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## Effect of Medicine Ball Training and Swiss Ball Training on Selected Upper and Lower Body Strength Endurance Parameters among College Men Students

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### Abstract

*The purpose of the present study was to investigate the effect of medicine ball training and swiss ball training on selected upper and lower body strength endurance parameters among college men students. To achieve the purpose of the study (N=45) forty five college men students were selected from YMCA College of Physical Education, during the year 2016-17. The subject's age ranges from 18 to 25 years. The selected players were divided into two equal groups consists of 15 men students each namely experimental group and control group. The experimental group –I underwent medicine ball training and experimental group –II underwent swiss ball training for nine weeks. The control group was not taking part in any exercise during the course of the study. The dependent variables lower and upper body strength was taken as criterion variables and they were tested by using push-ups test and squat test for this study. Pre-test was taken before the exercise period and post- test was measured immediately after the nine weeks of training period. Statistical technique paired sample 'T' ratio was used to analyze the means of the pre-test and post test data of experimental groups and control group. The data were analyzed paired sample "T" test technique was used with 0.05 levels as confidence. Analysis was performed using SPSS 20.0 (SPSS Inc Software). The results revealed that there was a significant difference found on the criterion variables. The difference found is due to medicine ball training and swiss ball training groups when compare better than the control group on upper and lower body strength endurance.*

**Keywords:** Medicine ball training, Swiss ball training, Upper and Lower body strength endurance.

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### Introduction

Specific or task oriented fitness is person's ability to perform in a specific activity with a reasonable efficiency for example, sport or military service specific training. Prepares athletes to perform well in their sports. Fire fighters and police officer must undergo regular fitness testing to determine if they are capable of the physically demanding tasks required for the job before they are employed. Students in elementary and high school also undergo regular fitness testing. In some countries, students can earn fitness badges, such as the physical fitness badge which is earned in the United States. (Narasimham, 2009).

Raghavan, G and S.Sethu, (2006) A medicine ball is a whined ball, weighing between 1 and 10 kg. Medicine ball can vary size which is made of brown leather, these days they are graded in different colors according to size and one made out soft plastic. The main principle with medicine ball training is that in order to throw catch it, one has to tense many abdominal muscles this creates a solid or stable base to work from. In much

the same way as the foundations are laid when building a house, the stronger the foundations the greater the forces that can be applied. Another advantage is that unlike weights, which the practitioner invariably have to lift upwards against gravity, medicine balls can be thrown across gravity or in any direction relative to the sporting activity or muscle group that are under training. It can work against the inertia of the ball when throwing and the momentum of the ball when catching. That's why those athletes and sport people that require upper body power use medicine ball in their workout.

Ana Paula de Vasconcellos Abdon (2008) Swiss ball develops abdominal muscles, stabilizes lower back as well as improving posture. There are many different names for the swiss ball namely, exercise ball, gym ball, fitness ball, stability ball, gymnastic ball, yoga ball, body ball, physio ball. The reason it is called a swiss ball is that it originated from Switzerland in the 1960s and therapist used it for physical rehabilitation. The swiss or stability ball was originally introduced as the "gymnastic" ball by Dr. Susanne Klien-Vogelbach, a doctor in Switzerland. Dr. Klien-Vogelbach created the ball in the 1960s for use in physical therapy to treat orthopedic and neurological disorder. Doctors had children with cerebral palsy and inefficient motor skill development use the ball to help neuromuscular

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stimulation. When someone with poor motor skills uses the ball, their brain pathways are “re-patterned” and they are to improve the way their body moves. The first balls were manufactured by an Italian toy manufacturer named Aquilino Cosani, whose company Gymnastic remains the leader in ball making. The Gymnastic ball became leader in ball making. The Gymnastic ball became highly acclaimed for 8 helping to develop motor sensory skills in premature babies and children with traumatic motor skill retardation. Observes noted that the colorful balls, with their circular shape and dynamic surface were inviting to the senses while, at the same time, the exercises being done with them produces very positive outcomes. Even though ball work was first developed as a form of physical therapy and not as a form of exercise for healthy people, the ball is a natural in the gym: It blends the therapeutic values of stability a balancing skills with conventional exercises while also teaching the importance of using core muscles activity.

### Materials and Methods

The purpose of the present study was to investigate the effect of medicine ball training and swiss ball training on selected upper and lower body strength endurance parameters among college men students. The achieve this study was randomly selected forty five college men students from YMCA college of physical education , during the year 2016-17 and their age ranged from 18 to 25 years. Forty five subjects from college men students were randomly selected and they were assigned into three equal groups. Each group consisted of fifteen subjects. Of which Experimental Group I underwent medicine ball training group (MBTG), Experimental Group II underwent swiss ball training group (SBTG) and Group III acted as Control Group

### Results and Discussion

Table 1

*Analysis of Covariance of Medicine ball training, Swiss ball training and Control group on Lower body muscular strength endurance and Upper body muscular strength endurance for college men students*

