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The self-esteem, goal orientation, and health-related physical fitness of active and inactive adolescent students

Md. Dilsad Ahmed[1], Walter King Yan Ho[1]*, Rudolph Leon Van Niekerk[2], Tony Morris[3], M. Elayaraja[4], Ki-Cheon Lee[5] and Edel Randles[6]

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*Corresponding author: Walter King Yan Ho, Faculty of Education, University of Macau, Macau, China
E-mail: walterdilsad@gmail.com

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Additional information is available at the end of the article

Abstract: A purposive sample of 200 (100 active and 100 inactive) adolescent students between 11 and 17 years (mean age of active students 13.40 ± 1.64 and inactive students 13.18 ± 1.40) were invited to participate in this study. The self-esteem and goal orientation of the students were determined with Rosenberg's Self-Esteem Scale (1965) and the Task- and Ego Orientation in Sport Questionnaire (TEOSQ), respectively. The health-related behavior and physical fitness of the students were determined by five tests measuring upper body strength, muscular endurance, aerobic endurance, flexibility, and body composition. Group comparisons of active and inactive students were done using descriptive statistics and independent samples *t*-tests, while Chi square tests were used to determine the adolescents' time spent on sedentary activities, specifically on "Sunday" and the "Other Weekdays." The results showed a significant difference between both groups on all of the parameters of health-related physical fitness components, self-esteem, and goal orientation. Active students had higher self-esteem and task orientation, whereas inactive students showed lower self-esteem and higher ego orientation levels.

ABOUT THE AUTHORS

Md. Dilsad Ahmed obtained his PhD at the SGB Amravati University, India. Currently, he is working as a post-doctoral fellow at the University of Macau. He was also a visiting scholar at the Korea Institute of Sports Sciences, South Korea and a research assistant at the UM, Macau from 2014 to 2016. He is the recipient of several national and international awards which includes CPI fellowship; South Korea, and Best Scholar Award; South Korea, Rajguru academic Award and DG Commendation Award from India. He is now actively involved in the works of International Society for Comparative Physical Education and Sport. Dilsad's research is centered on measuring quality physical education, sexual abuse in sports, physical activity and health-related parameters, scale construction (psychometrics) and measuring other positive psychology constructs among youth and university level athletes. The works on these research interests need collaborative efforts with other international partners and this initiation attracts the attention of researchers coming from more than 40 universities.

PUBLIC INTEREST STATEMENT

Active lifestyle development turns to be common health goal in nations. Sports participation provide ample opportunities to make role models toward positive development among young people. Physical activity thus a key component in the development of physical and psychological health benefits during adolescence. Many of these works, for example, focus on games, physical activities, and sports as the media. Nevertheless, how these elements link with the successful works for active living is still the question for answer. The present investigation intended to identify elements that have a relationship to the development of active and inactive lifestyle development. The finding supports the observation that active students have higher self-esteem (SE) and task orientation (EO) behavior, whereas inactive students indicate the development of lower SE and higher EO levels. This information serves as an important message for personnel who works in the field of physical education that self-esteem and task orientation are the two important directions and concerns for the development of behavior in active living.

Subjects: Sports and Leisure; Sport and Exercise Science; Physical Education

Keywords: active and inactive adolescence; self-esteem; goal orientation; health behavior; physical fitness

1. Introduction

Adolescents' participation in physical activity (PA) has contributed positively to their health-related parameters and well-being (Dilsad Ahmed, 2013). Sports seem to have a fertilizer effect during development e.g. sport participation by young people, shape their characters (and health) in socially desirable ways, while sports provide opportunities for guidance by adults as role models toward positive development (Donnelly, Darnell, Wells, & Coakley, 2007; Hartmann, 2003; Hartmann & Depro, 2006). Physical activity is thus a key component in the development of physical and psychological health benefits during adolescence. Sonstroem (1984) found that participation in sports helps to develop self-esteem and enhances goal orientation (Duda, 1989) regardless of the type of physical activity. Yet, the number of adolescents who are physically active seems to be low. Efforts to address the problem of physical inactivity among the youth also seem to focus too much attention on individualized behavior change strategies rather than on public health approaches that requires systems thinking (Kohl & Cook, 2013; Rowland, 2007). Therefore, the authors undertook the present study, with the primary aim to examine the self-esteem, goal orientation, and health-related physical fitness of active and inactive adolescent students.

Active participation in physical activity promotes the development of positive habits, enhances healthy lifestyles, have implications for health (Bouchard, Blair, & Haskell, 2007; Irish Sports Council, 2009, p. 6) and provide psychological health benefits (Haskell et al., 2007). These benefits include the enhancement of physical well-being (Warburton, Nicol, & Bredin, 2006), psychological well-being (Dilsad Ahmed, 2013), and psychosocial health (Powell & Pratt, 1996), while it decreases the impact of psychosocial problems (Kiess et al., 2001). It further enhances cognitive function and self-efficacy (Mazzeo et al., 1998), promotes sociological and environmental health (Kohl & Hobbs, 1998) and enhances quality of life (Gill, Chang, Murphy, Holder, & Etnier, 2006). In all likelihood, these benefits interact in a multidimensional way to influence young people's participation in physical activity and build lifelong, positive, healthy behaviors (Kohl & Hobbs, 1998). Physical activity interventions have shown better health outcomes in randomized clinical trials, including better general health across multiple health-related physical fitness factors (Penedo & Dahn, 2005), better mood states, the reduction in coronary heart disease (Lee et al., 2012), reduced obesity in children, improves musculoskeletal and cardiovascular efficiency, the endocrine system (Jackson & Pollock, 1985), and mental health outcomes (Penedo & Dahn, 2005). Despite all of these health-related benefits, research has accentuated issues around inactivity and its relationship with e.g. cardiovascular disease (Paffenbarger, Hyde, Wing, & Hsieh, 1986) and coronary heart disease (Powell, Thompson, Caspersen, & Kendrick, 1987) over the last decade. To the contrary, Dilsad Ahmed (2013) showed that active students perform better at health-related physical fitness (HRPF) activities when compared to inactive students. Physical inactivity is becoming a major concern globally (World Health Organization, 2004).

