. The lack of studies which link physical self-concept and the Mediterranean diet restricts discussion of these findings. However, a number of studies report the influence of physical self-concept on the eating habits of adolescents. Crocker et al. (2003, 2006), in two samples of 631 and 501 female Canadian adolescents, and Canpolat, Orsel, Akdemir, and Ozbay (2005), in a sample of 531 Turkish adolescents between 15-17 years of age, concluded that there was evidence that those with low physical self-concept were more likely to become involved in behaviours which compromise their health, such as going on a restrictive diet without seeking medical advice. In this regard, Goñi and Rodríguez (2007), in a sample of 740 Spanish adolescents between 12-18 years of age, found that adolescents with a low physical self-concept had a higher risk of suffering from eating disorders. Pastor, Balaguer, and García-Merita (2006), in a sample of 1,038 Spanish adolescents between 15-18 years of age, found that perceived athletic competence was positively and indirectly linked to the consumption of healthy food in both sexes. However, perceived physical appearance in the female sex showed a positive association with the consumption of unhealthy food, in contrast to the results obtained in this study.

Based on the above, increasing one's physical self-concept could have a positive influence on the current PA level, the intention to be physically active in the future, life satisfaction and adherence to the Mediterranean diet in adolescents. These findings are of great importance during adolescence, which is a key period in the formation of personality (Richter, 2006). It is difficult to make lifestyle changes later on and different studies suggest that lifestyle habits during adolescence tend to last into adulthood (Huotari, Nupponen, Mikkelsen, Laakso, & Kujala, 2011). Likewise, the fact that adolescents are going through a range of changes increases their vulnerability with regard to adopting bad lifestyle habits, making them a high-risk group (Rufino-Rivas, et al., 2007; van Sluijs, Page, Ommundsen, & Griffin, 2010). Intervention studies in the malleability stages of physical self-concept are needed in order to confirm or refute these results.

The descriptive and cross-sectional nature of this study is one of its limitations, as we cannot establish any causal relationships, given that we have not manipulated any variables. The study looks at the association of physical self-concept with PA, the intention to be physically active after secondary school, life satisfaction and adherence to the Mediterranean diet; any of these variables being also capable of influencing self-concept (Esnaola, et al., 2008). A further limitation is the possibility that some of the questions asked could have been misinterpreted, either intentionally or unintentionally, by some adolescents. However, the intentional provision of incorrect information was probably minimized by the fact that the questionnaires were completed anonymously and that all of the questionnaires showed a good reliability and validity in this age group (12-16 years).

Apart from these limitations, the present study has a number of strengths that merit consideration. The sample size is one such advantage. Working with a large sample allowed us to perform analyses for boys and girls separately. This is important because there are few studies that examine possible gender differences in this regard. Also, working with a representative sample of Andalusian adolescents, we limit possible interferences in the results of some confounders, which may occur with a biased or small sample. Another main strength of this study was the fact that it highlights the importance of physical self-concept as an essential resource for proper personal and social development during adolescence. These results are of great practical applicability because they open a basis for public health action for empowerment of adolescents in developing their physical self-concept. Professionals in the fields of sport, education and health should be aware of the importance of developing a positive physical self-concept to improve the current PA level, the intention of being physically active, life satisfaction and adherence to the Mediterranean diet in adolescents.

In conclusion, the study reveals that having a low level of physical self-concept in terms of *Physical condition*, *Physical appearance*, *Athletic competence*, *Physical strength* and *Self-confidence* increases the risk of having a low level of PA, a low level of intention to be physically active after secondary school, life satisfaction and adherence to the Mediterranean diet in male adolescents. Likewise, in girls all these dimensions of physical self-concept were positively associated with life satisfaction and Mediterranean eating habits, although only some of them showed a significant relationship with the intentions and behaviours of PA.

