

DOI: 10.2478/tpelj-2013-0001

A Comparison of Physical Self-Concept between Physical Education and Non-Physical Education University Students

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Abstract

The purpose of this study was to compare physical self-concept between physical education and non-physical education university students. The target population of this study was all male and female physical education and non-physical education university students in Rasht city of Iran. After translating the Physical Self-Description Questionnaire (PSDQ) and adjusting some of the questions, the questionnaire was evaluated by the specialists in the context of validity and the reliability achieved by test-retest (Cronbach Alpha value of 0.84). We then, according to the Odineski table selected 180 physical education and non-physical education males and 190 physical education and non-physical education females opportunistically. The collected data was analyzed by 2×2 MANOVA for determine differences between gender and major. The results showed mean vector scores of physical education in the following scales: physical activity; global physical; competence; sports; strength; endurance and flexibility were significantly ($p < 0.05$) higher than that of non-physical education major students. Also, the results shows that mean vector scores of male in the following scales: health; coordination; physical activity; body fat; global physical; competence; sports; global physical self-concept and global esteem were significantly ($p < 0.05$) higher than female. Based on the result of our study the physical self-concept non-physical education and female is lower, than that physical education and male. The results may reflect that male and physical major education students, who usually spend more time on physical activity and sport training to have better fitness and skill oriented self concept than their counterparts.

Key Words: *Self-Concept, Students, Physical Education, Non- Physical Education.*

Rezumat

Scopul acestui studiu a fost de a compara studenții de la facultatea cu profil educație fizică cu studenții altor specializări universitare. Populația țintă au acestui studiu a fost studenții de la facultatea cu profil educație fizică și studenții cu altă specializare decât educația fizică din orașul Rasht, Iran. După traducerea chestionarului PSDQ și ajustarea unor întrebări, chestionarul a fost supus validării (Cronbach Alpha având valoarea de 0.84). Apoi, conform tabelului Odineski au fost selectați aleator 180 de studenți (bărbați și femei) cu specializarea educație fizică și 190 studenți din alte specialități. Datele colectate au fost analizate cu ajutorul testului 2×2 MANOVA pentru a determina diferențele de gen și apartenență (educație fizică și specializare universitară). Rezultatele au aratat că scorurile medii ale vectorilor pentru studenții cu profil educație fizică, în următoarele scale: activitate fizică, aspect fizic, competență, sportivitate, putere, rezistență și flexibilitate, sunt semnificativ ($p < 0.05$) sunt mai mari decât pentru studenții cu alt profil. De asemenea, rezultatele arată că scorurile medii ale vectorilor pentru genul masculin, în următoarele scale: sănătate, coordonare, activitate fizică, masa țesutului adipos în organism, aspect fizic; competență; sportivitate, conceptul de sine și mândria, sunt semnificativ ($p < 0.05$) mai mari decât pentru genul feminin. Rezultatele reflectă faptul că studenții de gen masculin precum și cei de la facultatea cu profil educație fizică, care de obicei, petrec mai mult timp efectuând activități fizice sau antrenament sportiv au o condiție fizică superioară și conceptul de sine orientat spre îndemănare mai mult decât decât omologii lor din alte specialități.

Cuvinte cheie: *concept de sine, studenți, educație fizică.*

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Introduction

Over the last couple of decades, the critical role of physical activity in promoting health and preventing disease has become apparent. Strong evidence exists for physical activity as a factor in reducing the risk of diabetes [1], osteoporosis [2], heart disease [3] and some forms of cancer [4]. Evidence for the role of physical activity in psychological well-being also has accumulated, with research indicating that physical activity may be effective in treating and/or reducing the risk of depression and anxiety [5].

Concern with the link between physical activity and psychological well-being has also brought attention to the role that physical activity may play in bolstering self-esteem, the value we place on our self, and self-concept, our perception of self [6-7].

Self-concept may be differentiated from self-esteem, although the terms have been used interchangeably. Self-concept is defined broadly to include cognitive, affective and behavioral aspects whereas self-esteem refers to a smaller, evaluative component of an individual's self-perception [8-9]. Self-esteem is considered to be «an individual's positive or negative attitude toward the self as a totality» [10] and as such has cognitive and affective components. Conceptually, self-esteem is closely related to self-worth, so people with high self-esteem see themselves as having worth, whereas people of low self-esteem may be dissatisfied with themselves.

