

**Grade and gender differences in students' motives for participating in physical education in relation to their out school sport participation**

Kolovelonis Athanasios

PhD Student

Department of Physical Education and Sports Sciences, University of Thessaly

**Abstract**

The aim of this study was to examine the differences in students' motives for participating in school physical education in relation to their out school sport participation. Participants were 1280 students, 616 boys and 664 girls, of 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup> and 11<sup>th</sup> grade, which participated in 72 regular physical education classes from 33 schools of 11 cities in central and north Greece. The Greek version (Goudas, Dermitzaki & Bagiatis, 2000) of the Motivational Orientations Questionnaire (Ryan & Connell, 1989) with the addition of the amotivation subscale (Goudas, 1994) was used for the evaluation of motivational regulations. Loglinear analysis revealed no differences in out school sport participation across the grades, but higher levels of boys' sport participation in comparison with girls. Multivariate analysis of variance revealed that students who participated in sports out of school referred, independently of grade and gender, higher levels of self-determined motivation and lower levels of non self-determined motivation in comparison with students who didn't participate in sports out of school. These differences were similar across the grades for both genders with small variations in 5<sup>th</sup> and 7<sup>th</sup> grade. The results showed that students with out school sport experience referred higher levels of motives for participating in physical education. Taking this into account, physical education should satisfy the basic needs of all students and especially the needs of students who don't participate in sport out of school. In this way students will be able to gain positive experiences from the lesson which in turn may increase the possibilities of their involvement in sport activities in the future.

*Key words: sport participation, motivational regulations, physical education, self-determination theory*

To cite this article: Kolovelonis, A. (2008). Διαφορές στα κίνητρα μαθητών και μαθητριών δημοτικού, γυμνασίου και λυκείου για συμμετοχή στο μάθημα της φυσικής αγωγής σε σχέση με τη συμμετοχή τους ή μη σε σπορ εκτός σχολείου [Grade and gender differences in students' motives for participating in physical education in relation to their out school sport participation]. *Sport Organisation*, 6, 48-57.

Address for correspondence: Valtino, 42100 Trikala, e-mail: [sakisanta@hotmail.com](mailto:sakisanta@hotmail.com)

## Introduction

Physical activity can play a vital role in health promotion as well as in the prevention of many diseases (Bouchard & Shephard, 1994; Shephard, 1995). So, the promotion of life long physical activity should be a main goal for each health promotion policy (World Health Organization, 1999). School physical education can contribute in this direction, as is a setting where sport and physical activity is presented to almost all children (Sallis et al., 1992), increasing students' physical activity and enhancing in this way their health (Haywood, 1991; Sallis & McKenzie, 1991; Wallhead & Buckworth, 2004). Various curriculums have been developed to promote these goals (Melograno, 1996). However, in order the goals of these curriculums to be a reality; students should be motivated to actively participate in physical education (Pintrich & Schunk, 2002; Wallhead & Buckworth, 2004).

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).

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).

Another setting where students have the opportunity to participate in sport and physical activities is the sports clubs. However, this kind of sport involvement is voluntary and many students don't have access to these activities due to social, biological, cultural and environmental barriers (Buckworth & Dishman, 2002), such as the kind of sports which are offered, the parents and friend support, the students' motives, the gender, the prior experiences etc. (Lau, Fox & Cheung, 2005; Sallis, Prochaska & Taylor, 2000).

Until now, little research has examined the relations between students' motivation for participating in physical education and their levels of out school participation. Goudas, Dermitzaki and Bagiatis (2001) found, that sport participant students referred higher levels of intrinsic motivation in comparison with non participant students. Similarly, Koka and Hein

(2003) found the same differences in intrinsic motivation between sport and non sport participant students. In both studies, the intrinsic motivation was evaluated with the Intrinsic Motivation Inventory (McAuley, Duncan & Tammen, 1989). However, according to self-determination theory students' motives for participating in physical education are multidimensional (Deci & Ryan, 2004). So, the examination of the students' motivational regulation in relation to their participation in sports out of school will expand the previous studies and broaden our knowledge about the relations between students' motivational regulation for participating in physical education and their participation in sports out of school. Moreover, no study has examined a potential gender effect in these differences. In Koka and Hein' (2003) study data analyzed separately for two gender and no comparison between genders was carried out.