Variable name	Test	Exp I	Exp II	Control group	Source of Variance	Sum of Square	df	Mean square	‘F’ ratio
Lower body muscular strength endurance	Pre test	25.00	24.4	25.4	BS	7.60	2	3.8	1.042
					WS	153.2	42	3.64	
	Post test	33.06	32.33	25.2	BS	566.5	2	283.2	51.58*
					WS	230.66	42	5.492	
	Adjusted post test	33.04	32.48	25.07	BS	578.23	2	289.11	54.20*
					WS	218.7	41	5.33	
Upper body muscular strength endurance	Pre test	28.20	28.93	29.13	BS	7.24	2	3.62	.492
					WS	309.06	42	7.35	
	Post test	38.6	36.06	28.46	BS	834.31	2	417.15	63.42*
					WS	276.26	42	6.578	
	Adjusted post test	38.91	35.96	28.25	BS	898.5	2	447.79	105.2*
					WS	174.51	41	4.257	

\*Significance at 0.05 level; Number of subject in each group is 15

(CG). The two experimental groups were treated with their respective training for one hour per day for three days a week for a period of nine weeks.

Medicine ball training group performed 10 drills namely two arm wall pass, standing triceps extension, back throws, single arm press, front raise, squats, push-ups, slams, crunches and single arm press. Swiss ball training group performed 9 drills namely wall squat, seated circle, crunch on ball, crunch with feet on ball, superman, lower body twist, crunch with rotation, bridge with feet on ball, reverse back extension. This Medicine ball training group and Swiss ball group starts with 3 set of 12-10 repetitions in the first three weeks and progressed to 4 set of 10-8 repetitions in the second three weeks and 5 sets of 8-6 repetitions in the last three weeks. 30sec rest was given in between the sets. As the intensity start with 60% for first four weeks, 10% of intensity was increased for every two weeks. The subjects of all the three groups were tested on lower and upper body muscular strength endurance prior to and after the training period. To ascertain lower and upper body strength endurance was taken as criterion variables and they were tested by using push-ups test and squat test was administered mean value count by maximum count per minute.

### Statistical Technique

The significance of the difference among the means of experimental group was found out by pre-test. The data were analyzed analysis of covariance (ANCOVA) technique was used with 0.05 levels as confidence. Analysis was performed using SPSS 20.0 (SPSS Inc Software).

(Push-ups Test mean value count by maximum attempt per minute & Squat Test mean value count by maximum attempt per minute) Table value required for significant at 0.05 level with df 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively. Table-1 shows that in the

case of lower and upper body strength endurance the Post test and adjusted post test F-ratio found to be significant. To determine which of the paired means had a significant difference, the post-hoc t test was applied and the result are presented in the table –2.

Table 2

*Scheffe's Test for the Difference between the Adjusted Post Test Paired Means of College Men Students*

Variables	Medicine ball training group	Swiss ball training group	Control group	Mean Difference	C.I value
Lower body strength endurance	33.04	32.48	-	.566	2.14
	33.04	-	25.07	7.978*	
	-	32.48	25.07	7.413*	
Upper body strength endurance	38.91	35.96	-	2.954	2.71
	38.91	-	28.25	10.669*	
	-	35.96	28.25	7.715*	

(Push-ups Test mean value count by maximum attempt per minute& Squat Test mean value count by maximum attempt per minute)

In the above table, the lower body strength endurance results of Scheffe's Post hoc test are presented. From the table it can be seen that the mean difference between medicine ball training group and Swiss ball training group was .566  $P>0.05$  and the calculated C.I value was 2.14 ( $P>0.05$ ). The mean difference between medicine ball training group and the control group was 7.978\* ( $P<0.05$ ) and the calculated C.I value was 2.14 ( $P<0.05$ ). The mean difference between the Swiss ball training group and the control group was 7.413\* ( $P>0.05$ ) and the calculated C.I value was 2.14 ( $P>0.05$ ). From that it can be clearly noticed that medicine ball training group responded to the training with more positive influences of lower body strength endurance when compared with the swiss ball training group and control group. The swiss ball training group responded better when compared with the control group.

In the above table, the upper body strength endurance results of Scheffe's Post hoc test are presented. From the table it can be seen that the mean difference between medicine ball training group and Swiss ball training group was .566  $P>0.05$  and the calculated C.I value was 2.14 ( $P>0.05$ ). The mean difference between medicine ball training group and the control group was 7.978\* ( $P<0.05$ ) and the calculated C.I value was 2.14 ( $P<0.05$ ). The mean difference between the Swiss ball training group and the control group was 7.413\* ( $P>0.05$ ) and the calculated C.I value was 2.14 ( $P>0.05$ ). From that it can be clearly noticed that medicine ball training group responded to the training with more positive influences of lower body strength endurance when compared with the swiss ball training group and control group. The swiss ball training group responded better when compared with the control group.

### Conclusion

1. There was a significant difference between two experimental groups and control group on all the

two sites selected for assessing lower and upper body strength endurance.

2. As the improvement in nine weeks of medicine ball training group programme resulted in significant improvement in the lower and upper body strength endurance of subjects compared better than to swiss ball training and control group.
3. As the improvement in nine weeks of swiss ball training group programme resulted in significant improvement in the lower and upper body strength endurance of subjects compared better than to control group.

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