

Grade and gender differences in students' self-determination for participating in physical education

Kolovelonis Athanasios,
University of Thessaly, Karyes Trikala, 42100 Greece, sakisanta@hotmail.com

Abstract

The purpose of this study was to examine grade and gender differences in students' self-determination for participating in school physical education. Participants were 1385 Greek students, 681 boys and 704 girls, of 5th (n=358), 7th (n=348), 9th (n=346) and 11th grade (n=333), which participated in 72 regular physical education classes from 33 schools of 11 cities in central and north Greece. The combination of the motivational regulations, which were evaluated with the Greek version, adapted for the physical education settings, of the Motivational Orientations Questionnaire, with the addition of the amotivation subscale, resulted in self-determination index. The 4 (grade) X 2 (gender) analysis of variance and the post hoc comparisons after the Bonferoni adjustment in α level, revealed significant reduction in students' self-determination across the grades with the exception of 9th and 11th comparison. Boys in comparison with girls referred higher levels of self-determination only in 11th grade. In conclusion, the results indicated that students' self-determination for participating in physical education declined with age for both gender. These results highlight the need of Greek physical education to become more appealing, effective and useful for all students, especially in secondary and high school.

Keywords: *self-determination, motivation, grade and gender differences, physical education*

Introduction

Physical education can play a vital role in students' psychomotor, cognitive and emotional development (Council of Physical Education for Children, 2001). Various curriculums have been developed to promote these goals. These curriculums aim at the development of students' physical fitness, sport education, moral development and life long participation in fitness activities (Melograno, 1996). Moreover, it has been proposed that physical education could be used as a vehicle for teaching students life skills (Danish, 1997) promoting in this way students' positive psychological development (Benson, Scales, Hamilton & Sesma, 2006).

All these physical education goals could not be achieved, unless physical education teacher create the appropriate environment which promote students' motives for engagement in the physical education lessons (Pintrich & Schunk, 2002). Self-determination theory (Deci & Ryan, 2004) can be used as a framework to examine students' reasons and motives for participating in the physical education as well as the factors that are associated with them. It distinguishes among intrinsic motivation, extrinsic motivation and amotivation. When students participate in an activity due to their pleasure are intrinsically motivated. On the other hand, when students participate in an activity for external reasons, such as rewards, are extrinsically motivated. There are four types of external motivation, namely integrated, identified, introjected and external regulation which differ in the degree of self-determination. Finally amotivation refers to the lack of intention for action (Ryan & Deci, 2000).

The different types of motivation differ in the degree of self-determination, which is the feeling of the person that engages in an activity due to their choice, and they can be placed along with the self-determination continuum. On the left end of the continuum is the amotivation, a non self-determined type of motivation and on the right end is the intrinsic motivation, the prototype self-determined motivation. The four types of external motivation fall along the self-determination continuum between amotivation and intrinsic motivation (Ryan & Deci, 2000). According to the self-determination theory an environment influences students' motivation through the satisfaction of

their basic needs for autonomy, competence and relatedness (Deci & Ryan, 2004). Autonomy refers to being the perceived origin or source of one's own behaviour (Ryan & Connell, 1989). Competence refers to feeling effective in one's ongoing interaction with the social environment and experience opportunities to exercise and express one's capacities (Deci, 1975). Finally, relatedness refers to feeling connected to others, to caring by those others, to having a sense of belongingness both with other individuals and with one's community (Ryan, 1995). So the environment of the physical education lesson can promote students' self-determination through the enhancement of students' basic needs for autonomy, competence and relatedness.

A large number of studies have yielded that the self-determined types of motivation (intrinsic motivation and identified regulation) were associated with positive outcomes in academic settings, such as the time spend in an activity (Deci, Koestner & Ryan, 1999), the attendance in an academic course (Vallerand & Bissonnette, 1992), the intentions for high school attendance (Hardre & Reeve, 2003), the higher interest, the pleasure and the effort (Ryan & Connell, 1989), the learning quality and the participation in the lesson (Fortier, Vallerand & Guay, 1995; Grolnick & Ryan, 1987; Grolnick, Ryan & Deci, 1991; Miserandino, 1996). On the other hand, the non self-determined types of motivation were associated with negative results, such as the higher percentage of school drop out (Vallerand, Fortier & Guay, 1997) and the lower interest and effort in the lesson (Ryan & Connell, 1989).