The aim of this study was to examine the differences in students' motivational regulations for participating in school physical education in relation to their out school sport participation. It was expected that sport participant students would referred higher levels of self-determined motivation and lower level of non self-determined motivation in comparison with non sport participant students. Moreover, it was examined if these hypothesized differences had the same form for both gender. A secondary aim of the study was to examine the percentage of students' participation in sport out of school based on grade and gender.

## **Method**

### *Participants*

Participants in the study were 1280 Greek students (616 boys and 664 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 5<sup>th</sup> grade (19 classes,  $n = 329$ ,  $M_{age} = 10.70$ ,  $Sd = .44$ ), 7<sup>th</sup> grade (17 classes,  $n = 318$ ,  $M_{age} = 12.65$ ,  $Sd = .38$ ), 9<sup>th</sup> grade (19 classes,  $n = 321$ ,  $M_{age} = 14.60$ ,  $Sd = .38$ ), and 11<sup>th</sup> grade (17 classes,  $n = 312$ ,  $M_{age} = 16.46$ ,  $Sd = .38$ ).

### *Μετρήσεις*

*Self-determination questionnaire.* The Greek version (Goudas, Dermitzaki & Bagiatas, 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  $\alpha$  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.

Students' participation in sport out of school was evaluated with the following question: "Do you participate in organized sports and physical activities out of school (e.g. basketball, volleyball, soccer, track and field, swimming, gymnastics, etc.). The answers were given in yes or not format. Students who responded "yes" were asked to refer how times per week and for how long participate in sports. Students, who referred sport participation three times per week for at least thirty minutes each time, were considered to be sport participants out of school.

#### *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 three independent variables: the students' grade with four levels (5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup> and 11<sup>th</sup>), the students' gender, and the sport participation with two levels (yes – no) and four depended variables (intrinsic motivation, identified regulation, external regulation and amotivation). Data were analyzed through 4 (grade) x 2 (gender) x (sport participation) Manova. Research' hypothesis were tested through the examination of the sport participation main effect, and the sport participation x grade and sport participation x gender interactions. Moreover, loglinear analysis was used to examine potential differences in the percentage of students' participation in sports out of school.

### **Results**

The three-way loglinear analysis (grade x gender x sport participation) produced the final model which included the grade x gender and the gender x sport participation interaction, with a likelihood ratio chi square,  $\chi^2(6) = 4.79$ ,  $p = .57$ , which indicated a good fit of model to the data. According to the gender x sport participation significant interaction,  $\chi^2(1) = 61.26$ ,  $p < .001$ , and the odds ratio, the girls were 2.72 times less likely to participate in sports in comparisons to boys (the odds ratio for the 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, and 11<sup>th</sup>, grade were 3.39, 1.77, 3.32 and 2.74 respectively). The no significant grade x sport participation interaction,  $\chi^2(6) = .71$ ,  $p = .87$ , indicated that ratio of students participation and no participation in sports didn't differ among grades. Finally, the significant main effect of sport participation,  $\chi^2(1) = 270.69$ ,  $p < .001$ , indicated that were 2.65 times less likely for students to participate to sport out of school (Table 1).

