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Effect of medicine ball training on bio motor variables of adolescent boys

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Abstract
The study was designed to investigate the "Bio-motor fitness parameters response to medicine ball training on adolescent boys. The experimental group was given training for the period of 12 weeks of medicine ball training. The criterion variables were chosen namely speed, agility, leg explosive power and arm strength. All the dependent variables were assessed before and after the training period. The collected data on bio- motor fitness parameters due to effect of medicine ball training was analyzed by computing mean and standard deviation. In order to find out the significant improvement if any, 't' test was applied. 0.05. The study revealed that the bio -motor fitness parameters were significantly improved due to the influence of medicine ball training.

Keywords: medicine ball training, Motor fitness, Speed, Agility and arm strength.

1. Introduction
Physical activity has never been more important in the United States than it is today. The President's Council on Fitness, Sports & Nutrition finds that only one out of every three adults is getting the recommended amount of physical activity each week. More than 78 million U.S. adults and about 12.5 million children and adolescents are obese. Getting motivated to begin a fitness program can be a daunting task, especially with distractions like television, fast-food restaurants, and sugary snacks available at all hours of the day (Elijah Wolfson December 9, 2014).

Children and adolescents need to participate regularly in physical activities that enhance and maintain cardiovascular and musculoskeletal health. Current recommendations indicate that school-aged youth should participate daily in 60 minutes or more of moderate-to-vigorous physical activity that is developmentally appropriate and enjoyable and involves a variety of activities. In addition to aerobic activities such as swimming and bicycling, resistance training also can be part of a health-enhancing physical activity program for school-aged children, provided that appropriate guidelines are followed. Whereas different modes of resistance training such as weight machines and free weights (i.e., barbells and dumbbells) have proven to be safe and effective for children and adolescents, medicine balls are becoming increasingly more popular in schools, fitness centers, and sport training facilities.

A medicine ball refers to a weighted ball that can be used for doing a wide range of exercises to improve fitness, strength and coordination as well as help sportsmen recover from injuries. .Medicine ball exercises are effective for improving sport-specific as well as overall strength, fitness, flexibility and body coordination. They can be performed alone or with one or more partners. Some of the common medicine ball exercises include squats, lunges, lunge crossovers, slams, crunches, oblique twists, single-leg V-ups, reverse curls, overhead lateral flexions, kneel to push ups, diagonal chops, figure eights, two-arm wall passes, hammer throws, sit-up passes, front lateral raises and standing Russian twists.

2. Materials and Methods
The 40 adolescent boys were randomly selected from the government high school, Gobichettipalayam as subjects and their age ranged between 12 to 14 years. They were divided into two groups. The group - I was considered as an experimental group and group - II was considered as the control group. The control group was not given any exercise and the

experimental group was given Medicine ball training for five days per week for 8 weeks. The evaluated parameters were speed (50 m dash), agility (4×10 m shuttle run), leg explosive power (standing broad jump) and arm strength (hand grip dynamo meter). The parameters were measured before and after the medicine ball training programme. The collected data on motor fitness parameters due to effect medicine ball training was analyzed by computing mean and standard deviation. In order to find out the significant improvement if any‘t’ test was applied.

Table 1: Descriptive analysis of the Pre and Post test data and‘t’ ratio on Speed of Experimental group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
Speed	Experimental group	Pre	9.54	0.59	8.59%	0.822	5.79
		Post	8.72	0.50			
	Control group	Pre	9.46	1.12	0%	0.005	0.81
		Post	9.46	1.12			

* Table t- ratio at 0.05 level of confidence for 19 df = 2.093

The mean value of experimental group on Speed among boys in pre and post training are 9.54 and 8.72, the corresponding standard deviation are 0.59 and 0.50 respectively. The t-value as per the t-test is 5.79 and these values are greater than the required table value of 2.093 for significance at 0.05 levels for 19 degrees of freedom. The mean value of control group pre and post training are 9.46 and 9.46 the corresponding standard deviation are 1.12 and 1.12 respectively. The t- value as per the t- test is 0.81. Since it is lesser than the critical‘t’ value 2.093, it is not significant at 0.05 level of confidence.

Table 2: Descriptive analysis of the Pre and Post test data and‘t’ ratio on Agility of Experimental group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
Agility	Experimental group	Pre	12.52	0.92	14.29%	1.79	3.85
		Post	10.73	2.33			
	Control group	Pre	13.21	1.29	6.20%	0.02	0.27
		Post	13.19	1.21			

* Table t- ratio at 0.05 level of confidence for 19 df = 2.093

The mean value of experimental group on Agility among boys in pre and post training are 12.52 and 10.73, the corresponding standard deviation are 0.92 and 2.33 respectively. The t-value as per the t-test is 3.85 and these values are greater than the required table value of 2.093 for significance at 0.05 levels for 19 degrees of freedom. The mean value of control group pre and post training are 13.21 and 13.19 the corresponding standard deviation are 1.29 and 1.21 respectively. The t- value as per the t- test is 0.27. Since it is lesser than the critical ‘t’ value 2.093, it is not significant at 0.05 level of confidence.