These two terms are often used interchangeably and, as self-concept is the broader concept from which self-esteem is derived, we will henceforth use the term self-concept. Evidence shows that self-concept is protective against depression and obesity [11], as well as maladaptive behaviors such as substance abuse and violence [12-13].

The importance of physical self-concept rests in the relationship between the individual's personal set of beliefs and their subsequent behavior. The

measurement of physical self-efficacy has been utilized to establish relationships among one's overall self-perceptions and their subsequent participation in physical activities. To increase overall self-worth through a positive change in physical self-concept does not automatically result from participation in physical activity programs but such programs can be utilized "to incrementally improve" the physical self-concept perceptions of the individual [14]. In this sense, investigations conducted by Sonstroem et al. [15], Page et al. [16] and Aşçi [17] have found that more favorable perceptions of one's physical capacity contribute to an increase in levels of participation in physical activity.

In reference to gender, research indicates that boys and girls usually differ in both global and specific self-concept dimensions [6]. In general, investigators have noted less favorable physical self-perceptions for females in comparison to males. [18-20], These less favorable self-perceptions for girls have been found with regard to specific physical self-concept dimensions, including perceived sport competence, physical condition and strength, [17, 20-21], physical attractiveness [21-23], and overall physical self-appraisals [17, 20-21]. Even in the early days, researchers had reported a positive influence of physical activity on improving body-image and self-esteem [24-25]. Previous studies, reported that alterations on the body as a result of physical training could logically be expected to change one's body image, which is highly correlated with and might be expected to extend to self-concept [20, 23-26]. However, it could be hypothesized that physically well-training persons would have higher level of physical self-concept than those with less training. As to the researcher's knowledge, there are limited studies conducted in this area. Therefore the purpose of this study was to compare physical self-

concept between physical education and non-physical education university students.

Material and methods

Subjects

The target population of this study was all physical education and non-physical education university students in University of Guilan in Iran among them 180 males and 190 females, selected opportunistically. The condition of the study was thoroughly explained to all subjects, and written informed consent was subsequently obtained. The study protocol was approved by the Ethics Committee of University of Guilan.

Measurements

The physical Self-Description Questionnaire (PSDQ) (Marsh et al. 1994) was used to measure subject's physical self-concept. The PSDQ consists of 70 items which under 11 scales: Health; Coordination; Physical Activity; Body Fat; Global Physical; Competence; Sports; Appearance; Strength; Endurance; Flexibility and Esteem. Confirmatory factor analysis of multitrait-multimethod supported the convergent and discriminated validity of the PSDQ [27]. The PSDQ was administered to high school student on 4 occasions over 14-months period. Across the 11 scales, the internal consistency at each occasion was good (median $\alpha = 0.92$) and the stability over time varied from median $r = 0.83$ for a 3-months period to median $r = 0.69$ for the 14-months period [28]. A 6-point Likert scale, from False (1) to true (6) was used with the PSDQ in this study. The scoring for the negatively

worded items (1, 4, 12, 15, 22, 23, 26, 31, 33, 37, 40, 41, 44, 45, 48, 56, 59, 62, 67, 68, and 70) was reversed. Total score of the PSDQ is ranged from 70 to 420.

Procedure

Upon receiving permission from the participations and their respective tutors, the researcher conducted the pencil-paper measurements during the physical education classes. Informed consent was obtained from students prior in test. Confidentiality of subject's information and data was addressed. Subjects were instructed to complete the PSDQ sincerely and no discussion was allowed throughout the test.

Data analysis

Descriptive statistics was used to compare the mean and standard deviation of the total mean PSDQ scores and the 11 scales scores for the subjects. The 2×2 independent group MANOVA was conducted to compare the mean vector scores between gender (male and female) and major (physical education and non-physical education) on each of the scales. The above statistical analyses were conducted by using the SPSS 18 for Windows.

Results

Descriptive statistical analyses of the mean vector scores of 11 scales were presented in table I. Basic assumption for the use of MANOVA procedures in data analyses were tests through computation of the Bartlett-Box, Box M test, and Bartlett Test of Sphericity. The results are presented in table II.