Table 1.  
*Participation or not in sports out of school*

Grade	Sport participants			Non sport participants		
	Boys	Girls	Sum	Boys	Girls	Sum
5 <sup>th</sup> grade	63 (38.7%)	26 (15.7%)	89 (27.5%)	100 (61.3%)	140 (84.3%)	240 (72.5%)
7 <sup>th</sup> grade	47 (33.3%)	39 (22%)	86 (27.3%)	94 (66.7%)	138 (78%)	232 (72.7%)
9 <sup>th</sup> grade	72 (40.9%)	25 (17.2%)	97 (30.4%)	104 (59.1%)	120 (82.8%)	224 (69.6%)
11 <sup>th</sup> grade	49 (36%)	30 (17%)	79 (25.3%)	87 (64%)	146 (83%)	233 (74.7%)
Sum	231 (37.5%)	120 (18.1%)	351 (27.6%)	385 (62.5%)	544 (81.9%)	929 (72.4%)

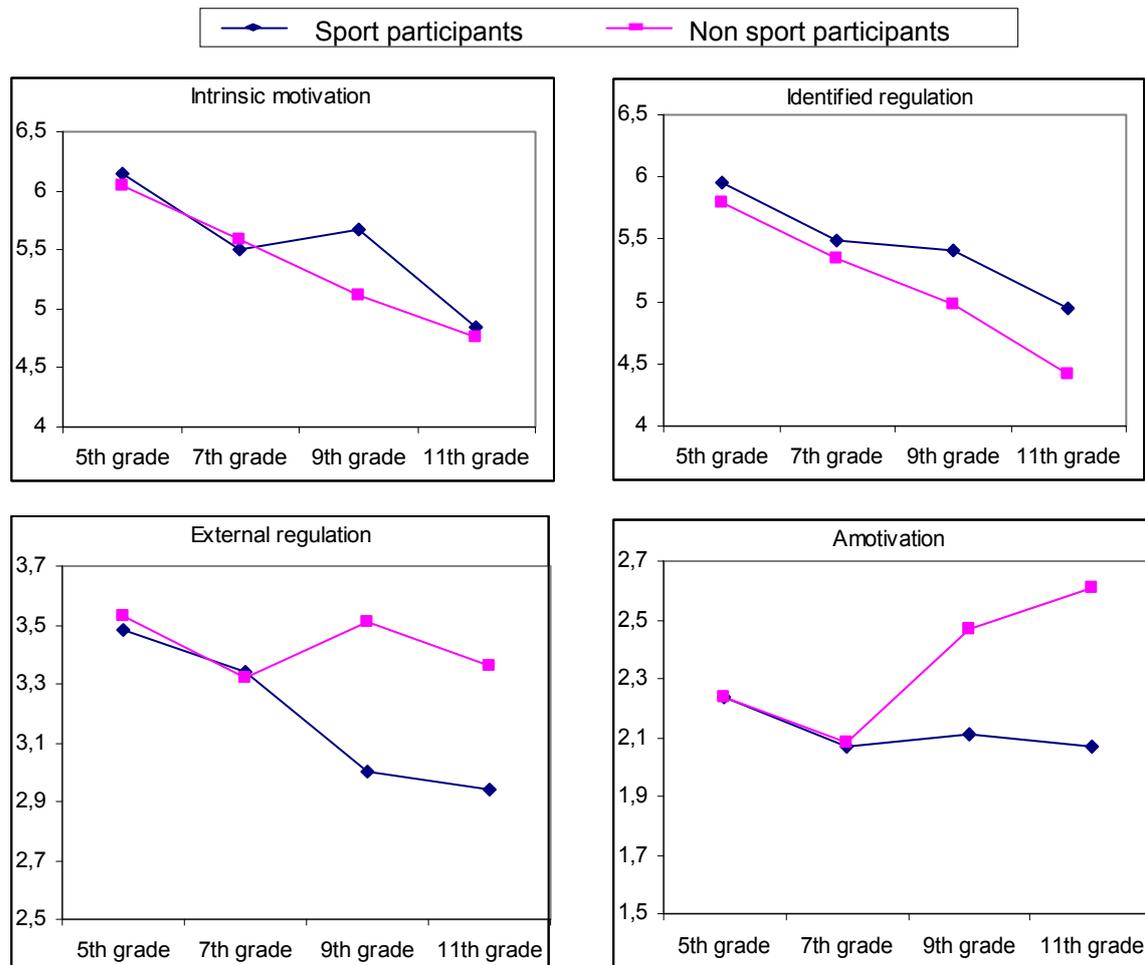
The 4 (grade) x 2 (gender) x (sport participation) Manova with motivational regulations as dependent variables, revealed a significant multivariate main effect of sport participation,  $F(4, 1265) = 7.07, p < .001, \eta^2 = .02$ , on dependent variables. The follow up univariate analyses of variances revealed significant differences between students who participated in sports out of schools and those who didn't participate in sports out of school, in intrinsic motivation,  $F(1, 1268) = 9.57, p < .01, \eta^2 = .01$ , in identified regulation,  $F(1, 1268) = 16.27, p < .001, \eta^2 = .01$ , in external regulation,  $F(1, 1268) = 10.98, p < .001, \eta^2 = .01$ , and in amotivation,  $F(1, 1268) = 8.66, p < .01, \eta^2 = .01$ . That is, sport participant students referred higher levels of intrinsic motivation and identified regulation and lower levels of external regulation and amotivation in comparison with non sport participant students (Table 2).