Table 3: Descriptive analysis of the Pre and Post test data and‘t’ ratio on Leg explosive power of Experimental group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
Leg Explosive power	Experimental group	Pre	1.41	0.11	11.34%	-0.17	-11.9
		Post	1.57	0.08			
	Control group	Pre	1.36	0.19	0%	0.00	-1.05
		Post	1.36	0.19			

* Table t- ratio at 0.05 level of confidence for 19 df = 2.093

The mean value of experimental group on Leg explosive power among boys in pre and post training are 1.41 and 1.57, the corresponding standard deviation are 0.11 and 0.08 respectively. The t-value as per the t-test is -11.9 and these values are greater than the required table value of 2.093 for significance at 0.05 levels for 19 degrees of freedom. The mean value of control group pre and post training are 1.36 and 1.36 the corresponding standard deviation are 0.19 and 0.19 respectively. The t- value as per the t- test is -1.05. Since it is lesser than the critical ‘t’ value 2.093, it is not significant at 0.05 level of confidence.

Table 4: Descriptive analysis of the Pre and Post test data and‘t’ ratio on Arm strength of Experimental group

Variables	Group	Test	Mean	Standard deviation	%	Mean difference	“t’ ratio
Agility	Experimental group	Pre	24.3	2.90	16.87%	-4.1	-10.51
		Post	28.4	3.13			
	Control group	Pre	25.06	3.49	3.15%	-0.79	-1.43
		Post	25.85	2.95			

* Table t- ratio at 0.05 level of confidence for 19 df = 2.093

The mean value of experimental group on Agility among boys in pre and post training are 24.3 and 28.4, the corresponding standard deviation are 2.90 and 3.13 respectively. The t-value as per the t-test is -10.51 and these values are greater than the required table value of 2.093 for significance at 0.05 levels for 19 degrees of freedom. The mean value of control group pre and post training are 25.06 and 25.85 the corresponding standard deviation are 3.49 and 2.95 respectively. The t- value as per the t- test is -1.43 since it is lesser than the critical ‘t’ value 2.093, it is not significant at 0.05 level of confidence.

3. Result and Discussion

The results clearly indicated that the speed, agility, explosive power and arm strength of experimental group improved due

to the influence of 12 week medicine ball training programme. One of the most important fitness levels for adolescence boys is strength in the lower body region. Therefore, this study aimed to provide scientific training techniques for improving muscle strength of adolescence boys. In this study the subjects who underwent medicine ball training were able to improve their motor fitness. Therefore, it is found a positive relationship between medicine ball training and improvements of motor fitness. This improvement in motor fitness is beneficial for athletes who require motor fitness while performing their sport and support the results from other studies. In the present study the low intensity medicine ball training has improved the speed, agility, explosive power and arm strength over 8.59%, 14.59%, 11.34% and 16.87% respectively by finding significant differences in comparison from baseline to post test.

4. Conclusion

Twelve weeks of Medicine ball training programme produced significant improvements in the speed, agility, leg explosive power and arm strength of adolescent boys. Medicine ball training is an appropriate training protocol to bring out desirable changes over motor fitness parameters for adolescent boys. Thus a continuous and systemic medicine ball training aimed at maximizing performance capacity should be applied to school level athletes.

5. Recommendations

The proposed medicine ball training programme should be a part of physical preparation of school level athletes, because of their significant influence on raising the level of the player physically and skillfully. It is necessary to raise the awareness of the trainers with the importance of the specific medicine ball exercises in the direction of the skill because of their significant influence on raising the physical and skillful level of athletes. Studies should be conducted in the same area on different samples in terms of age and gender.

6. References

1. Strong W, Malina R, Blimkie C *et al.* Evidence based physical activity for school-age youth. Journal of Pediatrics. 2005; 146(6):732Y737.
2. American College of Sports Medicine. ACSM's Guidelines for Exercise Testing and Prescription. 7th ed. Philadelphia: Lippincott Williams & Wilkins, 2006.
3. Faigenbaum A. Resistance training for children and adolescents: are there health outcomes? American Journal of Lifestyle Medicine. 2007; 1(3):190Y200.
4. Jones M. Strength Conditioning with Medicine Balls. Leeds: The National Coaching Foundation, 1997.
5. Mackenzie B. Medicine Ball Training, 1997. [www] Available from: http://www.brianmac.co.uk/medball.htm [Accessed 6/4/2016]
6. Newton R *et al.* Influence of load and stretch shortening cycle on the kinematics, kinetics and muscle activation that occurs during explosive upper-body movements. European journal of applied physiology and occupational physiology. 1997; 75(4):333-342.
7. Pauletto B. Strength Training for Coaches. USA; Human Kinetics Publishers, Inc., 1991.
8. Winch M. Strength Training for Athletes. UK; Stanley L. Hunt Ltd., 2004.
9. Tenke Z, Higgins A. Medicine Ball Training. Canada; Sport Book Publishers, 1999.