Self-esteem has been defined as either a favorable or unfavorable attitude toward oneself and functions as an affective evaluation of the self (Rosenberg, 1965). Thus, high self-esteem includes a positive self-evaluation (McAuley et al., 2005; McAuley & Rudolph, 1995; Sonstroem & Morgan, 1989) which makes a person feel good (Sonstroem & Morgan, 1989) and result in a perception of well-being (Rosenberg, 1965) about his own qualities (Blascovich & Tomaka, 1991; Harter, 1993; Tesser & Campbell, 1983). In this regard, self-esteem is often regarded as a situation specific type of self-confidence (Weinberg & Gould, 2015) and therefore informed the way a person evaluate their own achievements strongly. A number of motivational theories have been cited based on domain-specific self-evaluations pertaining to achievement-related behavior especially grounded in physical activity and how it perform a crucial role increasing such behavior (Deci & Ryan, 1985; Harter, 1978; Nicholls, 1989). There is a common agreement among theories that perceived competence is a positive predictor of intrinsic motivation (Bandura, 1986; Deci & Ryan, 2000; Harter & Connel, 1984) which is an essential factor for motivating people to exercise. This is supported by research showing that self-esteem is associated with motivated behavior in physical activity settings (Biddle et al., 1993; Goudas, Biddle, & Fox, 1994) and with physical activity behavior (Hagger, Ashford, & Stambulova, 1998; Tremblay, Inman, & Willms, 2000; Welk & Eklund, 2005). A number of studies have highlighted that participation in games and sports leads to higher levels of self-esteem than for those who do not participate in physical activity (Mahoney, 1991). Research confirmed the importance of building self-esteem and its significant relationship with quality of life (Fox, 1998, 2000), and increase the perceived physical value of a person contributing to enhanced self-esteem (Biddle, 1995) and goal orientation (Duda, 1989). For this reason, improving self-esteem has become a priority in some Physical Education programs (Roberts, Kleiber, & Duda, 1981). Self-esteem showed a significant relationship with motivated behaviors (Biddle, 1997; Goudas et al., 1994) and physical activity (Crocker, Eklund, & Kowalski, 2000; Tremblay et al., 2011), indicating that high self-esteem may be an important outcome of performance in school (Baumeister, Campbell, Krueger, & Vohs, 2003) and associated with choice, persistence, and success in a broad range of achievement and health-related behaviors (Fox, 2000). Thus, participation in physical activity has demonstrated self-esteem's multifaceted effects during development and has explained the nature of its hierarchical conceptualization (Elavsky, 2010; Fox & Corbin, 1989; Marsh & Shavelson, 1985). It is therefore expected that active adolescent students will display higher self-esteem than inactive adolescent students.

Kavussanu and Harnisch (2000) investigated the relationships between global self-esteem and goal orientation in athletes. They found that high task-oriented children reported significantly higher self-esteem than children with low task orientation. It seems to suggest that high task orientation has a moderating effect on self-esteem. The research of Hein and Hagger (2007) invited 634 high school students aged 11–15 years to answer a question of "whether autonomous motives would mediate the influence of achievement goal orientation on global self-esteem?". The findings suggest that PA interventions with targeting focus on autonomous motives in context to PA found more with encouraging results in enhancing the level of self-esteem among young people.

In India, still physical education is not regarded as a compulsory subject. Schools which do have physical education, their level of standard is much lower than the recommendation provide by the UNESCO guidelines (Year). As a result, awareness toward doing physical activity is much lower than expectation, evidently non-communicable diseases becoming more prevalent in the country. In connection to this fact an interesting finding come into focus from the research of Yu, Chan, Cheng, Sung, and Hau (2006) when they investigate a group of 333 Chinese pre-adolescents (aged 8–12) in Hong Kong. As, in Chinese culture, physical activity is often discoursed as "drains energy and affects academic concentration" on the contrary academic success regarded as only indicator of success. This study investigated the relations among academic achievement, self-esteem, school conduct, and PA level. Interestingly, regression analyses showed that only academically high-achieving boys and physically active boys had higher self-esteem. Despite the usefulness of such surveys few researches have investigated in India seeing the effect of physical activity on self-esteem and goal orientation. Hence, the present study attempts to explore the role of self-esteem and goal orientation and HRPF between active and inactive students. Active students were defined as those who regularly participate in recreational activities, games, sports, and competition, while inactive students are those that do not have regular habit in the participation of physical activity or only do so occasionally when forced by their parents or teachers and consequently withdraw when they are to participate in any recreational or physical activities (Dilsad Ahmed, 2013).

The theoretical framework of goal orientation has been used extensively in the fields of sport and exercise psychology, explaining the individual differences that motivate peoples' behavior. Goal orientation comprises two important goal perspectives, namely task- and ego orientation (Duda, 1989). Task orientation is subjective in nature and self-referenced with a specific focus on an individual's exertion of hard work and task mastery as primary motivation for participation, while in contrast, ego orientation is focused on individuals' comparison of their performance to others as primary motivation for participation and is thus also considered normatively challenging (Duda, 1989). Numerous studies have found that participation in physical activity enhances individual goal orientation. Both task- and ego orientation are regarded as types of intrinsic motivation that determine the behavior of a person and are regarded as important in the understanding of individuals' engagement in activities (Duda, 1992). There is a common agreement among a number of theories, that perceived competence is a positive predictor of intrinsic motivation (Bandura, 1986; Deci & Ryan, 2000; Harter & Connel, 1984) which is an essential factor for motivating people to exercise. Both task- and ego orientation relate to such perceptions of ability (Duda, 1992). Students who perceive themselves as highly competent tend to look for challenges and self-determination in learning contexts and are expected to present with high task and/or ego orientation, while students with low task and/or ego orientation are expected not to engage in such activities, e.g. physical activity.

Therefore, based on the different research findings, it was also expected that active students would have greater goal orientation than inactive students. Health-related physical fitness is dynamic and involves components of physical fitness related to health status (Warburton et al., 2006). Its dynamic nature is primarily influenced by individual exercise habits, and its parameters are attributed to changes in response to appropriate physical activity, conditioning and exercise programs such as strength, muscular endurance, aerobic endurance, musculoskeletal fitness, and metabolism (Warburton et al., 2006) and flexibility. Therefore, it was expected that active adolescent students would have better health-related physical fitness levels than inactive students.

2. Methods

2.1. Ethical considerations

The study was approved by the Degree College of Physical Education DCPE, permanently affiliated to SGB Amravati University, Maharashtra, India. All students participated in the study voluntarily, and the researchers received consent from the college authority as well as from the participants to conduct the study.

2.2. Participants

Upon receiving formal permission, data were collected from 200 active ($n = 100$) and inactive ($n = 100$) school going adolescent male students. Students were categorized in the 'active' group when they met one of these conditions: regularly took part in games and sports, voluntarily participated in training or conditioning programs, participated in school games and tournaments. Students were categorized into the 'inactive' group when they did not meet any of the conditions above (Dilsad Ahmed, 2013). These children required motivation from their parents and teachers to engage in some form of physical activity. According to the WHO, adolescents range between 10 and 19 years of age. The age of the participants ranged from 11 to 17 years, with a mean age of 13.40 ± 1.64 years for the Active students and 13.18 ± 1.40 years for the inactive students. The study was only delimited by the parental reported activity and behaviors for active and inactive adolescent male students.

2.3. Data collection

Data was collected during the annual school summer camp in Amravati in the northern part of Maharashtra, India. The summer camp hosts adolescent students, at the end of their academic year after their final examination. The camp accommodates all categories of students regardless of activity or gender. During camp, adolescents are grouped according to their liking of games and sports (such as cricket, football, basketball, swimming, and karate) under specialized coaches. The duration of the camp was one month.

3. Measuring instruments

3.1. Demographics information

Data collection included demographic information of the participants that was provided by the camp registration office where parents had submitted students' personal particulars such as gender, age, diet, interest, and level of participation in activity/sport, number of years they were practicing and their health certificate. Students were also asked to report the number of hours they spent in sedentary activity on Sundays (in India, Sunday is the official weekly holiday) and on other days of the week. Sedentary activities were defined as watching TV, surfing the internet, playing video games, reading, chatting with friends, sleeping, etc. (Kansal, 1996). Categorization of the active and inactive students (as defined above) was verified in accordance with the physical education teachers' and sports coaches' experience of the students at the camp. Thus, data collection was conducted on the first day of the third week at camp, so that the coaches were able to recognize the students' physical fitness levels and work capacity. Due to the daily weather conditions (temperature was recorded as between 39 and 41°C during the time) data collection was conducted in the morning only. The students were instructed to complete the self-esteem and goal orientation scales with reference to their main physical activity.

