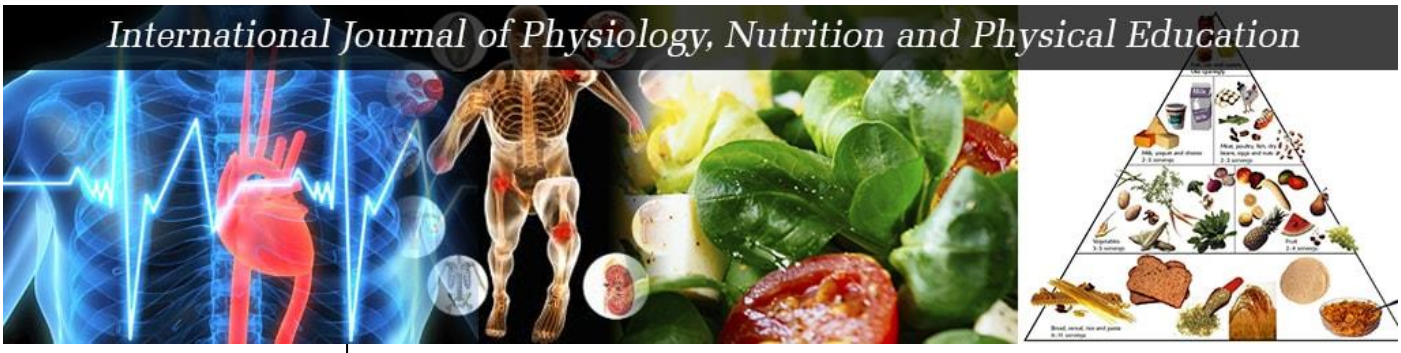

ISSN: 2456-0057
IJPNPE 2019; 4(2): 427-429

www.journalofsports.com
Received: 18-05-2019
Accepted: 22-06-2019

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Effect of plyometric exercises on movement time among the Kho-Kho players

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Abstract
The aim of the study was to determine the effect of plyometric exercise on movement time. Sixty male Kho-Kho Players (N=60 were randomly selected as subjects and their age ranged between 17 and 25 years. The selected subjects were randomly assigned into two equal groups with thirty subjects each (N=30). Group I experimental, Group II Control group the experimental groups underwent their respective experimental treatment for twelve weeks 3 days per week and a session on each day. Control group was not exposed to any specific training apart from their curriculum. Movement time was taken as variable for this investigation. The pre and post test were conducted one day before and after the experimental treatment. Analysis of covariance (ANCOVA) was used to analysis the collected data. Scheffe's test was used as a post hoc test to determine which of the paired mean differed significantly. The results revealed that There was also a significant difference between experimental groups on movement time ($P \leq 0.05$) Further it related that the plyometric training and plyometric training produced significant improvement ($P \leq 0.05$) on movement time as compared to control group.

Keywords: Plyometric training, movement time

Introduction

Sport has been a part of civilized societies throughout history. In some cases, as in Greece in the fifth century B.C, sport was of central importance to culture and has been studied and analyzed by scholars on many disciplines over the past 50 years. Most scholars agree that sport is a manifestation of play and that sports are institutionalized forms of play. Sport involves ritual and it involves tradition.

Response programming entails translation of the selected response into the appropriate execution commands for the task. Response programming can be manipulated by increasing the number of steps in the movement sequence, including directional changes in the movement, altering the target size, or altering the timing or rhythm of the task, When RT increases significantly as a result of increasing the complexity of the movement response, the increase is commonly referred to as a movement complexity effect. Both simple and choice RT paradigms have been advocated to study movement complexity effects on response programming.

The very elaborations of sport, its internal conventions of all kinds, its ceremonies, its endless meshes entangling itself for the purpose of training, testing and rewarding the rousing emotion within an individual to find a moment of freedom. Freedom is that state where energy and order merge and all complexity is purified into a simple coherence of parts and purpose and passions that cannot be surpassed and whose goal could only be to be itself.

Plyometrics is a method of developing explosive power, an important component of most athletic performances. As coaches and athletes have recognized the potential improvements which Plyometrics can bring about in performance, they have integrated it into the overall training programme in many sports and made it a significant factor in planning the scope of athletic development. Plyometrics is a new form of isotonic training which became popular during the late 1970s and early 1980s. Proposed to bridge the gap between speed and strength, plyometrics uses the stretch reflex to facilitate the recruitment of additional motor units and loads both the elastic and contractile components of muscle and hence, plyometrics has been referred to as bounce loading or rebound jumping.

The word Plyometrics is derived from the Greek word *pleythyein* meaning "to increase" or from the Greek roots *plio* and metric meaning 'More' and 'Means'. Plyometrics refers to exercises that enable a muscle to reach maximal strength in as shorter time as possible. Plyometrics exercises are important in sports requiring high levels of speed strength (ability to exert maximum force during high speed activity) to complete movement such as sprinting, jumping and throwing.