Table 2.  
*Means and standard deviations in four motivational regulations in relation to sport participation, independently of grade and gender*

	Sport participants		Non Sport participants	
	<i>M</i>	<i>Sd</i>	<i>M</i>	<i>Sd</i>
Intrinsic motivation	5.63	1.12	5.38	1.20
Identified regulation	5.46	1.13	5.14	1.20
External regulation	3.19	1.35	3.43	1.35
Amotivation	2.12	1.26	2.35	1.34

The 4 (grade) x 2 (gender) x (sport participation) Manova, also, revealed a significant multivariate grade x sport participation interaction,  $F(24, 5072) = 12.26, p < .001, \eta^2 = .06$ , on dependent variables. The follow up univariate analyses of variances revealed significant grade x sport participation interaction, in intrinsic,  $F(6, 1268) = 37.89, p < .001, \eta^2 = .15$ ,

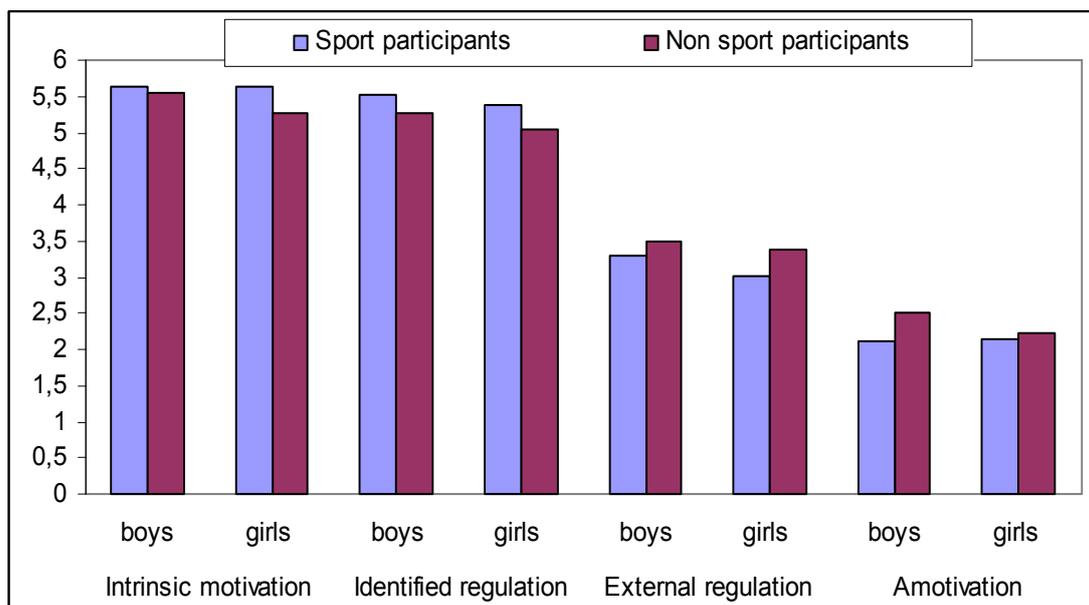
identified regulation,  $F(6, 1268) = 40.14, p < .001, \eta^2 = .16$ , external regulation,  $F(6, 1268) = 2.43, p < .05, \eta^2 = .01$ , and amotivation,  $F(6, 1268) = 4.01, p < .001, \eta^2 = .02$ . For intrinsic motivation, simple effects analysis indicated that sport participant students referred higher levels of intrinsic motivation in comparison with non sport participant students, in 5<sup>th</sup> grade,  $F(1, 1277) = 11.05, p < .001$ , in 9<sup>th</sup> grade,  $F(1, 1277) = 23.30, p < .001$ , and in 11<sup>th</sup> grade,  $F(1, 1277) = 45.40, p < .001$ . For identified regulation, simple effects analysis indicated that sport participant students referred higher levels of identified regulation in comparison with non sport participant students, in 5<sup>th</sup> grade,  $F(1, 1277) = 7.46, p < .01$ , in 9<sup>th</sup> grade,  $F(1, 1277) = 14.51, p < .001$ , and in 11<sup>th</sup> grade,  $F(1, 1277) = 70.59, p < .001$ . For external regulation, simple effects analysis indicated that sport participant students referred lower levels of external regulation in comparison with non sport participant students, in 9<sup>th</sup> grade,  $F(1, 1277) = 9.75, p < .01$ . Finally, for amotivation, simple effects analysis indicated that sport participant students referred lower levels of amotivation in comparison with non sport participant students, in 9<sup>th</sup> grade,  $F(1, 1277) = 7.71, p < .01$ , and in 11<sup>th</sup> grade,  $F(1, 1277) = 17.82, p < .001$  (Graph 1).



