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Gender Differences in the Relationship between the Regular Practice of Sports and Physical Exercise, Self-Beliefs and Academic Achievement during Adolescence

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Abstract

The present study examined the associations between self-concept, academic achievement and adolescents' participation in physical exercise and sports practice. The work extends previous research linking regular physical activity with self-concept by looking in detail at how different dimensions of self-perception may be linked to the regular practice of exercise and also to the adolescents' school results. In addition, the present study adopted a gender specific approach to explore the relationship between the variables analysed. The sample included 1094 adolescents ranging in age between 12 and 18 years attending four different schools in the south of Portugal. The results suggest some clear gender differences in terms of levels of physical activity and how exercise and sports may shape the mental representations that adolescents develop about themselves in different dimensions of the self. More interesting is the finding that sports and physical exercise can support particular developmental changes in adolescent girls' domain-specific self-perceptions, self-esteem and levels of academic achievement.

Keywords: academic achievement, adolescence, physical activity, self-concept

1. Introduction

1.1 The Benefits of Regular Physical Activity during Adolescence

Regular practice of exercise has been linked to many health benefits and higher levels of physical activity during childhood and adolescence show clear associations with positive health outcomes (Pearce, Basterfield, Mann, Parkinson, Adamson, & Reiley, 2012). There is also a growing body of evidence about the impact that exercise can have on emotional wellbeing (Donaldson & Ronan, 2006), indices of mental health (Daley, 2002) and levels of positive self-esteem (Klomsten, Skaalvik, & Espnes, 2014). For example, Parfit, Pavey and Rowlands' study (2009) found that levels of physical activity were negatively associated with levels of anxiety and positively associated with levels of physical self-concept in a sample of pre-adolescents.

The benefits of physical activity on mental health and wellbeing are often explained by the biochemical changes resulting from the regular practice of physical exercise. One reported example of this effect is the link between physical exercise and raised levels of endorphins (Meeusen & Meirleir, 1995). However, metabolic changes do not fully explain some of the benefits of regular physical activity and psychological and psychosocial factors also help us to understand this relationship. The regular practice of physical exercise seems to lead to an increased perception of physical ability and positive body perception (Daley, 2002), contributing to internal locus of control and self-efficacy beliefs (Gasic-Pavisic, Joksimovic, & Janjetovic, 2006) leading, in turn, to the development of more positive levels of self-esteem. The social context in which sports and physical exercise take place is also a relevant contributor to some of the psychological benefits, as they often provide opportunities for social engagement (Donaldson & Ronan, 2006). This is certainly the case amongst adolescents where exercise usually occurs in the context of extra-curricular group activities which are important settings that support adolescents' establishment of friendships amongst their peer group (Schaefer, Simpkins, Vest, & Price, 2011).

Despite the benefits repeatedly associated with physical activity, recent surveys report lower levels of adolescent participation in sports and physical activity. This seems to be particularly true amongst girls (Guerieri, 2009).

This gender gap seems to emerge during the end of primary school and continue to widen during adolescence (Women's Sport and Fitness Foundation [WSFF], 2012). The finding that on average girls seem to spend significantly more time in sedentary behaviour is particularly worrying if we consider all the benefits that they may be missing out from being more physically active and that higher levels of physical inactivity will place them at higher risk of future health and emotional problems (Pearce et al., 2012; WSFF, 2012).

1.2 Self-Concept Development in Adolescence

Adolescence is an important period for the development of identity and acquired beliefs about the self. Much research has been focused on the study of how individuals develop a sense of self and the importance of self-concept for affect and behaviour. Although there was in the past some tendency to view self-concept as a construct that could be measured singly, research during the last decades has increasingly made the distinction between global self-concept and specific domains of self-concept. Specific domains reflect the individuals' mental representation and evaluation of their performance in different life contexts (Zanobini & Usai, 2002; Dweck, 2008). Accordingly, the self-system is considered a multidimensional construct, which includes feelings and beliefs about one's abilities. The development of self-concept is also a dynamic and evolving process that greatly changes in the transition from adolescence to adulthood (Huang, 2010).

