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## **IMPACT OF TRADITIONAL EXERCISES ON PERCEPTUAL- MOTOR DEVELOPMENT IN ELEMENTARY SCHOOL GIRL STUDENTS**

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### **ABSTRACT**

The aim of this study was to impact traditional games on perceptual- motor development in elementary school girl students. The present study was semi-experimental design. The statistical population included all girls second, third and fourth grades students of elementary schools of Chaboksar - Iran. Fifty-one of who were randomly selected (cluster stage). Then participants were given training for six weeks, 3 sessions per week and each session lasting 45 minutes. Bruininks- Oseretsky test of motor proficiency was applied. The analysis of variance (ANOVA) was used at a significance level of  $p \leq 0.05$  in order to examine the relationship between the measured factors and analyze the research assumptions. The results showed that traditional games with mean differences in static balance ( $F=3.790$ ,  $P=0.03$ ) and horizontal jumping for muscle strength ( $F=4.671$ ,  $P=0.014$ ) was observed. In fact, traditional exercises impacted on the motor development of participants and led to their motor development progress. The traditional exercises can be used as an appropriate plan to improve motor skill development in elementary school.

**Keywords:** *Perceptual-motor Development, Elementary-Traditional Games-Children-Girls*

### **INTRODUCTION**

Decades of research have shown that play is an important mediator in the physical, social, cognitive, and language development of young children (Garvey, 1993; Bergen, 2002; Vygotsky, 1976).

The growing emphasis on standards, assessment, and accountability in schools has led to a reduction in outdoor and active physical play. In many schools and centers, play has been all but eliminated to make room for quieter academic learning (Stipek, 2006).

Preschools and kindergartens in public school settings have become particularly regimented and adult-directed, with teachers feeling compelled to increase literacy and numeracy instruction at the expense of play time (Golinkoff *et al.*, 2004). Passive television viewing and use of other media also are replacing active play and have even been found to interrupt the play of young infants (Schmidt *et al.*, 2008; Zimmerman *et al.*, 2007).

The value of play is considered by researchers from a range of disciplines including psychology, education, philosophy, and anthropology. Childhood theorists see “play” as fundamental to human development and emphasize its critical value for all children.

Early play theorists determined only the physical benefits of play. According to Herbert Spencer’s (1873) “surplus energy theory”, play is necessary to allow children to discharge excess energy. Opposite of Spencer’s view, Patrick (1916) explained the purpose of play as renewal of the energy (Hughes, 1995) and a need for relaxation (Mussen, 1983). He saw play as a tool that keeps children occupied while they restore their natural energy supply.

Play is the child’s way of learning. Through play, children receive information from the surrounding environment in order to use it in their physical and mental development. By means of play, children learn and develop as individuals, and as members of the community. Regular participation in physical activity is associated with substantial health benefits for children and adolescents including increased bone mass, maintenance of healthy weight, reduction in high blood pressure among hypertensive adolescents and improved psychosocial behaviors (Okely *et al.*, 2001). There are a number of factors positively associated with physical activity in youth including self-efficacy in one's ability to overcome barriers to physical activity, perceptions of physical or sport competence, having positive attitudes toward physical education, enjoying physical activity, and parent, sibling and peer support. An additional determinant of physical

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activity among children and adolescents may be the level of mastery of the movement skills that are foundations for the skills used in common forms of adult physical activity. Children with poor motor proficiency may subsequently choose a more sedentary lifestyle to avoid these movement difficulties (Wrotniak, 2006). Motor development may act as a ‘control parameter’ for further development, in that some motor abilities may be prerequisite for the acquisition or practice of other developmental functions such as perceptual or cognitive ability (Piek *et al.*, 2008). On the other hand, one of the reasons for the fact that we value physical activity is the health benefit associated with a physically active lifestyle.

Other reasons are the developmental need to explore and master our environment, to express ourselves through movement and to feel satisfaction resulting from successful movement. Physical activity also provides an opportunity for affiliation (Tomas *et al.*, 2003). Since fundamental movement skills are considered prerequisite to, or foundation of, the specific skills used in popular forms of adult physical activity, it is reasonable to assume that there may be a relationship between an individual's participation in physical activity and his/her mastery of fundamental movement skills. Fostering enjoyment of and participation in, physical activity during childhood and adolescents may contribute to an increased prevalence of participation in the adult population (Okely *et al.*, 2001). Regarding the importance of movement and activity in children's motor development, particularly in elementary schools, motor development and the factors affect it have been investigated in different forms by researchers. With regard to previous researches and importance of effect of physical activity on motor development, the aim of the present study was to examine the influence of traditional exercises on motor development in elementary school girl students in chaboksar City.

