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COMPARISON OF SOME PERFORMANCE PARAMETERS OF PHYSICALLY ACTIVE MENTALLY RETARDED AND INACTIVE MENTALLY RETARDED INDIVIDUALS

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Abstract:
The aim of this study is to compare the some performance parameters of 12-14 aged physically active mentally retarded and inactive mentally retarded individuals. 6 male sedentary mentally disables as a control group (age 13,33±0,21 year, weight 42,33±5,21 kg, height 149,66±6,44 cm) and 6 male physically active mentally disables (age 13,16±0,16 year, weight 39,66±2,37 kg, height 154,00±3,96 cm) were participated to the study. First of all height and weight measurement were taken, then they began warming up. Vertical jump was applied to control group and experimental group respectively. Immediately before and after the 50 meters speed test, heartbeats were taken with polar. The times of 50 meters speed test were taken by using chronometer. Spss 22 package program was used for evaluating the data. Result of the study, there were no significant differences in terms of age, height and weight of the groups. In addition that, the parameters of vertical jump, 50 meters speed test, anaerobic power and heart beat (fatigue) of the subjects were significantly different in favor of the experimental group. As a result, doing exercise for the mentally disables can improve health levels and quality of life.

Keywords: exercise, mentally retarded, mental retardation

1. Introduction

The human body is in physical, physiological, biomotoric and psycho-mental forms with a great balance (homeostasis) and adaptation. It is known that the sport, which has been carried out from an early age, has changed the internal balance state and the adaptation process of the human in time (Özer and Kılınç, 2012). Individuals with mental disabilities have biological, social and psychological needs such as eating,

drinking, liking, being loved, being accepted and being successful like normal people they prefer to follow and mimic others rather than being leaders during group activities, because they have little confidence in themselves (Koç, 2012).

Various definitions have been made about mental retardation. This field has been examined by different disciplines and many definitions were made. Psychologists and educators also looked at the field from different perspectives and offered more educational definitions (Diken, 2013). In 1973, the American Mental Retardation Association (AMGB) defined the mental disability as, the mental disability, under-development of general intelligence functions under normal, the disorder in learning and social adaptive behaviors disorder. As a result of the evaluations made with intelligence tests, the determination of 70 points or less of the individual's score is explained as mental functions are below normal. Children with mild mental retardation are called "Educable Mentally Retarded Children" according to educational classification and account for about 85% of all mentally retarded children (Özer, 2013). Children with moderate mental retardation are classified as trainable mentally retarded children (Baykoç, 2011).

In mentally retarded individuals, physical development lags behind normal individuals due to metabolic and hormonal disorders or genetic causes. This situation slows down the development of rough and fine motor skills of mentally retarded individuals. Weak muscles and non-fixed joints of mentally disabled individuals start from childhood and cause motor development stages to be late (Connoly and Michael, 1986). Weakness in major muscle groups of mentally disabled individuals, lack of vision, weakness in hand-eye coordination, weakness in complex movements, visual attention and difficulty in mimicking movements limit their physical capacity (Varol, 2004). In addition, it is reported that the greatest difference occurs in physical development, motor skills and body coordination when mentally disabled individuals are compared with their normal age (Bruininks, 1974).

Physical activity is associated with good physiological and psychological health (Melekoğlu et al., 2018). Exercising alters muscle structure, central nervous system's ability to control muscle co-ordination and therefore the effectiveness of the movement (Soslu et al., 2018). It is possible to observe all and even more of the positive effects of physical education and sport on individuals who have mental retardation development. Every sports event is a social experience for the disabled. In addition, sports affect all individuals in the natural environment in different ways and support all developmental dimensions. The basic philosophy of physical education and sports for the disabled is to create a positive sense of self in individuals (İlhan, 2010).

Children with mental disabilities have lower eligibility levels than those with non-disabled peers, resulting in fewer physical activity models (Pitetti et al., 2009). Disabled children are also at risk for health due to their sedentary lifestyle (Ayvazoğlu et al., 2004).

Some researches about this area report that, exercise or doing sport affects performance of mentally retarded individuals in positive way. For example strength,

agility, coordination skills were better in favor of groups doing sport. Few studies support that sport did not change mentally retarded individuals' abilities. Therefore, in this study, we will compare the some performance parameters of 11-12 aged physically active mentally disables and inactive mentally disables.