Table I. Description statistics for the PSDQ mean vector scores (mean (SDPQ)) for both gender and major (N=370)

	Gender		Major	
	Male	Female	Physical education	Non-physical education
Appearance	4.20±0.88	4.13±0.76	4.10±0.88	4.3±0.84
Activity	3.90±1.11	3.83±1.2	3.95±1.13	3.80±1.2
Body Fat	4.23±1.7	3.96±1.15	4.3±0.76	3.89±0.63
Coordination	3.78±0.91	3.50±0.86	3.63±0.88	3.78±0.72
Endurance	3.80±1.20	3.44±1.14	3.75±1.14	3.69±1.3
Flexibility	3.93±0.84	3.82±0.75	4.1±0.67	3.93±0±34
Health	4.30±0.33	4.12±0.50	4.15±0.39	3.99±0.48
Sport Competence	3.83±0.87	3.72±0.92	3.88±0.44	3.79±0.57
Strength	3.93±0.81	3.72±0.65	3.90±0.72	3.80±0.66
Global Physical Self-Concept	3.83±0.72	3.67±0.87	3.90±0.66	3.78±0.73
Global Esteem	4.21±0.65	4.12±0.55	4.4±0.89	3.85±0.55

Table II. Basic assumption for 2 × 2, independent group MANOVA

	Bartlett-Box F-Ratio	P Values
Appearance	4.101	0.021*
Activity	3.356	0.044*
Body Fat	1.211	0.654
Coordination	0.671	0.347
Endurance	2.782	0.236
Flexibility	2.341	0.153
Health	3.251	0.047*
Sport Competence	0.546	0.261
Strength	0.193	0.832
Global Physical Self-Concept	0.167	0.553
Global Esteem	1.791	0.447

* Significant difference at level of p <0.05

The Bartlett-Box F-Ratios for body fat, coordination, endurance, flexibility, sport competence, strength, global physical self-concept and global esteem were non significant (p>0.05); however, appearance, activity and health were significant (p<0.05). The Bartle-Box F-Ratios were significant (p<0.05) indicating that there were significant differences in variance, covariance matrices for the two independent groups.

The MANOVA program was utilized to compare the mean vectors of PSDQ scale scores using gender and major as the independent variable. The results of the analysis were presented in table III.

Table III. MANOVA comparing physical self-concept scales for physical education and non-physical education

Effect	Wilks Lambda	F	P Values
Sex	0.88	6.96	0.01 *
Major	0.78	3.12	0.04 *
Sex & Major	0.84	4.86	0.02 *

* Significant difference at level of p <0.05

Significant (p <0.05) mean vector differences were found in both main effects: sex and major. The interaction however was significant difference with respect to the 11 scales of the PSDQ. The Univariate F-test for each of the 11 dependent variables is presented in the table IV. The results showed that mean vector scores of physical education in the following scales: physical activity; global physical; competence; sports; strength; endurance and flexibility were significantly (p <0.05) higher than that of non-physical education major students. Also, the results shows that mean vector scores of male in the following scales: health; coordination; physical activity; body fat; global physical; competence; sports; global physical self-concept and global esteem were significantly (p <0.05) higher than female.

Table 4. Univariate F-Ratio comparing Gender (male and female) and Major (Physical education and non- Physical education) student on physical self concept scales

	Gender Male/Female	Major Physical education/ Non-physical education
Appearance	0.07	0.16
Activity	0.01 *	0.00 *
Body Fat	0.05 *	0.34
Coordination	0.03 *	0.21
Endurance	0.18	0.03 *
Flexibility	0.60	0.05 *
Health	0.05 *	0.39
Sport Competence	0.03 *	0.02 *
Strength	0.66	0.05 *
Global Physical Self-Concept	0.00 *	0.11
Global Esteem	0.04 *	0.28

*Significant difference at level of $p < 0.05$.

Discussions

The purpose of this study was to compare physical self-concept between physical education and non-physical education university students.

The result showed that differences were significant in major and mean vector scores of physical education in the following scales: physical activity; global physical; competence; sports; strength; endurance and flexibility were significantly ($p < 0.05$) higher than that of non-physical education major students. Several researchers have documented that athlete have higher self-concept as compared to non-athlete [26, 29, 30-31]. Self-selection may be the main cause of these differences.