The same patterns of results have been found in sport and physical education settings. More specifically, the self-determined types of motivation were associated with higher levels of effort, enjoyment, cooperative learning, intentions for future participation in physical activity and lower levels of amotivation and boredom. On the other hand, the non self-determined types of motivation were associated with lower levels of effort, enjoyment and pleasure and higher levels of boredom (Hagger, Chatzisarantis, Culverhouse & Biddle, 2003; Ntoumanis, 2001, 2002, 2005; Papacharisis, Simou & Goudas, 2003; Standage, Duda & Ntoumanis, 2003, 2005).

These results show that the students' self-determination for participating in physical education is associated with positive outcomes which are main physical education goals. So the examination of students' self-determination in physical education across the grades and gender it is of great interest. Until now no study has examined students' differences in self-determination for participating in physical education using the self-determination theory framework. However, studies in physical education, which have examined other similar constructs, have indicated that, students' interest, mastery goals and intrinsic motivation decline with age (Digelidis & Papaioannou, 1999; Van Wersch, Trew & Turner, 1992). As far as gender differences, they have been emerged mixed results. Boys referred higher levels of intrinsic motivation (Jaakkola & Sepponen, 1997), perceived competence and enjoyment (Carroll & Loumidis, 2001), while girls referred high levels of interest until 14 years old, which declined until the age of 18 (Van Wersch et al., 1992). Moreover, studies in educational settings (Vallerand & Bissonnette, 1992) and sport (Fortier, Vallerand, Briere & Provencher, 1995) have showed that females perceived higher levels of self-determined types of motivation compared with males.

Taking all these into account, there is no doubt that the examination of students' self-determination could reveal important information about the physical education environment which can be useful for improving physical education lessons. As noted earlier, students' self-determination is associated with positive results in physical education. Moreover, students' self-determination can be enhanced in environments which support students' basic needs. So the knowledge of students' self-determination status across different grades and genders will help us to improve the physical education, designing more attractive, useful and enjoyable physical education lessons. Therefore, the purpose of this study was to examine grade and gender differences in students' self-determination for participating in school physical education. It was expected that, independently of gender, students' self-determination would decline with age. No specific hypothesis for gender differences was made, due to the mixed results of the past studies.

Method

Participants

Participants in the study were 1385 Greek students (681 boys and 704 girls) from 72 regular physical education classes from 33 schools of 11 medium sized cities in central and north Greece. Participants were from middle socioeconomic status, participated in mandatory school physical education and attended the 5th grade (19 classes, $n = 358$, $M_{age} = 10.70$, $Sd = .44$), 7th grade (17 classes, $n = 348$, $M_{age} = 12.65$, $Sd = .38$), 9th grade (19 classes, $n = 346$, $M_{age} = 14.60$, $Sd = .38$), and 11th grade (17 classes, $n = 333$, $M_{age} = 16.46$, $Sd = .38$).

Measures

Self-determination questionnaire. The Greek version (Goudas, Dermitzaki & Bagiatis, 2000) of the Motivational Orientations Questionnaire (Ryan & Connell, 1989) with the addition of amotivation subscale (Goudas, 1994) was used. The questionnaire evaluate students' reasons for participating in the physical education, began with the stem "I participate in physical education lesson..." and consisted of 5 subscales: intrinsic motivation (e.g. because is enjoyable), identified regulation (e.g. because it is important for me to do well in the lesson), introjected regulation (e.g. because I want teacher to think that I am a good student), external regulation (e.g. because I will have problems with my teacher if I don't do it), and amotivation (e.g. truly, I don't now why). Responses were rated on a 7-point Likert scale (1 = strongly disagree, 7= strongly agree). The Greek version of the questionnaire, adapted for the physical education (Goudas et al., 2000), had adequate internal consistency (Cronbach's alpha: .69 - .74) and good factor structure ($\chi^2(82): 163.53$, NFI: .920, NNFI: .938, CFI: .952). In the present study the internal consistency of the questionnaire's subscales was satisfactory (Cronbach's α ranged from .65 to .83) with the exception of the low internal consistency of the introjected subscale (.58) which, for this reason, was not included in the rest analysis. The relative weight of the four questionnaire subscales (intrinsic motivation, identified regulation, external regulation and amotivation) according to their place in self-determination continuum (+2, +1, -1, -2, correspondingly) resulted in self-determination index.