Methodology

For the purpose of this study, 60 Male Kho-Kho players who has played in the Senior state championships from different districts of Kerala were selected as the subjects. The age of the subjects ranged between 17 to 25 years. The subjects were informed about the nature of the study and their consent were also taken before involving them as subjects of the study. The subjects were later randomly assigned to a control group and to an experimental group of equal sizes. Sixty male Kho-Kho Players (N=60 were randomly selected as subjects and their age ranged between 17 and 25 years. The selected subjects were randomly assigned into four equal groups with thirty subjects each (N=30). Group I experimental, Group II Control group The experimental groups underwent their respective experimental treatment for twelve weeks 3 days per week and a session on each day. Control group was not exposed to any specific training apart from their curriculum. movement time was taken as variable for this investigation. The pre and post test were conducted one day before and after the experimental treatment.

Result and Discussion

Table 1: Analysis of co-variance done among the two groups on movement time

	Control group	Experimental group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio	P-value
Pre-test Mean	19.867	20.900	Between	16.017	1	16.017	0.585	0.447
S.D.	5.043	5.416	Within	1588.167	58	27.382		
Post-test Mean	18.833	19.600	Between	8.817	1	8.817	0.569	0.454
S.D.	3.705	4.157	Within	899.367	58	15.506		
Adjusted Post-test Mean	19.133	19.301	Between	0.419	1	0.419	0.065	0.799
S.D.	0.464	0.464	Within	366.271	57	6.426		

The Table 1 contains all the relevant factors related to analysis of co-variance done on the variable Movement Time. The post-test values are the values of the variable Movement Time, while the pre-test variable was taken as the co-variate. The P-value of 0.447 associated with the pre-test scores indicates that, there is no significant difference between the means of the pre scores of control and experimental group. Again a P-value of 0.454 associated with the post scores implies that, the post mean scores are not significant. Further, the said table do indicates an F-ratio of 0.065 on the adjusted post-test means and this do implies that, there existed no significant mean difference on the variable Movement Time among the control group and experimental group, as the P-value obtained has been 0.799, which is greater than 0.05, the level of significance set for this study.

Since, the F-ratio was found to be insignificant the LSD post-hoc test was not done on the variable Movement Time.

Table 2: Analysis of co-variance done among the two groups on flexibility (trunk & back)

	Control group	Experimental group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio	P-value
Pre-test Mean	13.400	14.300	Between	12.150	1	12.150	0.516	0.475
S.D.	4.860	4.843	Within	1365.500	58	23.543		
Post-test Mean	13.767	18.00	Between	268.817	1	268.817	15.508**	0.000
S.D.	4.384	3.930	Within	1005.367	58	17.334		*P*< .001
Adjusted Post-test Mean	14.124	17.643	Between	184.112	1	184.112	72.299**	0.000
S.D.	0.292	0.292	Within	145.153	57	2.547		*P*< .001

** significant at 0.01 level as the P-value is < 0.01

The Table 2 contains all the relevant factors related to analysis of co-variance done on the variable Flexibility (trunk and back). The post-test values are the values of the variable Flexibility (trunk and back), while the pre-test variable was taken as the co-variate. The P-value 0.475 associated with the pre-test scores indicates that, there is no significant difference between the mean of the pre scores of control and experimental group. Again a P-value of 0.001 associated with the post scores implies that the post mean scores are significantly different. Further, the said table do indicates an F-ratio of 72.299 on the adjusted post-test means and this do implies that, there existed significant mean differences on the variable Flexibility (Trunk and Back) among the control and experimental group, as the P-value obtained has been 0.001 which is much less than 0.05, the level of significance set for this study.

Since, the F-ratio was found to be significant, the LSD post-hoc test was done, to find out whether there existed significant differences among the adjusted post-test means or not on the variable Flexibility and the details are presented in Table 3.

Table 3: LSD post-hoc test done on the two groups for difference between adjusted post-test paired means on flexibility (Trunk & Back)

Adjusted Post-test means		Mean Difference	Std. Error	P-value
Control group	Experimental group			
14.12	17.64	3.52*	.414	*P*<.000**

* The mean difference is significant at 0.05 level

** Based on estimated marginal means. Adjustment for multiple comparisons least significant difference (equivalent to no adjustment)

The above table do indicates a mean difference of 3.52 and a P-value of 0.000. This do clearly shows that, there existed

significant differences in the adjusted post-hoc paired means among the control group and experimental group. The graphical representation of the adjusted post-hoc means of the two groups an presented in Figure 1.