During adolescence self-evaluation becomes more differentiated and complex with increasing awareness of others' perspectives and sensitivity to social evaluation (Sebastian et al., 2008). An important debate around the understanding of self-concept has focused on how changes in the social context may lead to gender differences in self-beliefs across adolescence. Accordingly, previous research has found slight gender differences in favour of boys in relation to specific domains such as physical self-concept (Klomsten et al., 2004) and global self-esteem (Quatman & Watson, 2001), suggesting that adolescent girls may evaluate themselves more negatively than boys (Molloy et al., 2011). Nevertheless, other researchers have questioned the existence of particular gender changes across adolescence (Huang, 2010).

1.3 Self-Concept, Academic Achievement and Physical Activity

Schools are important developmental contexts during adolescence and academic success exerts a prominent influence on adolescents' lives (Zuffiano et al., 2013). Although several studies have in the past tried to relate global self-concept to academic results findings have in general been rather inconsistent (Alves-Martins, Peixoto, Gouveia-Pereira, Amaral, & Pedro, 2002). Some agreement does, however, exist about the critical role that academic self-concept may play in the development of academic motivation, expectations and achievement (Molloy, Ram, & Gest, 2011).

The possible link between physical activity and academic self-concept/academic outcomes has also been explored in past studies and while Gerber and Pulse (2006) found that general academic self-concept was not significantly related to sports participation, Guerieri's (2009) findings showed significant links between levels of physical activity and body composition in a group of adolescents and their academic performance. Moreover, in a study using longitudinal data from Germany examining the impact of exercising during childhood and adolescence on long term educational attainment, Cornelißen and Pfeifer (2007) found that sports participation was significantly associated with end of secondary school achievement and the probability of achieving a professional degree. More agreement seems however to be found between the possible benefits of regular sports participation on some other domains of the concept of self, such as physical appearance and athletic competence (Carapeta, Ramires, & Viana, 2001).

Variations in studies regarding the interaction between the different variables discussed here are still very evident and could be partly due to the complex nature of self-concept, its multidimensional character, and the interplay between the affective, cognitive, motivational and behavioural factors involved (Zanobini & Usai, 2002). The inconsistent results found in the literature clearly highlight the need for a better understanding of the key contributors to developing a positive sense of self in adolescents and the possible interplay between adolescents' self-theories and key life-contexts including academic performance and their involvement in physical activity and sports. Specifically it is important to uncover possible gender-specific patterns regarding the mechanisms underlying some of the factors affecting the representations that adolescents develop about themselves. The present study has therefore adopted a gender-specific perspective when examining the relationship between levels of physical activity and adolescents' self-beliefs and academic achievement.

2. Method

2.1 Procedure

The present study was conducted in four different schools in the south of Portugal, ensuring that different geographical areas were included. Only state schools were recruited to the study as most students in Portugal attend state education: 85.3% students in Portugal are in state education against 14.7% in private schools (Gabinete de Estatistica e Planeamento, 2010). Permission was first obtained from the Ministry of Education as required for all research studies carried out in Portuguese Public schools. This was followed by obtaining the permission of all schools' directors, parents and students through consent letters clearly explaining the aims of the study and its procedure. The research instruments were applied in the classroom with the presence of one researcher, who explained to the students again the aim of the study and the procedure to fill in the questionnaires and answered any questions they may have had. Students were also reminded that participation was voluntary and to ensure anonymity they were asked not to write their names or student numbers on the questionnaires. Only pupils in year 7, 8 and 9 (3°Ciclo do Ensino Básico) in the four schools were recruited to the study.

2.2 Sample

A total of 1094 students were considered in the data analysis from the four schools that took part in the study, ranging in age between 12 and 18 years (M = 13.8, SD = 1.2). Table 1 shows the number of students per school which was determined by the number of consent forms received from the parents as well as each school's total number of students. There were 526 male adolescents and 568 female students distributed in the three grade levels.

Table1. Number of students per school and grade level

	Boys				Girls			
	Grade 7	Grade 8	Grade 9	*Total*	Grade 7	Grade 8	Grade 9	*Total*
School 1	47	41	46	*134*	35	39	44	*118*
School 2	62	45	49	*156*	68	60	62	*190*
School 3	52	50	43	*145*	70	58	43	*171*
School 4	26	35	30	*91*	30	28	31	*89*
Total	187	171	168	*526*	203	185	180	*568*

Levels of school retention (repeating a year) were also collected and the data show that 212 adolescents reported that they had been retained at least one year, with 71 students having been retained twice. There were only 10 students who had had more than two retentions throughout their academic life.