3.2. Self esteem

The Rosenberg Self-Esteem Questionnaire (Rosenberg, 1965) is a widely accepted10-item measure of global self-esteem. It assesses individual self-worth in comparison with others using statements that reflect both low and high self-esteem by asking respondents to reflect on their current feelings. The 10 items are scored on a four-point Likert scale with Strongly Agree = 3, Agree = 2, Disagree = 1, and Strongly Disagree = 0. Items 3, 5, 8, 9, and10 are reverse scored. Five of the items refer to positive attributes (e.g. "On the whole, I am satisfied with myself," "I feel that I have a number of good qualities"), whereas five items relate to negative self-valuations (e.g. "At times, I think I am no good at all," "I feel I do not have much to be proud of"). The scale ranges from 0 to 30, with 30 indicating the highest score possible. Its psychometric properties reflect high reliability of 0.80, with an internal consistency that ranges from 0.77 to 0.88 and test–retest reliability that ranges from 0.82 to 0.85.

3.3. Goal orientation

The Task and Ego Orientation in Sport Questionnaire (TEOSQ) developed by Duda and Whitehead (1998), was used to assess the task- and ego achievement goal orientations of the participants. The TEOSQ use a 5-point Likert scale, with 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Neither Agree nor Disagree," 4 = "Agree," and 5 = "Strongly Agree." The questionnaire has been validated and extensively used in diverse samples including secondary school students (adolescents) (Goudas et al., 1994). The TEOSQ is a 13-item questionnaire with two subscales for which seven items measure task orientation and six items measure ego orientation. The total score reflects total goal orientation.

3.4. Health-related physical fitness components

Health-related physical fitness was measured using five test items that were designed to measure upper body strength, muscular endurance, aerobic endurance, and flexibility (Kansal, 1996; Phillip & Hornak, 1979).

Muscular strength, specifically upper body strength, was measured with chin-ups performed on a horizontal bar. One point was awarded for a correct chin-up, while any faulty performance was not counted. Nonstop chin-up performance was recorded only for the record. Muscular endurance was measured with bent-knee sit-ups, and the number of exact sit-ups performed by the pupil in 60 s was recorded.

Cardiorespiratory endurance refers to the maximal function and endurance of the cardiorespiratory system and was measured using a 12-min run and walk test. The participants were requested to stand at the starting line of the 400 meter track, and instructed to run or walked individually or in groups. They were paired with partners who relayed their times, and the participants were encouraged to pace themselves. They were also dressed in numbered t-shirts. As each group ran, they were timed, and when the whistle was blown, the students were instructed to stop at the place wherever they were. The test was scored based on the number of laps each student completed during the stipulated time of 12 min (Kansal, 1996).

Flexibility was measured through trunk flexion using the sit and reach test. Reaches that approached the measurement mark were recorded as negative, and reaches beyond 15 inches were scored positive (Kansal, 1996).

Portable electronic weighing machine was used to measure the weight of the students. Body composition was measured with percentage body fat (Davidson et al., 2011).

The percentage of each participant's body fat was calculated through skinfold measurement taken at four selected sites, namely, the biceps, triceps, subscapular, and suprailiac, using a Harpendon Skinfold Caliper. The caliper jaws are applied 1 cm from the finger holding the skinfold, and the thickness was recorded to the nearest 0.1 cm. The percentage of body fat was recorded in kilograms. After measuring the skinfold thickness of the above-mentioned four sites, the values were totaled, in reference to the conversion by Durnin and Wormesly, and individual fat percentages were obtained. Fat weight was calculated with the formula: (Fat weight = percentage of body fat × total body weight/100) and the lean body mass (fat-free weight) was calculated using the formula: (LBM = Total body weight - fat weight). Sedentary behavior was characterized by behaviors that require little energy expenditure and that occurred in a sitting or reclined position. Further, student's total sedentary activities were measured by the number of hours involved or classified as either reading, playing quietly, watching television (TV), using the computer, or playing video games, etc. (Tremblay, 2012).

4. Results

While inactive student did not report participation in any of the activities as discussed for categorization above, active students have been participating in their preferred physical activity/sport on average (4.16 ± 1.66) years. The results of the participants' self-esteem, task orientation, and ego orientation scores are presented in Table 1. When considering the mean score, active participants showed higher self-esteem and task orientation than inactive participants, while inactive participants showed higher ego orientation than active students. Independent samples *t*-tests were conducted to compare the self-esteem, task orientation, and ego orientation scores for the active and inactive male adolescent school students. There was a significant difference in the self-esteem scores for active students ($M = 21.29 \pm 3.83$) and inactive students ($M = 16.60 \pm 3.17$; $t(198) = 9.42$, $p < 0.05$, two-tailed). The magnitude in the difference between the means (MD = 4.69, 95% CI) was large (eta squared = 0.31). This implies that active students have significantly higher self-esteem than inactive students. A significant difference was further found in the task orientation scores for active students ($M = 21.86 \pm 5.46$) and inactive students ($M = 17.19 \pm 4.10$; $t(198) = 6.83$, $p < 0.05$). The magnitude in the difference between the means (MD = 4.67, 95% CI) was large (eta

Table 1. Mean differences in self-esteem and goal orientation between the active and inactive students

Variables	Groups	Mean	SD	MD	*t*	Sign. (*p*-value)	Eta squared
Self esteem	Active	21.29	3.83	4.69	9.42*	0.000	0.31
	Inactive	16.60	3.17				
Task orientation	Active	21.86	5.46	4.67	6.83*	0.000	0.19
	Inactive	17.19	4.10				
Ego orientation	Active	16.77	3.36	−3.96	1.78	0.000	0.02
	Inactive	20.73	4.44				

Notes: $n = 200$, Tab. $t_{0.05}$ (198) = 1.96.

*Significant at 0.05 level.

Table 2. Sedentary activities among active and inactive adolescent students

Variables	Groups	Mean	SD	MD	*t*	Sign. (*p*-value)	Eta squared
Sedentary activities on other days (SAOD)	Active	1.61	0.863	2.51	18.49*	0.000	0.62
	Inactive	4.12	1.04				
Sedentary activities on Sundays (SAS)	Active	1.99	0.979	2.89	21.46*	0.000	0.67
	Inactive	4.88	0.924				

Notes: $n = 200$, Tab. $t_{0.05}$ (198) = 1.96.
*Significant at 0.05 level.

squared = 0.19). This implies that active students have significantly higher task orientation than inactive students. Further, a significant difference was found in the ego orientation score for active ($M = 16.77 \pm 3.36$) and inactive students ($M = 20.73 \pm 4.44$, $t(198) = 1.78$, $p < 0.05$). The magnitude in the difference between the means (MD = −3.96, 95% CI) was moderate (eta squared = 0.02). This implies that inactive students have significantly higher ego orientation than active students.