Marsh [32] conducted a study to compare self-esteem between athlete and non-athlete and concluded that athletes had a higher positive attitude, attractive sociable and successful that their counterparts. To increase overall self-worth through a positive change in physical self-concept does not automatically result from participation in physical activity programs but such programs can be utilized

to incrementally improve the physical self-concept perceptions of the individual [14]. In this sense, investigations conducted by Sonstroem et al [15] Page et al [16] and Asçi [17] have found that more favorable perceptions of one's physical capacity contribute to an increase in levels of participation in physical activity. other researchers have also articulated a link between the athletes greater physical endurance, coordination, reflexes and a more positive body image for the athletes which could in turn, generalize to the athletes overall self-esteem [26-29]. Previous studies, reported physical education student and athlete had invested heavily in their sports performance and frequently received positive informational feedback were essential for the development and maintenance of self-esteem. From the studies revealing that strong relationship between physical activity and physical self-concept [14, 32, 33-34], as well as physical fitness and physical ability self-concept [26, 29, 30-31] It could be conclude that individual with more activity involvement tend to have better motor skill and physical fitness and higher physical ability self-concept. Moreover, studies result of Fox [14], Goñi et al [18], Sonstroem et al [15] Rahmani-Nia et al [31] shows that physical activity and fitness provide the ability to correct Self-perceived in school-aged children, youth and adults.

Also, the results showed that differences were significant in gender and mean vector scores of male in the following scales: health; coordination; physical activity; body fat; global physical; competence; sports; global physical self-concept and global esteem were significantly ($p < 0.05$) higher than female. The finding on gender partly support Wylie's [35] research finding in which, who concluded that there was no evidence for sex differences in overall self-concept at any age level, however, sex differences would exist in specific

components of self-concept. Research indicates that male and female usually differ in both global and specific self-concept dimensions [6]. In general, investigators have noted less favorable physical self-perceptions for females in comparison to males [18, 19, 20-36]. Marsh [20] also found that males had higher self-concept in physical ability and appearance whereas; Rahmani-Nia et al [31] indicated that males scored higher on perceived physical performance capacity than females. Chung [26] also obtained similar findings—males scored higher than females on perceived physical appearance and perceived athletic competence. These less favorable self-perceptions for female have been found with regard to specific physical self-concept dimensions, including perceived sport competence, physical condition and strength [17, 21-22] physical attractiveness [21-22] and overall physical self appraisals [17, 20, 21-37]. The social cultural context exerts a clear effect on physical self-concept characteristics. Moreno et al [37], Maïano et al [21] and Ruiz et al [38] have noted that motor competence diminishes with age in female which can have correspondent effects on perceived competence. A lack of perceived competence can affect level of involvement in physical activity. Gender stereotypes about various physical activities in sport can also influence the sport and physical activity of females. The study by Solmon et al [39] indicated that when females perceived an activity to be more appropriate for males than for females, they typically demonstrate lower perceived competence in that activity. In this same way, Ruiz et al [38] speak of clashing self-concepts. Males may be more motivated to participate in competitive activities and females in cooperative activities as a consequence of differences in preferred styles of social interaction. The study by Asçi [17] indicated that Turkish girl's score lower on self-ratings of physical

attractiveness than do Turkish boys and the same patterns hold for American girls, whereas Estonian girls score more highly than their Turkish and American counterparts [40]. Education provides an important socialization experience for youngsters. Physical Education contributes to the development of the physical self-concept of youngsters and to attitudes toward the practice of physical activity that can extend through the lifetime. In most studies, are shown the ratio of male to female in a positive and correct self-perceived in physical fitness, among children who are physically active, different genders there is not significant [21, 24-31]. Physical activity levels can be an important determinant in self-perceived and self-concept measure physical fitness to be considered. Also, Children who have physical activity in, than children who do not have a physical activity, correct Self-perceived in physical fitness. On average, female the ratio of in male in low activity and may understand little of physical fitness. Also, other studies that the effect of gender on the self-perceived check, result shows that female more try-the protected person placed the ability of their less shows, but the male always like to have the ability to show their more subjective assessment of your ability so the male more than female [2,27,28,30-31]. Seems to be a gender difference over the impact of factors related to the physiological differences and anatomic (structural) associated with the role of gender and the views of people about specific tasks and the female and male in a given society.

Conclusions

The result showed that differences were significant in both gender and major. The male and physical education major students had higher scores in most of the scales of PSQD than their counterparts. Also,

the result showed that there were significant interactions (sex & major).

The relationship between self-concept and behavior tendencies has been researched extensively over years. Roid et al [41] stated that the individual's self-concept has been demonstrated to be highly influential in much of his/her behavior and also to be directly related to general personality and mental health. It can be expected that individuals with positive physical self-concept may be more active and those who activity involved in physical activity may have higher physical self concept. In fact, the positive effects of physical training on self-concept and body-concept are well documented [24, 29, 30-42]. The cultural stereotypes females suggest that they should be inactive, weak and decent but do not limit them from participating in physical activity and in building up self-confidence for females in performing physical activity.

