

The Effect of Physical Activity on Social Development, Self-Esteem and Learning Attitude of Middle School Students

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The purpose of this study was to analyze the effect on social development, self-esteem, and learning attitude of middle school students by constructing a physical activity program called 'rope skipping' and 'Daejanggong'. The 63 middle school students had to perform 10 sessions of Daejanggong and rope skipping. The measures of the study were social development inventory, Rosenberg self-esteem scale and learning attitude inventory. The physical activity programs were organized through expert consultation, prior research, and student interviews to improve research participants' sociality, self-esteem, and learning attitude. The results of this study were as follows: First, physical activity gives a positive impact on the social development of students. Second, physical activity was found to improve middle school students' self-esteem. Third, physical activity improves the learning attitude of students, and the more strenuous activity it was, the higher academic performance was shown. The discussion of how physical activity affects and enhances exercise participation rate on adolescents were presented.

Key words : Social development, Self-esteem, Learning attitude, Middle school students

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Introduction

Middle school students experienced various stresses such as physical change due to sexual maturity, psychological independence from parents, conflict, frustration, psychological burden and pressure due to academic performance and career problems (Torsheim & Wold, 2001). If an infant or adolescent does not have the experience necessary to promote social development, it becomes much more difficult to control the skills and acquire the adaptive abilities necessary to live as a competent member of society (Han, 2012). In other words, when children develop these personal and social skills, they will not only be more successful learners, they will also be more likely to make a more successful transition to adult life (Wright & Craig, 2011). Infants learned the ability to cooperate socially through physical activities, forming a smooth relationship with others (Gehardt, 1973; Gullahue, 2004; Lee, 2014; Seefeldt, 1976).

Evidence suggested that youngsters can develop these personal and social skills through their participation in physical education (Park, 2020). Indeed, there was an increasing interest in physical education's role in preparing youth for the demands and challenges of everyday life (Society of Health & Physical Educators, 2014). Additionally, physical activity participation has been associated to personal (Gould & Carson, 2008; Smoll & Smith, 2002) and social development (Gould & Carson, 2008). According to Goudas and Giannoudis (2008), because physical activity and education were suitable contexts for learning these skills is the transferability of these skills to other domains in life. For example, in physical education and sports children can, under the right pedagogical circumstances (Bailey et al., 2009), learn how to solve problems and to communicate and work as a team, which are skills they will also need in daily life.

Meanwhile, middle school students had a strong intention to form self-identity (Erikson, 1959), so self-esteem was an essential factor in forming self-identity. Self-esteem was the reinforcement of an individual's inner self, and was defined as the degree to which one perceives oneself as valuable, assessing the degree and degree of positive or negative attitudes toward oneself (Rosenberg, 1965). In addition, since self-esteem affected the attitude of recognizing and coping with problems when faced with various problems, it also affected the future successful life such as stress buffering, academic achievement and social adaptation oneself (Rosenberg, 1965).

In particular, Maslow (1943) suggested that if you were not loved or respected by yourself or others, your mental health would inevitably deteriorate, and that self-esteem that could strengthen your inner self was more important than anything else in order to enjoy your own happier and healthier life.

The development of self-esteem was a primary goal because it was considered to be an underlying factor determining student motivation, persistence, and academic success (Yawkley, 1980). Many researchers have reported the powerful relationship that participation in physical activity had with self-esteem (Elavsky, 2010; Gruber, 1986; Wood, Angus, Pretty, Sandercock & Barton, 2013). In addition, physical activity had a positive effect on learning (Kimiecik & Newburg, 2009), self-efficacy (Welch, Hulley & Beauchamp, 2010), positive emotions (Giacobbi, Hausenblas & Frye, 2005), elasticity (Biddle, Mutrie & Gorely, 2015), self-regulation (Oaten & Cheng, 2006), and physiological responses to stress (Von Haaren, Ottenbacher, Muenz, Neumann & Ebner-Priemer, 2016).

There was a belief that despite the various positive effects of physical activity, it had negative effect on academic achievement. Many parents and students believed that spending time during school hours on physical activity inhibited children's chances of success in academic pursuits. Departments of education also maintained that the time and money spent on physical activity might be better spent on academic pursuits (Hanson & McKenzie, 1989). These trends ran contrary to research. The results of several correlational studies conducted on data obtained from large samples of children and adolescents suggested moderate to strong positive associations between the amount of physical activity or participation in physical education and school behavior and academic achievement (Carlson et al., 2008; Roberts et al., 2010). Cross-sectional studies of the relationship between physical activity and academic performance have generally revealed a positive relationship between fitness scores, or participation in athletic programs, and academic success, as gauged by grade point averages, report card results, and IQ scores (Shephard, 1997). Shephard (Shephard, 1997) concluded that academic learning per unit of class time is actually enhanced in physically active students.

