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European Journal of Experimental Biology, 2013, 3(6):285-289



### Effect of rope skipping on social skills and academic performance on elementary students

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#### ABSTRACT

Physical activity as a main factor in socialization has been teachers' concept in different cultures. The purpose of this research was to determine the effect of rope skipping on social skills (SS) and academic performance (AP) on students of grade 4 in elementary schools. Participants were 84 students, randomly sampled among graded 4 students, in 4 educational areas, Shiraz, Iran. According to three control factors schools were randomly selected. Data collection occurred after and before performing rope skipping. The rope skipping was exercised for 45 minutes per week, in 12 weeks. Teachers completed the teachers' rating of social skills questionnaire (TRSSQ) about students. Academic performance was obtained from school lessons. The TRSSQ was based on subscales of non social competence (NSC), social skill (SS) and peer relation (PR). It consists of 56 items designed to measure NSC with 30 items, SS with 30 items, and PR with 15 items. Each of the TRSSQ items was on a Likert scale. The AP was defined as a class point average and it was descriptive. The hypotheses were if there were any significant effects on AP and SS by rope skipping performance among elementary students. Paired sample *t*-tests were conducted for these hypotheses. The statistical analysis showed there were significant differences after and before rope skipping in AP ( $p \leq 0.05$ ). So performing rope skipping had significant effects on AP. Also the analysis presented there were significant differences after and before rope skipping in SS ( $p \leq 0.05$ ). Although the hypotheses were approved, results should carefully interpret about correlations.

**Keywords:** Rope skipping, social skills, peer relation, non social competence, academic performance.

#### INTRODUCTION

In present century with changes of attitude and human life style, physical, mental and social problems due to mechanical life and sedentary life, the importance of being active is become obvious to every one. Sport as a social factor in controlling and curing a lot of social problems and injuries, is in height of specialist attention. According to scientific researches, healthy and routine physical activities directly or indirectly have important role on prevention and cure of diseases. On the other hand physical activities are of cheap and useful instruments in controlling stress, depression and aggression of present life [2]. To get these goals, activities which are recreations and can perform in teams, obviously are effective to every one. According to the fact, routine physical activities are the basic requirements in growing ages for school students. Although, the budget and time are inadequate for physical education in schools, using simple and available kinds of activity with minimum facilities is to the point. National educational program in Iran have a total and complete look to human, considering physical and mental aspects. This

program consists of 11 learning areas. Attentions to physical, mental and emotional characters of 7 to 12 years old children in elementary schools are in main purposes [8, 19]. In these ages, children like to play with friends, cooperate with others, enjoy playing and interested to learn social rules. Different kinds of games and various situations in sport help them to make themselves ready for future [12]. Rope skipping as an active, combination of various skills, rhythmical activity can perform single or team working. Nowadays coaches and athletes apply this activity as a complementary in sports such as gymnastic, swimming, cycling, wrestling, football, basketball and volleyball. Besides, low injury potential, make rope skipping so attractive among children.

Social skills are one of the physical education (PE) purposes. It is affected from group and social cultures that a man connects to. It is believed social skills are peoples' impression without any harm. This definition consists of expressing happiness, appreciation and other behaviors that construct inter personal relations [8]. Specialists believed the social skills teaching program have to include all aspects of socialization [7]. A study on German adolescents observed lower anxiety and depression scores, as well as less social behavioral inhibition, than their less active peers. The significant relationship between physical activity and self-image also remains after controlling for socioeconomic status [20]. Regular physical activity in adolescents is significantly related to a favorable self-image, in addition to physical and psychological well-being [11].

One recent well-controlled study has shown improvements in self-esteem following running activities in girls. Psychosocial and behavioral changes amongst girls participating in two developmentally focused youth sport programs were assessed. Girls in grades three to eight participated in 'Girls on the Run' and 'Girls on Track'. The programs resulted in beneficial increases in global and specific self-esteem, enhanced satisfaction with body image, and increased physical activity frequency and commitment [6, 16].

In American school children, researchers found that academic achievement was not related to enrolment in PE, but interestingly it was associated with the total amount of vigorous activity performed by the children. Subsequent analysis of a 55 minute PE class revealed that only 19 minutes of this time was spent in moderate to vigorous activity and it was suggested that this was sufficient vigorous activity to impact in academic achievement [4, 9]. A study conducted with 214 six-grade students in Michigan found that students enrolled in PE had similar grades as students who were not enrolled in PE, despite receiving 55 minutes less of daily classroom instruction time for academic subjects[4].

In 2007, 287 fourth- and fifth-grade students from British Columbia were evaluated to determine if introducing daily classroom physical activity sessions affected their academic performance. Students in the intervention group participated in daily 10-minute classroom sessions in addition to their regularly scheduled 80-minute PE class. Despite increasing in-school physical activity time by approximately 50 minutes per week, students receiving the extra physical activity time had similar standardized test scores for mathematics, reading and language arts as did students in the control group [1, 26].

## MATERIALS AND METHODS

The research method was pre experimental. The experimental variable was rope skipping. The dependant variables were social skills (SS) and academic performance (AP).

### Participant

A random sample of 84 students in grade four with the age average of 9.5 was used from female elementary schools in Shiraz, Iran. There were three factors in selecting elementary schools.1- Teachers' education level.2- School facilities for PE.3- Socioeconomic status of students. According to that, schools were categorized into three groups: poor, medium and strong. Randomly one school chose in each level. Random sample was 12 schools in 4 educational areas. 7 students were also randomly chosen in every school.

### Procedure

Data collection occurred after and before performing rope skipping. The rope skipping was exercised in 12 weeks, a 45 minutes section per week. Teachers completed social skills questionnaire about students. Academic performance was obtained from school lessons. Informed consent was obtained from students prior to the test. Confidentially subject's information and data was addressed.