Procedure

The questionnaire was administrated in the middle of the school year (from middle of February to the end of the April). Permission for the study was obtained by the schools head teachers and the physical education teachers who taught in the corresponding classes. Students completed voluntary and anonymously the questionnaire during the physical education lesson, after they were given the appropriate instructions and assured about the confidentiality of their answers. The questionnaire was administrated with the absence of physical education teacher by three trained research assistants who were postgraduate students. The students were told that the purpose of the questionnaire was the improvement of the physical education.

Design - Statistical analysis

The research design included two independent variables: the students' grade with four levels (5th, 7th, 9th and 11th) and the students' gender, and one depended variable (students' score in self-determination index). Grade and gender differences in students' self-determination were examined through analysis of variance.

Results

Means and standard deviations of the self-determination index for each grade, in total and separately for each gender, are presented in Table 1. Correlations among the four motivational regulations (Table 2) were consisted with the self-determination theory, that is, the motivational regulations which are nearby in the self-determination continuum had higher correlation in comparison with the others. This pattern of correlations confirmed the existence of the self-determination continuum, which means that the self-determination index could be used in the present study (Ryan & Connell, 1989).

Table 1.

Means and standard deviation in self-determination index for each grade, in total and separately for each gender and post hoc comparison for grade main effect

	Self-determination index							
	5 th grade		7 th grade		9 th grade		11 th grade	
	<i>M</i>	<i>Sd</i>	<i>M</i>	<i>Sd</i>	<i>M</i>	<i>Sd</i>	<i>M</i>	<i>Sd</i>
Total	9.90 ^{bcd}	4.33	8.78 ^{acd}	4.92	7.19 ^{ab}	5.70	6.05 ^{ab}	6.36
Boys	9.49	4.33	8.51	4.34	7.32	5.62	7.10	5.62
Girls	10.32	4.29	9.00	5.35	7.01	5.81	5.25	6.79

Note: The indices ^{a, b, c, d} represent significant differences with the 5th, 7th, 9th, and 11th grade correspondingly.

Table 2.

Correlations among all motivational regulations

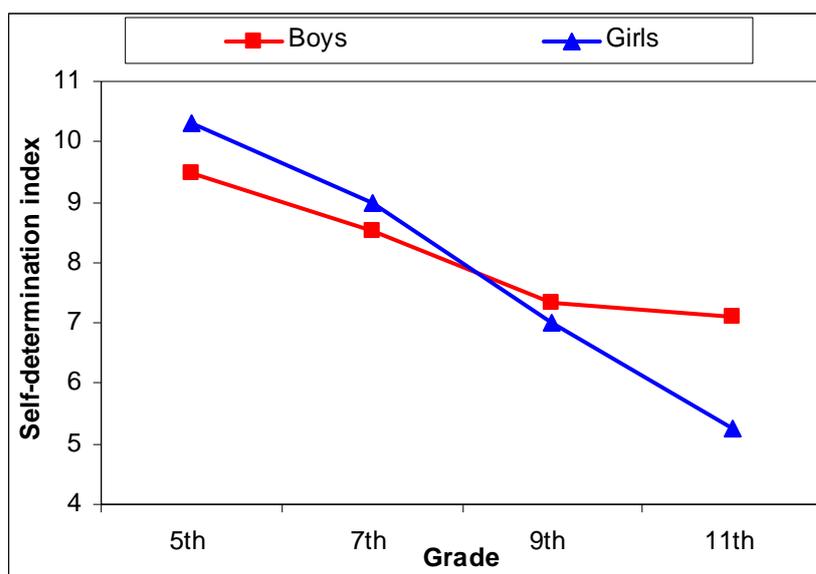
	Identified regulation	External regulation	Amotivation
Intrinsic motivation	.67*	-.11*	-.37*
Identified regulation		.04	-.32*
External regulation			.42*

Note: *significant correlations ($p < .001$)

Grade and gender differences in self-determination index were examined through analysis of variance, with the students' score in self-determination index as dependent variable and the grade and the gender as independent variables. The 4 (grade) X 2 (gender) analysis of variance revealed a significant grade main effect, $F(3, 1377) = 32.97, p < .001, \eta^2 = .07$, a non significant gender main effect, $F(1, 1377) = .53, p = .47$, and a significant grade and gender interaction $F(3, 1377) = 4.20, p < .01, \eta^2 = .01$. That is, students' self-determination differed across grades independently of the gender (grade main effect) and gender differences existed in relation to the grade level (grade and gender interaction).

