



EFFECT OF MEDICINE BALL TRAINING ON STRENGTH RELATED PARAMETERS AND PLAYING ABILITY OF SCHOOL LEVEL HANDBALL PLAYERS

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Abstract

For the purpose of the study a total of Forty (N=40) male Handball players were selected and equally assigned (n=20) as experimental and control group from Victory Boys High School, Nemam, Thiruvananthapuram, Kerala. The age group of the selected subjects ranged between 13 to 16 years. The experimental group was exposed to Medicine ball training programme for a period of 8 weeks. Pre and post test data was collected on selected Strength related parameters and the playing ability of the subjects. Dependent t test was applied to compare the mean difference between initial and final score with respect to the selected variables. The result of the study indicated that experimental group had improved in playing ability and Strength related variables namely Explosive strength, Shoulder strength, Back strength and Leg strength.

Keywords: Medicine Ball Training, Explosive-Strength, Shoulder-Strength, Back-Strength, Leg-Strength and Handball Players.

Introduction

Handball also known as team handball, Olympic handball, European team handball, European handball, or Borden ball is a team sport in which two teams of seven players each pass a ball to throw it into the goal of the other team. The team handball game of today was formed by the end of the 19th century in northern Europe – primarily in Denmark, Germany, Norway and Sweden. The first written set of team handball rules was published in 1906 by the Danish gym teacher, lieutenant and Olympic medalist Holger Nielsen from Ordrupgamm School north of Copenhagen. The modern set of rules was published on 29 October 1917 by Max Heiser, Karl Schelenz, and Erich Konig from Germany. After 1919 these rules were improved by Karl Schelenz. The first international games were played under these rules between Germany and Belgium for men in 1925 and between Germany and Austria for women in 1930.

Training means preparing for something for an event or reason of improving the performance (Hardyalsingh, 1997). Medicine ball exercises is a form of training for improving sports specific as well as overall fitness of an individual like strength, flexibility, body coordination etc.. They can be practiced alone or with one or more partners. The fundamental skills in handball are catching, passing, dribbling, faking, fainting, shooting and goalkeeping. For the successful execution of this skill one that had ample level of physical fitness especially the skill related fitness like Speed, Agility, Explosive power and coordination. The ability to generate strength and power is a very vital element for success in many sports, particularly in those involving explosive movement. Medicine ball exercise in conjunction with a programme of weight training and circuit training can develop speed and strength (power).

Certain Medicine ball exercises can also be used as part of a plyometric training programme to develop explosive movement. Medicine ball training is appropriate to all level of ability, age and development of sport. The power is produced through specific drills and specialized equipment for medicine ball. The variety of exercise cause significantly changes in explosive power. Medicine ball training is one of the many components in an individual's routine. Medicine ball exercises promote variety by introducing a novel stimulus for physiological adaptation. Medicine balls are an appropriate implement for power training because there is no deceleration phase at the end of the concentric movement, similar to sports movements (Ikeda et al., 2009). The purpose of the study was to find out the effect of Medicine ball training on Strength related parameters and Playing ability of School level Handball players after 8 weeks of intervention.

Methodology

Selection of Subjects

A total of Forty (N=40) male School handball players studying in Victory Boys high School, Nemam, Thiruvananthapuram, Kerala, were selected as subjects. The age group of the selected subjects was between 13-16 years. The subjects were equally divided (n=20) into experimental and control group. The experimental group was exposed to Medicine ball training programme for a period of Eight weeks.

Variables and Tools utilized

Playing ability and the following **Strength related parameters** were selected as the independent variables for the study:

1. Explosive strength - Explosive strength was measured by administrating vertical jump test.



2. Shoulder strength - Shoulder strength was measured by administrating Pull up test.
3. Back strength - Back strength was measured by utilizing Back dynamometer.
4. Leg strength - Leg strength was measured by using leg dynamometer.
5. Playing ability of the players was measured subjectively by using coaches rating.

Administration of the Training Programme

The training programme was given to the subjects for three days per week, on Monday, Wednesday, and Friday. The duration of the training programme was for ninety minutes. The total duration of the training programme was for Eight weeks. For the first two weeks the load intensity and the volume of the Medicine ball exercises were 40%, in the third and fourth week the load intensity and the volume of the exercises was increased to 60%, in the next two weeks the intensity and volume is progressively increased to 70% and in the 7th and 8th week the load intensity and the volume of the Medicine ball exercises was increased to 80%. Initially less intensive exercises were given for the subjects to get adapted. The intensity of the exercises was increased proportionately after every two weeks. The intensity was decided on the basis of average of maximum repetition of the subjects and before setting the intensity the investigator asked the subjects to do the selected exercises to their maximum repetition to find out the capacity of the subjects. The programme comprised of fifteen minutes of warm up, sixty minutes of Medicine ball exercises and fifteen minutes of warm down session.

A pretest was conducted prior to the administration of the programme. After Eight weeks of Medicine ball training post test was conducted on the subjects to know the effect.

Medicine ball Exercises

- | | |
|---------------------------------|------------------------------|
| 1. Standing torso twist | 2. Chest push |
| 3. Hamstring curl | 4. Downward pass |
| 5. Vertical upward pass | 6. Lay back double arm throw |
| 7. Straight arm standing throws | 8. Standing double arm throw |

Statistical Analysis

Dependent t test was applied to compare the mean difference between initial and final score with respect to the selected performance related variables. The level of significance chosen was 0.05 to determine the significant difference with 19 degree of freedom.

Analysis and Discussion of Results

The statistical analyses of collected data on the Strength related parameters have been presented below.