2. Materials and Methods

2.1 Subjects

In this study, 12 mentally retarded children, studying in Selçuk teacher Fatma Menekse Education Application School and Business Training Center, was participated. 12 children were divided into 2 groups. Experimental group composed of 6 physically active children. Control group composed of 6 inactive children. Before the study, teachers and families were informed about the test procedure.

Table 1: Mean of anthropometric characteristics of subjects participating in the study

Parameters	Group	N	Average	Std. deviation	P
Age	Experimental	6	13,16	0,16	0,54
(year)	Control	6	13,33	0,21	
Height	Experimental	6	154,00	3,96	0,57
(m)	Control	6	149,66	6,44	
Body Weight	Experimental	6	39,66	2,37	0,65
(kg)	Control	6	42,33	5,21	

2.2 Study Design

First day both groups came to Selçuk University laboratory. Weight and height measurement were done then control group were taken to gym for warming up.

Vertical jump measurement was applied to control group after that experimental group's vertical jump scores were taken. 1 week later both group came to gym again to do 50 meter sprint test. Before and right, after the 50 meter sprint test heart rate was taken for measuring the resting and fatigue heart beat level.

Vertical jump: The subject marks the wall with his fingertip by extending his hands up on the wall. Then they touch the wall by jumping up without taking steps. The result was determined as the bounce distance of that subject in centimeters. The test was performed three times and the best score was accepted. The anaerobic forces of the subjects were calculated using the subjects ' vertical jump values and body weight with

Lewis formula. 50 meters sprint test were measured by using chronometer.

Hearth rate: Heart rate values were measured with polar RS 800 (made in Finland) device in Selçuk University faculty of sports sciences performance laboratory.

2.3 Statistical analyze

Performance data from the vertical jumping distance, heart rate, anaerobic power were analyzed with parametric independent T test (control vs experimental group).

All data were provided as the mean (M) and standard deviation (SD). All statistical tests were performed using the software package SPSS version 22.0 (SPSS Inc, Chicago, IL). Statistical significance level was set at $p < 0.05$.

3. Results

Table 1: Comparison of measured parameters of experimental group and control group

Parameter	Group	N	Mean	Std. deviation	P
Age (year)	Experimental	6	13,16	0,16	0,54
	Control	6	13,33	0,21	
Height (m)	Experimental	6	154,00	3,96	0,57
	Control	6	149,66	6,44	
Body Weight (kg)	Experimental	6	39,66	2,37	0,65
	Control	6	42,33	5,21	
Vertical jump distance (cm)	Experimental	6	16,00	2,29	**0,00***
	Control	6	6,66	0,17	
50 Meter speed test (min)	Experimental	6	11,66	0,42	**0,00***
	Control	6	13,74	0,30	
Heart beat (resting)	Experimental	6	66,00	2,25	0,82
	Control	6	65,33	1,97	
Heart beat (fatigue)	Experimental	6	112,66	2,17	**0,00***
	Control	6	137,33	2,45	
Anaerobic power	Experimental	6	3225,01	573,61	**0,02***
	Control	6	1479,80	350,59	

Control: Inactive mentally retarded, **experimental**: physically active mentally retarded,
* significant differences (p<0,05).

As seen in the table, there are no significant differences between control and experimental groups' heights and weights. Vertical jump distance score of groups were significantly different each other and the differences were in favor of experimental group (p<0,00). While there was no significant differences in terms of resting heart rate, fatigue heart rates of experimental group and control group were significantly (p<0,00) different. The significant differences were in experimental group favor. It was determined that anaerobic powers of groups significantly higher in experimental group (p<0,02).

4. Discussion

In this study, age and height of the groups were not different. It is previously reported that body weight is one of the determinant factors that can muscular strength (Işık et al., 2018). At this point, the homogenous groups were obtained in terms of body weight variables. Physically active mentally retarded and sedentary mentally retarded individuals' 50 meter speed, anaerobic power, vertical jump distance, resting and fatigue hear beat rate parameters were compared. It was found that, physically active

mentally retarded individuals' speed, anaerobic power, anaerobic power were better than inactive mentally retarded individuals.