Previous studies verifying the psychological and educational effects of physical activity had some limitations. First, most of the studies were experimental research designs and the number of study participants was small. Second, in many cases, physical activity was also conducted under the experimental conditions set as one sports event. Third, there was no research on the effects of two or more physical activities on the social development, self-esteem, and learning attitude of middle school students. In this regard, by supplementing the limitations of previous studies, this study aimed to investigate the effects of middle school students' physical activities on social development, self-esteem, and learning attitude. Therefore, the purpose of this study was to analyze the effect on social development, self-esteem, and learning attitude of 63 middle school students by constructing a physical activity program called rope skipping and Daejanggong (basketball of new sport type).

Methods

1. Participants

The participants of this study consisted of 63 middle school students. After explaining the research procedure to the school side, the researchers explained the research purpose and research method to the research participants and parents, and received a consent to participate in the research. The researchers promised to pay the participation fee and feedback on the study results to the study participants. The gender of the participants was 36 male students (57.1%) and 9 female students (42.9%). All participants were in the first grade, and their academic GPA level were 15 high GPA group (23.8%), 37 middle GPA group (58.7%), and 11 low GPA group (17.5%). The physical strength level was grade 1 7 persons (11.1%), grade 2 34 persons (54.0%), grade 3 16 persons (25.4%), grade 4 5 persons (7.9%), and grade 5 1 (1.6%).

2. Measures

Social development was modified and used according to the purpose of this study based on the preceding research on social development (Hwang & Kim, 2014; Grineski, 1996). Since the social development inventory was used for the purpose of measuring the effect of exercise, it was composed of three items with 5 points Likert scale as a simple type. The internal consistency reliability as determined by the Cronbach's alpha was $\alpha = .658$. Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) was used self-reported scale to assess self-esteem of participants. The RSES consists of three items and is scored on a 5 point Likert scale. The internal consistency reliability as determined by the Cronbach's alpha was $\alpha = .770$. Learning attitude of participants was analyzed by academic attitude inventory (Annie, Howard & Mildred, 1996; Park & Lee, 1976). The learning attitude inventory consists of three items with 5 point Likert scale. The internal consistency reliability as determined by the Cronbach's alpha was $\alpha = .768$.

3. Procedures

The subjects participated in Daejanggong and rope skipping with 10 sessions. Daejanggong was a basketball game that has been modified to make it easier for middle school students to participate. Daejanggong was conducted for about 30 minutes per session. The two programs were organized through expert meetings, prior research, and student interviews to enhance research participants' sociality, self-esteem, and learning attitude. Rope skipping intervention consisted of a personal program and a group program. It was performed three times per week (30 min per session). Exercise intensity was 13 (somewhat hard) of Borg's rating of perceived exertion scale. The exercise program was

conducted under the supervision of class teacher.

4. Data analysis

All statistical computations were performed using SPSS/PC Version 23.0. The values were expressed as average standard deviations. Descriptive analyses were performed on physical characteristics of participants. To examine the effects of physical activity on social development, self-esteem, and learning attitude, paired sample t test were performed. Also chi-square analysis was conducted to investigate the relationship between physical strength level and academic performance.. The statistical significance level of all analysis was $p < .05$.

Results

1. The effect of physical activity on social development

Table 1. *The paired sample t-test on the effect of physical activity on social development*

	pre-test		post-test		t
	M	SD	M	SD	
Social development	2.86	.82	3.11	.83	-2.973

$p^{**} < .01$

Table 1 showed the mean and standard deviation of social development by times. There was a significant difference on social development according to times ($t = -2.973$, $p < .01$). The social development score of pre-test ($2.86 \pm .82$) significantly increased in post-test ($3.11 \pm .83$).

2. The effect of physical activity on self-esteem

Table 2. *The paired sample t-test on the effect of physical activity on self-esteem*

	pre-test		post-test		t
	M	SD	M	SD	
Self-esteem	3.56	.84	3.72	.83	-2.195

$p^{*} < .05$

Table 2 showed the mean and standard deviation of self-esteem by times. There was a significant difference on self-esteem according to times ($t=2.195, p<.05$). The self-esteem score of pre-test ($3.56 \pm .84$) significantly increased in post-test($3.72 \pm .83$).

