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Impact of Medicine Ball Training on Abdominal Strength and Muscular Strength in Football Players

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Abstract: The study aims to determine the impact of medicine ball training on abdominal and muscular strength among football players in New Delhi. To achieve the study goal, thirty(n=30) football players of Indian nationality were chosen at random as subjects from VK Sports Academy. Their age ranges from 8 to 12 years. The selected participants were randomly divided into two groups. Group 1 was regarded as the Experimental group (n=15) while Group 2 was regarded as the Control group(n=15). The experimental group participated in medicine ball training on three alternative days per week for 6 weeks with each session lasting for 45 minutes. The control group underwent no specific training but participated in football activities. The Sit-ups (Aapher Youth Fitness Test) were used to test abdominal and muscular strength which were then selected as factors. The pre and post-test data on selected criteria variables were obtained before and after the test. They were statistically analyzed using the dependent t-test using Excel and analysis of covariance with Anacova. The level of significance was set at a 0.05 level of confidence. It was concluded that the experimental group had considered an improvement in medicine ball training while the control group showed no significant change

Keywords: Medicine Ball Training, Abdominal Strength, Muscular Strength, Football Players

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INTRODUCTION

What is football?

When people talk about popular and renowned sports in India, football is one of the major sports that comes to everyone's mind. After all, it is the most popular game in the world. A football team has a force of 11 players and is played both at the national level and at the international level. The literal meaning of football can be derived from two words that this word is composed of foot and ball. As the name suggests, people dribble and shoot the ball into the goalpost. (Hsuan Huang, 2023) Most importantly, football demands a great level of physical fitness because players have to run and be active for ninety or one hundred and twenty minutes. As an important part of the sport, the players have to chase the ball and the opponent players have to intercept and also have to protect the goals every second. Heading the ball, outside of the foot-pass, bicycle kicks – these are just a few techniques that make football a beautiful piece of art. (Nicholson, 2020)

Medicine ball training

The medicine ball has been used in training from the earliest days of physical conditioning. The great benefit of medicine ball work is that it can work either the whole body or only specific parts, thus

benefiting overall conditioning and core stability. (Athletes, 2005) Medicine balls are becoming increasingly popular in schools and youth sports training centers. Originally it was used in the rehabilitation of muscle function in all patients, medicine balls are now being used to improve health-related fitness, performance-related fitness, and participatory self-efficiency in school-age youth. (Pramod, 2018) Regular participation in a medicine ball training program has the potential to positively influence many health fitness measures. Medicine ball training can be used to enhance muscle strength, muscle power, flexibility, endurance, coordination, agility, balance, and speed. (Faigenbaum, 2006).

Why abdominal strength is important?

Abdominal strength is really important for athletes because it helps in the contraction of muscles or the single contraction of muscles. All movements in sports especially in football are caused by muscle contractions hence muscular strength is an inherent part of all motor qualities, technical skills, and tactical skills. (Vincent) It is the ability to overcome resistance or to act against resistance is called muscular strength. Medicine ball plays a vital role in developing abdominal strength and muscular strength. In sports movements, muscular strength always appears together with duration and speed of movement. Endurance is the possibility to release sports action at will, in their qualitative form and with the required speed when fatigue comes. (Singh, 1991)

PURPOSE OF STUDY

The study aims to analyze the effectiveness of the training program in improving abdominal strength and muscular strength. To assess the effect of medicine ball training on football players in improving abdominal strength and muscular strength.

RESEARCH METHODOLOGY

To achieve the purpose of the study 30 football players were selected randomly from VK Sports Academy. Their age ranges between 08-12 years. Considering the availability of equipment and significant variables in the current study, the dependent variable was abdominal strength and muscular strength and the independent variable was medicine ball training. The AAHPER youth fitness test (Sit-ups) was tested for abdominal strength and muscular strength was used as a factor.

