

## GENDER DIFFERENCES ON MOTOR COORDINATION ABILITIES IN CHILDREN 8-12 YEARS OLD CHILDREN

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(Accepted 15 March 2019)

### Abstract

The purpose of this study is to evaluate gender differences on motor coordination abilities in children aged 8-12 years and their relationship. The research was conducted in march 2019 evaluating forty- two children on motor coordination abilities. Anthropometric measurements include stature, total body weight and waist circumference (WC). The KörperKoordinations Test für Kinder (KTK), lateral jumping, jumping on layers, moving with plates and balance backwards were measured. Statistical analysis for comparison by gender showed better results for boys than girls for balance backwards ( $F=0.07$ ;  $Sig=0.792$ ,  $Sig.$  (2-tailed) = 0.811, Mean Difference 1.3 steps). Girls performed better than boys on test Moving with Plates ( $F=4.96$ ;  $Sig=0.034$ ,  $Sig.$  (2-tailed) = 0.557, mean difference 0.7 counts). Also girls performed better on Lateral Jumping test ( $F=0.146$ ;  $Sig=0.705$ ,  $Sig.$  (2-tailed) = 0.222, mean difference 8.70 jumps) and on Jumping one leg left static ( $F=9.148$ ;  $Sig=0.006$ ,  $Sig.$  (2-tailed) = 0.165, mean difference 1.36 layers) and on Jumping one leg right static ( $F=461$ ;  $Sig=0.504$ ,  $Sig.$  (2-tailed) = 0.191, mean difference 1.53 layers). In conclusion the results showed that girls performed better on motor coordination abilities compared to boys except on balancing backwards.

**Keywords; children, motor coordination. KTK test, moving with plates**

### Introduction

A key factor for a healthy physical and mental development of children is considered to be physical activity (Ortega et al., 2008). Nowadays children faced the biggest problem such as obese and overweight, which cause cardiovascular problems, diabetes and many others health diseases (World Health Organization, 2015). For this reason, it is advisable to take part about 60 minutes of physical activity per day to avoid various problems with

health and to develop mobility skills (coordination, speed, force etc.) (Washington, DC, 2008). Physical activity is an important tool in treatment and prevention of overweight and obesity in children (Korsten-Reck .U, 2007, Hills. AP et al, 2010) as in Albania overweight is 10.9% and obesity 5.7% among children (Jarani et al., 2016; Jarani et al., 2018). A. Children aged 8-12 years old faced many problems while doing physical activity but what is more distinguished is the problem with the coordination. In Albania there is a increase

participation in physical activities by age (Bellova et al., 2018). Many researches find out that the level of coordination contributes on a good performance (Thies, K.M. & Travers, J.F, 2006). A good level on motor skills (including motor coordination) is not only a key factor in children's general development but also very important for an active lifestyle (Piek. JP et al, 2006), (Lubans DR et al, 2010). Study from Pepa & Jarani (2017) show a negative relationship between school daily steps counts and body fat percent and waist circumference in boys 10 years of age. Anthropometric measurement are very important in the field of sport especially in volleyball, basketball etc which needs tall players. Apart from stature, total body mass and waist circumference it is required to know body mass index BMI. BMI is the most common way to classify people in underweight, overweight and obese categories (World Health Organization Obesity, 2015). The calculation of BMI is carried out by the formula  $(\text{kg}) / \text{height} (\text{m}^2)$  (Cole T.J, 2012). There are few information in Albania about this topic, thus we decided to make this survey. Anthropometric parameters and motor coordination abilities will provide more accurate information on the developmental process of children, however, it is not well known whether a relationship actually exists between motor abilities and anthropometric parameters in children. The aim of this investigation was to evaluate the possible relationships between

selected anthropometric parameters and motor coordination abilities.

## **Methodology**

### **Subjects**

Seventy-six children attended the KTK-test and anthropometric measurements. Children were between the age 8-12 years old. Subject participated in physical activity in their leisure time around an hour and half. Their sport profile was basketball. Half of participants were part of smart team and the other part represented Ardhmeria team.

### **Anthropometry**

Weight and Stature were assessed by certified electronic scale. All participants wore light sportswear and were barefoot. To measure waist circumference is used measuring tape. The anthropometric measurement are made in march 2019.

### **Tests**

The Körperkoordinationstest für Kinder (KTK), which is a standardized normative German test battery is used to assess the level of coordination (Kiphard EJ & Schilling F. 1974), (Kiphard EJ & Schilling F. 2007). The KTK is very reliable test suitable for all children age 5-15 years. Each children takes 20 min to realize the test. KTK includes 4 tests (1) walking backwards along balance

beams of decreasing width: 6.0, 4.5, and 3.0 cm (KTK<sub>BEAM</sub>), (2) moving sideways on wooden boards for 20 s (KTK<sub>BOARD</sub>), (3) one-legged hopping over a foam obstacle with increasing height in consecutive steps of 5 cm (KTK<sub>HOP</sub>) and (4) two-legged jumping from side to side for 15 s (KTK<sub>JUMP</sub>).

### **Statistical analysis**

Descriptive statistic (excel) is used to find out the mean, SD, minimum and maximum of the data available such as anthropometric parameters and the KTK battery test. Also statistical analysis is used to make comparison between girls and boys and to know which have the best results by using the pearson correlation coefficient.

### **Results**

According to statistical analysis for comparison by gender showed better results for boys than girls for balance backwards (F=0.07; Sig=0.792, Sig. (2-tailed) = 0.811, Mean Difference 1.3 steps). Girls performed better than boys on test Moving with Plates (F=4.96; Sig=0.034, Sig. (2-tailed) = 0.557, mean difference 0.7 counts). Also girls performed better on Lateral Jumping test (F=0.146; Sig=0.705, Sig. (2-tailed) = 0.222, mean difference 8.70 jumps) and on Jumping one leg left static (F=9.148; Sig=0.006, Sig. (2-tailed) = 0.165, mean difference 1.36 layers) and on Jumping one leg right static

(F=461; Sig=0.504, Sig. (2-tailed)= 0.191, mean difference 1.53 layers).

### **Discussion**

Anthropometric parameters and motor abilities will provide more accurate information on the developmental process of children, however, it is well known whether a relationship actually exists between motor abilities and anthropometric parameters in children or between different motor ability evaluation tests. In conclusion the results showed that girls performed better on motor coordination abilities compared to boys except on balancing backwards. Anthropometric parameters and motor coordination abilities will provide more accurate information on the developmental process of children, however, it is well known whether a relationship actually exists between motor coordination abilities and anthropometric parameters in children or between different motor ability evaluation tests. Conclusive evidence provides widen gap in gross motor coordination performances between girls and boys of that age for any further researches.

Table 1 Descriptive statistics by gender for KTK tests

Gender		Mean	Std. Deviation	Gender
<b>Boys</b>	Moving_with_Plates_counts	17.9	2.4	Boys
	Lateral_Jumping_counts	57.3	19.7	
	Jumping_one_leg_left_static_layers	8.2	2.4	
	Jumping_one_leg_right_static_layers	7.9	2.7	
<b>Girls</b>	Balance_Backwards_steps	33.4	16.1	Girls
	Moving_with_Plates_counts	18.6	4.1	
	Lateral_Jumping_counts	66.0	16.6	
	Jumping_one_leg_left_static_layers	9.6	1.0	
	Jumping_one_leg_right_static_layers	9.4	2.2	

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