The results for the sedentary activity levels of students are presented in Table 2. When considering the mean score, inactive students are involved with more sedentary activities both during other week days (SAOD) and on Sundays (SAS). Independent samples *t*-tests were conducted to compare the sedentary activity levels on weekdays and on Sundays for the active and inactive students. The sedentary activity levels of inactive students ($M = 4.12 \pm 1.04$) was significantly higher than active students ($M = 1.61 \pm 0.863$; $t(198) = 18.49$, $p < 0.05$, two-tailed) for SAOD. The magnitude in the difference between the means (*MD* = 2.51, 95% CI) was large (eta squared = 0.62). Similarly, the sedentary activity levels of inactive students ($M = 4.88 \pm 0.924$) was significantly higher than active students ($M = 1.99 \pm 0.979$; $t(198) = 21.46$, $p < 0.05$, two-tailed) for SAS. The magnitude in the difference between the means (MD = 2.89, 95% CI) was large (eta squared = 0.67). The results imply that inactive students participate in significantly more sedentary activities both during the week and on Sundays.

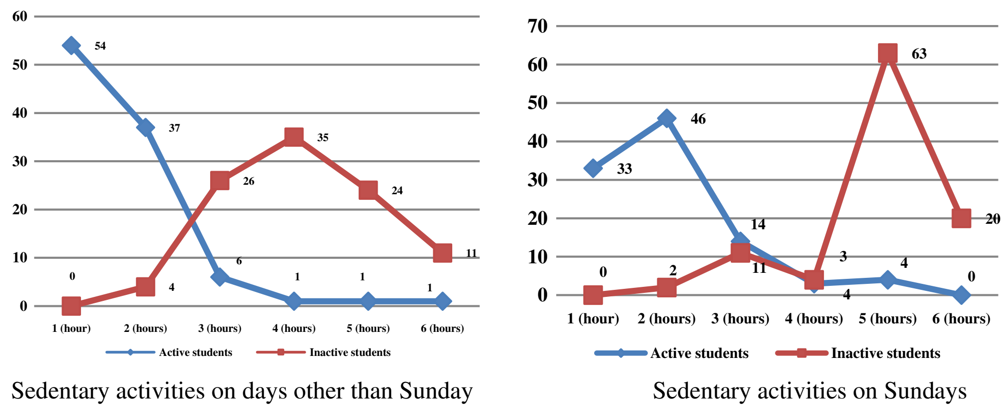
The number of sedentary activities on weekdays and on Sundays is presented in Table 3. The cross-tabulation indicates that the number of hours spent on sedentary activities steadily decrease for the active group of participants, while it steadily increases for the inactive group of participants for both weekdays and on Sundays. Most active students have only one to two hours on weekdays and one to three hours on Sundays for sedentary activity, while most inactive students have three to five hours on weekdays and five to six hours on Sundays for sedentary activity. A chi-square test for independence indicated a significant association for active/inactive students and the hours spent on sedentary activity on weekdays, χ^2 ($n = 200$) = 396.97, $p < 0.05$. While none of the inactive

Table 3. Total number of hours spent on sedentary activities by the active and inactive adolescent students

Variables	Groups	1 h	2 h	3 h	4 h	5 h	6 h	Total
Sedentary activities on days other than Sunday	Active	54	37	6	1	1	1	100
		(54%)	(37%)	(6%)	(1%)	(1%)	(1%)	(100%)
	Inactive	0	4	26	35	24	11	100
		(0%)	(4%)	(26%)	(35%)	(24%)	(11%)	(100%)
Sedentary activities on Sundays	Active	33	46	14	3	4	0	100
		(33%)	(46%)	(14%)	(3%)	(4%)	(0%)	(100%)
	Inactive	0	2	10	4	64	20	100
		(0%)	(2%)	(10%)	(4%)	(64%)	(20%)	(100%)
Total	Both	87	89	56	43	93	32	400
		(21.8%)	(22.2%)	(14%)	(10.8%)	(23.2%)	(8%)	(100%)

Note: Percentage appears in parentheses below counts.

Figure 1. Graphical depiction of sedentary activities between the active and inactive students.



adolescents spent 1 h on sedentary activities on both weekdays and Sundays, 54% of the active adolescents have only one hour of sedentary activities on weekdays and 33% on Sundays, respectively. Eleven percent of the inactive cohort had up to 6 h of sedentary activities during weekdays and 20% on Sundays, respectively, while none of the active students had 6 h of sedentary activity on both weekdays or Sundays. The graphic illustration in Figure 1 shows the inverse tendency of the number of hours spent on sedentary activities of the two groups.

The results for the health-related physical fitness tests are presented in Table 4. These tests include Body Mass, muscular strength, muscular endurance, cardiorespiratory endurance, flexibility, body composition (Body fat weight), and body composition (Lean body weight) of the active and inactive male adolescent school students.

Independent samples *t*-tests were conducted to compare all the health-related physical fitness measures of the active and inactive students. Significant differences were found on all four performance measures, with the active students outperforming the inactive students on all tests. These included muscular strength (active students $M = 4.27 \pm 2.40$, inactive students $M = 1.51 \pm 2.79$; $t = 5.19$, $p < 0.05$), muscular endurance (active students $M = 20.73 \pm 4.44$, inactive students

Table 4. Mean differences in health-related physical fitness between the active and inactive students

Variables	Group	Mean	SD	MD	t	Sign. (*p*-value)	Eta squared
Muscular strength (chin-ups)	Active	4.27	2.40	1.48	*5.19**	0.000	0.12
	Inactive	2.79	1.51				
Muscular endurance (bent-knee sit-ups)	Active	26.65	7.89	7.45	*7.03**	0.000	0.19
	Inactive	19.20	7.05				
Cardiorespiratory endurance (12-min run/walk)	Active	2,599.15	679.28	328.20	*3.50**	0.001	0.06
	Inactive	2,270.95	643.82				
Flexibility (sit and reach test)	Active	17.85	6.96	3.72	*4.10**	0.000	0.08
	Inactive	14.13	5.81				
Weight	Active	52.58	5.08	3.98	3.93*	0.000	0.67
	Inactive	56.56	8.75				
Body composition (body fat weight)	Active	11.17	3.06	3.13	*5.92**	0.000	0.15
	Inactive	14.30	4.30				
Body composition (lean body weight)	Active	45.55	5.72	4.05	*4.91**	0.000	0.11
	Inactive	41.49	5.95				

Notes: $n = 200$, Tab. $t_{0.05}$ (198) = 1.96.
*Significant at 0.05 level.

$M = 19.20 \pm 7.05$; $t = 7.03$, $p < 0.05$), cardiorespiratory endurance (active students $M = 2{,}599.15 \pm 679.28$, inactive students $M = 2{,}270.95 \pm 643.82$; $t = 3.50$, $p < 0.05$), and flexibility (active students $M = 17.85 \pm 6.96$, inactive students $M = 14.13 \pm 5.81$; $t = 4.10$, $p < 0.05$). Significant differences were also found for the weight and body composition measures. The inactive students ($M = 56.56 \pm 8.75$) reported significantly higher body weight than the active students ($M = 5.08 \pm 5.08$; $t = 3.93$, $p < 0.05$). Inactive students ($M = 14.30 \pm 4.30$) reported significantly higher Body composition (*Body fat weight*) than the active students ($M = 11.17 \pm 3.06$; $t = 5.92$, $p < 0.05$). However, to the contrary, active students ($M = 45.55 \pm 5.72$) reported significantly higher body composition (*Lean body weight*) than the inactive students ($M = 41.49 \pm 5.95$; $t = 4.91$, $p < 0.05$).