2.3 Materials

Two instruments were applied: the *Self-Perception Profile Adolescents Scale* (SPPA) by Susan Harter translated for the Portuguese adolescent population by Peixoto, Alves-Martins, Mata and Monteiro (1996) and a Sports and Physical Exercise Questionnaire designed for this study. A third questionnaire was also given to the students regarding their motivation for sport and physical activity participation but this will not be analysed in the context of this paper.

2.3.1 Self-Perception Profile Adolescents (SPPA)

Like the original version, the Portuguese adaptation of the SPPA consists of two scales: the *profile of self-awareness* ("How am I") and the *scale of importance* ("How this is important to me"). The original SPPA includes eight specific domains of competence: Academic, Athletic, Physical Appearance, Job, Romantic appeal, Behavioural conduct and Close friendships and the global Self-worth subscale (Harter, 2012). The Portuguese version does not include the subscale Job as the authors found it of little relevance to the Portuguese adolescent population (Alves-Martins et al., 2002). Harter (2012) included the subscale Job competence because many adolescents in USA start part-time jobs at this time, which is less common amongst Portuguese adolescents (Peixoto et al., 1996).

Although different instruments have been used to tap into self-concept, the SPPA is one of the most used measures of self-concept (Huang, 2010) offering both a global self-esteem (Self-worth) and distinct domain specific information from the subscales. Also important is the fact that the questionnaire is presented in a question format alternative to the two-choice response format more often used in other instruments developed to assess psychological constructs such as self-perception. According to Harter (2012) this was developed to avoid the tendency for young people to give socially desirable answers. The adaptation of the scale carried out by Peixoto et al. (1996) showed, according to these authors, similar psychometric characteristics as the original version. The internal consistency of the subscales was also calculated for the samples studied here (separately for boys and girls). Cronbach's alphas for the subscales ranged between .65 (Academic self-concept) and .87 (Friendships) for boys and, between .60 (Academic self-concept) and .90 (Physical appearance) for girls. The internal consistency of the subscales in this study showed similar or even higher scores than those obtained by previous studies for the Portuguese population (see for example, Peixoto et al., 1996; Fontaine & Antunes, 2002).

2.3.2 Sports and Physical Exercise Questionnaire

A Sports and Physical Exercise Questionnaire, specifically designed for the present study, was also used to collect descriptive information about the students' past and current practice of regular sports and/or physical activity. This self-report questionnaire included questions about type of sports/activities practiced regularly, frequency (number of times per week) and length (minutes/hours), place and context of practice (leisure/competition). Students were specifically asked to only include in this questionnaire information about sports and physical exercise activities developed outside the school's PE activities, as in Portugal PE is a compulsory subject at this level of education.

2.3.3 Academic Achievement

In the present study academic achievement was assessed by collecting the students' grades at the end of the academic year and calculating an average for each student based on all subjects except Religious Education, which is an optional subject in Portuguese state schools. All subjects were considered taking in consideration that academic achievement is more than just what is frequently considered key academic areas such as maths and native language (Pixten, DeFraine, Danne, & D'Haenes, 2010). In Portugal between grade 7 and 9 all subjects are graded on a scale from 1 to 5. Students need to obtain a grade of 3 in order to pass a subject and pass at least 7 out of the 9 compulsory subjects in order to move to the next year, ensuring that they do not fail both Maths and Portuguese.

Levels of school retention were also collected for the present sample. School retention consists of retaining a student at the same level of education for an additional year and although it is commonly associated with academic failure it may be caused by other factors (Conboy, 2011).

3. Results

As the present study adopted a gender-specific perspective all statistical data analyses were carried out for boys and girls separately and were performed using SPSS statistical package, with alpha set at $p<.05$ level. All variables were found to be approximately normally distributed.

3.1 Exploring Gender Differences—T-Tests

Independent sample *t*-tests were performed to first identify any sex differences across the descriptive data variables in terms of adolescents' regular sports and exercise practice, scores on the SPPA and academic achievement. The results are presented in Table 2. Cohen's *d* effect size was used to measure magnitude of effect.