The PSDQ is a reliable, valid and comprehensive inventory for reflecting one's physical self-concept. However, it seems difficult for subjects to complete 70 items of statements consecutively with focused attention. It is desirable to simplify the questionnaire and to develop an Iranian version of the PSDQ for future studies.

Perspectives

On the one hand, the use of physical activity is increasingly being promoted as a means of prevention of chronic disease (overweight, obesity and blood pressure...). On other hand; the economic resources for health care are limited and increase physical self concept.

Acknowledgements

The authors would like to thank the Physical Education students at University of Guilan, and the

non-athlete male and female students for their willing participation in this study.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References

1. Kriska A. (2003) *Can a physically active lifestyle prevent type 2 diabetes?* Exercise and Sport Science Reviews, 31(3):132-137;
2. Todd J., Robinson R. (2003). *Osteoporosis and exercise.* Postgraduate Medicine Journal, 79:320-323;
3. Thompson P., Buchner D., Pina I., et al. (2003) *Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease: A statement from the council on clinical cardiology (subcommittee on exercise, rehabilitation, and prevention) and the council on nutrition, physical activity, and metabolism (subcommittee on physical activity).* Circulation, 107:3109-3116;
4. Friedenreich C., Orenstein M.R. (2002) *Physical activity and cancer prevention: Etiologic evidence and biological mechanisms.* Journal of Nutrition, 132(11):3456-3464;
5. Hall E., Ekkekakis P., Petruzzello S. (2002) *The affective beneficence of vigorous exercise revisited.* British Journal of Health Psychology, 7:47-66;
6. Ekeland E., Heian F., Hagen K.B., Abbott J., Nordheim L. (2004) *Exercise to improve self-esteem in children and young people.* Cochrane Database Syst Rev, (1): 36-83;
7. Sonstroem, R.J. (1997) *Physical activity and mental health.* Philadelphia, PA, US: Taylor & Francis. *Physical activity and self-esteem*, 127-143;
8. Boyd K.R., Hrycaiko D.W. (1997) *The effect of a physical activity intervention package on the self-esteem of pre-adolescent and adolescent females.* Adolescence, 32(127):693-709;
9. Byrne B.M. (1988) *Adolescent self-concept, ability grouping and social comparison: re-examining academic track differences in high school.* Youth and Society; 20: 46-67;
10. Rosenberg M., Schooler C., Schoenbach C., Rosenberg F. (1995) *Global self-esteem and specific self-esteem: different concepts, different outcomes.* American Sociological Review, 60(1): 141-156;
11. Park J. (2003) *Adolescent self-concept and health into adulthood.* Health Reports, 14: 41-52;
12. Kirkcaldy B.D., Shephard R.J., Siefen R.G. (2002) *The relationship between physical activity and self-image and problem behaviour among adolescents.* Social Psychiatry and Psychiatric Epidemiology, 37 (11):544-550;

