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ORIGINAL ARTICLE

EFFECT OF PELVIC CORE EXERCISE TRAINING ON GLUTEUS STRENGTH AMONG COLLEGE LEVEL CRICKETERS

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ABSTRACT

Background of the study: The core musculature in concludes the muscle of the trunk and pelvis that are responsible for the maintenance of stability of spine and pelvis help in generation and transfer of energy from large to small body parts during for the cricket players in cricket. Objective of the study was to determine the effect of pelvic core exercise training on gluteus strength among college level cricketers. **Methodology:** This was an observational study with convenient sampling of pre and post experimental study design. Forty male cricket players were recruited from the students at Dr.MGR Deemed University with the age group of 18 to 25 years. Cricket players were included after specific selection criteria for the study. Pelvic core exercise was given to the participants for 6 weeks. Single leg pelvic bridging test used to measure the strength of gluteus muscle before and after the training. The core exercise training will give to all cricketers. The prescribed exercise performed for 4 days in a week for 30 minutes and this were followed for 6 weeks. At the end, they were assed with single leg pelvic Bridging test. Paired T-test analysis used to find the significant difference between pre and post test measurement. **Results:** Pelvic core exercise training found significant effect on improving the strength of gluteus muscles among college level cricketers with mean difference of 6.68 and $P < 0.0001$. **Conclusion:** This study concluded that Pelvic core exercise training can improve the strength of gluteus muscles among college level cricketers.

Keywords: Cricketers, Pelvic core exercise, Gluteus strength, Single leg pelvic bridging test

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INTRODUCTION

Cricket is an international game. This game was played by many people professionally and non-professionally. In a team there are 10 players with batsman, keeper and fielder. Mostly running, throwing and forceful trunk rotation occurs. Therefore core muscles play an important role on cricket players^{1,2}.

The core musculature in concludes the muscle trunk and pelvis that are responsible for maintenance of stability of spine and pelvis. The core strengthening required for cricket, throwing, bowling, batting events in cricketers. Some of the core muscles they are thoracolumbar fascia, paraspinalis, abdominalis, hip gridle musculature, diaphragm and pelvic floor muscles they are mostly involved in sports activities of cricketers^{3,4}.

Spines and pelvis are centrally located to be able to perform many of the stabilizing functions that body will require in order for the distal segments. To do specific function providing the proximal stability for distal mobility and function of limbs^{5,6}.

Core muscle strengthening training is widely practised by professionals with the goals entrancing core stability and increase core muscular strength there by improves performance of cricketers^{7,8}.

Pylometric and isometric core strengthening is widely used as a method of developing explosive strength capacity in those sports that require jumping ability such as athletics, basketball and volley ball.

Aim of the study: The aim of the study is to determine the effect of pelvic core exercise training on gluteus strength among college level cricketers.

Need of the study: Core muscles play an important role in cricket players. According to that, plyometric and isometrics are used to improve explosive power and agility by core strengthening. Advanced technique such as plyometric training protocol has proven more effect on sports events. But not many studies did to assess its effectiveness on events such as on cricketers.

METHODOLOGY

This was a study with Quasi experimental design and a cross sectional pre-post study. Study was conducted in physiotherapy department of A.C.S. Medical College and Hospital, Chennai. Total 40 Subjects were selected for this study. Convenient Sampling Method used to select the samples. Total duration of the study was 6 Weeks. Male subjects with 18-25 Years of age and Collegiate Cricket players were included for this study. Patients with any neurological disorder, Systemic disease, Stopwatch, Single leg pelvic bridging test, Strength of Gluteus muscle, Couch were eluded from the study.

Procedure: Players volunteered to participate in the training program were selected from Dr. M.G.R. Educational and Research Institute, Chennai. A total of 40 players were selected and explained about the study. Informed consent was obtained from the subjects.

Exercises such as abdominal crunch, reverse crunch, single leg crunch, double leg crunch were given to the cricket players. The pre and post test values were measured using single leg pelvic bridging test.

The Single Leg: Step 1: Lay on your back with your knees bent. Step 2: Kick one leg out straight. Step 3: Pick your hips up and hold this bridge for 10 seconds.

Gluteus strength	Number of Pairs	Mean Diff.	SD SEM	95% CI	Df	t	P value	Sig.Diff. (P<0.05)
Pre-Post	40	6.68	3.083 0.488	5.689 to 7.661	df=39	t=13.69	0.0001	****

Table 1: Frequency distribution of Age, Height, Weight and BMI among pelvic core exercise training cricketers

The above table 1 shows the mean value of Age, Height, Weight and BMI with 20.78, 167.7, 62.18 and 22.27 respectively.

Bridge test abdominal crunch: Abdominal crunches are simple to perform. Begin flat on your back with your knees bent and the heels of your feet only a few inches from your buttocks.

