EFFECT OF LOW INTENSITY PLYOMETRIC TRAINING ON SELECTED NEURO MUSCULAR ACTIVITIES OF SCHOOL STUDENTS

Mr. Yallarao Mandava[1*], Dr. C. Vairavasundaram[2], Mr. Mohmmad Chotemiya[3]
Ph.D Full Time Research Scholar[1*,3], Assistant Professor[2]
[1,2,3]Alagappa University College of Physical Education Karaikudi, Tamil Nadu, India.

Abstract:

Background: the main aim of this research was to evaluate the effect of low intensity plyometric training on selected neuro muscular activities of school students. **Method:** Therefore the purpose of the study was to investigate the effect of low intensity plyometric training on speed and agility of school students. In this study thirty (30) subjects, of school students were randomly selected from in and around the algappa sports foundation, Karaikudi, Tamilnadu. Selected subjects divided into two groups namely such as low intensity plyometric training fifteen (15) and control group fifteen (15). (n=30). Timeline: The low intensity plyometric training was consisted of 45-60 min/day, 3 days in a week till 8 weeks from in and around the algappa sports foundation. Neuro muscular activities completed of the both groups at zero time and after 8 weeks of low intensity plyometric training intervention group. Speed was tested by 50mts (Dash) in seconds and agility was tested by t-test mts shuttle run, Pre and post-test random group design was used for this study. The Paired 't' test was applied to determine the difference between the means of two group. To find out whether there was any significant difference between the experimental and control groups **Conclusion:** The advantage of low intensity plyometric training concluded that, there was a significant difference exists between experimental and control groups on speed and agility. The control group did not improve the selected criterion variables. Therefore low intensity plyometric training covered in this study are beneficial for the school students.

Keywords: Resistance Training, Paired 't' test, Neuro Muscular Activities, School Students.

Introduction

Plyometric training consists of a rapid stretching of a muscle (eccentric action) immediately followed by a concentric or shortening action of the same muscle and connective tissue (Baechle & Earle, 2000). Plyometric drills usually involve stopping, starting, and changing direction in an explosive manner. Muscle under this condition is known to generate higher force

and deliver greater energy than without a pre stretch. The main purpose of giving plyometric training is to increase the excitability of the nervous system for improved reactive ability of the neuromuscular system which is helpful in sports.

Plyometric exercises vary in both complexity and intensity. It should be taught and progressed accordingly. Plyometric exercises are classified into four types, viz, low intensity, medium intensity, high intensity and shock exercises. High intensity plyometric is a vigorous, time taking, exhaustive training regime with a very rapid amortization phase in comparison to low intensity plyometric which is gentle and has a longer amortization phase. Low intensity exercises can produce the same effect being less exhaustive for the players and requiring less recovery time. Although plyometric training has been shown to increase performance variables like vertical jump and knee extensor strength and finally individual performance, but no scientific information is available to determine the effect of high intensity and low intensity plyometric on individual performance.

Therefore the aim of this research to determine the effect of low intensity plyometric training on selected neuro muscular activities of school students.

Methodology:

The purpose of the study was to find out the effect of low intensity plyometric training on selected neuro muscular activities of school students. To achieve the purpose of the study, thirty school students were selected from the algappa sports foundation. The subjects were randomly assigned in to two equal groups namely, Low intensity plyometric training group (LIPTG) and Control group (CG) consist of (n=15). The respective training was given to the experimental group the 3 days per weeks (alternate days) for the training period of 8 weeks. Design: The neuro muscular activities such as agility and speed were selected as dependent variables. Speed was tested by 50mts (Dash) in seconds and agility was tested by t-test mts shuttle run, Pre and post-test random group design was used for this study. After 8 weeks of low intensity plyometric training intervention group.

Statistical Analysis:

The collected data before and after training period of 8 weeks on the above said variables due to the influence of low intensity plyometric training was statistically analyzed with paired 't' test to find out the significant improvement between pre and post-test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. ($P<0.05$)

Table I

Computation of 't' Ratio on Selected Neuro Muscular Activities of School Students on Low Intensity Plyometric Training Group

Group	Variables		Mean	N	Std. Deviation	Std. Error Mean	t ratio
Experimental Group	Speed,	Pre	7.82	15	0.50	0.00	13.03*
		Post	7.76	15	0.51		
	Agility,	Pre	8.96	15	0.99	0.071	4.54*
		Post	8.63	15	1.06		
Control group	Speed,	Post	7.77	15	0.48	0.47	1.68
		Pre	7.85	15	0.45		
	Agility,	Post	8.90	15	0.96	0.003	1.33
		Pre	8.90	15	0.97		

*Significant level 0.05 level degree of freedom (2.14, 1 and 14)

Table I reveals the computation of mean, standard deviation and 't' ratio on selected bio motor fitness parameters namely speed and agility experimental group. The obtained 't' ratio speed and agility were 13.03, and 4.54 respectively. The required table value was 2.14 for the degrees of freedom 1and 14 at the 0.05 level of significance. Since the obtained 't' values were greater than the table value it was found to be statistically significant. Further the computation of mean, standard deviation and 't' ratio on selected neuro muscular activities namely Speed and Agility control group. The obtained 't' ratio on Speed and Agility were 1.68, and 1.33 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained 't' values were lesser than the table value it was found to be statistically not significant.