Graph 1. Grade and sport participation interaction in four motivational regulation

The 4 (grade) x 2 (gender) x (sport participation) Manova, also, revealed a significant multivariate gender x sport participation interaction,  $F(8, 2532) = 6.14, p < .001, \eta^2 = .02$ , on

dependent variables. The follow up univariate analyses of variances revealed significant gender x sport participation interaction, in intrinsic motivation,  $F(2, 1268) = 7.44, p < .001, \eta^2 = .01$ , in identified regulation,  $F(2, 1268) = 4.68, p < .01, \eta^2 = .01$ , and in amotivation,  $F(2, 1268) = 5.30, p < .01, \eta^2 = .01$ . Simple effects analysis indicated that sport participant students referred higher levels of intrinsic motivation in comparison with non sport participant students for girls,  $F(1, 1275) = 20.63, p < .001$ , but not for boys,  $F(1, 1275) = .22, p = .64$ , higher levels of identified regulation for boys,  $F(1, 1275) = 3.98, p < .05$ , and girls,  $F(1, 1275) = 21.10, p < .001$ , lower levels of external regulation for boys,  $F(1, 1275) = 4.20, p < .05$ , and girls,  $F(1, 1275) = 4.38, p < .05$ , and lower levels of amotivation for boys,  $F(1, 1275) = 15.52, p < .001$ , but not for girls,  $F(1, 1275) = .00, p = .99$  (Graph 2).



Graph 2. Gender x sport participation interaction in four motivational regulations

Finally, according to discriminant analysis, the four motivational regulations discriminated significantly,  $\chi^2(4) = 28.27, p < .001$ , the sport participants students from non the sport participants ones. Students who referred higher scores in intrinsic motivation and identified regulation and lower levels of external regulation and amotivation were more possible to participate in sports out of school.