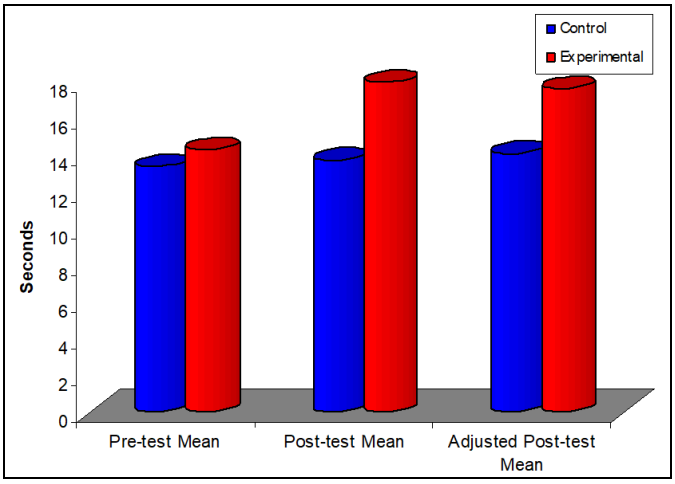

Fig 1: Graphical Representation of the Pre-test, Post-test and Adjusted Post-test Means on Flexibility (Trunk & Back) of the two different groups

Conclusion

The result of the study indicates that, there was no significant difference on Movement Time among the control group and the experimental group, as there was no change on Movement Time in both the groups after the plyometric training programme.

References

1. Aggarwal JC. Educational Research, New Delhi: The Arya Book Depot, 1975.
2. Anita Bean. The Complete Guide to Strength Training, London: A and C Black Publishers Ltd, 1997.
3. Arnhein, Daniel D. Modern Principles of Athletic Training, St. Louis: The Mosby College Publishing Co., 1985.
4. Baechle, Thomas R. (Ed.), Essential of Strength Training and Conditioning, Champaign, Illinois: Human Kinetics, 1994.
5. Barrow, Harold M. Man and his Movement Principles of Physical Education, Philadelphia: Lea and Febiger, 1971.
6. Cooper, John M, Mavlene Adrian, Ruth B Glassow. Kinesiology, (5th Ed.), St. Louis: The C.V. Mosby Company, 1982.
7. Cooper, John M, Mavlene Adrian, Ruth B. Glassow, Kinesiology, (5th ed.).
8. Dick, Frank W, Sports Training Principle, London: Hendry Kimpton Publisher, 1980.
9. Hooks, Gene, Application of Weight Training to Athletics, Engle Wood Cliffs: New Jersey, Prentice Hall. Inc, 1962.
10. Janner JM. The Physique of the Olympic, (London: The George Allen and Unwin Ltd., 1969.
11. Jensen, Clayue R, Garth A. Fishes, Scientific Basis of Athletic Conditions, (Philadelphia: The Lea and Febiger Publishers, 1979.
12. Johnson, Barry L, Jack K Nelson. Practical Measurement for Education in Physical Education, New Delhi: Surjeet Publication, 1982.
13. Phillips, Allen D, Sandra A. Street, Sprint Assisted Training Programme, Track Technique, 1989.
14. Riley, Daniel P. (Ed.), Strength Training (2nd Ed.), New York: Leisure Press, 1982.
15. Singh, Hardayal. Science of Sports Training New Delhi: D.V.S. Publication, 1991.
16. Singh, Hardayal. Sports Training General Theory and Education Method, (New Delhi: D.V.S. Publication, 1991.
17. Blakey JG, Southard D. The Combined Effects of Weight Training and Plyometric on Dynamic Leg Strength and Leg Power, Journal of Applied Sports Science Research, 1987, 1.
18. Delecluse C *et al.*, Influence of High-Resistance and High-Velocity Training on Sprint Performance, Journal of Medicine Science Sports and Exercise, 1995, 27(8).
19. Echer, Tom. Improving sprinting speed through strength training, athletic journal, 1975, 65.
20. Gehri, Daniel J *et al.*, A Comparison of Plyometric Training Techniques for Improving Vertical Jump Ability and Energy Production, Journal of Strength and Conditioning Research, 1998, 12(2),
21. Holcomb, William R *et al.*, The Effectiveness of a Modified Plyometric Program on Power and Vertical Jump, Journal of Strength and Conditioning Research, 1996, 10(2),
22. Jones K *et al*. The Effect of Compensatory Acceleration on Upper Body Strength and Power, Journal of Strength and Conditioning Research. 1996; 10:1.
23. Kalyan Kumar Maji. The Effect of Specific Isotonic, Isometric and Combination Training on Arm Strength, SAI-Scientific Journal. 1996; 19:4
24. Staly, Charles, Quality Strength for Human Athletic Performance, Mesomorphosis.com. 1998, 9.