3. The effect of physical activity on learning attitude

Table 3. *The paired sample t-test on the effect of physical activity on learning attitude*

	pre-test		post-test		t
	M	SD	M	SD	
Learning attitude	3.70	.79	3.76	.83	-.825

Table 3 indicated the mean and standard deviation of learning attitude by times. There was a significant difference on learning attitude according to times ($t=-.825, p>.05$). The learning attitude score of pre-test ($3.70 \pm .79$) didn't significantly increased in post-test($3.76 \pm .83$).

4. The analysis of chi-square between physical fitness level and academic performance

Table 4. *The chi-square analysis on physical fitness level and academic performance*

		Physical fitness rank					Total	x2
		1th	2nd	3rd	4th	5th		
Academic performance rank	Higher	1	13	1	0	0	15	15.695*
	Middle	6	15	12	4	0	37	
	Lower	0	6	3	1	1	11	
Total		7	34	16	5	1	63	

$p*<.05$

Table 4 indicated the result of chi-square analysis between physical fitness level and academic performance. There was a significant correlation between physical fitness level and academic performance ($x^2=15.6955, p<.05$). In other words, it was confirmed that the better the physical strength grade, the better the academic performance.

Discussion

Social development(Han, 2012), self-esteem (Rosenberg, 1965), and learning attitudes (Shephard, 1997) in adolescence were very important in terms of development and psychology. In other words, the purpose of this study was to analyze the effect on social development, self-esteem, and learning attitude of 63 middle school students by constructing a physical activity program called rope skipping and Daejanggong basketball. The results of this study were as followings.

First, it was found that physical activity had a positive effect on the social development of middle school students. The results of this study supported the results of previous studies (Gould & Carson, 2008; Park, 2020; Smoll & Smith, 2002) that physical activity had a positive effect on social development. Despite the positive effects of regular sports activities on social development, the rate of physical activity participation gradually decreased from the 50% range from 1990s to recent and the response of 'not participating at all' of regular physical activities was 41.8% (Ministry of Culture, Sports & Tourism, 2013). In addition, the obesity rate was increasing in all age groups and the probability of obese adolescents becoming obese adults is 80%, and obesity increases risk factors such as insulin resistance, hyperlipidemia, high blood pressure, high blood sugar, and arteriosclerosis, leading to cardiovascular disease, diabetes and non-alcoholic liver disease (Cook, 2003). It was possible to improve the participation rate of sports by increasing the enjoyment and interest (Snyder & Spreizer, 1973), social interaction (Cockerham, Kunz & Lueschen, 1998), and feelings of happiness (Berger & Owen, 1988) during physical activities. One of the important factors in improving the participation rate of adolescents in physical activity was the role of teachers. Teachers' opinions, views, and attitudes towards physical activity have been recognized as the greatest obstacles to physical activity promotion in the classroom (Kwon, 2017; Kwon & Kulinna, 2017; Yi & Lee, 2017).) and executing change was ultimately an individual decision by teachers (Martin & Murtagh, 2015b). In future studies, research on various methods to improve the participation rate of adolescents' physical activity was needed.

Second, physical activity was found to improve middle school students' self-esteem. The results of this study were consistent with the results of previous studies (Elavsky, 2010; Gruber, 1986; Wood et al., 2013) that physical activity positively affected self-esteem. Self-esteem affected the attitude of recognizing and coping with problems when faced with various problems, it also affected the future successful life such as stress buffering, academic achievement and social adaptation oneself (Rosenberg, 1965). In particular, the development of self-esteem was an underlying factor determining student motivation, persistence, and academic success(Yawkley, 1980). Future studies need to develop and verify the effectiveness of various intervention programs that can improve adolescents' self-esteem in addition to physical activity.

Third, physical activity was found to improve the learning attitude of middle school students, and the higher the physical strength level, the higher the academic achievement. Learning attitude is an important variable that determines academic achievement. In this respect, the results of this study supported the results of previous studies (Elavsky, 2010; Gruber, 1986; Wood et al., 2013) that physical activity positively influenced the factors of academic achievement. It was argued that physical activity time reduced learning time and negatively affects academic achievement. However, this study examined the positive associations between the amount of physical activity or participation in physical education and school behavior and academic achievement (Carlson et al., 2008; Roberts et al., 2010). In this respect, incorporating physical activity time into the regular school course will help improve students' learning attitude and achievement. Incorporating physical activity time into the regular school course will help improve students' learning attitudes and achievements.

The World Health Organization (WHO) (2010) recommended that school aged children should accumulate at least 60 min of physical activity per day for health benefits. However, less than 20% of children worldwide were achieving these recommendations (WHO 2010). For health improvements to occur, it has been proposed that physical activity should be made a public health priority throughout the world (WHO 2010). In the school system, various studies to increase participation in physical activities of infants and adolescents need to be conducted.

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