Discussion on Findings

The present study experiment the effect of low intensity plyometric training on neuro muscular activities of school students. The result of the study indicated that the low intensity plyometric training improved the neuro muscular activities such as speed and agility.

The findings of the present study had similarity with the findings of the investigations referred in this study. However, there was a significantly changes of subjects in the present study the speed and agility was significantly improved of subject in the group may be due to the in low intensity plyometric training. K.Devaraju et al., (2014) reported that twelve impact of low intensity plyometric training, the group improved significantly on all functional fitness components. Vairavasundaram et al., (2014) showed that significant improvement in all the selected physical variables namely agility, explosive power, muscular strength endurance and flexibility among handball players. Collectively, it appears that, from a theoretical standpoint, the inclusion of cluster set configurations has the potential to alter the training stimulus and ultimately magnify the adaptive response.

Conclusion:

There was a significant improvement takes place on selected neuro muscular activities due to the effect of eight weeks low intensity plyometric training. There was a significant difference exists between experimental and control groups on selected neuro muscular activities such as speed and agility. Therefore low intensity plyometric training included in this study are helpful for the school students.

Reference:

1. Matavulj, D., Kukkolj, M., Ugarkovic, D., Tihanyi, J., Jaric, S. 2001. Effects of plyometric training on jumping performance in junior basketball players. J. Sports Med. Phys. Fitness,41(2): 159-164.
2. Witzke KA, Snow CM. Effects of polymetric jump training on bone mass in adolescent girls. Medicine and science in sports and exercise. 2000 Jun 1;32(6):1051
3. Kumaravelu P and K.Govindasamy. Comparison of selected motor ability variables among football players of different positional play. International Journal of Physical Education, Sports and Health. 2018; 5(1): 101-107.

4. Potteiger, J.A., Lockwood, R.H., Haub, M.D., Dolezal, B.A., Alumzaini, K.S., Schroeder, J.M. and Zebas, C.J. 1999. Muscle power and fiber characteristics following 8 weeks of plyometric training. J. Strength and Conditioning Research,(13): 275-279.
5. Roper, R.L. 1998. Incorporating agility training and backward movement into a plyometric program. Strength and Conditioning,20(4): 60-63.
6. P Kumaravelu and K Govindasamy. Efficacy of SAQ drills on selected bio-motor abilities among inter collegiate athletes. International Journal of Yogic, Human Movement and Sports Sciences. 2018; 3(1): 160-161.
7. Toumi, H., Best, T.M., Martin, A., F., Guyer, S., Poumarat, G. 2004. Effects of eccentric phase velocity of plyometric training on the vertical jump. Int. J Sports Med., 25(5): 391-398.
8. Kumaravelu P, Govindasamy K. Impact of circuit resistance training on leg strength among University players from different discipline. International Journal of Yogic, Human Movement and Sports Sciences. 2018; 3(1):158-159.
9. Mr.Shaik. Hassan Jany, Dr.C.Vairavasundaram. Effect of suspension training on selected skill related fitness parameters among senior athletes. Journal of Xi'an University of Architecture & Technology. 2020; 12(3): 5673-5678.
10. Braun SI, Kim Y, Jetton AE, Kang M, Morgan DW. Prediction of bone mineral density and content from measures of physical activity and sedentary behavior in younger and older females. Preventive medicine reports. 2015 Jan 1;2:300-5.
11. J Anitha, P Kumaravelu, C Lakshmanan, K Govindasamy, et al. Effect of plyometric training and circuit training on selected physical and physiological variables among male Volleyball players. International Journal of Yoga, Physiotherapy and Physical Education. 2018; 3(4): 26-32.
12. Mr.Shaik. Hassan Jany, Dr.C.Vairavasundaram. Effect of aerobic circuit training on selected health related fitness parameters among senior athletes. Journal of Information and Computational Science. 2020; 10(2): 414-418.
13. Asadi A. Monitoring plyometric exercise intensity using rating of perceived exertion scale. Physical Activity Review. 2014(2):10-5.
14. Karabulut M, Bemben DA, Sherk VD, Anderson MA, Abe T, Bemben MG. Effects of high-intensity resistance training and low-intensity resistance training with vascular

restriction on bone markers in older men. European journal of applied physiology. 2011 Aug 1;111(8):1659-67.

15. Kumaravelu P, Govindasamy K. Impact of circuit resistance training on leg strength among University players from different discipline. International Journal of Yogic, Human Movement and Sports Sciences. 2018; 3(1):158-159.
16. Kim S, Sherk VD, Bemben MG, Bemben DA. Effects of short term low intensity resistance training with blood flow restriction on bone markers and muscle cross-sectional area in young men. International Journal of Exercise Science. 2012;5(2):6.
17. K Govindasamy, Mou Pramanik and A Vinayagamoorthi. Effect of yogic practices on selected physiological and psychological variables among patients of coronary artery disorder. 2020; 10(2): 76-82.
18. Vairavasundaram C, Palanisamy A. impact of aerobic dance on selected physical components on intercollegiate handball players, Star International Journal. 2014; 2:10(7), ISSN: 2321-676X.