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## Investigation of the changes on agility and shooting ability of basketball players due to medicine ball exercises

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### Abstract

The purpose of the study is to find out the investigation of the changes on agility and shooting ability of basketball players due to medicine ball exercises. To achieve the purpose of the study thirty male basketball players were selected from various departments of Annamalai University, Chidambaram, Tamil Nadu during the year 2019-2020. The age group of the subjects were between 18-23 years. Thirty subjects were selected at random and subjects were divided into two equal groups designed one experimental group and the other control Group. Thus each group consisted of 15 subjects. Each subject was oriented in the procedure to the administration of the test. Prior to and after the exercises period the subjects were tested for, agility and shooting ability measured by shuttle run and field-goal speed test (Johnson Basketball test). The statistical tool were used for the present study is ANACOVA. The result of the study was a significant increase on agility and shooting ability after six weeks of medicine ball exercises. However the increase was favour of experimental group. There was a significant difference was occurred between experimental and control group after six weeks of medicine ball exercises.

**Keywords:** Medicine ball exercises, agility, shooting ability and basketball

### Introduction

Physical training aims at improving the performance of sports persons. The sports performance depends on several factors. The performance of sports primarily depends on his performance capacity, such as speed, strength and endurance. All these factors therefore are the principle aims of physical exercises.

Sport training is a physical, technical, moral and intellectual participation with the help of physical exercises. It is a planned process for the participation of athlete and players to achieve top-level performance.

The medicine Ball is a good tool for complete body workout. It can be used to strength shoulders, back, arms, and legs as well as improving core trunk strength and joint integrity.

The medicine ball has been used as an athletic exercises aid for decades in Europe, but in recent years the value of medicine ball exercises has been recognized in the United State. A number of collegiate and professional sports team are now incorporating this form of strength development into their exercises and with proper guidance runners can also benefit from using the medicine ball.

Basketball is a demanding sport. Not only the basketball player must have tremendous cardiovascular endurance to run up and down the court time after time for four quarters of play, but he will also need to be able to execute explosive bursts of speed, explosive jumps, and explosive movements for agility, time after time. Such an ability to perform explosively regardless of extreme cardiovascular fatigue is called "strength-endurance". Explosive power, one of the most important components of performance related factors, helps the player to move fast, jump high, and beat out the man in front of him. Basketball is no longer just a game of shooting baskets and dribbling the ball around opponents.

### Methodology

The purpose of the study is to find out the investigation of the changes on agility and shooting

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ability of basketball players due to medicine ball exercises. To achieve the purpose of the study thirty male basketball players were selected from various departments of Annamalai University, Chidambaram, Tamil Nadu during the year 2019-2020. The age group of the subjects were between 18-23 years. Thirty subjects were selected at random and subjects were divided into two equal groups designed one experimental group and the other control Group. Thus each group consisted of 15 subjects. Each subject was oriented in the procedure to the administration of the test. Prior to and after the exercises period the subjects were tested for, agility and shooting ability measured by shuttle run and field-goal

speed test(Johnson Basketball test). The statistical tool were used for the present study is ANACOVA. In order to ensure full co-operation from the subjects, the scholar explained the requirements, importance of this study and the subjects voluntarily agreed to undergo the prescribed tests and exercises.

### Analysis and Interpretation of Data

The data collected prior to and after the experimental periods on agility on medicine ball exercises and control group were analyzed and presented in the following table -1.

**Table 1:** Analysis of covariance on agility between pre and post-test of medicine ball exercises group and control group

Test	Medicine ball Exercises group	Control group	Source of Variance	Sum of Square	df	Mean Square	Obtained "F" Ratio
<b>Pre test</b>							
Mean	12.21	12.46	Between	0.42	1	0.42	2.80
S.D	0.49	0.56	Within	4.21	28	0.15	
<b>Post test</b>							
Mean	11.51	12.50	Between	1.55	1	1.55	8.61*
S.D	0.31	0.33	Within	4.91	28	0.18	
<b>Adjusted Post test</b>							
			Between	1.98	1	1.98	7.92*
Mean	11.12	12.36	Within	6.77	27	0.25	

\*Significant 0.05 level of confidence. (The table values required for significance at 0.05 level of confidence with df1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

Table-1 showed that the pre-test mean values of agility for medicine ball exercises group and control group were  $12.21 \pm 0.49$  and  $12.46 \pm 0.56$  respectively. The obtained F-ratio value of 2.80 for pre-test score of medicine ball exercises group and control group on agility was less than the required table value of 4.20 for significant with df 1 and 28 at 0.05 level confidence.

The post-test mean values for agility for medicine ball exercises group and control group were  $11.51 \pm 0.31$  and  $12.50 \pm 0.33$  respectively. The obtained F-ratio value of 8.61 for post-test scores of medicine ball exercises group and control group was greater than the required table value of 4.20 for significance with df 1 and 28 at 0.05 level of confidence.

The adjusted post-test mean values of agility for medicine ball exercises group and control group were 11.12 and 12.36 respectively. The obtained F-ratio value of 7.92 for adjusted post-test scores of medicine ball exercises group and control group were greater than the required table value of 4.21 for significance with df 1 and 27 at 0.05 level of confidence.

The result of this study showed that there was a significant difference between medicine ball exercises group and control on agility.

The data collected prior to and after the experimental periods on shooting ability on medicine ball exercises and control group were analyzed and presented in the following table - 2.

**Table 2:** Analysis of covariance on shooting ability between pre and post-test of medicine ball exercises group and control group

Test	Medicine ball Training group	Control group	Source of Variance	Sum of Square	df	Mean Square	Obtained "F" Ratio
<b>Pre test</b>							
Mean	65.33	65.31	Between	2.85	1	2.85	0.48
S.D	3.28	2.36	Within	166.28	28	5.94	
<b>Post test</b>							
Mean	68.11	64.33	Between	512.31	1	512.31	14.42*
S.D	3.91	3.29	Within	994.87	28	35.53	
<b>Adjusted Post test</b>							
			Between	666.57	1	666.57	51.93*
Mean	69.39	65.03	Within	1402.3	27	55.69	

\*Significant at 0.05 level of confidence. (Table value required for significance at 0.05 level with df 1 and 28 and 1 and 27 are 4.20 and 4.21.)

Table-2 showed that the pre-test and values of shooting ability for medicine ball training group and control group were  $65.33 \pm 3.28$  and  $65.31 \pm 2.36$  respectively. The obtained 'F' ratio value of 0.48 for pre-test score of medicine ball training group and control group on shooting ability was less than the required table value of 4.20 for significant with df 1 and 28 at 0.05 level of confidence.

The post-test mean value of shooting ability for medicine ball training group and control group were  $68.11 \pm 3.91$  and  $64.33 \pm 3.29$  respectively. The obtained 'F' ratio value of 14.42 for

post-test scores of medicine ball training group and control group was more than the required table value of 4.20 for significant with df 1 and 28 at 0.05 level of confidence.

The adjusted post-test mean values of shooting ability for medicine ball training group and control group were 69.39 and 65.03 respectively. The obtained 'F' ratio value of 51.93 for adjusted post-test scores of medicine ball training group and control group was more than the required table value of 4.21 for significance with df 1 and 27 at 0.05 level of confidence.

The result of this study showed that there was a significant difference among medicine ball training group and control group on shooting ability.

### Conclusions

Within the limitations and delimitations of this study the following conclusions were drawn from the result.

1. It was concluded that there was significant improvement in agility and shooting ability among basketball players due to medicine ball exercises.
2. The result of the study reveal that medicine ball exercises would improve basketball Players agility and shooting ability significantly.

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