In order the grade main effect to be examined, post hoc comparisons were conducted using the Bonferroni adjustment in the α level (the initial α level was divided by the number of comparisons that were conducted, that is $\alpha: .05 / 6 = .008$) to prevent from type I error (Thomas & Nelson, 2001). These comparisons revealed significant differences in self-determination index among all grades with the exception of the comparison between 9th and 11th grade (Table 1). That is students' self-determination decline from 5th to 7th grade, from 7th to 9th grade and didn't change significantly from 9th to 11th grade.

In order the grade and gender interaction to be analyzed a simple main effect analysis was conducted (Field, 2005) in combination with the interpretation of the grade and gender plot (Thomas & Nelson, 2001). Analyzing the plot (Graph 1) we can see that girls' score in self-determination index was higher in 5th and 7th grade in comparison with boys' score, while the opposite was the case for the 9th and 11th grade. However, the simple main effect analysis revealed no significant difference between boys and girls in self-determination index in 5th grade, $F(1, 1380) = 1.82, p = .18$, in 7th grade, $F(1, 1380) = 1.07, p = .30$, and in 9th grade, $F(1, 1380) = .02, p = .90$, and a significant difference in 11th grade, $F(1, 1380) = 14.78, p < .001$. That is, boys in comparison with girls referred significantly higher levels of self-determination for participating in physical education only in grade 11th.



Graph 1. Grade and gender interaction in self-determination

Discussion

The purpose of this study was to examine grade and gender differences in students' self-determination for participating in school physical education. As the results revealed, students' self-determination decline from 5th to 7th and 9th grade while in the 11th grade didn't have a further reduction. This reduction was the case for both genders for all grades with the exception of the 11th grade, in which boys in comparison with girls referred higher levels of self-determination.

These results support the research hypothesis that students' self-determination would decline across grades. Moreover, they are in accordance and extend the results of previous studies (Digelidis & Papaioannou, 1999; Van Wersch et al., 1992) using as framework the self-determination theory. This reduction in students' self-determination raises questions about the environment in which the physical education takes place in the different grades. More specifically, according to the results of the present study, while the students experience high levels of self-determination in elementary school, when they go into secondary and high school this situation is reversed and their levels of self-determination for participating in physical education decline. This is a negative situation because the low levels of self-determination are associated with negative academic outcomes, such as the lower levels of effort, enjoyment and pleasure and higher levels of boredom (Ntoumanis, 2001, 2002, 2005; Ryan & Connell, 1989; Vallerand et al., 1997). In reverse, the self-determined types of motivation are associated with positive academic outcomes, such as higher interest, pleasure and effort in lessons (Ryan & Connell, 1989), quality and participation in lessons (Fortier et al., 1995; Grolnick & Ryan, 1987; Grolnick et al., 1991; Miserandino, 1996) higher intention for future participation in physical activity and lower levels of amotivation and boredom (Hagger et al., 2003; Ntoumanis, 2001, 2002, 2005; Standage et al., 2003, 2005). So, based on the results of these studies, it can be inferred that the goals of physical education can't be easily achieved, when the students feel less self-determined motivated for participating in physical education, as they don't try hard during the lesson (Ryan & Connell, 1989) and feel less pleasure and enjoyment (Ntoumanis, 2001, 2002, 2005). Moreover, according to Sansone and Harackiewicz (1996) when students experience the interest for an activity during their participation, they have higher possibilities to continue this activity. So if students don't feel like to participate in the lesson, the physical education goals couldn't be easily achieved.