Table 2. Independent samples *t*-tests analysing gender differences across the main variables studied

Variable	Boys M/SD	Girls M/SD	*t*	df	*p*	Effect size
Average grade	3.37 (.58)	3.52 (.63)	3.27	1090	.001	-.248
School Retention	.42 (.73)	.29 (.58)	-3.89	1030	.000	.198
Regular practice of exercise	.70 (.46)	.48 (.50)	7.71	1092	.000	.458
Weekly exercise practice	2.58 (2.32)	1.41 (1.84)	9.19	1090	.000	.559

Length of regular practice (years)	3.03 (3.33)	1.54 (2.69)	8.14	1085	.000	.492
SPPA/subscales						
"How I am"						
Total score	118.00 (15.21)	115.34 (17.61)	2.53	1038	.012	.160
Academic	13.63 (3.25)	13.34 (3.66)	1.38	1083	ns	
Social	15.65 (2.85)	15.32 (3.23)	1.76	1086	ns	
Athletic	14.76 (3.37)	12.28 (3.57)	11.80	1090	.000	.714
Physical appearance	14.52 (3.64)	12.88 (4.26)	6.83	1088	.000	.414
Romantic appeal	13.66 (3.38)	13.69 (3.28)	-.15	1075	ns	
Behavioural conduct	14.55 (2.99)	15.50 (2.99)	-5.25	1081	.000	-.318
Friendships	15.64 (3.90)	17.38 (3.93)	-7.27	1084	.000	-.444
Self-worth	15.37 (2.95)	14.95 (3.87)	2.03	1086	.042	.122
"How this is important to me"						
Academic	6.43 (1.26)	6.54 (1.29)	-1.43	1067	ns	
Social	5.81 (1.44)	5.67 (1.39)	1.64	1067	ns	
Athletic	6.44 (1.53)	5.76 (1.63)	7.11	1087	.000	.430
Physical appearance	6.07 (1.94)	6.25 (1.44)	-1.72	960	ns	
Romantic appeal	6.73 (1.25)	6.83 (1.21)	-1.29	1070	ns	
Behavioural conduct	6.50 (1.35)	6.81 (1.25)	-4.00	1061	.000	-.238
Friendships	6.84 (1.43)	7.41 (2.04)	-5.33	1086	.000	-.324

The results show that on average boys were significantly more involved in sports and exercise than girls. More girls did not practice any form of regular exercise when compared to boys and on average practiced significantly less time per week than boys. Frequency of practice remained significantly higher amongst boys when only considering adolescents who reported some regular practice of physical activity, with boys' average practice of 3.65 (1.91) compared to girls' average of 2.97 (1.57), t 4.8 (df 636), $p < .001$.

Overall, boys also scored significantly higher on the SPPA (total score on the self-concept scale) but this difference had a relatively small effect size. Other significant group differences were noted on some of the self-concept dimensions; female adolescents, compared to their male peers, reported significantly higher levels of dissatisfaction with their Physical appearance, Athletic competence and Self-Worth, this last dimension showed small effect sizes, however, girls' scores, showed a clear mean advantage in terms of Close friendships and Behavioural conduct.

Significant gender differences on the importance ratings were noted for Athletic competence, with boys attributing more value to this dimension, and for Behavioural conduct and Close friendships, with girls scoring both dimensions as more important than boys. Finally, girls had on average overall higher academic results than boys but again this difference although significant was very modest in terms of effect size.

3.2 Exploring Possible Changes across Age—ANOVAS

In order to also explore possible changes in self-concept across adolescence highlighted in some previous research, one-way ANOVA was used to examine differences across year groups in terms of self-concept (general score on the scale) and specific dimensions (sub-scales). The results from the ANOVA tests presented in Table 3 offer some support for the idea that self-concept in developmental terms may indeed decrease in middle adolescence amongst girls. Post-hoc Tukey tests revealed that girls in year 9 had significantly lower average scores than girls in year 7 ($p < .05$) in terms of their self-concept (total scores), Physical appearance, Athletic competence, Social competence and self-esteem (Self-worth). The proportion of variance accounted for by

age/school year was calculated using eta squared as suggested by Cohen, Cohen, West and Aiken (2003). Boys had no significant group differences across school years on any of the self-concept subscales, suggesting that girls might indeed be a more vulnerable group in terms of a decline in some self-concept dimensions during adolescence.