5. Discussion

An active lifestyle enhances the psychosocial characteristics of a person (e.g. beliefs, values, self-esteem, motivation, and goals), which aids in an individual's decision to be active (King, 1991; King et al., 1992). People are currently more health conscious than two decades ago (Steffen et al., 2006), however, it appears that despite the wide recognition of the physical and psychological benefits of regular physical activity, half of American adults are still not physically active (Centers for Disease Control & Prevention, 2005). As a consequence, obesity, physical inactivity, and inactivity-related diseases are continuing to affect individuals, families, and societies. Based on the available scientific evidence and the importance of early participation in physical activity as adolescents to promote a healthy and active adult life, this study was designed to measure the self-esteem, goal orientation, and health-related physical components of a group of active and inactive students in India. The study found that the self-esteem of the active students was significantly higher than that of the inactive students. This is well supported by other research findings in the same context (Crocker et al., 2000; Duda, 1989; Gruber, 1986; Hein & Hagger, 2007; Mahoney, 1991; Sonstroem, Harlow, Gemma, & Osborne, 1991; Sonstroem, Harlow, & Josephs, 1994; Sonstroem, Speliotis, & Fava, 1992; Tremblay, Colley, Saunders, Healy, & Owen, 2010). The result is consistent with the research findings of Tremblay et al. (2010), which was conducted on 6th-grade students ($n = 6{,}923$) from different elementary schools in Canada. The study revealed that both females and males who were more physically active had considerably higher self-esteem than inactive students. Another study by Frost and McKelvie (2005) on 127 male and female students from elementary-, high school, and university found that the high exercisers showed higher self-esteem regardless of exercise activity and that their self-esteem was robust across sex and age for all participants. Goal orientation in this study differed significantly between active and inactive students. Active students showed higher task orientation, while inactive students showed higher ego orientation. In a study of Spanish physical education students, Moreno (2005) found higher ego orientation and task orientation among exercisers than the non-exercisers. Similarly, in a Serbian sample of active adolescents, Vesković and Milanović (2011) found high levels of positive affective outcomes and higher levels of task orientation than ego orientation. When both self-esteem and goal orientation are considered, the results suggest that active students present with high self-esteem and high task orientation, while inactive students present with low self-esteem and high ego orientation. This might be an indication that low self-esteem and high ego orientation serve to contribute and maintain inactivity among adolescent male students. The present study also aimed at comparing the health-related fitness components of physically active and inactive adolescent students. The study found that there were significant differences in all parameters between the two groups, with active students presenting with significantly higher health-related fitness (muscle strength, muscle endurance, cardiorespiratory endurance, and flexibility) than inactive students, while inactive students were significantly worse with regard to body composition than active students.

The active group in this study had greater muscular strength than did the inactive group, consistent with the findings on muscular strength among school children (Faigenbaum & Mediate, 2006; Flanagan et al., 2002). Although muscular strength depends on gender, exercise intensity, and the introduction of progressive overload (Rengasamy, 2012), properly structured strength training among adolescents according to the FITT (frequency, intensity, time, and type) principle is safe and the result of trainable variables such as the strength and endurance of the shoulders and forearms and maximum grip strength, rather than anthropometric characteristics (Dilsad Ahmed, 2013; Giles, Rhodes, & Taunton, 2006; Mermier, Janot, Parker, & Swan, 2000; Rengasamy, 2012), and participation in physical activity improves upper body strength. Muscular endurance was significantly higher for the active students than for their counterparts. A study by Moore, Uhl, and Kibler (2013) showed positive effects from a preseason training program on shoulder muscle endurance in a study of adolescent baseball players. It was also found that the active students in this study showed significantly higher levels of cardiorespiratory endurance than did the inactive students. This is consistent with findings of Tremblay et al. (2011) and the Physical Activity Guidelines Advisory Committee (2008), that participation in health-enhancing physical activity results in improved cardiovascular and metabolic fitness as well as enhanced bone health. Previous research has reported that cardiorespiratory endurance is inversely correlated with weight status and directly correlated with physical activity levels (Aarnio, Winter, Kujala, & Kaprio, 2002; Deforche et al., 2003; Sveinsson, Arngrimsson, & Johannsson, 2009; Tremblay et al., 2011; World Health Organization, 2004). The active students had higher flexibility than did the inactive students, possibly because their regular participation in physical activities might have increased their joint mobility and synovial fluid secretion, so that their joints moved more freely, their muscles stretched more, and their ligaments and tendons were more flexible. In contrast, inactive students' joints became more rigid owing to their lack of participation in sports and physical activities (Dilsad Ahmed, 2013; Wilmore, 1977). Regarding body composition, individuals who have higher BMI values, have excess body fat that acts as an additional load, thus impairing their performances. In this study, the inactive students weighed on average much more than the active students. Regardless of activity, these students were lower in weight than Flemish (67 kg) and American (75 kg) adolescents and higher than those of Omani (55.01 kg) and Taiwanese (52.1 kg) adolescents (Huang & Malina, 2002; Khoo & Al-Shamli, 2012). There was a significant difference in body fat weight between the active and inactive students. The reason could be that regular exercise leads to a reduction in the size of fat cells, that is, when one performs physical activity regularly for a long period, the stored fat will be burned, resulting in decreasing amounts of adipose tissue. The findings of this study are in line with those obtained by Warburton, Gledhill, and Quinney (2001); Seidell et al. (1991) and Dilsad Ahmed (2013). In addition, the lean body weight scores of the active students were significantly higher than those of the inactive group. Participation in physical activities results in an increased number and diameter of myofibrils. Fat-free weight (FFW) is considered to be positively related to athletic performance in certain events because a large FFW component indicates greater muscle mass and thus greater force potential. Athletes generally have higher FFWs than do non-athletes. Some studies have concluded that reduced adiposity can occur while maintaining or even increasing FFW in children (Lazzer, Molin, Stramare, Facchini, & Francescato, 2008; Zorba, Cengiz, & Karacabey, 2011). Notably, decreased FFM can result in subsequent reductions in basal metabolic rates, which in turn has a negative impact on body weight (Dao, Frelut, Peres, Bourgeois, & Navarro, 2004; Wong et al., 2008). In some of the previous studies conducted among Indian populations, it was found that physically inactive participants had lower physical fitness (PFI) scores (Bandyopdhyay & Chattopadhyay, 1981; Bannerjee & Chatterjee, 1983).

6. Conclusion

In conclusion, adolescents who engage in regular physical activity have high self-esteem and task orientation, whereas inactive adolescents possess lower levels of self-esteem and higher levels of ego orientation, which could be contributing to an inactive lifestyle. Adolescents with high involvement in physical activity showed proportionally healthy body weights and body composition, less body fat and higher levels of cardiorespiratory fitness, flexibility, and greater muscular strength and endurance, which is associated with enhanced functional capacity.

7. Recommendation

The growing obesity epidemic causes fatal health disaster across all age categories. Eventually, it carries a huge economic burden on the countries budget as well as on the personal income of each individual. The clustering of risk factors is a well-documented phenomenon due to inactivity and children prone to high risk, especially with non-communicable diseases. Though, the current study has been conducted on male students resulted with higher mean level of the active students on the factors of self-esteem, task orientation, and HRFP in comparison to their counterparts of inactive students. It is well evident from many studies that females have less interested in doing PA than male students. It would be pertinent to envisage why so many children, especially girls, are inactive. This is one of the several questions that require further study. It may be important to note that girls are usually in disadvantage situation with more than one risk factor. The environmental, social, and psychological reasons that underlie such clustering needs are yet to be identified. Therefore, pursuing a similar study on female active and inactive students will be highly recommended. Additionally, it has been well documented that knowledge appears to help the increase of initiation in activities and adherence to its corresponding behavior. Therefore, school authorities should embed firmly physical literacy classes to update students with latest knowledge on health benefits and explore student with knowledge on sport and PA. It is interesting to learn in this study that in order to alleviate the growing childhood obesity, it is puzzling why so little attention has been given to HRF? Hence, to determine the short- and long-term effects of HRF knowledge on PA behavior establishment for students would be crucial.

