

## Evaluating the Physical and Physiological Properties of 11-13 Years Old Students in the Primary School Teams by Comparing to the Students Who Takes the Physical Education Lessons

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**Abstract:** 20 students, average age is  $11,55 \pm 1,43$  years, doing regular exercise in the Yunus Emre Primary School football team and 15 students, average age is  $11,93 \pm 0,59$  years, who don't do regular exercise but take compulsory physical education lessons in the same school, totally 35 male students have taken part as volunteers in the study in order to identify the the physical and physiological effects of the exercises applied to 11-13 years old students in the primary school team. Group's age, height, weight, the number of rest heart beat, (RHB) systolic blood pressure,(SBP), diastolic blood pressure (DBP) measures, vital capacity (VC), forced vital capacity (FVC), forced expirasyon volume (FEV1) and maximum voluntary ventilation (MVV), 20 meters run, right (RHG) and left hand grip strength (LHG) have been measured. The data has been searched on the PC using the SPSS 22.0 statistics program by the t-test method for the groups average variation independent, with  $p < 0,05$ ,  $p < 0,01$  percent level. It has been found out that there are no meaningful differences between the groups with the age, height, weight, (SBP), (RHG) and(LHG) strength amounts. It has been found out that there are meaningful differences between the amounts of ( $p > 0,05$ ). The number (RHB), (DBP), (MVV), 20 meters run values ( $p < 0,05$ ), VC, FVC, FEV1 ( $p < 0,01$ ) significant differences were determined. As a result ; it has been found that VC, FVC, FEV1 amounts are higher than the respiration amount while the rest heart beat, diastolik blood pressure and 20 meters run amount of students in school team are lower than the students who don't do exercise.

**Keywords :** Primary Scool Students, School Team, Circulation, Respiration

### Introduction

Sport has an important part in the healthy and balanced growth of a child. Each child is to be in a specific physical activity in order to perform a healthy growth and development Sportvie exercises should be planned according to these criterias , instead of one way ,monotonous and repeated loading , all-round ,productive , lively exercises should have been done. The physical health , gained during the period of childhood and youth and life long saved , is seen as compulsory so as a body to have a function with the highest capacity. Sportive activities makes children feel confident by activating their undiscovered talents and productive side. Self-confidence has an important role for a child to be sociable. It shouldn't be forgotten that being sociable and personal development lasts whole life. (Açıkada and Ergen, 1990; Ergun and Baltacı,1997)

As the sociological, physiological and economical aspects of the sport have taken over, sport has become a very effective instrument. That's why detailed researches about the sports area have started to be done so as to reach for the better each time It is seen over %10 increase with the max VO<sub>2</sub> by an exercise for 7-13 weeks. A person always provides much more oxygen than the body needs for the organism. So what important is to provide the utility of the oxygen in other words to provide the increase of max VO<sub>2</sub> via exercise. (Tamer, 1995)

The most visible effect of the exercise is about to widen the diffusion capacity of the oxygen at the sportsman/sportswoman. The diffusion capacity of the oxygen is an indicator of the diffusion speed of the oxygen from alveolus to the blood. Pulmonary and cardiovascular capacity can be increased by the

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exercises. It is aimed with the study to evaluate the effect of the exercises, applied to primary students taking part in school team, to the circulation and respiration system.

## MATERIAL METHOD

### Participants

20 male students, taking part in the Şanlıurfa province Yunus Emre Primary School football team, doing regular exercise for 3 days a week and 2 hours a day, preparing for the school competitions, have been doing sports for average  $2 \pm 1.3$  years, average age of  $11,55 \pm 1,43$  years, and 15 healthy, volunteer male students, who take P.E. lessons in the same school for 2 hours a week and don't do regular exercise, average age of  $11,93 \pm 0,59$  years, has been taken part in the study.

### Instruments For Data Collecting:

For the participants' height measurement, digital height meter; for body weight (BW), a scale branded Tanita; for body mass index (BMI) calculation, the formula " $\text{kg/m}^2$ " was used. In order to measure resting heart rate (RHR), pulse was counted for 15 seconds, then multiplied by 4 (heart rate/min) and the

results were recorded. Blood pressure was measured through tension gauges stethoscope and sphygmomanometer (Erka Perfect Aneroid /Germany). functions of the lungs by Microlab ML 3300 spirometer have been measured. Strength measures of the participants are done by the Hand Grip labelled Takkei. 20 Meters Speed Test: Before the test the participants have been warmed up for 15 minutes parallel with the intensity of the target activity and running duration of the participant has been measured via the Tecneque labelled photocell chronometer and computer which have been set in a 0-20 meters distance in a football area. The best of three trials have been recorded as seconds.

### Analysis of the Data

The amounts found out during the measuring process in the study have been evaluated on SPSS 22.0 statistic program. Within the measuring process of the groups, the meaningfulness of the difference between the averages at the independent groups have been tested by "t" test belonged to variation among the arithmetical averages and the results have been evaluated in the  $P < 0.01$ -  $P < 0.05$  level of importance.