Reverse crunch: Lie down on the floor with your legs fully extended and the arms to the side of your torso with the palms on the floor. While inhaling, legs are moved towards the torso as you roll the pelvis backwards. At the end of this movement your knees should touch the chest.

Single leg crunch: While keeping abdomen tense lean backwards and bring the raised knee towards the chest. Bring raised knees back

down and switch to the other leg to complete one repetition.

Double leg crunch: Lie flat on your back and place your hands behind your head. Bring your feet close to your glutes so your knees are bent and place your flat on the ground.

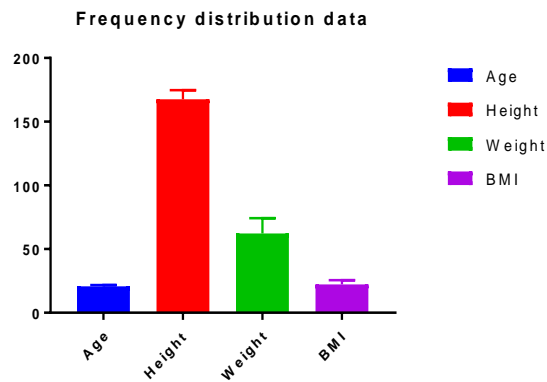
RESULTS

The above table 1 shows the mean value of Age, Height, Weight and BMI with 20.78, 167.7, 62.18 and 22.27 respectively. The above table 2 shows the Paired t Test for pelvic core exercise training on gluteus strength among college level cricketers. Pelvic core exercise training found significant effect on improving the strength of gluteus muscles among college level cricketers with mean difference of 6.68 and $P < 0.0001$.

Variables	Number of values	Mean	Std. Deviation	Std. Error of Mean	95% CI of mean
Age	40	20.78	1.025	0.1621	20.45 21.1
Height	40	167.7	7.07	1.118	165.4 169.9
Weight	40	62.18	12.12	1.916	58.3 66.05
BMI	40	22.27	3.361	0.5315	21.19 23.34

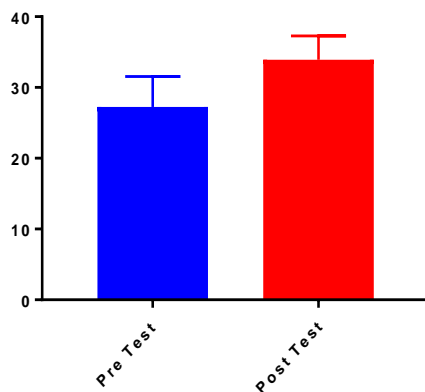
Table 2: Paired t Test for pelvic core exercise training on gluteus strength among college level cricketers

The above table 2 shows significant difference in pelvic core exercise training on gluteus strength among college level cricketers with mean difference of 6.68 and $P < 0.0001$



Graph1: Graphical representation of frequency distribution of Age, Height, Weight and BMI among pelvic core exercise training cricketers.

Paired t test data for gluteus muscle strength



Graph 2: Graphical representation on effect of pelvic core exercise training on gluteus strength among college level cricketer.

DISCUSSION

The above table 1 shows the mean value of Age, Height, Weight and BMI with 20.78, 167.7, 62.18 and 22.27 respectively

The above table 2 shows the Paired t Test for pelvic core exercise training on gluteus strength

among college level cricketers with mean difference of 6.68 and $p < 0.0001$.

Proximal stability is important for distal mobility, a proximal to distal patterning of generation of force, and the creation of interactive moments that move and protect distal joints⁹.

Marshall And Murphy core stability is a generic description for the training of the abdominal and lumbopelvic region. Local stability refers to the deep intrinsic muscles of the abdominal wall, such as transverse abdominus, and multifidus. These muscles are associated with segmental stability of the lumbar spine during gross whole body movements¹⁰.

Core stabilization training for middle and long distance runners'' discussed the theory behind the core training for injury prevention and improving a distance runners efficiency and performance. For runners whose event involve balance and powerful movements of the body^{11,12}.

In this study the pelvic core exercise training found significant effect on improving the strength of gluteus muscles among college level cricketers with mean difference of 6.68 and $P < 0.0001$. Sothe study rejecting the null hypothesis and accepting the alternative hypothesis.

Ethical Clearance: Clearance was obtained from the Institutional ethical committee of Faculty of Physiotherapy, Dr MGR Deemed to be University, Chennai with Ref. No. IV C-030/PHYSIO/IRB/2017-2018, Dated: 08/01/2018.

Conflict of Interest: No conflict of interest to conduct this study.

Source of Fund: It was a Self financed study.

CONCLUSION

The study concluded that there is significant improvement in strength of gluteus muscles among college level cricketers. Hence the study rejects the null hypothesis and accepts the alternate hypothesis.

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