Table 3. Summary of One-Way ANOVA showing significant changes across school year—Girls

		Average M scores and SD per school year	η^2 Eta squared
"How I am"			
Total score	F(2,537) = 3.13, p = .045	Year 7, M = 117.7 (16.7) Year 8, M = 115.3 (17.5) Year 9, M = 113 (18.6)	.012
Physical appearance	F(2,563) = 6.67, p = .001	Year 7, M = 13.6 (4.2) Year 8, M = 12.9 (4.2) Year 9, M = 12.1 (4.3)	.023
Athletic	F(2,563) = 6.37, p = .002	Year 7, M = 13 (3.4) Year 8, M = 12 (3.7) Year 9, M = 11,8 (3.5)	.022
Social	F(2,561) = 3.53, p = .030	Year 7, M = 15. 8 (2.9) Year 8, M = 15.1 (3.4) Year 9, M = 15 (3.4)	.012
Self-worth	F(2,564) = 3.38, p = .035	Year 7, M = 15.4 (3.4) Year 8, M = 15.1 (4.6) Year 9, M = 14.4 (3.6)	.012

One-way ANOVA was also carried out to explore possible changes in levels of physical activity across different year groups. The results showed no significant difference amongst year groups for both boys and girls in their practice of sports and physical exercise.

3.3 Exploring Relationships between Variables—Correlations and Regression Analyses

The possible interplay between self-concept, academic achievement and physical exercise was first explored using bivariate correlations. Correlations between the measured variables were calculated and the results are presented in Table 4 and 5 for boys and girls respectively. The results show positive significant coefficients between scores on the SPPA including total score and their academic results, but this relationship is stronger in the case of girls than boys. When analysing the relationship between exercise activity and academic results only girls showed a significant systematic association between academic outcomes and levels of physical activity.

Table 4. Correlation coefficients across self-concept dimensions (subscales), academic achievement (average grade), school year and physical exercise for boys

	1	2	3	4	5	6	7	8	9	10	11	12
1. SPPA total												
2. Academic	.508**											
3. Social	.706**	.232**										
4. Athletic	.594**	.120**	.471**									
5. Physical	.689**	.213**	.421**	.343**								

appearance												
6. Romantic	.656**	.213**	.626**	.479**	.407**							
7. Behavioural	.307**	.267**	-.081	-.027	.170**	-.114*						
8. Friendships	.437**	.107**	.289**	.099*	.161**	.134**	.044					
9. Self-worth	.723**	.358**	.462**	.343**	.575**	.366**	.313**	.161**				
10. PA	.234**	.104**	.189**	.364**	.106*	.150**	-.023	.086**	.149**			
11. Frequency of PA	.308**	.160**	.257**	.444**	.136**	.241**	-.033	.079	.189**	.801*		
12. Average grade	.198**	.531**	.021	.004	.080	-.050	.267**	.024	.203**	.057	.093*	
13. School Year	.033	.016	.045	.043	.004	.087	.061	.027	-.053	-.059	-.028	-.028

**p < .01 *p < .05 level Note: PA (Practice of regular physical exercise/sports), Frequency of PA (Weekly frequency of physical exercise/sports)

Table 5. Correlation coefficients across self-concept dimensions (subscales), academic achievement (average grade), school year and physical exercise for girls

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1. SPPA total												
2. Academic	.604**											
3. Social	.716**	.290**										
4. Athletic	.557**	.248**	.357**									
5.Physical appearance	.768**	.366**	.447**	.374**								
6. Romantic	.588**	.210**	.553**	.255**	.423**							
7. Behavioural	.403**	.361**	.094*	.087*	.203**	-.029						
8. Friendship	.403**	.176**	.293**	.084*	.163**	.167**	.054					
9. Self-worth	.812**	.482**	.515**	.327**	.688**	.400**	.393**	.202**				
10. PA	.295**	.193**	.206**	.408**	.159**	.096*	.072	.132**	.210**			
11. Frequency of PA	.328**	.210**	.224**	.455**	.190**	.116**	.085*	.139**	.242**	.936*		
12. Average grade	.306**	.631**	.046	.121**	.147**	-.048	.394**	.119**	.277**	.216**	.226**	
13.School Year	-.105*	-.040	-.102*	-137**	-152**	.085*	-.055	.007	-.105*	-.035	-.034	-.028

**p < .01 *p < .05 level Note: PA (Practice of regular physical exercise/sports), Frequency of PA (Weekly frequency of physical exercise/sports)

The correlation between physical activity and global self-concept suggests a significant relationship between overall self-perceptions and the practice of physical exercise and sports with the strongest relationship for practice frequency, both significant for boys and girls. The next question to answer is which specific dimensions may be contributing to this significant relationship? The correlation coefficients indicate that, as expected, the Athletic competence dimension has the highest correlation coefficient with practice of exercise, followed by Social competence and to a less extend Academic competence. For boys only Romantic appeal also appears associated with frequency of weekly exercise practice.