## FINDINGS

**Table 1: Anthropometric Characteristics of the Subjects**

Veraibles	Group	N	Mean	SD.	Sig.
Age (Year)	Experiment	20	11,55	1,43	p>0,05
	Control	15	11,93	0,59	
Height (Cm)	Experiment	20	152,70	15,39	p>0,05
	Control	15	148,20	6,60	
Weight (Kg)	Experiment	20	43,80	13,84	p>0,05
	Control	15	42,00	8,18	
BMI (kg/m <sup>2</sup> )	Experiment	20	24,59	26,82	p>0,05
	Control	15	18,97	2,54	

**Table 2: Comparison of Physical And Physiological Properties Experiment and Control Group**

Veraibles	Group	N	Mean	SD.	Sig.
Rest Heart Beat (Be/Min)	Experiment	20	78,00	5,31	P<0.05
	Control	15	85,06	11,36	
Sistolic B.P (mmhg)	Experiment	20	121,00	3,07	p>0,05
	Control	15	118,13	6,11	
Diastolic B.P (mmhg)	Experiment	20	65,90	5,92	P < 0.01
	Control	15	76,71	10,57	
Vital Capat.(L)	Experiment	20	2,14	0,74	P<0.01
	Control	15	1,39	0,20	
Forced Vital Capt.(L)	Experiment	20	2,08	0,80	P<0.01
	Control	15	1,28	0,20	
Forc. Exp. Vol (L)	Experiment	20	2,12	0,72	P<0.01
	Control	15	1,34	0,18	
Maxi. Volt. Vent.(L)	Experiment	20	830,25	27,77	P<0.05
	Control	15	630,90	12,37	
20 M Run(Sn)	Experiment	20	3,86	0,73	P<0.05
	Control	15	4,38	0,14	
Rig Hand GS(Kg)	Experiment	20	17,28	6,94	p>0,05
	Control	15	15,33	3,13	
Left hand GS(Kg)	Experiment	20	17,53	8,39	p>0,05
	Control	15	14,60	3,41	

\*p<0,01, \*\*p<0,05

## DISCUSSION

In this study , it has been aimed to compare the physical and physiological qualiteies of the 11-13 years old primary education students attending to school team to the same aged students who take 2 hours P.E lessons but don't do regular exercise. It has been seen that there is no importnat difference between the avarage age, height , weight and BMI between the experimnet group and the control group. (P>0,05) these measures show that both groups have the similar physical qualities .

When the number of heart beat, systolic and diastolic blood pressure of the experiment group and the control group have been compared, systolic amounts have not been seen as a worth according to the statistic aspect (P>0,05) while a meaningful difference about the the number of heart beat (p<0,05) diastolic blood pressure amount being recorded . (p<0,01) , (Table-2).

Similar results were reported by the other researchers, too. ( Gökdemir and Koç 2000; Çiloğlu and Peker 1999; Kürkçü et al 2009;)

Decrease with the blood pressure is seen after a period of exercise and thus the heart works more economical and blood pressure decreases because of the decrease with the resistance against the blood flow. When the principle “ It has been reported that the durability exercises lasting for about 4 -6 weeks can make a %5 -10 decrease with the blood pressure” has been taken into consideration our study results confirm this principle.( Günay et al 2006)

When the respiratory functions of the experiment group and the control group compared , there have been found meaningful differences with the amounts of maximum voluntary ventilation p<0,05), vital capacity , forced vital capacity, forced expiration volume and maximum voluntary ventilation p<0,01),

Various kind of stuides on the effects of the exercise on the respiratory parameters of the young people brings the different point of views aswell. While some of the researchers are claiming that exercises make an increasing effect in the respiratory parameters , (Açıkada and Ergen 1990; Gözü et all 1988; Atabeki 2015; Atan et el 2013), the others claim that exercises do not have any effect in respiratory parameters (Taşgın 2009; Erdil et al 1984; Mogulkoç et al 1997).Some of the researchers apart from those draw attention to the development of the respiratory parameters are parallel with the natural growing up as the dynamic of the age group (Akdur et al 2001; Ergen 1983)

During the pyhsical exercises oxigen need of the muscle increases and paralel with this respiration system's physiological harmony that is to supply the need of the increasing oxigen appears. The increase in the respiratory parameters bounded to the type of the exercise besides the growth of the respiration muscles, widening skill of lungs and rib cage , (Gözü et al 1988) have been thought to cause high rates on the forced expiration volume and forced vital capacity of the children doing sport.

It has been determined that there is not a meaningful difference between he experiment and the control group children's avarge right and left hand grasping strength . (P>0,05) Different results about the effects of the exercise on the grasping strength have been reported. Besides the studies which say the exercise makes the muscle strength develop (Güler 2009 ; Şahin et al 2012), there are studies which say just the oppsite. (Gönülateş et al 2006; Günay et al 2006)

When 20 meter speed run rates of the experiment and the control group have been compared , it has been found that the rates of experiment group are quite low. (p<0,01). It was reported by the other researchers that there were similar results about the exercise had an effect on the speed development of the children,too. (Müniroğlu et al 2000; İri et al 2009; Güler 2009; Şahin et al 2012)

Why Experiment group's rates are lower than the control group's in the 20 meter run has been tought that different speed and talent exercise models have been used within the applied exercise program .

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