References

- Andersen, L.B. (2009). Physical activity in adolescents. *Jornal de Pediatria*, 85(4), 281-283.
- Atienza, F.L., Pons, D., Balaguer, I., & García-Merita, M. (2000). Propiedades psicométricas de la escala de satisfacción con la vida en adolescentes. [Psychometric properties of the satisfaction with life scale in adolescents. In Spanish.] *Psicothema*, 12(2), 314-319.
- Bulló, M., Lamuela-Raventós, R., & Salas-Salvadó, J. (2011). Mediterranean diet and oxidation: Nuts and olive oil as important sources of fat and antioxidants. *Current Topics in Medicinal Chemistry*, 11(14), 1797-1810.
- Canpolat, B.I., Orsel, S., Akdemir, A., & Ozbay, M.H. (2005). The relationship between dieting and body image, body ideal, self-perception, and body mass index in Turkish adolescents. *The International Journal of Eating Disorders*, 37(2), 150-155.
- Crocker, P.R.E., Sabiston, C.M., Forrester, S., Kowalski, N., Kowalski, K.C., & McDonough, M. (2003). Predicting change in physical activity, dietary restraint, and physique anxiety in adolescent girls: Examining covariance in physical self-perceptions. *Canadian Journal of Public Health*, 94(5), 332-337.
- Crocker, P.R.E., Sabiston, C.M., Kowalski, K.C., McDonough, M.H., & Kowalski, N. (2006). Longitudinal assessment of the relationship between physical self-concept and health-related behavior and emotion in adolescent girls. *Journal of Applied Sport Psychology*, 18(3), 185-200.
- Delfabbro, P.H., Winefield, A.H., Anderson, S., Hammarström, A., & Winefield, H. (2011). Body image and psychological well-being in adolescents: The relationship between gender and school type. *The Journal of Genetic Psychology*, 172(1), 67-83.
- Demarin, V., Lisak, M., & Morović, S. (2011). Mediterranean diet in healthy lifestyle and prevention of stroke. *Acta Clinica Croatica*, 50(1), 67-77.
- Esnaola, I., Goñi, A., & Madariaga, J. M. (2008). El autoconcepto: Perspectivas de investigación. [Self-concept: Research issues. In Spanish.] *Revista de Psicodidáctica*, 13(1), 179-194.
- Goñi, A., & Infante, G. (2010). Actividad físico-deportiva, autoconcepto físico y satisfacción con la vida. [Physical-sporting activity, physical self-concept and satisfaction with life. In Spanish.] *European Journal of Education and Psychology*, 3(2), 199-208.
- Goñi, A., & Rodríguez, A. (2007). Variables associated with the risk for eating disorders in adolescence. *Salud Mental*, 30(4), 16-23.
- Grao-Cruces, A., Fernández-Martínez, A., & Nuviala, A. (2014). Association of fitness with life satisfaction, health risk behaviors, and adherence to the Mediterranean diet in Spanish adolescents. *Journal of Strength and Conditioning Research*. Advance online publication. Retrieved February 20, 2014, from: http://journals.lww.com/nsca-jscr/Abstract/publishahead/Association_of_fitness_with_life_satisfaction,.97505.aspx
- Grao-Cruces, A., Nuviala, A., Fernández-Martínez, A., Porcel-Gálvez, A.M, Moral-García, J.E, & Martínez-López, E.J. (2013). Adherencia a la dieta mediterránea en adolescentes rurales y urbanos del sur de España, satisfacción con la vida, antropometría y actividades físicas y sedentarias. [Adherence to Mediterranean diet in rural urban adolescents of southern Spain, life satisfaction, anthropometry, and physical and sedentary activities. In Spanish.] *Nutrición Hospitalaria*, 28(4), 1129-1135.
- Hein, V., Müür, M, & Koka, A. (2004). Intention to be physically active after school graduation and its relationship to three types of intrinsic motivation. *European Physical Education Review*, 10(1), 5-19.
- Huotari, P., Nupponen, H., Mikkelsen, L., Laakso, L., & Kujala, U. (2011). Adolescent physical fitness and activity as predictors of adulthood activity. *Journal of Sports Sciences*, 29(11), 1135-1141.
- Lovretić, V., Benjak, T., & Vuletić, G. (2013). Subjective wellbeing of cyclists and physically inactive subjects. *Kinesiology*, 45(1), 101-106.
- Moreno, J.A., & Cervelló, E. (2005). Physical self-perception in Spanish adolescents: Effects of gender and involvement in physical activity. *Journal of Human Movement Studies*, 48, 291-311.
- Moreno, J.A., Moreno, R., & Cervelló, E. (2007). El autoconcepto físico como predictor de la intención de ser físicamente activo. [The physical self-concept as predictor of the intention of being physically active. In Spanish.] *Psicología y salud*, 17(2), 261-267.
- Moreno-Murcia, J.A., Hellín, P., González-Cutre, D., & Martínez-Galindo, C. (2011). Influence of perceived sport competence and body attractiveness on physical activity and other healthy lifestyle habits in adolescents. *The Spanish Journal of Psychology*, 14(1), 282-292.
- Pastor, Y., Balaguer, I., & García-Merita, M. (2006). Relaciones entre el autoconcepto y el estilo de vida saludable en la adolescencia media: Un modelo exploratorio. [The relationship between self-concept and a healthy lifestyle in adolescence: An exploratory model. In Spanish.] *Psicothema*, 18(1), 18-24.
- Pavot, W., Diener, E., Colvin, C.R., & Sandvik, E. (1991). Further validation of the Satisfaction with Life Scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment*, 57(1), 149-161.
- Prochaska, J.J., Sallis, J.F., & Long, B. (2001). A physical activity screening measure for use with adolescents in primary care. *Archives of Pediatrics & Adolescent Medicine*, 155(5), 554-559.