In the study, it was found that 50 meters speed test values of experimental group significantly better than control group's values. In support of our study, Savucu (2005) trained 15 mentally disabled people for 3 months, twice in a week. The other 15 mentally disabled people did not exercise for 3 mounts. In anaerobic power and vertical jump variable significantly higher in exercising group than inactive group. Yılmaz (2012) examined the effect of physical education lesson on mentally retarded individuals. 20 experiments (height 1.41 ± 0.12, weight 42.40 ± 697, age 11.00 ± 0.85 and 20 control groups (BMI 1.38± 0.08, weight 41.70 ± 15.45, age 11.10 ± 0.85) were included in the study. In the 50-meter speed test, the experimental group ran 57.60 ± 4.92 before the training and 48.50 ± 5.03 seconds after the training. The control group values were found to be 61.35 ± 3.40 before and 65.55 ± 3.63 sec after the training. The experimental group showed a significant improvement of 0.01, while the control group gave a negative value of 0.01. when we compare the groups after training 50 meter and vertical jump values, it is shown that, 50 meter speed values (P<0,01) and vertical jump values (P<0.006) significantly higher in exercising group. Koç (2012) examined the effect of basketball training on 12 mentally retarded individuals (age 16.7 ± 1.6 years, height 1.76 ± 0.08 centimeters). Mentally retarded individuals were trained third times in a week for 2 months. 50 meter speed test values of mentally retarded individuals were significantly (p<0,05) decrease after trainings (before 4.8±0.3 sec, after 4.6±0.3 sec). Şahin (2011) studied with 30 mentally retarded individuals for examining the ski effect. 15 mentally retarded individuals (age 14,93 year, height 162,47 cm, weight 63,19 kg) were taken 8 weeks ski education as a experimental group. The other 15 mentally retarded individuals did not exercise for 8 weeks. After 8 weeks training period, 20 meter speed test and vertical jump values were significantly different (0,01) in experimental group favor. Rimmer (2004) conducted a training program for 52 adult mentally retarded people for 12 weeks including strength exercises, and showed significant improvements in muscle strength and endurance. Aygün and Dinçer (2006) examined the effects of 10 weeks exercise on mentally retarded individuals. There were 15 students (age 9-15 year, 137,13± 3,77 cm, 35,26 ± 3,30 kg) studying in Sakarya center Canada practice school. The students were able to take command and these students were given a 10-week exercise program. Before and after 10 weeks training, vertical jump test, 20 meters speed test and some other test were applied to mentally retarded students. Vertical jump values significantly increased after 10 weeks training from 20,46±11,13 cm to 24,46± 1,18 cm. Tümer (2007) examined the plyometric training effect on mentally retarded children. 24 mentally retarded children were divided into 2 groups. Experimental group were consist of 12 mentally retarded children (age 12.14±1.6 year, height 1.47±0.08 cm, weight 44.2±10.7 kg) and control group were consist of 12 mentally retarded children (age 11.5±1.2 year, height 142±0.10 cm, weight 34.6±10.7 kg). In the statistical evaluation, it was determined that the vertical jump of the exercise group increased by 28.7% and this value increased by 3.2% in the control group. When the speed values of the groups are

examined 20.9% of the experimental group, in the control group a decrease of 7.4% was observed. Lewis and Fragala-Pinkham (2005) trained a 10.5-year-old girl with Down syndrome at home. After exercise period, Improvements in submaximal heart and respiration rates, aerobic performance, muscle strength and endurance, gross motor skills, and anaerobic power were observed for this subject. Calders et al. (2011) Compared to no training, combined exercise training has significant positive effects on total cholesterol levels, aerobic capacity, muscle strength and resting systolic blood pressure, while endurance exercise training has significant effects on aerobic capacity. Guidetti et al. (2010) reported that in his study showing that athletes' explosive leg power performances are higher than non-athletic people's performances. Rimmer ve Kelly (1991) found that resistant training significantly increased upper and lower body strength of individuals with mental retardation. Croce (1990) and Beasley (1982) found exercise increased cardio vascular fitness in mentally retarded children and adults. In contrast to our findings, Ciftci (2016) examined 32 children, 16 of them were training group and the other 16 were control group. Training group was trained for 8 week. After the training period, both group 25 meters speed performance were significantly the same. Aygün and Dinçer (2006) found that 20 meter speed test data were the same before and after training period. These contrasts can be caused by differences in subject groups and tests.

As a result, it can be said that the measured performance parameters of physically active mentally retardates are better than mentally disabled inactive individuals and this can reflect positively on mental development and quality of life.

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