Correlation analyses were also used to investigate the relationship between global self-concept (total score) and the different dimensions measured by the subscales. The results shown on Tables 4 and 5 indicate that for both

girls and boys Self-worth obtained the highest correlation score followed by Physical appearance for girls and Athletic performance for boys, an interesting result that may reflect differences amongst boys' and girls' social values. When analysing the relationship between academic achievement and self-concept the results indicate that both female and male students with higher levels of academic achievement make more positive self-evaluations on the Academic competence dimension as well as in terms of Behavioural conduct and Self-worth.

In order to explore what variables may make a significant contribution to end of year academic achievement, linear regression analyses were run for boys and girls separately. Average grade was entered as a dependent variable, Academic self-concept and importance given to Academic competence (Importance sub-scale), Self-worth, Behavioural conduct and frequency of physical activity practice were entered as independent variables (based on correlation coefficients). The results indicate that while for boys physical activity made no additional significant contribution to their end of year grades this variable offered a very small contribution for girls. Results are presented in Tables 6 and 7 and Academic competence, the Importance given to academic competence and Behavioural conduct were significant contributors to both models.

Table 6. Regression analysis using average grade as dependent variable—boys

Variables	**Standardized Coefficients B**	***T***	**Sig.**
Academic Perception	.441	10.30	.000
Behavioural conduct	.153	3.70	.000
Self-Worth	-.006	-.15	.880
Frequency PA	-.010	-.26	.792
Importance of academic performance	.151	3.80	.000
R^2 = .313			

Table 7. Regression analysis using average grade as dependent variable—girls

Variables	**Standardized Coefficients B**	***T***	**Sig.**
Academic Perception	.458	11.83	.000
Behavioural conduct	.176	4.74	.000
Self-Worth	-.051	-1.36	.173
Frequency PA	.112	3.24	.001
Importance of academic performance	.188	5.27	.000
R^2 = .414			

4. Discussion

The present study examined gender differences in the relationship between the practice of physical exercise, dimensions of self-concept and academic achievement in a sample of adolescents in Portugal. The results suggest some important differences between boys and girls in terms of specific dimensions of their self-concept, levels of physical activity and the links between the variables studied.

To start with, girls, when compared to boys, reported significantly less practice of physical activity with more girls not getting any form of regular physical exercise outside the context of their PE lessons at school. When comparing girls and boys who took part in regular physical activity the results indicated that boys did so more frequently. The lower levels of adolescent girls' engagement in physical activity also reported in previous surveys are a clear concern because of its potential negative impact on their wellbeing. However, and contrary to some previous studies suggesting that it is during adolescence that girls more significantly drop out of physical activity, in the present sample the practice of physical activity amongst girls did not decrease with school year. This finding seems to suggest that the increase in sedentary behaviour reported amongst girls may occur at

specific periods during adolescence (Brodersen, Stetoe, Boniface, & Wardle, 2007) or, more likely, occur earlier in their development/school life (WSFF, 2012; Pearce et al., 2012).

In terms of self-concept, the present data showed that overall girls rated themselves significantly lower in terms of Physical appearance and Athletic competence dimensions of the SPPA subscales and to a less extent on Self-worth. Perhaps more interesting seems to be the fact that in the present sample girls' self-ratings, and not boys', on both these two dimensions (Physical appearance and Athletic competence) decreased from year 7 to year 9, suggesting a change in self-concept across age amongst girls. Although some authors (e.g., Huang, 2010) have argued that self-esteem does not vary across gender groups during adolescence others have indicated that this may occur at least in some specific domains of the self (Alves-Martins et al., 2002; Klomsten et al., 2004).