- Regional Ministry of Education of Andalusia. (2012). *Estadística sobre el alumnado escolarizado en el sistema educativo andaluz, a excepción del universitario*. [Statistics about enrolled students in the Andalusian education system, except for the university. In Spanish.] Retrieved April 9, 2014, from: http://www.juntadeandalucia.es/educacion/educacion/nav/contenido.jsp?pag=/Contenidos/Viceconsejeria/Estadisticas/2011_2012/2011_12&vismenu=0,0,1,1,1,1,0,0
- Richter, L.M. (2006). Studying adolescence. *Science*, 312(5782), 1902-1905.
- Rodríguez, A. (2005). Felicidad subjetiva y dimensiones del autoconcepto físico. [Subjective happiness and dimensions of the physical self-concept. In Spanish.] *Revista de Psicodidáctica*, 10(1), 131-138.
- Rufino-Rivas, P., Figueredo, C.R., Ubierna, M.T., Lanza, T.A., González-Lamuño, D., & Fuentes, M.G. (2007). Aversiones y preferencias alimentarias de los adolescentes de 14 a 18 años de edad, escolarizados en la ciudad de Santander. [Nutritional aversions and preferences of adolescents aged 14-18 years, schooled at the city of Santander. In Spanish.] *Nutrición Hospitalaria*, 22(6), 695-701.
- Ruiz, F., García, E., García, M.E., & Bush, P.L. (2010). Role of individual and school factors in physical activity patterns of secondary-level Spanish students. *Journal of School Health*, 80(2), 88-95.
- Serra-Majem, L., Ribas, L., Ngo, J., Ortega, R.M., García, A., Pérez-Rodrigo, C., Aranceta, J. (2004). Food, youth and the Mediterranean diet in Spain. Development of KIDMED, Mediterranean Diet Quality Index in children and adolescents. *Public Health Nutrition*, 7(7), 931-935.
- Tur, J.A., Romaguera, D., & Pons, A. (2004). Food consumption patterns in a Mediterranean region: Does the Mediterranean diet still exist? *Annals of Nutrition and Metabolism*, 48(3), 193-201.
- Valois, R.F., Zullig, K.J., Huebner, E.S., & Drane, J.W. (2004). Life satisfaction and suicide among high school adolescents. *Social Indicators Research*, 66, 81-105.
- van der Sluis, M.E., Lien, N., Twisk, J.W., Steenhuis, I.H., Bere, E., Klepp, K.I., Wind, M. (2010). Longitudinal associations of energy balance-related behaviours and cross-sectional associations of clusters and body mass index in Norwegian adolescents. *Public Health Nutrition*, 13(10A), 1716-1721.
- van Sluijs, E.M., Page, A., Ommundsen, Y., & Griffin, S.J. (2010). Behavioural and social correlates of sedentary time in young people. *British Journal of Sports Medicine*, 44(10), 747-755.
- Videra-García, A., & Reigal-Garrido, R. (2013). Autoconcepto físico, percepción de salud y satisfacción vital en una muestra de adolescentes. [Physical self-concept, perceptions of health and life satisfaction in a sample of adolescents. In Spanish.] *Anales de Psicología*, 29(1), 141-147.

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POVEZANOST SLIKE O VLASTITU TIJELU S TJELESNOM AKTIVNOŠĆU, ZADOVOLJSTVOM ŽIVOTOM I MEDITERANSKOM PREHRANOM ŠPANJOLSKIH ADOLESCENATA

Cilj je ovog istraživanja bio utvrditi povezanost između samopoimanja tijela i tjelesne aktivnosti, namjere da se bude tjelesno aktivan, zadovoljstva životom i pridržavanja mediteranske prehrane kod adolescenata. U ovo transverzalno istraživanje bilo je uključeno ukupno 1.808 španjolskih adolescenata (u dobi od 12 do 16 godina). U istraživanju su korišteni sljedeći mjerni instrumenti: *Physical Self Questionnaire*, *Moderate-to-Vigorous Physical Activity Screening Measure*, *Intention to be Physically Active Scale*, *Satisfaction with Life Scale*, i *Mediterranean Diet Quality Index*. Dječaci s nižom razinom zadovoljstva vlastitim tijelom, u bilo kojoj njegovoj dimenziji, pokazali su veću sklonost tjelesnoj neaktivnosti, nižu odlučnost da budu tjelesno

aktivni, manifestirali su nisku razinu zadovoljstva životom i slabo pridržavanje načela mediteranske prehrane. Slično kao i kod dječaka, većina relacija bila je statistički značajna i kod djevojčica. Zaključno, istraživanje je ukazalo na činjenicu da niska razina samopoimanja povećava rizik za neaktivnost i za nisku razinu namjere za kasniju tjelesnu aktivnost te da je povezano sa slabijim zadovoljstvom životom i slabijim pridržavanjem načela mediteranske prehrane kod adolescenata.

Ključne riječi: *percepcija tjelesnog, namjeravana tjelesna aktivnost, subjektivno zadovoljstvo, mediteranska prehrana, tinejdžeri*