TRAINING PROGRAMME

The experimental group received six weeks of medicine ball training on three alternative days per week. Each training session lasted 45 minutes which included warm-up, medicine ball training, and cooling down. In the experimental group, each exercise required 6-8 repetitions with 2 mins rest and progressively the repetition increased and rest reduced when it was performed in the next week accordingly. The control group did not get any specific training but they did participate in football activities. The drills which were performed by the experimental group are included in the following

Table 1 – Training program for the experimental group

Week (3 days a week	Exercise with the medicine ball	Set	Rep	Intensity	Weight of medicine ball	Rest	Rest
Week 1 and Week 2	1. Russian twist 2. Circles 3. Medicine ball push-ups 4. Abdominal crunch	2 set	08-10	Low	1kg	60 -90sec	3-5 min
Week 3 and 4	1. Medicine ball boat balance 2. Medicine ball wall throw 3. Overhead medicine ball throw 4. Abdominal crunch	3 set	08-10	Moderate	1kg	60-90sec	3-5min
Week 5 and 6	1. Medicine ball side throw 2. Circles 3. Medicine ball wall throw 4. Abdominal crunch	5 set	08-10	High	1kg	60-90sec	3-5min

ANALYSIS OF DATA

Table 2 presents the descriptive statistics on the mean pre and post-test for the experimental group and control group in terms of abdominal muscular strength. Mean and standard values are utilized to represent the findings.

Table 2: Descriptive stats for the experimental and control group (pre and post-test)

Components		Control group		Experimental group	
Abdominal muscular strength		Pre-data	Post-data	Pre-data	Post-data
	Mean	9.26	9.53	9.38	13.61
	SD	2.15	2.76	2.62	3.53

* Based on Table 2- the mean score of the control group pre-test for the independent variable term was 9.26 with a standard deviation of 2.15 and the post-data mean was 9.53 with a standard deviation of 2.76.

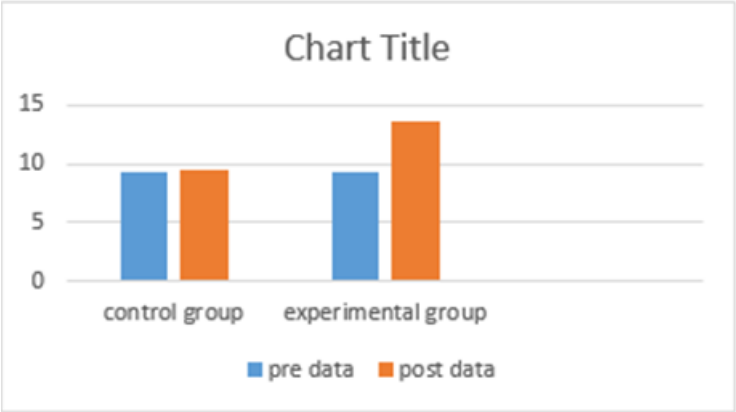
* According to Table 2, the mean score of the experimental group pre-test for the independent variable term was 9.38 with a standard deviation of 2.62 while the post-test mean was equal to 13.61 with a standard deviation of 3.53.

Table 3: Pre-test and Post-test comparison of experimental and control group of abdominal

strength

group	test	Mean	MD	SD	't' value
Control Group	Pre-test	9.26	0.27	2.15	0.2558
	Post-Test	9.53		2.76	
Experimental Group	Pre-Test	9.38	4.23	2.62	5.26
	Post-Test	13.61		3.53	

* This table states that there are no significant differences between the findings of the pre and post-test values which are recorded for the control group. In the experimental batch of students, from the table, we can understand that there was a significant difference between the findings of the pre and post-test values. The results were obtained after the inferential statistics such as the paired t-test which helps to determine the difference between before and after data of the athlete.



Graph 1: Comparison of Abdominal Strength and Muscular strength components of pre-test and post-test for the control group and experimental group.

* Graph 1 represents that the control group had no improvement but on the other side it shows that the experimental group has shown improvement.

RESULT

1. In the experimental group significant differences were seen between the football athletes due to medicine ball training at the VK Sports Academy in Delhi.
2. In the control group there were no changes seen on the selected parameter.

DISCUSSION ON FINDINGS

The findings from this study state that the major improvement Between the pre-data and the post-data shows the impact of medicine ball training on football athletes. The result of the findings comes out with the help of a sit-up test. The analysis of the findings is done with the help of Excel. It helps to execute the data and also gives output according to the findings of the result.

One question has been generated in the findings does medicine ball training help to develop abdominal strength and muscular strength?

The result states that there is a major improvement on the football players with the help of medicine ball which helps to enhance their performance in competitive matches.

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