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Author details
Md. Dilsad Ahmed[1]
E-mail: dilshadsportspsychology@gmail.com
Walter King Yan Ho[1]
E-mail: walterdilsad@gmail.com
Rudolph Leon Van Niekerk[2]
E-mail: leonvn@ufh.ac.za
Tony Morris[3]
E-mail: Tony.Morris@vu.edu.au
M. Elayaraja[4]
E-mail: elaya.cricket@gmail.com
Ki-Cheon Lee[5]
E-mail: kclee@korea.ac.kr
Edel Randles[6]
E-mail: Edel.Randles@staff.ittralee.ie
[1] Faculty of Education, University of Macau, Macau, China.
[2] Department of Human Movement Studies, University of Fort Hare, Alice, South Africa.
[3] College of Sport & Exercise Science, Victoria University, Melbourne, Australia.
[4] Department of Physical Education and Sports, Pondicherry University, Pondicherry, India.
[5] Department of Sports Studies, Korea University, Seoul, South Korea.
[6] Department of Health & Leisure Studies, Institute of Technology Tralee, Tralee, Ireland.

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References

Aarnio, M., Winter, T., Kujala, U., & Kaprio, J. (2002). Associations of health related behaviour, social relationships, and health status with persistent physical activity and inactivity: A study of Finnish adolescent twins. *British Journal of Sports Medicine, 36*, 360–364. doi:10.1136/bjsm.36.5.360

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Sage.

Bandyopdhyay, B., & Chattopadhyay, H. (1981). Assessment of physical fitness of sedentary and physically active male college students by a modified Harvard step test. *Ergonomics, 24*, 15–20. doi:10.1080/00140138108924826

Bannerjee, P. K., & Chatterjee, S. (1983). Harvard step test as measure of physical fitness in adolescent boys. *Indian Journal of Medical Research, 79*, 413–417.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*, 1–44. https://doi.org/ 10.1111/1529-1006.01431

Biddle, S. J. (1997). Cognitive theories of motivation and the physical self. In K. R. Fox (Ed.), *The physical self: From motivation to well-being* (pp. 59–82). Champaign, IL: Human Kinetics Publishing House.

Biddle, S. J. H. (1995). Exercise motivation across the life span. In S. J. H. Biddle (Ed.), *European perspectives on exercise and sport psychology* (pp. 3–25). Champaign, IL: Human Kinetics Publishing House.

Biddle, S., Page, A., Ashford, B., Jennings, D., Brooke, R., & Fox, K. (1993). Assessment of children's physical self-perceptions. *International Journal of Adolescence and Youth, 4*, 93–109. https://doi.org/10.1080/02673843.1993.9747728

Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (Vol. I). San Diego, CA: Academic Press.

Bouchard, C., Blair, S. N., & Haskell, W. L. (Eds.). (2007). *Physical activity and health*. Champaign, IL: Human Kinetics Publishing House.

Centers for Disease Control and Prevention. (2005). Trends in leisure-time physical inactivity by age, sex, and race/ethnicity—United States, 1994–2004. *Morbidity and Mortality Weekly Report, 54*, 991–994.

Crocker, P. R., Eklund, R. C., & Kowalski, K. C. (2000). Children's physical activity and physical self-perceptions. *Journal of Sports Sciences, 18*, 383–394. https://doi.org/10.1080/02640410050074313

Dao, H. H., Frelut, M. L., Peres, G., Bourgeois, P., & Navarro, J. (2004). Effects of a multidisciplinary weight loss intervention on anaerobic and aerobic aptitudes in severely obese adolescents. *International Journal of*