### Discussion

The results of the present study indicated that students who participated in sports out of school referred higher levels of intrinsic motivation and identified regulation and lower levels of external regulation and amotivation in comparison with students who didn't participate in sports out of school. These results are in accordance with the results of previous studies (Goudas et al., 2001; Koka & Hein, 2003) which expand, using as framework the self-determination theory (Deci & Ryan, 2004). That is, sport participant students referred, in higher levels in comparison with non sport participant students, that participate in school physical education due to the pleasure and the enjoyment that they derive from the lessons

(intrinsic motivation) and because they found physical education valuable and useful for them (identified regulation). Moreover, sport participant students referred lower levels of extrinsic reasons for participation in physical education (e.g. rewards, guilt) and amotivation. These differences were the case for almost all grades with some small exceptions, mainly in 5<sup>th</sup> grade, in which they were found differences only in self-determined types of motivation. As far as gender differences, the results indicated that sport participants in both gender referred higher levels of intrinsic motivation and identified regulation and lower levels of external regulation and amotivation in comparison with non sport participants.

Overall, the results of the present study revealed that students who participated in sports out of school referred higher levels of self-determined motivation and lower levels of non self-determined motivation in comparison with students who didn't participate in sports out of school. These results were similar across gender and principally in older students. Students with sport experiences out of school value physical education and actively engaged in physical activities during the lesson and subsequently refer higher levels of intrinsic motivation (Goudas et al., 2000; Goudas & Hassandra, 2006). Moreover, sport participant students develop their athletic skills and transfer them into physical education. This proficiency enhances students' perceived competence which is considered to be a basic antecedent for the intrinsic motivation (Goudas et al., 1994). On the other hand, non sport participant students don't have many opportunities to develop their skills and the gap in skill proficiency with the sport participant students increases and may decline their motivation for participation in physical education (McKiddle & Maynard, 1997). These differences become more obvious in a competitive environment in which non sport participant students have fewer chances to succeed and to experience positive feelings and as a result their perceived competence and their intrinsic motivation decrease (Deci & Ryan, 1985).

The results of the present study highlight the fact that students, who don't participate in sport out of school, may need more the school physical education to compensate the lack of physical activity. Physical education can be the appropriate setting for the promotion of students' life long fitness (Biddle, 1987). According to the self-determination theory (Deci & Ryan, 2004), students' motives 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' motivation declines. 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, Laparidis & 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. The enhancement of self-determined motivation in physical education are associated with increasing effort and enjoyment in physical education (Ntoumanis, 2001, 2005) and with higher intentions for out school sport participation (Hagger et al., 2003; Papacharisis, et al., 2003).

Another interesting result of the present study was that the ratio of sport participants and non sports participants was similar along grades, result that may contradict with previous studies which have revealed that physical activity declines with age (Sallis et al., 2000). However, the present study evaluated the sport participation out of school itself and not the actual levels of physical activity. Boys in comparisons with girls referred higher levels of sport participation out of school in all grades, result that is consistent with previous ones (Sallis et al., 2000). In sum, the general percentage of sport participation could be characterized as low, as for each child who participates in sports out of school there are three children who don't participate, raising concern about the promotion of life long activity as a healthy habit among young people (Rowland, 1999).

A limitation of the present study was its cross-sectional nature. So, longitudinal designs are necessary to verify these results and quantitative and qualitative studies which try to explore the factors which contribute to the differences between sport and non sport participant students are needed.

### **Βιβλιογραφία**

- Biddle, S. (1987). *Foundations of health-related fitness in physical education*. London: The Ling Publishing House.
- Bouchard, C., & Shephard, R. J. (1994). Physical activity, fitness, and health: The model and key concepts. In C. Bouchard, & R. J. Shephard (Eds.), *Physical activity, fitness, and health* (pp. 77-88). Champaign, IL: Human Kinetics.
- Buckworth, J. & Dishman, R. K. (2002). Determinants of physical activity and exercise. In J. Buckworth & R. Dishman (Eds.), *Exercise psychology* (pp. 191-209). Champaign, IL: Human Kinetics.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (2000). The what and the why of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry*, 11, 227-268.
- 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.