**Instrument**

Social skills (SS) was measured using the teachers' rating of social skills questionnaire (TRSSQ). The theoretical framework of TRSSQ was based on subscales of non social competence, social skill and peer relation. The TRSSQ consists of 56 items designed to measure non social competence with 30 items, social skill with 30 items, and peer relation with 15 items. Each of the TRSSQ items is a simple statement that can be answered on a Likert scale. The AP was defined as a class point average and it was descriptive. The AP obtained from schools [21].

**Table 1. The descriptive scale of AP**

Descriptive Scale	More endeavours needed	Accepted	Good	Very good
Scores	0- 9.75	10-12.75	13-16.75	17-20

The validity of the TRSSQ was reported between 50- 70. The reliability of the TRSSQ in non social competence and social skill subscales were reported in respective between 0.65-0.93 and 0.91.

**Statistical analysis**

Descriptive statistic for SS and AP were calculated. Paired sample t-test was conducted to examine if there were any significant effects on SS and AP with rope skipping performance among students. In all analysis  $\alpha = 0.05$ .

**RESULTS**

First hypothesis: If there were any significant effects on SS by rope skipping performance among elementary students in grade four.

Descriptive statics for students in pre and post test is presented in table 2.

**Table 2. The descriptive statics for students in pre and post tests**

	Frequency	Percent	Valid Percent	Cumulative percent
Grade 4 in pre test	84	35.0	35.0	65.0
Grade 4 in post test	84	35.0	35.0	65.0

The descriptive statics for SS in pre and post test is presented in table 3. In this table mean, sample number, std. deviation and std. error mean for SS in pre and post tests are shown.

**Table 3. The descriptive statics for SS in pre and post tests**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 SS in pre test	2.7405	84	.39018	.04257
SS in post test	2.7637	84	.34367	.03750

The paired sample t-test for SS is shown in table 4. As the  $p \leq 0.05$ , so there were significant differences after and before rope skipping. So rope skipping had significant effects on SS.

**Table 4. The paired sample t-test for SS**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 SS in pre test- SS in post test	-.0232	.08173	.00892	-.04094	-.00546	-2.602	83	.011

Second hypothesis: If there were any significant effects on AP by rope skipping performance among elementary students in grade four.

The descriptive statics of AP for students in pre and post tests are presented in 5<sup>th</sup> and 6<sup>th</sup> tables.

Table 5. The descriptive statics of AP for students in pre test

Descriptive Scale	Frequency	Percent
More endeavours needed	0	0
Accepted	5	6
Good	22	26.2
Very good	57	67.9
Total	84	100

Table 6. The descriptive statics of AP for students in post test

Descriptive Scale	Frequency	Percent
More endeavours needed	0	0
Accepted	0	0
Good	16	19
Very good	68	81
Total	84	100

The descriptive statics for AP in pre and post tests is presented in table 7. In this table mean, sample number, std. deviation and std. error mean for AP in pre and post tests are shown.

Table 7. The descriptive statics for AP in pre and post tests

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 AP in pre test	3.62	84	.599	.065
AP in post test	3.81	84	.395	.043

The paired sample t-test for AP is shown in table 8. As the  $p \leq 0.05$ , so there were significant differences after and before rope skipping. So rope skipping had significant effects on AP.

Table 8. The paired sample t-test for AP

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 AP in pre test- AP in post test	-.190	.395	.043	-.276	-.105	-4.419	83	.000

## DISCUSSION AND CONCLUSION

The purpose of this research was to determine the effect of rope skipping on social skills and academic performance on students of female elementary schools. For many years socialization was a key material that teachers try to cover as well as possible. Social teaching does not meet the needs of society in high schools in Iran [27]. So it become obvious the duty of socialization is important goal for school teaching. The social output of PE in developing social relations is constructive in all layers of society. In the first hypothesis the researcher found rope skipping performance had significant effects on SS among elementary students in grade four. This was supported with the studies mentioned [25, 11, 6]. The influence of physical activity on self-esteem may be influenced by the activity mode undertaken, although positive cognitive behavioral modifications have been observed across aerobics, strength, dance and flexibility activities [18]. In present study, teachers reported along rope skipping teaching in 9<sup>th</sup> week students themselves requested for group activities. This was just effects of rope skipping performance as no other rope skipping teaching was done out of school time.

Many school systems have downsized or eliminated PE under the assumption that more classroom instructional time will improved AP and increase standardized test scores. Despite this trend, no clear evidence indicates that AP will improve if PE classes are cut. Numerous studies have shown positive relationships between AP and both physical activity [3, 10, 13-17, 20-22, 24] and sports participation [5]. In the second hypothesis the results showed that rope skipping performance had significant effects on AP among elementary students in grade four. In 1999 found that spending more time in PE did not harmful effects on academic achievement when measured using a standardized test in elementary school. The 2-year follow-up of the PE program showed pupils in the experimental group did significantly better in achievement tests when compared to controls [23]. Also studies supported the results [1]. It

was not supported with the study that found academic achievement was not firmly related to enrolment in PE [4]. The present study found performing simple and attractive activity in PE class not only helps students to gain achievements in school lessons but also assists them to become socialize during physical activity and challenges.

In present study, although, the random sampling controlled socioeconomic status but still possible influence of this factor on the observed association physical activity and AP cannot be ruled out. It is possible that physical activity may be only a marker for greater levels of AP and may not be a causal factor. It is important to note that socioeconomic status may be the major cause of AP with physical activity level acting as a mediator in relationship. This fact should be considered when interpreting the results.

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