Table: 1

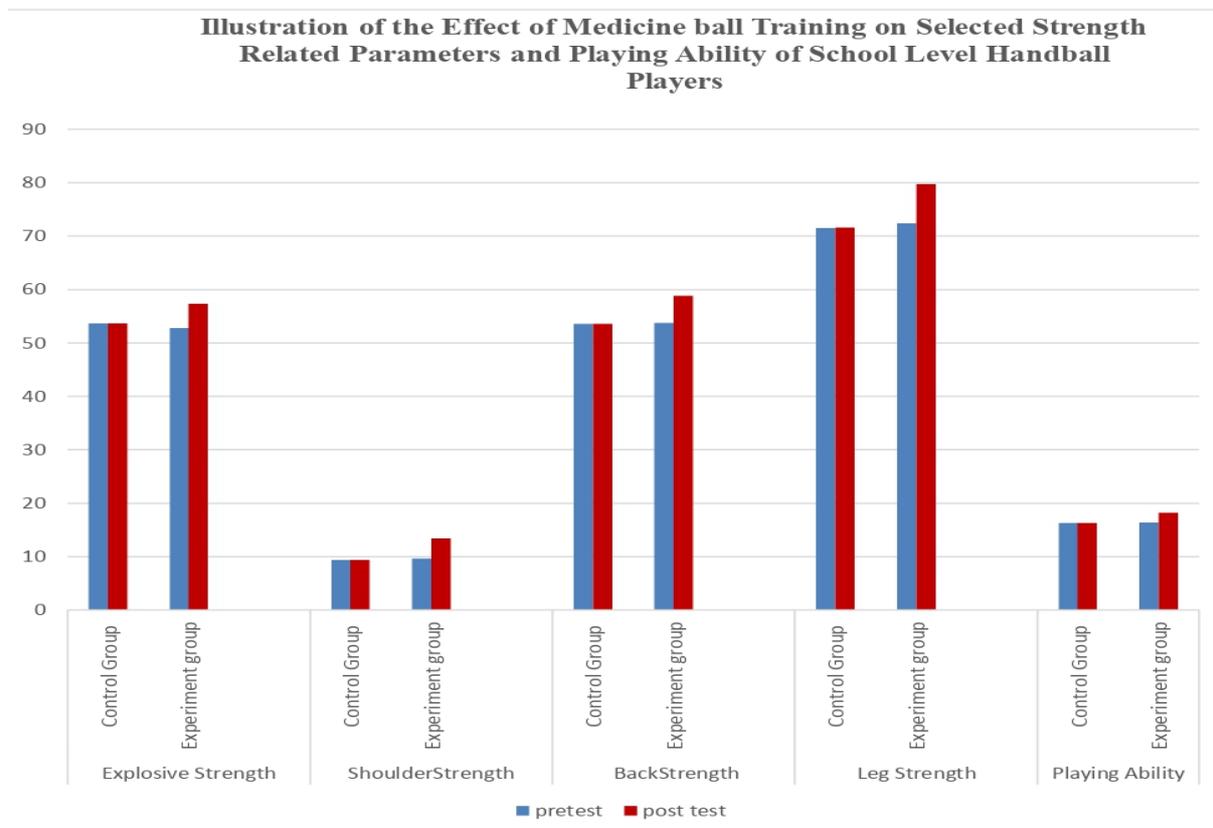
Mean Comparison of Selected Strength Related Parameters and Playing Ability of School Level Handball Players

Variables	Groups	Pretest mean	S. D	Posttest mean	S.D	T. value
Explosive strength	Control group	53.65	3.15	54.05	3.11	6.28
	Experiment group	52.75	2.30	57.35	1.49	10.38*
Shoulder strength	Control group	9.35	3.17	9.40	3.09	4.26
	Experiment group	9.65	3.04	13.4	4	11.05*
Back strength	Control group	53.55	2.73	53.75	2.33	5.82
	Experiment group	53.75	2.19	55.85	2.29	15.16*
Leg strength	Control group	71.55	2.25	71.80	2.18	6.47
	Experiment group	72.35	2.65	76.70	2.15	18.71*
Playing ability	Control group	16.29	.67	16.27	.67	.11
	Experiment group	16.36	.73	17.25	.77	9.22*

Significant at t.05 (19.2) =2.09



From **Table 1** it is evident that Medicine ball Training Programme had a significant effect on the selected Strength related parameters and playing ability of school level Handball players, since the calculated 't' value of the experimental groups were higher than the tabulated value of 2.09 at 0.5 level of significance.



Discussion

Six weeks of Medicine ball training had improved the selected Strength related variables of school level Handball players namely Explosive strength, Shoulder strength, Back strength, Leg strength and Playing ability too. The subjects selected for the study had no previous experience on Medicine ball training other than their regular coaching schedule; probably this could have been the reason for the improvement. The subjects had enthusiastically participated in the training program since they found the training to be interesting due to the freshness of the exercise, the subjects in the experimental group did the training whole heartedly as the training given to them was different from their usual routine as such leading to the improvement in the Strength related parameters.

The result of the study is in consonance with the results of other studies. Medicine ball training on high school boys improved on explosive strength (Szymanski, 2007). The prepubescent players trained with Medicine balls it has improved on power (Mallory Kodak, 2013). Effect of Medicine ball training of Physical education students of twelve weeks training improved explosive power and strength (Merlin Thanga Daniel, 2015). Regular participation in a progressive Medicine ball training programme produced greater magnitudes of improvement in fitness performance (Faigenbaum et al., 2002). Effect of Medicine ball training improved on muscle power of Handball players (Aleksander et al., 2012) and Medicine ball training was improved on fitness components on high school students (Faigenbaum and Mediate, 2006).

Conclusion

The results of the study proved that participation in Eight weeks of Medicine ball training programme resulted in the improvement of playing ability and the given Strength related parameters of school level Handball players such as Explosive-strength, Shoulder-strength, Back- strength, Leg-strength.



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