Obesity, 28, 870–878. doi:10.1038/sj.ijo.0802535
Davidson, L. E., Wang, J., Thornton, J. C., Kaleem, Z., Silva-Palacios, F., Pierson, R. N., … Gallagher, D. (2011). Predicting fat percent by skinfolds in racial groups: Durnin and Womersley revisited. *Medicine and Science in Sports and Exercise, 43*, 542–549. doi:10.1249/MSS.0b013e3181ef3f07
Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum. doi:10.1007/978-1-4899-2271-7
Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268. https://doi.org/10.1207/S15327965PLI1104_01
Deforche, B., Lefevre, J., De Bourdeaudhuij, I., Hills, A. P., Duquet, W., & Bouckaert, J. (2003). Physical fitness and physical activity in obese and nonobese flemish youth. *Obesity Research, 11*, 434–441. https://doi.org/10.1038/oby.2003.59
Dilsad Ahmed, Md. (2013). Comparative study of well-being, thought control, academic achievement and health related physical fitness of active and inactive adolescent School students. *International Leisure Review, 2*, 135–156.
Donnelly, P., (with Darnell, S., Wells, S., & Coakley, J.). (2007). The use of sport to foster child and youth development and education. In *Sport for Development and Peace, International Working Group (SDP/IWG): Literature reviews on Sport for Development and Peace* (pp. 7–47). Toronto: University of Toronto, Faculty of Physical Education and Health.
Duda, J. L. (1989). Goal perspectives, participation and persistence in sport. *International Journal of Sport Psychology, 20*, 42–56.
Duda, J. L. (1992). Motivation in sport settings: A goal perspective approach. In G. Robberts (Ed.), *Motivation in sport and exercise* (pp. 57–92). Champaign, IL: Human Kinetics.
Duda, J. L., & Whitehead, J. (1998). Measurement of goal perspectives in the physical domain. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 21–48). Morgantown, WV: Fitness Information Technology Inc.
Elavsky, S. (2010). Longitudinal examination of the exercise and self-esteem model in middle-aged women. *Journal of Sport and Exercise Psychology, 32*, 862–880. https://doi.org/10.1123/jsep.32.6.862
Faigenbaum, A. D., & Mediate, P. (2006). Effects of medicine ball training on fitness performance of high-school physical education students. *Physics Education, 63*, 160–168.
Flanagan, S. P., Laubach, L. L., De Marco, G. M., Alvarze, C., Borchers, S., Dressman, E., … Weseli, D. (2002). Effects of two different strength training modes on motor performance in children. *Research Quarterly for Exercise and Sport, 73*, 340–344. https://doi.org/10.1080/02701367.2002.10609029
Fox, K. R. (1998). Advances in the measurement of the physical self. In J. Duda (Ed.), *Advances in sport and exercise psychology* (pp. 295–310). Morgantown, WV: Fitness Information Technology Inc.
Fox, K. R. (2000). Self-esteem, self-perceptions and exercise. *International Journal of Sport Psychology, 31*, 228–240.
Fox, K. R., & Corbin, C. B. (1989). The physical self-perception profile: Development and preliminary validation. *Journal of Sport and Exercise Psychology, 11*, 408–430. https://doi.org/10.1123/jsep.11.4.408
Frost, J., & McKelvie, S. J. (2005). The relationship of self-esteem and body satisfaction to exercise activity for male and female elementary school, high school, and university students. *Athletic Insight: The Online Journal of Sport Psychology, 7*, 36–49.
Giles, L. V., Rhodes, E. C., & Taunton, J. E. (2006). The physiology of rock climbing. *Sports Medicine, 36*, 529–545. https://doi.org/10.2165/00007256-200636060-00006
Gill, D. L., Chang, Y. K., Murphy, K. J., Holder, K. M., & Etnier, J. L. (2006). Quality of life assessment in physical activity and health promotion. *Medicine and Science in Sports and Exercise, 38*, S370–S371.
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. https://doi.org/10.1111/bjep.1994.64.issue-3
Gruber, J. J. (1986). Physical activity and self-esteem development in children: A meta-analysis. In G. Stull & H. Eckert (Eds.), *Effects of physical activity on children: The academy papers No. 19* (pp. 30–48). Champaign, IL: Human Kinetics Publishing House.
Hagger, M. S., Ashford, B., & Stambulova, N. (1998). Russian and British children's physical self-perceptions and physical activity participation. *Pediatric Exercise Science, 10*, 137–152. https://doi.org/10.1123/pes.10.2.137
Harter, S. (1978). Effectance motivation reconsidered toward a developmental model. *Human Development, 21*, 34–64. https://doi.org/10.1159/000271574
Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. F. Baumeister (Ed.), *Self-esteem* (pp. 87–116). New York, NY: Plenum Press. https://doi.org/10.1007/978-1-4684-8956-9
Harter, S., & Connel, J. (1984). A comparison of alternative models of the relationships between academic achievement and children's perceptions of competence, control, and motivational orientation. In J. Nicholls (Ed.), *The development of achievement-related cognitions and behaviors* (pp. 219–250). Greenwich: JAI Press.
Hartmann, D. (2003). Theorizing sport as social intervention: A view from the grassroots. *Quest, 55*, 118–140. https://doi.org/10.1080/00336297.2003.10491795
Hartmann, D., & Depro, B. (2006). Rethinking sports-based community crime prevention: A preliminary analysis of the relationship between midnight basketball and urban crime rates. *Journal of Sport and Social Issues, 30*, 180–196. https://doi.org/10.1177/0193723506286863
Haskell, W. L., Lee, I. M., Pate, R. R., Powell, K. E., Blair, S. N., Franklin, B., … Bauman, A. (2007). Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Circulation, 116*, 1081–1093.
Hein, V., & Hagger, M. S. (2007). Global self-esteem, goal achievement orientations, and self-determined behavioural regulations in a physical education setting. *Journal of Sports Sciences, 25*, 149–159. doi:10.1080/02640410600598315
Huang, Y. C., & Malina, R. M. (2002). Physical activity and health-related physical fitness in Taiwanese adolescents. *Journal of Physiological Anthropology and Applied Human Science, 21*, 11–19. https://doi.org/10.2114/jpa.21.11
Irish Sports Council. (2009). *Lifelong Involvement in Sport and Physical Activity (LISPA) Framework*. Retrieved from http://www.irishsportscouncil.ie/
Jackson, A. S., & Pollock, M. L. (1985). Practical assessment of body composition. *The Physician and Sportsmedicine, 13*, 76–90. https://doi.org/10.1080/00913847.1985.11708790
Kansal, D. K. (1996). *Test and measurement in sports and physical education*. New Delhi: DVS Publication.
Kavussanu, M., & Harnisch, D. L. (2000). Self-esteem in children: Do goal orientations matter? *British Journal of Educational Psychology, 70*, 229–242. https://doi.org/10.1348/000709900158074
Khoo, S., & Al-Shamli, A. K. (2012). Leisure-time physical activity and physical fitness of male adolescents in Oman. *Asia Pacific Journal of Public Health, 24*, 128–135. https://doi.org/10.1177/1010539510366178

Kiess, W., Galler, A., Reich, A., Muller, G., Kapellen, T., Deutscher, J., Raile, K., & Kratzsch, J. (2001). Clinical aspects of obesity in childhood and adolescence. *Obesity Reviews, 2*, 29–36. doi:10.1046/j.1467-789x.2001.00017.x

King, A. C. (1991). Community intervention for promotion of physical activity and fitness. *Exercise and Sport Sciences Reviews, 19*, 211–259.

King, A. C., Blair, S. N., Bild, D. E., Dishman, R. K., Dubbert, P. M., Marcus, B. H., … Yeager, K. K. (1992). Determinants of physical activity and interventions in adults. *Medicine and Science in Sports and Exercise, 24*(Suppl. 6), S221–SS36.

Kohl III, H. W., & Cook, H. D. (2013). *Educating the student body: Taking physical activity and physical education to school*. Washington, DC: The National Academies Press.

Kohl III, H. W., & Hobbs, K. E. (1998). Development of physical activity behaviors among children and adolescents. *Pediatrics, 101*, 549–554.

Lazzer, S., Molin, M., Stramare, D., Facchini, S., & Francescato, M. P. (2008). Effects of an eight-month weight-control program on body composition and lipid oxidation rate during exercise in obese children. *Journal of Endocrinological Investigation, 31*, 509–514. doi:10.1007/BF03346399

Lee, I. -M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., Katzmarzyk, P. T., & Lancet Physical Activity Series Working Group (2012). Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. *The Lancet, 380*, 219–229. https://doi.org/10.1016/S0140-6736(12)61031-9

Mahoney, M. J. (1991). *Human change processes: The scientific foundations of psycho- therapy*. New York, NY: Basic Books.

Marsh, H. W., & Shavelson, R. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107–123. https://doi.org/10.1207/s15326985ep2003_1

Mazzeo, R. S., Cavanagh, P., Evans, W. J., Fiatrone, M., Hagverg, J., McAuley, E., & Starzell, J. (1998). American college of sports medicine position stand. Exercise and physical activity for older adults. *Medicine and Science in Sports and Exercise, 30*, 992–1008.

McAuley, E., Elavsky, S., Motl, R. W., Konopack, J. F., Hu, L., & Marquez, D. X. (2005). Physical activity, self-efficacy, and self-esteem: Longitudinal relationships in older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 60*, P268–P275. https://doi.org/10.1093/geronb/60.5.P268

McAuley, E., & Rudolph, D. (1995). Physical activity, aging, and psychological well-being. *Journal of Aging and Physical Activity, 3*, 67–96. doi:10.1123/japa.3.1.67

Mermier, C. M., Janot, J. M., Parker, D. L., & Swan, J. G. (2000). Physiological and anthropometric determinants of sport climbing performance. *British Journal of Sports Medicine, 34*, 359–365. doi: https://doi.org/10.1136/bjsm.34.5.359

Moore, S. D., Uhl, T. L., & Kibler, W. B. (2013). Improvements in shoulder endurance following a baseball-specific strengthening program in high school baseball players. *Sports Health, 5*, 233–238. https://doi.org/10.1177/1941738113477604

Moreno, J. A. (2005). Goal orientations, motivational climate, discipline and physical self-perception related to the teacher's gender, satisfaction and sport activity of a sample of Spanish adolescent physical education students. *International Journal of Applied of Sports Science, 17*, 57–68.

Nicholls, J. (1989). *The competitive ethos and democratic education*. Cambridge, MA: Harvard University Press.

