

PHYSICAL AND PHYSIOLOGICAL PARAMETERS EVALUATION OF SPORT SCIENCE STUDENTS

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Abstract

The purpose of this study is the evaluation of the training effects on the physical and physiological parameters of students. In order to evaluate the effects on anaerobic power and standing long jumping parameters of student, was tested some students that were selected as voluntary. Coordination test, anaerobic power test and standing long test was performed. The training influenced on the parameters significantly in compare to the first state of them, at 1 and 5 probability level. But coordination tests showed negative significant results. This study concluded the difference time and strength of the training with more exact to do for different student with wide age limitation.

KEYWORDS: Physical parameters. Anaerobic power. Jumping, Coordination.

1. INTRODUCTION & PROBLEM OF THE STUDY

Today sports and exercise are applied by millions of persons in order to move away from stress, raise their quality of life (Tas et al. 2008). By doing long-term practice, play sports can promote metabolism. Physical exercise is planned to make propel changes in body that occur to body and organ system's metabolism so as to improve each organ system structure and functions, make it a series of higher adaptability that causes to human physical quality can strengthen (Wang et al., 2012). During sports process persons have some changes in their physiological properties and parameters, such as muscle excitement, breathe speed increasing, heart rate promotion, perspiration, temperature changed. These physiological parameters have close relationships with sports amount and sport process duration. Information of sport physiological factors change is helpful for physical education teaching and sports training (Deng et al., 2004). College students are sometimes under heavy learning responsibility, great learning pressure that causes them in tight plans. As a result of this case, they do not have time to do exercise. In this way physical quality gets worse so that cannot support heavy learning, damaged circles generate. It can be shown that physical exercise is important to college students. By analysing the physical education exercise characteristics, after discovering the measurement sport physiological parameters, make real time analysis of such data can play important information transfer role in physical education training and matches and provide important bond to effective development of physical education teaching (Li, 2012). Performance is included physical, physiological, biomechanical and psychological product that produced by the athletes. When structural factors are considered in addition to physiological factors; body measurements and proportions as well as physical and body compositions become important factors that affect physical performances (Colakoglu et al., 2014). The aim of the study was to evaluate physical and physiological parameters of the college students. With our study can be illustrated the sport science reaction strength to the physical and physiological parameters.

2. METHODOLOGY

Subjects: The study population was consisted of 33 male students of Ataturk University, Kazim Karabekir sport science and physical activity Education faculty. The students were selected as voluntary. This study took 14 weeks during education semesters.

Physical and physiological measurements: The age, height and body weight of the student was measured and noted. Some test was applied such as Coordination test, Sargent Jump Test and Standing Long Jump Test.

Coordination is the ability to move two or more body parts under control, smoothly and efficiently. Manual dexterity tests or tests of hand-eye coordination also fall into this category.

To measure the anaerobic power test was used of Sargent Jump Test. The Sargent Jump Test also known as the vertical jump test was developed by Dr. Dudley Allen Sargent (1849-1924).

The athlete's anaerobic power was measured by this formula:

$$P = (\sqrt{4.9} (w) \sqrt{D})$$

P: Anaerobic power (kg.m/sec)

W: Body weight (kg)

D: Jumping distance (m)

$\sqrt{4.9}$: Standard time (sec)

The Standing long jump, also called the Broad Jump, is a common and easy to administer test of explosive leg power.

Procedure of standing long jump: The athlete stands behind a line marked on the ground with feet slightly apart. A two foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed.

Procedure of Sargent Jump Test:

- The athlete warms up for 10 minutes.
- The athlete chalks the end of his/her finger tips.
- The athlete stands side onto the wall, keeping both feet remaining on the ground, reaches up as high as possible with one hand and marks the wall with the tips of the fingers (M1).
- The athlete from a static position jumps as high as possible and marks the wall with the chalk on his fingers (M2).
- The assistant measures and records the distance between M1 and M2.
- The athlete repeats the test 3 times.
- The assistant calculates the average of the recorded distances and uses this value to assess the athlete’s performance.

The measurement of height and body weight:

To measure the persons height was used of medical measurement tool that used when the persons ere with naked foot. The body weight was measure by the medical measurement tool after the person undressing and only wears shorts.

Table 1: Descriptive statistics

	Count	Mean
Height	33	176.75 (m)
Age	33	21.84 (year)
Body weight	33	71.93 (kg)
Coordination 1	33	18.47 (sec)
Coordination 2	33	17.73 (sec)
Coordination 3	33	16.92 (sec)
Anaerobic power 1	33	98.72 (kg.m/Sec)
Anaerobic power 2	33	109.18 kg.m/Sec)
Anaerobic power 3	33	109.84 kg.m/Sec)
Standing long jump 1	33	2.30 (m)
Standing long jump 2	33	2.34 (m)
Standing long jump 3	33	2.37 (m)

Training program:

Training name: Rapid force

Training aim: Development of rapid force (Anaerobic power)

Training time: 15-25 sec

Loading density: %40-60

Seri number: 3-5

Rest: 3-5 min (Between series)

Movements:

1. Jumping to right and left on the gymnastics bench
2. Skip and transition between Slalom rods
3. Somersault to front cushion straight
4. Vertical jumping
5. Shuttle and push-up movement performance

6. 9 meters running straight

3. RESULTS

In this study was evaluated the effect of anaerobic power training of the 20-24 years old of sport science and physical activity students on the physical and physiological parameters during 14 weeks and 2-3 times doing technique training during week. For the experimental group, before study, the principle of anaerobic power training showed parallelism for the performed training principle number and other effects plan for the selected study. Anaerobic power showed increasing as 11 kg.m/sec and the first amount and the end amount of anaerobic power had significant difference at 1% probability level (fig. 1). Standing long jump had raising as 4 cm and the first and the end measurement of this parameter had significant difference at 5% probability level (Fig. 2). According to the results, there was significant and negative difference between coordination tests at 1% probability level (fig. 3).

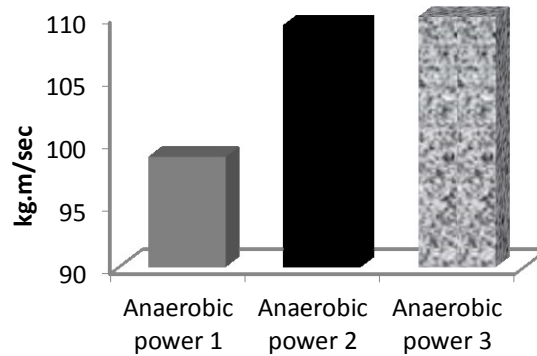


Fig. 1: Anaerobic power tests

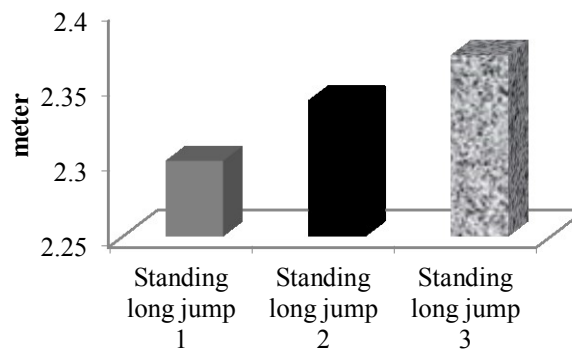


Fig. 2: Standing long jumping tests

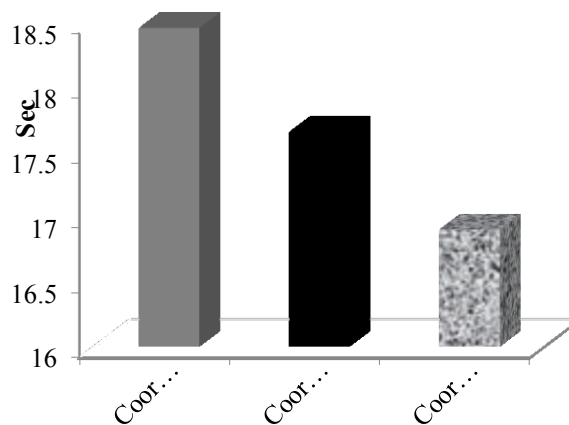


Fig. 3: Coordination tests

4. DISCUSSION

In a study on the 16 students with 15 mean years was determined the aerobic power as between 49.4-60.4 kg.m/sec (Brown et al., 1986). The results had a study on female handball players and applied 8 weeks straining on experimental group. Analyzes showed that mean of first and last 20 meters shuttle run test of experimental group were 3.99 ± 0.27 and 3.60 ± 0.23 sec, respectively and 20 meters shuttle run test mean of either first and last tests of control group was 4.04 ± 0.34 sec. Physical training can cause significant changes in the parameters of body composition and it is important factor in the regulation and maintenance of body mass (Cvrino et al., 2002). Ceiling effects might explain our defeat to identify significant changes in physical self-perception among boys in the resistance training groups. The effects of exercise on self-concept are most likely to occur among participants with initially low levels of physical self-perception (Fox, 2000). The results have shown that there are significant increases in leg strength after 8 weeks of strength training in female and male group, but no improvements in vertical jump were observed (Faigenbaum et al., 1999). A study by Weltmann et al. (in 1986) showed that the group who completed a strength training intervention for 14 weeks had significantly better results in the vertical jump than the control group. Studies of adolescents have also shown positive performance changes in response to long-term strength training interventions (Keiner et al., 2012).

5. CONCLUSIONS

In this study after 14 weeks training performance was shown increasing and development for the anaerobic power and standing long jump. Training should be done with more exact and with a true plan. By this way, this training can be have positive and significant effects on the athletics. For this study is suggested that is evaluated the different time and strength of the training for the different persons.

Practical applications:

Training and exercise improved the anaerobic power players and standing long jumping but the coordination tests had negative and significant results after training period. The movement types were very important to effect on the studied parameters.

Acknowledgment

Research was supported by Ataturk University of Kazim Karabekir education faculty of Turkey. The authors wish to thank the subjects for their participation in this study.

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