## **MATERIALS AND METHODS**

### ***Setting and Participants***

This study was conducted in Chaboksar - Iran, during 2012-2013. The study took place in elementary schools that including all second, third and fourth grades girl students of elementary schools in Chaboksar - Iran. The mean age of the participants was 8/96 with standard deviation 0/82 years. This study was semi-experimental and its statistical population composed of all elementary school girl students of Chaboksar city. Statistical sample of this study included 51 students who were randomly selected (cluster-stage).

### ***Instrumentation***

To measure motor development, the subscales of static balance and horizontal jumping (for muscle strength) from Bruininks- Oseretsky test of motor proficiency were selected.

### ***Intervention Program***

Program included a six-week period of selected exercises. The length of each session was 45 minutes. Sessions took place three days a week according to a specific lesson plan. Each session consisted of three parts: heating, selected exercises and cooling.

### ***Statistical Methods***

Both descriptive and inference statistics were performed using SPSS version 16. To organize and summarize classification of raw scores and to describe sample characteristics, descriptive statistics (frequency, mean, and standard deviation, drawing tables) and the analysis of variance (ANOVA) was used at a significance level of  $p \leq 0/05$ .

## **RESULTS AND DISCUSSION**

### ***Results***

Descriptive analysis of data showed that the mean (SD) age of the participants were  $8.96 \pm 0.82$  years.

### **Table1: Descriptive information about the participant's Age**

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		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	Second grade	18	35.3	35.3	35.3
	Third grade	17	33.3	33.3	68.6
	Fourth grade	16	31.4	31.4	100.0
	Total	51	100.0	100.0	

**Table 2: Description of mean and standard deviation for horizontal jumping (muscle strength)**

<b>Groups</b>		<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>
<b>Second grade</b>	Pre-test	107.22	18	13.636
	Post-test	118.06	18	18.561
<b>Third grade</b>	Pre-test	117/94	17	16/589
	Post-test	136/24	17	15/401
<b>Fourth grade</b>	Pre-test	119/38	16	17/783
	Post-test	129/06	16	19/080

Table 2 indicated pre-test and post-test mean scores of the children in the horizontal jumping in three grades. Based on this information, the mean horizontal jumping in the post test in three groups increased significantly. These differences in 9-year-old age group (third grade) are more effective than others.

**Table 3: Description of mean and standard deviation for static balance test**

<b>Groups</b>		<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>
<b>Second grade</b>	Pre-test	42.94	18	16.159
	Post-test	83.83	18	25.436
<b>Third grade</b>	Pre-test	52/06	17	27/974
	Post-test	100/76	17	36/329
<b>Fourth grade</b>	Pre-test	44/50	16	17/959
	Post-test	72/62	16	25/830

Table 3 illustrates mean pre-test and post-test scores of static balance test in the three groups. Based on this information, the mean static balance in the post- test groups increased significantly. The difference is about 9 years old age (third grade) is more impressive. In other words, selected training program has had significant impact on perceptual-motor development.

**Table 4: Results of one-way variance analysis for horizontal jumping (muscle strength) ANOVA**

		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>Horizontal jumping</b>	Between Groups	2941.569	2	1470.785		
	Within Groups	15112.941	48	314.853	4.671	0.014
	Total	18054.510	50			

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As shown in Table 4, a significant difference was observed among groups in horizontal jumping test (F=4.671, p=0.14). Furthermore, results of HSD post hoc analysis showed that differences between groups in second grade and third grade were more effective than fourth grade in the horizontal jumping.

**Table 5: Results one- way variance analysis for static balance test ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
<b>Static balance</b>	Between Groups	6652.613	2	3326.306		
	Within Groups	42123.309	48	877.569	3.790	0.030
	Total	48775.922	50			

As shown in Table 5, a significant difference was observed among groups in static balance test (F=3.790, p=0.30). Furthermore, results of HSD post hoc analysis showed that differences between groups in third grade and fourth grade were more effective than second grade in the balance test.

**Discussion**

Fundamental motor skills are foundation and basic of sport advanced skills. In addition to the influences of the skills on sport and specialized skills development, they can cause people to be more efficient in daily life movements.