Paffenbarger, R. S., Hyde, R. T., Wing, A. L., & Hsieh, C. C. (1986). Physical activity, all-cause mortality, and longevity of college alumni. *New England Journal of Medicine, 314*, 605–613. https://doi.org/10.1056/NEJM198603063141003

Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry, 18*, 189–193. doi:10.1097/00001504-200503000-00013

Phillip, A. D., & Hornak, J. E. (1979). *Measurement and evaluation in physical education* (p. 219). New York, NY: Wiley.

Physical Activity Guidelines Advisory Committee. (2008). *Physical activity guidelines advisory committee report*. Washington, DC: US Department of Health and Human Services.

Powell, K. E., & Pratt, M. (1996). Physical activity and health. *BMJ, 313*, 126–127. doi:10.1136/bmj.313.7050.126

Powell, K. E., Thompson, P. D., Caspersen, C. J., & Kendrick, J. S. (1987). Physical activity and the incidence of coronary heart disease. *Annual Review of Public Health, 8*, 253–287. https://doi.org/10.1146/annurev.pu.08.050187.001345

Rengasamy, S. (2012). A physical fitness intervention program within a physical education class on selected health-related fitness among secondary school students. *Procedia Social and Behavioral Sciences, 55*, 1104–1112. doi:10.1016/j.sbspro.2012.09.603

Roberts, G. C., Kleiber, D. A., & Duda, J. L. (1981). An analysis of motivation in children's sport: The role of perceived competence in participation. *Journal of Sport Psychology, 3*, 206–216. doi:10.1123/jsp.3.3.206

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press. doi:10.1515/9781400876136

Rowland, T. W. (2007). Physical activity, fitness, and children. In C. Bouchard, S. N. Blair, & W. L. Haskell (Eds.), *Physical activity and health* (pp. 259–270). Champaign, IL: Human Kinetics Publishing House.

Seidell, J. C., Cigolini, M., Deslypere, J. P., Charzewska, J., Ellsinger, B. M., & Cruz, A. (1991). Body fat distribution in relation to physical activity and smoking habits in 38-year-old European men. The European Fat Distribution Study. *American Journal of Epidemiology, 133*, 257–265. https://doi.org/10.1093/oxfordjournals.aje.a115870

Sonstroem, R. J. (1984). Exercise and self-esteem. *Exercise and Sport Sciences Reviews, 12*, 123–155.

Sonstroem, R. J., Harlow, L. L., Gemma, L. M., & Osborne, S. (1991). Test of structural relationships within a proposed exercise and self-esteem model. *Journal of Personality Assessment, 56*, 348–364. https://doi.org/10.1207/s15327752jpa5602_13

Sonstroem, R. J., Harlow, L. L., & Josephs, L. (1994). Exercise and self-esteem: Validity of model expansion and exercise associations. *Journal of Sport and Exercise Psychology, 16*, 29–42. doi:10.1123/jsep.16.1.29

Sonstroem, R. J., & Morgan, W. P. (1989). Exercise and self-esteem: Rationale and model. *Medicine and Science in Sports and Exercise, 21*, 329–337.

Sonstroem, R. J., Speliotis, E. D., & Fava, J. L. (1992). Perceived physical competence in adults: An examination of the physical self-perception profile. *Journal of Sport and Exercise Psychology, 14*, 207–221. https://doi.org/10.1123/jsep.14.2.207

Steffen, L. M., Arnett, D. K., Blackburn, H., Shah, G., Armstrong, C., Luepker, R. V., & Jacobs, D. R. (2006). Population trends in leisure-time physical activity: Minnesota Heart Survey, 1980-2000. *Medicine and Science in Sports and Exercise, 38*, 1716–1723. doi:10.1249/01.mss.0000227407.83851.ba

Sveinsson, T., Arngrimsson, S. A., & Johannsson, E. (2009). Association between aerobic fitness, body composition, and physical activity in 9- and 15-year-olds. *European Journal of Sport Science, 9*, 141–150. https://doi.org/10.1080/17461390802638149

Tesser, A., & Campbell, J. (1983). Self-definition and self-evaluation maintenance. In J. Suls & A. Greenwald (Eds.), *Psychological perspectives on the self* (Vol. 2, pp. 1–31). Hillsdale, NJ: Lawrence Erlbaum Associates.

Tremblay, M. (2012). Letter to the Editor: Standardized use of the terms sedentary and sedentary behaviours. *Applied Physiology, Nutrition, and Metabolism, 37*, 540–542.

Tremblay, M. S., Colley, R. C., Saunders, T. J., Healy, G. N., & Owen, N. (2010). Physiological and health implications of a sedentary lifestyle. *Applied Physiology, Nutrition, and Metabolism = Physiologie Appliquée, Nutrition et Métabolisme, 35*, 725–740. doi:10.1139/H10-079

Tremblay, M. S., Inman, J. W., & Willms, J. D. (2000). The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. *Pediatric Exercise Science, 12*, 312–323. https://doi.org/10.1123/pes.12.3.312

Tremblay, M. S., LeBlanc, A. G., Kho, M. E., Saunders, T. J., Larouche, R., Colley, R. C., ... Connor Gorber, S. (2011). Systematic review of sedentary behaviour and health indicators in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity, 8*, 98. doi:10.1186/1479-5868-8-98

Vesković, A., & Milanović, M. (2011). Relationship between goal orientation, motivation and positive affective outcomes of young athlete in Serbia. *Facta Universitatis – series: Physical Education and Sport, 9*, 455–464.

Warburton, D. E., Gledhill, N., & Quinney, A. (2001). The effects of changes in musculoskeletal fitness on health. *Canadian Journal of Applied Physiology, 26*, 161–216. doi:10.1139/h01-012

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal, 174*, 801–809. https://doi.org/10.1503/cmaj.051351

Weinberg, R.S., & Gould, D. (2015). *Foundations of sport and exercise psychology* (6th ed.). Champaign, IL: Human Kinetics.

Welk, G. J., & Eklund, B. (2005). Validation of the children and youth physical self perceptions profile for young children. *Psychology of Sport and Exercise, 6*, 51–65. https://doi.org/10.1016/j.psychsport.2003.10.006

Wilmore, J. H. (1977). *Athletic training and physical fitness: Physiological principles and practices of the conditioning process*. Boston, MA: Allyn and Bacon Inc.

Wong, P. C., Chia, M. Y., Tsou, I. Y., Wansaicheong, G. K., Tan, B., Wang, J. C., ... Lim, D. (2008). Effects of a 12-week exercise training programme on aerobic fitness, body composition, blood lipids and C-reactive protein in adolescents with obesity. *Annals of the Academy of Medicine, Singapore, 37*, 286–293.

World Health Organization. (2004). *Global strategy on diet, physical activity and health WHA57.17*. Geneva: Author.

Yu, C. C. W., Chan, S., Cheng, F., Sung, R. Y. T., & Hau, K. T. (2006). Are physical activity and academic performance compatible? *Academic Achievement, Conduct, Physical Activity and Self-Esteem of Hong Kong Chinese Primary School Children, Educational Studies, 32*, 331–341. doi:10.1080/03055690600850016

Zorba, E., Cengiz, T., & Karacabey, K. (2011). Exercise training improves body composition, blood lipid profile and serum insulin levels in obese children. *Journal of Sports Medicine and Physical Fitness, 51*, 664–669.