- Digelidis, N., Papaioannou, A., Laparidis, K., & Christodoulidis, T. (2003). A one-year intervention in 7<sup>th</sup> grade physical education classes aiming to change motivational climate and attitudes towards exercise. *Psychology of Sport and Exercise*, 4, 195-210.
- Field, A. (2005). *Discovering statistics using spss (2<sup>nd</sup> ed.)*. London: Sage.
- Goudas, M. (1994). *Goal orientations and intrinsic motivation in physical education*. Unpublished doctoral dissertation. University of Exeter, Exeter, United Kingdom.
- Goudas, M., Biddle, S., & Fox, K. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, 64, 453-463.
- Goudas, M., Dermitzaki, I., & Bagiatis, K. (2001). Motivation in physical education is correlated with participation in sport after school. *Psychological Reports*, 88, 491-496.
- 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.
- Goudas, M., & Hassandra, M. (2006). Greek students' motives for participation in physical education. *International Journal of Physical Education*, 43, 85-89.
- 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.
- Haywood, K. M. (1991). The role of physical education in the development of active lifestyles. *Research Quarterly for Exercise and Sport*, 62, 151-156.
- Koka, A., & Hein, V. (2003). The impact of sports participation after school on intrinsic motivation and perceived learning environment in secondary school physical education. *Kinesiology*, 35, 86-93.
- 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.
- Lau, P., Fox, K., & Cheung, M. (2005). Psychosocial and socio-environmental correlates of sport identity and sport participation in secondary school-age children. *European Journal of Sport Science*, 4, 1-21.
- McAuley, E., Duncan, T., & Tammen, V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60, 48-58.
- McKiddle, B., & Maynard, I. W. (1997). Perceived competence of schoolchildren in physical education. *Journal of Teaching Physical Education*, 16, 324-339.
- Melograno, V. (1996). *Designing the physical education curriculum*. Champaign IL: Human Kinetics.
- 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.

- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology*, 71, 225-242.
- Papacharisis, V., Simou, K., & Goudas, M. (2003). The relationships between motivation and intention towards exercise. *Journal of Human Movement Studies*, 45, 377-386.
- Pintrich, P., & Schunk, D. (2002). *Motivation in education: Theory, research, and applications* (2<sup>nd</sup> ed.). Upper Saddle River, NJ: Merrill Prentice Hall.
- Rowland, T. W. (1999). *Adolescence: A risk factor for physical activity*. The Presidents Council on Physical fitness and Sports Research Digest (Series 3, No. 6). Washington, DC: President's Council on Physical Fitness and Sports.
- 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.
- Sallis, J. F., & McKenzie, T. L. (1991). Physical education's role in public health. *Research Quarterly for Exercise and Sport*, 62, 124-137.
- Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, 32, 963-975.
- Sallis, J. F., Simons-Morton, B., Stone, E., Corbin, C., Epstein, L. H., Faucette, N., et al. (1992). Determinants of physical activity and interventions in youth. *Medicine and Science in Sports and Exercise*, 24, S248-S257.
- Shephard, R. J. (1995). Physical activity, fitness, and health: The current consensus. *Quest*, 47, 288-303.
- 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.
- 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.
- Wallhead, T. L., & Buckworth, J. (2004). The role of physical education in the promotion of youth physical activity. *Quest*, 56, 285-301
- World Health Organization (1999). *Improving health through schools: National and international strategies*. The Global School Health Initiative Department of Health Promotion, Geneva & Health and Human Development Programs Education Development Center, Inc. Newton, MA USA.