Gender comparisons in self-determination revealed significant difference only in the 11th grade in which boys referred higher levels of self-determination in comparisons with girls. This means that the reduction of self-determination across the grades and the negative consequences which are associated with it was the case for both genders in the 5th, 7th and 9th grade while the decline was even worst for gills in 11th grade. As, already, noted previous results in point of the

boys and girls comparisons in self-determination were mixed (Jaakkola & Sepponen, 1997; Fortier, et al., 1995). This mixed results may, partially, be explained by the different domain (physical education and sport accordingly) and the measures which were used in these different studies (Jaakkola, 2002). In the present study, the interpretation of the grade and gender plot showed that girls' score in self-determination index was higher in 5th and 7th grade and lower in the 9th and 11th grade in comparison with boys' score, but the simple main effect analysis revealed significant gender difference only in the 11th grade. So, the need for further examination of this issue using the self-determination framework is obvious.

The results of the present study have important practical implications for physical education lesson. According to the self-determination theory (Deci & Ryan, 2004), students' self-determination for participating in physical education lesson can be increased when the environment of this context support their needs for autonomy, competence and relatedness. Practically this means that students can choose among alternative activities, have chances to develop initiatives, experience feelings of success, cooperate with classmates, are taught with participatory teaching methods and the lesson focus on mastery goals (Ntoumanis, 2005; Standage et al., 2005). On the other hand, when the physical education environment lacks of the abovementioned characteristics, it is likely that students' self-determination declines. The results of the present study revealed a reduction in students' self-determination in Greek physical education and a possible explanation, among others, for this negative situation can be traced, according to the self-determination theory in the climate in which the physical education lesson take place. However, this situation could be change if we adopt the abovementioned principles in order to create an autonomy supportive environment in physical education lessons (Kaye & Le Masurier, 2006). Using the self-determination theory as a guide, physical education teachers can improve the quality of physical education lessons creating an autonomous physical education environment which will satisfy the students' basic needs (Deci & Ryan, 2004). In such class climate, students enjoy, satisfy their needs, try hard and became more self-determined motivated and so physical education can achieve its goals. Previous efforts in physical education settings have revealed promising results. An intervention to create a mastery class climate (Digelidis, Papaioannou, Lapidis & Christodoulidis, 2003), as well as the teaching of a life skills training program in combination of students' fitness development (Kolovelonis, Goudas, Dimitriou, Gerodimos, 2006) revealed encouraging results in enhancing students' motivation and self-determination accordingly.

In conclusion, according to the results of this study, students' self-determination for participating in physical education declined across grades. This pattern of results was similar for both genders, while in the 11th grade girls' self-determination declined even more than boys. These results highlight the need of changes in school physical education, especially in secondary and high school, so as the lesson become more appealing, attractive and interesting for Greek students. In this direction the self-determination theory framework could be very helpful.

One limitation of the present study was its cross-sectional nature. So, longitudinal designs are needed to verify the present results. Moreover, this study didn't examine the factors which are associated with the decline in students' self-determination across grades. Nevertheless, theoretically based explanation, including students' basic needs satisfaction in physical education, were given. Testing this hypothesis, using both quantitative and qualitative research methods, could increase our knowledge of the factors which are associated with this decline in students' self-determination for participating in physical education and will help us to improve the physical education status.

References

1. Council of Physical Education for Children (2001). *Physical education is critical to a complete education*. A position paper from the National Association for Sport and Physical Education.
2. Melograno, V. (1996). *Designing the physical education curriculum*. Champaign IL: Human Kinetics.
3. Danish, S. J. (1997). Going for the goal: A life skills program for adolescents. In G. Albee, & T. Gullota (Eds.), *Primary prevention works, Vol. 6: Issues in children's and families' lives* (pp. 291-312). Newbury Park, CA: Sage.
4. Benson, P. L., Scales, P. C., Hamilton, S. F., & Sesma, A. (2006). Positive youth psychology: Theory, research, and applications. In Lerner, R. M. *Handbook of child psychology. Vol. 1: Theoretical models of human development (6th ed.)* (pp.894-941). Hoboken, New Jersey: Wiley.
5. Pintrich, P., & Schunk, D. (2002). *Motivation in education: Theory, research, and applications (2nd ed.)*. Upper Saddle River, NJ: Merrill Prentice Hall.
6. Deci, E. L., & Ryan, R. M. (2004). Overview of self-determination theory: An organismic dialectical perspective. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: The University of Rochester Press.
7. Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54-67.
8. Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749-761.
9. Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum.
10. Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*, 397-427.
11. Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*, 627-668.
12. Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, extrinsic and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality, 60*, 599-620.
13. Hardre, P. L., & Reeve, J. (2003). A motivational model of rural students' intentions to persist in, versus drop out of, high school. *Journal of Educational Psychology, 95*, 347-356.
14. Fortier, M. S., Vallerand, R. J., & Guay, F. (1995). Academic motivation on school performance: Towards a structural model. *Contemporary Educational Psychology, 20*, 257-274.
15. Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology, 52*, 890-898.
16. Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508-517.
17. Miserandino, M. (1996). Children who do well in school: Individual differences in perceived competence and autonomy in above-average children. *Journal of Educational Psychology, 88*, 203-214.
18. Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72*, 1161-1176.
19. Hagger, M., Chatzisarantis, N., Culverhouse, T., & Biddle, S. (2003). The processes by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behaviour: A trans-contextual model. *Journal of Educational Psychology, 95*, 784-795.
20. Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology, 71*, 225-242.
21. Ntoumanis, N. (2002). Motivational clusters in a sample of British physical education classes. *Psychology of Sport and Exercise, 3*, 177-194.

22. Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, 3, 444-453.
23. Papacharisis, V., Simou, K., & Goudas, M. (2003). The relationships between motivation and intention towards exercise. *Journal of Human Movement Studies*, 45, 377-386.
24. Standage, M., Duda, J., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology*, 95, 97-110.
25. Standage, M., Duda, J., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, 75, 411-433.
26. Digelidis, N., & Papaioannou, A. (1999). Age-group differences in intrinsic motivation, goal orientations and perceptions of athletic competence, physical appearance and motivational climate in Greek physical education. *Scandinavian Journal of Medicine & Science in Sports*, 9, 375-380.
27. Van Wersch, A., Trew, K., & Turner, I. (1992). Post-primary school education: Age and gender differences. *British Journal of Educational Psychology*, 62, 56-72.
28. Jaakkola, T., & Sepponen, K. (1997). *The associations between goal orientations, motivational climate, and intrinsic motivation in physical education*. Unpublished master thesis. University of Jyväskylä, Finland.
29. Carroll, B. & Loumidis, J. (2001). Children's perceived competence and enjoyment in physical education and physical activity outside school. *European Physical Education Review*, 7, 24-43.
30. Fortier, M. S., Vallerand, R. J., Briere, N. M., & Provencher, P. (1995). Competitive and recreational sport structures and gender: A test of their relationship with sport motivation. *International Journal of Sport Psychology*, 26, 24-39.
31. Goudas, M., Dermitzaki, I., & Bagiatis, K. (2000). Predictor of students' intrinsic motivation in school physical education. *European Journal of Psychology of Education*, 15, 271-280.
32. Goudas, M. (1994). *Goal orientations and intrinsic motivation in physical education*. Unpublished doctoral dissertation. University of Exeter, United Kingdom.
33. Thomas, J. R., & Nelson, J. K. (2001). *Research methods in physical activity (4rd ed.)*. Champaign, IL: Human Kinetics.
34. Field, A. (2005). *Discovering statistics using spss (2nd ed.)*. London: Sage.
35. Sansone, C., & Harackiewicz, J. M. (1996). "I don't feel like it": The function of interest in self-regulation. In L. T. Martin, & A. Tesser (Eds.), *Striving and feeling. Interactions among goals, affect, and self-regulation* (pp. 203-228). New Jersey: Lawrence Erlbaum Associates.
36. Jaakkola, T. (2002). *Changes in students' exercise motivation, goal orientation, and sport competence as a result of modifications in school physical education teaching practices*. Unpublished doctoral dissertation. University of Jyväskylä, Finland.
37. Kaye, M. P., & Le Masurier, G. C. (2006). Understanding and applying motivational theory in physical education in order to enhance participation and the health status. *International Journal of Physical Education*, 43, 48-58.
38. Digelidis, N., Papaioannou, A., Laparidis, K., & Christodoulidis, T. (2003). A one-year intervention in 7th grade physical education classes aiming to change motivational climate and attitudes towards exercise. *Psychology of Sport and Exercise*, 4, 195-210.
39. Kolovelonis, A., Goudas, M., Dimitriou, E., & Gerodimos, V. (2006). The effect of a life skills training program on students' self-determination. *Inquiries in Physical Education and Sport*, 4, 379-389.

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