13. Nelson M.C., Gordon-Larsen P. (2006). *Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors*. *Pediatrics*, 117(4):1281-1290;
14. Fox K.R. (2000) *Self-esteem, self-perceptions and exercise*. *International Journal of Sport Psychology*, 31: 228-240;
15. Sonstroem R.J., Speliotis E.D., Fava J.L. (1992) *Perceived physical competence in adults. An examination of the Physical Self-Perception Scale*. *Journal of Sport and Exercise Psychology*, 10:207-221;
16. Page A., Ashford B., Fox K., Biddle S. (1993) *Evidence of cross-cultural validity for the Physical Self perception Profile*. *Personal Individual Differences*, 14(4): 585-590;
17. Asçi F. (2005) *The construct validity of two physical self-concept measures: An example from Turkey*. *Psychology of Sport and Exercise* 2005, 2: 1-11;
18. Goñi A., Zulaika L.M. (2000) *Relationships between physical education classes and the enhancement of fifth Grade pupils' self-concept*. *Perceptual and Motor and Skills*, 91:146-150;
19. Hagger M., Biddle S., Wang C.K. (2005) *Physical Self-Concept in Adolescence: Generalize ability of a Multidimensional, Hierarchical Model Across Gender and Grade*. *Educational and Psychology Measurement*, 65(2):297-322;
20. Marsh H.W. (1998) *Age and Gender Effects in Physical Self-Concept for Adolescent Elite Athletes and Nonathletes: A Multicohort-Multioccasion Design*. *Journal of Sport and Exercise Psychology* 1998, 20: 237-259;
21. Maiano C., Ninot G., Bilard J. (2004) *Age and gender effects on global self-esteem and physical self-perception in adolescents*. *European Physical Education Review*, 10: 53-69;
22. Welk G.J., Eklund B. (2005) *Validation of the children and youth physical self perceptions profile for young children*. *Psychology of Sport and Exercise*, 6: 51-65;
23. Hagbord W.J. (1994) *The Rosenberg self-esteem scale and Harter's self-perception profile for Adolescents: a concurrent validity study*. *Psychology in the Schools*, 30: 132-136;
24. Tucker LA. (1983) *Effect of weight training on self-concept*. *AM Psychol*, 36: 373-389;
25. Guay F., Marsh H.W., Boivin M. (2003) *Academic self-concept and academic achievement: developmental perspectives on their causal ordering*. *Journal of Educational Psychology*, 95: 124-136;
26. Chung P.K. (2003) *Physical self-concept between PE major and non-PE major students in Hong Kong*. *Journal of Exercise Science and Fitness*, (1): 41-46;
27. Marsh H.W., Richards G.E., Johnson S., Roche L., Tremayne P. (1994) *Physical self-description questionnaire: psychometric properties and a multitrait-multimethod analysis of relations to existing instruments*. *Journal of Sport and Exercise Psychology*, 16: 270-305;
28. Marsh W.H. (1996) *Physical self-description questionnaire: Stability and discriminate validity*. *Res Q Exerc Sport* 1996, 67(3): 249-264;
29. Schneider M. (2008) *Physical Activity and Physical Self-Concept among Sedentary Adolescent Females. An Intervention Study*. *Psychol Sport Exerc*, 9(1): 1-14;
30. Ireson I., Hallam S. (2009) *Academic self-concepts in adolescence: Relations with achievement and ability grouping in schools*. *Learning and Instruction*, 19: 201-213;
31. Rahmani-Nia F., Damitchi A., Azizi M. , Hoseini R. (2011) *Associations Between Self-Perceived and Measured Physical Fitness of Male College Students*. *World Applied Sciences Journal*, 14 (9): 1331-1338;
32. Marsh H.W., Peart N.D. (1988) *Competitive and cooperative physical fitness training programs for girls: Effects on physical fitness and multidimensional self-concepts*. *Journal of Sport and Exercise Psychology*, 10: 390-407;
33. Van de Vliet P., Knapen J., Onghena P. (2002) *Assessment of physical self-perceptions in normal Flemish adults versus depressed psychiatric patients*. *Personality and Individual Differences*, 32:855-863;
34. Murcia JAM. (2007) *Physical Self-Concept of Spanish Schoolchildren: Differences by Gender, Sport Practice and Levels of Sport Involvement*, 1(2): 1-17;
35. Wylie R. (1979) *The self-concept, volume 2: theory and research on selected topics*. University of Nebraska Lincoln;
36. Jackson S.A., Marsh H.W. (1986) *Athletic or antisocial? The female sport experience*. *Journal of Sport Psychology*, 8: 198-211;
37. Moreno J.A., Cervelló E. (2005) *Physical self-perception in Spanish adolescents: Gender and involvement in physical activity effects*. *Journal of Human Movement Studies*, 48: 291-311;
38. Ruiz L.M., Graupera J.L., Rico I., Mata E. (2004) *Preferencias participativas en Educación Física de los chicos y chicas de la Educación Secundaria mediante La Escala GR de participación social en el aprendizaje*. *European Journal of Human Movement* 2004, 12: 151-168;
39. Solmon M.A., Lee A.M., Belcher D., Harrison L., Wells L. (2003) *Beliefs about Gender Appropriateness, Ability, a Competence in Physical Activity*. *Journal of Teaching in Physical Education*, 22: 261-279;
40. Raudsepp L., Kais K, Hannus A. (2004) *Stability of Physical Self-Perceptions during Early Adolescence*. *Pediatric Exercise Science*, 16: 138-146;
41. Roid G.H., Fitts W.H. (1988) *Tennessee self-concept scale: Revised manual*. Los Angeles, CA: Western Psychological Services;
42. Finkenber M.E., Shows D., Dinucci J.M. (1994) *Participation in adventure-based activities and self-concepts of college men and women*. *Percept Mot Skills*, 78: 1119-22.