Girls' lower ratings on Physical appearance is particularly noteworthy as this dimension seems to be a key predictor of general self-esteem (Klomsten et al., 2004) and one of the most important domains of self-concept in adolescence. The importance that body self-concept may have as a dimension of the self-concept may be more salient for girls than boys (Bowker, Gadbois, & Cornock, 2003) and may in part be linked to the physical changes experienced during adolescence and an increased sensitivity to social evaluation (Somerville, Jones, Ruberry, Dyke, Glover, & Casey, 2013). This was, at least in part, confirmed in the present study by the very high correlation coefficients observed between self-esteem (Self-worth) and the Physical appearance dimension, clearly the highest correlation coefficient obtained for Self-worth. This was also the highest correlation coefficient obtained for boys although to a slightly less extent than that observed for girls. However, boys did not score higher than girls on all self-concept dimensions as they also presented average lower self-ratings on two of the SPPA sub dimensions namely Close friendships and Behavioural conduct. Accordingly, this advantage for girls was also confirmed by the higher importance ratings they attributed to these two dimensions on the Importance Scale. Girls have in the past been reported to outperform boys on different social skills (Nilsen, Karevold, Roysamb, Gustavson, & Mathiesen, 2013).

When exploring the relationship between academic performance and physical activity differences were also noted across gender groups. The results clearly show that, for boys and girls, time spent on weekly exercise practice is not in any way detrimental to studying as suggested by the positive correlations between physical activity and average grades. However, physical activity had no significant direct contribution to boys' academic results while a small significant contribution was identified for girls. Interestingly, this may suggest that girls may be benefitting more directly from taking part in regular physical activity than their male counterparts.

The development of the self-system is complex and dependent on many internal and external contextual factors and is still not fully understood. Acquired beliefs will have an important influence on adolescents' motivation, expectations and behaviour. Although some stability may be attributed to self-esteem, beliefs can be changed influenced by how interpersonal environments undergo some changes as adolescents take up new social roles (Dweck, 2008; Sebastian, Burnett, & Blakemore, 2008). The present study suggests that sports and physical exercise may directly or indirectly contribute to the mental representations that adolescents develop on some of the dimensions of their self. More importantly it adds to the present literature by showing that this contribution may, at least in part, be clearly different for boys and girls at a stage of development where social expectations may differ and be mediated by gender role orientation (Bowker et al., 2003).

5. Conclusion

Adolescence constitutes a unique phase of human development with important psychological changes, including a more complex ability to perceive themselves across different domains of their life. A positive sense of self is a significant component of adolescents' development and wellbeing, as it plays a critical role in the way they relate to others, their levels of motivation and how they approach challenges. Although a vast amount of research has contributed to our understanding of self-concept there are still significant inconsistencies regarding gender differences about the representations that adolescents develop in different dimensions of the self and how specific social contexts are important contributing factors.

The present findings clearly suggest that engaging in regular physical activity may be instrumental to enhancing how adolescents evaluate themselves in some key areas of their self-belief system. The results indicate that physically active adolescents report more positive self-perceptions. Of particular interest was the fact that girls scored significantly lower than boys on several self-concept domains, including Physical appearance. However, they also indicate that sports and physical activity can function as a protective factor, at a time when body image emerges as a significant dimension of the self. Helping girls stay active as they go through adolescence, and even earlier, will support the development of a positive self-image and help prevent the decline in self-esteem

observed in middle adolescence. In addition, the data also show that physically active adolescent girls are more likely to have higher levels of academic achievement. Together, these findings highlight the clear need for a gendered perspective when examining intrapersonal constructs such as self-concept. Such research can help identify appropriate intervention strategies to increase levels of physical activity amongst girls and positive levels of self-esteem, particularly, in the transition to adolescence.

Despite the significance of the present results, it is important to highlight that the cross-sectional nature of the data does not permit definite conclusions about the direction of the variables explored and it is possible that adolescents with more positive self-beliefs may be more likely to take part in sports and exercise activities. In addition, the data collected regarding levels of physical activity are self-reported and therefore not necessarily providing accurate estimates of physical activity. However, the present findings clearly indicate specific gender differences in self-concept development during adolescence and further highlight the interplay between adolescents' self-theories and specific life-contexts. These differences need to be taken into account in future research as we continue to uncover the factors that may be key in effectively supporting adolescents as they face particular social and emotional challenges in developing their identity and self-beliefs.

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