

## Effect of sport game on Coordination performance among 3-6 aged children-a pilot study

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### Abstract

Coordination ability is very important for children. After 12 weeks experiment, the experimental result showed that sports games have a better effect on improving children's coordination ability.

**Keywords:** Sports, coordination, 3-6 aged kids.

### INTRODUCTION

The most definition of coordination is defined as children who have the motor competence to cope with the demands of everyday tasks (Missiuna et al., 2006). But In sport field, researcher further defined coordination ability that movement co-ordination could be considered as the overall principle of adjusting all processes of one motor act according to the goal of that movement action (Meinel & Schnabel, 1998).

Coordination ability is important to children. The improvement of coordination ability contributes to the improvement of children's movement. The practice of coordination ability, reduce the probability of injury in children's life and sports and show smooth and coordinated movement in the process of sports.

However, a study focused on children's coordination ability found that many children lack coordination ability. For example, 6-year-old children have a 30% probability of having difficulties in movement, coordination response time, rope skipping, ball catching and throwing, or 10% of children often fall down while

cycling and lack coordination (Wertheim). So, the question becomes. Coordination is so important to children, so what methods should be used to improve their coordination ability?

Four to six years old could be considered as the best age to stimulate their motor abilities. The development of the nervous system begins at this time so the stimulation will greatly help accelerate the development of motor skills (Cristia & Seidl, 2015; Shenouda et al., 2011).

Motor skill is the ability of the nervous system to control motion performance. Motor skills are divided into gross and fine motor skills. A study pointed that the gross motor skills involve the ability to perform single movements, while fine motor skills comprise ability in movements that require coordination between different organs including hands, eyes, arms, and limbs (Kokštejn et al., 2017).

Game is an enjoyable activity that has an effect on pleasure and self-satisfaction. The activity is not based on age or gender and the default rules provide satisfaction for players (Sutapa et al., 2020). And Sports games are educational and interesting game activities based on people's

basic activities and actions, based on action development, promoting psychological development and combined with intellectual activities to promote the improvement of intelligence.

Children aged 4-6 are always attracted to games and games could be divided into three categories including sensorimotor, role-playing, and constructive. Sensorimotor is the simplest form and its characteristic is that repeated muscle movements that improve athletic performance like strength, speed, agility, which could help children to develop their gross and fine motor skill (coordination ability).

However, the existing research on whether sports games can promote children's coordination ability is still unclear. Therefore, the purpose of this study is to explore whether sports games can promote the coordination performance of children aged 3-6.

## Subjects and Measurement

### Subjects

This study involved 60 children aged 3-6 as participants, and their parents signed informed consent. In this study, 60 children were randomly divided into experimental group and control group, with 30 children in each group.

### Study design

The experimental group used sports games as intervention, while the control group used

routine physical education. The experimental period was 6 weeks, 3 times a week.

### Measurement

Coordination task - rotation after jumping (general dynamic coordination): first, arrange a cross on the ground with adhesive tape, and the children's feet step on the cross. More accurately, the children's feet stand on a straight line, and the subjects jump vertically and rotate at the same time. The biggest goal of this test is to complete a 360 ° turn. The greater the rotation angle, the higher the coordination ability of children. Young children can jump in the direction they want. Before the test, children have three opportunities to understand the test. In the test, the rotation angle is corresponding to the coordination score: (1). One point: the subject unable to complete the test (fall); (2). Two points: the subject performs a rotation after jumping between 1 and 90°; (3). Three points : the subject performs a rotation after jumping between 91 and 180°; (4). Four points: the subject performs a rotation after jumping between 181 and 270°; (5). Five points: the subject performs a rotation after jumping between 271 and 360°.

## Result

The overall scoring of coordination performance in the experimental group and control group between pre and post test was listed in the tale 1.

Table 1. *Comparison between two groups during pre and post test.*

Variables	Test	Experimental group(n=30)	Control Group(n=30)	t	p
Coordination ability	Pre-test	2.43±1.006	2.27±1.048	.628	.532
	Post-test	3.33±0.711	2.53±0.629	4.616	.000
	t	-4.506	-1.246		
	p	.000	.223		

Before intervention, this study measured coordination ability between two groups and the result showed that there is no significant

difference between them ( $P > 0.05$ ). After 6 weeks intervention, paired sample t-test was conducted for the two groups. The results

showed that a statistically significant change was observed in the experimental group ( $p < 0.05$ ), but there was no significant change in the control group before and after the test ( $p > 0.05$ ). Additionally, this study analyzed the post-test data of the two groups and found that a statistically significant change was observed ( $p < 0.05$ ).

## Conclusion

Compared with routine physical education, sports games can more effectively improve children's coordination ability. Therefore, this study suggests that sports games should be integrated into regular physical education in order to better develop children's coordination ability.

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