Akbari *et al.*, (2009) investigated the influence of local and native plays on 7-9-year old boy’s locomotion skills development. According to their study, local and native plays have more influences on locomotion skills development than common activities (Akbari *et al.*, 2009). Sheikh et al found that elementary school selected plays affect motor development (dynamic and static balance, coordination, speed, agility and movement accuracy) in elementary school third grade girls (Sheikh *et al.*, 2003). Pike *et al.*, (2006) in a study of the relation between fine and gross motor abilities in children (boy and girl) showed that the level of motor ability is correlated with school activities. Besides, further school activities cause better fine motor skills (Piek *et al.*, 2006). Wrotniak found that children who were physically active were higher in terms of motor abilities, motor mastery, running speed, agility and motor skills than children who didn’t have physical activity (Wrotniak, 2006). Graf et al investigated the effects of school common program on BMI and motor abilities of children with age ranging from 5.5 to 9 years. Horizontal Jump and 6 minutes running were measured to assess pre- and post-test motor abilities. The results showed that there was not any difference between control and experimental groups in BMI. However, the number of horizontal Jumps and running distance increased significantly in the experimental group (Graf *et al.*, 2005). Van *et al.*, (2002) showed that selected training program increased motor skills development in third grade students.

Research findings show that exercises, playing and physical activities affect motor development (motor efficiency) of school students. Therefore, the results of this study based on selected trainings are in accordance with the findings of previous studies (Wrotniak, 2006; Akbari *et al.*, 2009; Van *et al.*, 2002). Different trainings have been used to investigate the effects of training on motor development in aforementioned studies. With regard to the previous studies, impact of training on motor development is important and should be considered by relevant authorities in schools (especially for physical education lesson).

According to previous findings, it should be indicated that education should be considered in preschool and school age to develop fundamental skills. If school-age children do not acquire advanced stages, their sport skills in older ages will be difficult, in addition to motor problems created at the same age (Akbari *et al.*, 2009).

Findings show that training affects motor development against maturation theory stating the growth process is controlled by internal factors (genetic) but not external factors (environmental). Therefore, hereditary factors are ultimately responsible for controlling growth. The maturational perspective explains developmental change as a function of maturational process that controls or dictates motor development.

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According to the assumptions of this theory, motor development is an internal or innate process driven by a biological time clock (Wood *et al.*, 2009). Besides, behaviorism is a mechanistic theory which describes observed behavior as a predictable response to experience.

Although biology sets limits on what people do, behaviorists view the environment much more influential. They hold that human beings learn about the world at all ages in the way similar to other organisms: by reacting to conditions or aspects of their environment that they find pleasing, painful or threatening (Papalia *et al.*, 2001). While the pretest indicated that the subjects were not fully developed in the fundamental skills, subject's age can be one of the causes of delay in motor development. Another reason can be lack of sufficient opportunities for students, lack of necessary facilities and enough training based on scientific scheduling according to student's age in school, and planning for physical education lesson. Since the interaction of both genetic and environmental factors influence motor development, to create enough opportunities for children and students in physical education lessons in primary schools, to produce scientific training programs according to their age, and to provide simple, enough and required facilities to attract students to physical activity, playing and training is essential.

It is noticeable that to develop fundamental motor skills in children, our primary schools should develop written programs, appropriate training and employing physical education teachers in physical education hours especially in the first three years. Moreover, existence of space, enough facilities and increasing hours of physical education lessons in primary schools not only can help motor development of children in fundamental motor skills, but also can increase student's interest in life activities which are basic for health and fitness and also provide a strong infrastructure for championship sports in the country. School administrators who create and implement sound adapted physical education programs must ensure that the resources at their disposal adequately meet the needs of the pupils they serve.

First, they must identify pupils who should receive adapted physical education programs and then, they must implement programs in an appropriate setting. Appropriate and innovative instructional strategies and challenging activities should be provided for all students with unique needs. Administrators must ensure that programs fit to student schedules, meet mandated time requirements, provide sport opportunities, are conducted in accessible facilities, and are appropriately funded (Winnick, 2000).

One of limitations of this study was the fact that only girls participated in this study and this study did not survey effects of selected exercise program on fundamental motor skills in boys. Besides, it is likely that the research subjects performed similar activities outside study hours.

### **Conclusion**

Our findings indicate that motor skills development is positively associated with physical activity. However, future research is needed to further examine the relation between motor skills development and physical activity. Since the motor skills development is related to physical activity, strategies that increase physical activity in childhood may be an important target to promote increased physical activity and health in youth. These findings can be implicated in elementary school physical education programs.

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