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Effect of six week plyometric exercise on dynamic postural control of male athletic students

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ABSTRACT

The purpose of this study was to consider the effect of plyometric exercises on dynamic postural control of male athlete students. 30 male athletic students with average and standard deviation age of 22.17 ± 6.2 yr, weight 74.21 ± 2.92 kg and length 171.62 ± 3.83 cm without any precedence of lower extremity, head and vestibular injuries, voluntarily participated in this study. They divided into two groups as follow: group 1: plyometric exercise and group 2: control group. One day before from executing of exercises, dynamic postural control assessed with using The SEBT test. Within 6 week that plyometric exercise groups executing exercise programs, Control group asked to continue their daily activities. One day after from completing of exercises, dynamic postural control of subjects assessed with using The SEBT¹ test. Descriptive statistics, Dependent and Independent T-test used for data analysis. Significant increase shown in reaching distance in all directions for two groups. Due to results, using plyometric exercises in training programs are recommended to decrease likelihood of injury and improve the athletes' dynamic postural control.

Keywords: Plyometric Exercise, Dynamic Postural control.

INTRODUCTION

Considering that the postural control is one of the body integral components of daily activities and a key for athletes performance (1) beside the role of lower extremity muscles in getting a skeletal state of body to a balanced condition employing different training programs to strengthen control Postural, researchers have been considered (2 and 3). For example, Karl and colleagues (1997), in a study titled effects of a six-week strength training program on dynamic postural control concluded that proprioceptive and strength training, improves the ability to maintain dynamic postural control (2). Also Paterno and colleagues (2004) showed that using a combination program (Plyometric, technical, strength and postural control), could improve anterior- posterior postural control (3). Reviewing previous studies about Plyometric training program effect on dynamic postural control is examined were not observed. Therefore, current study suggesting practice effect on postural control, have been examined the effect of Plyometric exercises on control of dynamic postural. Mahyoo and his colleagues studied about improving

the power and postural control of the young with two kind of the exercises: resistance and vibration exercises. Each of the groups (vibration and resistance) exercised 6 weeks and 3 sessions per week. The result showed that none of these groups to improve postural control and there is not a significant difference between the groups. (Mahyoo and his colleagues 2006). Jerry B. Wilkerson and his colleagues in 2004 considered plyometric jumping exercise effect on college women athletes muscular and nervous changes. Subjects were 19 university basketball players. They have not any damage and pain on their knees during 6 months before this research. The findings showed that plyometric jumping exercises were the cause of improve and development of the nervous and muscular coordination and also reducing the intersecting Ligament damage of the knee (Jerry B. Wilkerson and his colleagues in 2004).

MATERIALS AND METHODS

Research Methodology

Current research is quasi-experimental study. Thus, 30 male students of physical education and sport sciences with a mean and standard deviation, of age 6.2 ± 22.17 years, weight 2.92 ± 74.21 kg and height of 3.83 ± 171.62 cm, with no history of injury lower limbs, head and vestibular disorders, voluntarily participated in this study. Subjects randomly were divided into two groups with 15 persons in each one. Plyometric group exercises for six weeks (Two sessions per week) and second group served as the control group participated in this study. One day before practice, dynamic postural control of subjects was measured by the balanced SEBT test and the next day Plyometric group subjects attended their own six weeks training program. At this time, the control groups were asked to maintain their daily physical activity and training. One day after ending of training period again postural control of subjects was measured. We used descriptive statistical methods and paired T-test at a ≤ 0.05 level of significance for statistical analysis.

Table(1). accessing interval (cm divided by leg length multiplied by 100) samples of two groups in eight course of SEBT before and after applying SEBT training program

Mean and standard deviation after applying training program	Mean and standard deviation before applying the training program	group	course
92.20 \pm 1.78 86.73 \pm 1.48	85.46 \pm 2.30 86.93 \pm 1.83	Plyometric Control	Anterior
88.86 \pm 2.19 85.80 \pm 2.42	85.20 \pm 2.42 80.40 \pm 2.29	Plyometric Control	Anterior- External
89.93 \pm 2.43 86.46 \pm 2.58	84.86 \pm 2.55 86.30 \pm 2.14	Plyometric Control	External
90.16 \pm 1.92 88.46 \pm 2.47	84.66 \pm 2.02 85.80 \pm 2.07	Plyometric Control	External - posterior
93.16 \pm 1.77 88.47 \pm 2.56	87.73 \pm 2.46 87.93 \pm 2.73	Plyometric Control	posterior
95.10 \pm 1.55 89.47 \pm 2.44	88.53 \pm 1.92 89.26 \pm 2.68	Plyometric Control	Posterior - Internal
95.20 \pm 1.57 88.47 \pm 1.68	88.93 \pm 2.25 88 \pm 1.85	Plyometric Control	Internal
93.26 \pm 1.58 88.47 \pm 2.09	88.60 \pm 1.88 88.06 \pm 1.87	Plyometric Control	Anterior - Internal

¹- Star Excursion Balance test (SEBT)

Table (1) shows accessing interval data between two groups in eight course of SEBT before applying training program. T-test indicated age, height, weight and accessing interval of subjects before applying of training programs didn't have significant difference. So groups in these features were congruent. Also, Table (1) shows accessing interval information of samples of two groups in eight course of SEBT after applying the training programs. Research finding after training program, indicate that six weeks plyometric training program made significant increase

in accessing interval at very eight course of SEBT. While no significant difference was observed in control group after six weeks.

CONCLUSION

The purpose of this research was consideration of a six-week Plyometric training program effect on dynamic postural control in male student athletes. Findings of this research showed significant increase in six-week Plyometric training in each eight courses of SEBT. Results of this research with, Karl et al (1997) and Paterno and colleagues findings (2004) based on a significant effect of exercise on postural control, is consistent (2, 3). Possible increase was attributed to postural control after Plyometric exercises that can increase muscle strength of lower limbs, quadriceps and hamstring muscle contraction, and also increase of muscle spindle sensitivity, and the impact of exercise on muscle -neural pathways (2, 3 and 4.) Also, since in practice Plyometric, more stress on the nervous - muscular system to maintain postural control is applied, while doing these exercises when the person needs a dynamic postural control, so Plyometric exercise may be able to be a dedicated practice to improve dynamic postural control. According to the findings, the sports educators and experts recommend to use Polymeric exercises to reduce the chance of injury and increase athletics performance and postural control.

REFERENCES

- [1] Gribble, P., Hertel, J., Denegar, C., Buckley, W. **2004**. *J Athl Train*. 39(4), 321-329.
- [2] Carl G, Atc and John WD. **1997**. *J Athl Train*. 32(2): 127-35
- [3] Paterno MV, **2004**. *J Orthop Sports Phys ther*. 34(6): p. 305- 16
- [4] Duda M. **1998**. *The Phys and Sport Med*. 16: 213-19