



“COMPARISON OF SWISS BALL VERSUS THERABAND EXERCISE ON CORE MUSCLE FLEXIBILITY, AND BALANCE, IN COLLEGIATE CRICKET PLAYERS:A Randomized Controlled Trial”

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ABSTRACT

BACKGROUND: Cricket game sustain injuries Cricket is the one of the most popular game in India played by men and women of all ages and these players need some fitness such as flexibility and balance.1 Cricketers sustain back and trunk injuries by 14 to 18%, lower limb injuries is 25 to 30% has reported2 the major cause of injuries was found to be bowling 38% of young school boy bowlers3 and 65.7% of provincial bowlers2 suffer from back injuries these are mostly lower back injuries. The greatest risk of injury is for younger players with bowlers mean age 16.8 years showing increased vulnerability to injury because their growth process could not have been completed10 injuries were thought to occur as a result of sudden unexpected movements, such as slips or falls, because the neuromuscular system overreacts, and in the process, soft tissues containing nociceptors and proprioceptors are damaged.678910

AIM OF THE STUDY: Comparison of Swiss ball versus Theraband exercise on core muscle flexibility and balance in collegiate cricket players.

OBJECTIVE OF THE STUDY: To compare the effectiveness of Swiss ball versus Theraband exercise on Core muscle Flexibility and balance in collegiate cricket players.

TYPE OF STUDY DESIGN: Randomized Controlled Trial

METHODOLOGY: A Randomized control trial (RCT) was conducted on 28 young cricket players for 2-3 months. Subjects were randomly sampled and sequentially allocated to group A (Experimental group) and Group B(Control group) has continued their daily activities . Group A performed theraband exercises for 3days a week for a period of time 6 weeks. Group B performed Swiss ball exercises for 3 days a week for a period of 6 weeks. Changes were measured using flexibility and balance of core muscle cricket players.

CONCLUSION: Both the Exercise programme were found to be effective in increasing the flexibility and balance of cricket players.

KEYWORDS: Cricket players, core muscle, flexibility, balance, cricket players

INTRODUCTION: Cricket game sustain injuries

Cricket is the one of the most popular game in India played by men and women of all ages and these players need some fitness such as flexibility and balance.¹ Cricketers sustain back and trunk injuries by 14 to 18%, lower limb injuries is 25 to 30% has reported² the major cause of injuries was found to be bowling 38% of young school boy bowlers³ and 65.7% of provincial bowlers² suffer from back injuries these are mostly lower back injuries.

Swiss Ball exercise benefits

Swiss ball is an extremely popular apparatus used for core stability training in populations as varied as spinal disorders to cricketers, the majority of the research work done on abdominal muscle exercise were comparing and with traditional mat exercises, and benefits of swiss ball exercises.

Theraband Importance

Consisting of the muscle of the abdomens, low back and hip is called The power house and plays a important role in maintaining the balance stability. Theraband was created in 1978 Akron in USA the major advantage that it is not depend upon the gravity for providing a resistance, as for the resistance produced by the theraband increases with stretching of the band while allowing work on multiple joints at the same time.

NEED OF THE STUDY:

- There are several studies available on hamstring flexibility in cricket Players
- Few studies were available on balance in cricket players.
- There are no studies done on comparison of Swiss ball versus theraband exercise on core muscle flexibility and balance.
- So this study is designed to find out the comparison of Swiss ball versus and theraband exercise on core muscle flexibility and balance.

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INCLUSION CRITERIA:

- Subjects no experience of core exercises
- Age group 18 to 25years
- Male and female cricket players
- Non elite players

EXCLUSION CRITERIA:

- Subjects with Neuromuscular condition any spinal injuries, musculoskeletal Disorders
- History of medical condition such as respiratory and neurological disorder
- Professional players/ Elite players
- People undergoing core muscle exercises

MATERIALS USED:

- Inch tape used to measure Sit and reach test in cms
- Swiss ball
- Theraband
- Mat for exercises

METHODOLOGY:

Study Design: Experimental study design

Study Sample Period: 1ST JAN/ 2022 TO 21ST FEB /2022 Sampling Method: Simple Random sampling

Type of sampling: SNOZE Randomization Sample Size: 28

Source of data: The oxford college of Engineering, Bangalore. Study Duration: 6 WEEKS

- Subjects were allotted into two groups (A & B) 14 subjects was allotted in Group A(Experimental Group) and 14 subjects in Group B
- (Control Group) Both group participants continued with their normal activity.
- Group A received a detailed explanation of theraband exercise with blood flow
- Restriction as given below, for 6 week consecutively. CONTROL GROUP B :

Swiss ball exercises: 1. PRONE BALL HOLD PUSH UP: Patient in prone position Swiss ball hold with both hands body will be straight position and ankle support with toes therapist in comfortable position.

2. PRONE BALL HOLD WITH KNEE DRIVE: Patient in forward position to hold the Swiss ball with both hands, upperlimb don't bend elbows and knees will be straight to support the base feet and one knee bend and touch the Swissball and same movement do the another knee.

3. SUPINE HIP EXTENSION AND KNEE DRIVE: Patient in supine position and both lower limbs heels place

on the Swiss ball buttock will not contact to base and knees will be straight and upper limb hands are abducted and relax position do the and Relax position do the hip flexion therapist in comfortable position.

EXPERIMENTAL GROUP A :

Theraband exercises: 1. SLIDE BRIDGE :Participants will be evaluated on side lying both right and left with the arm on the side to be assessed perpendicular to the floor, the elbow 90 degrees

on the flexor and the forearm over the bed, and the upper extremity crossed over the trunk, with lower extremities in the extension and the foot on top is in front of the foot on the bottom. Participants were asked to raise their bodies on their toes and elbows and to maintain this position.

2. QUADRUPED STABILIZATION :The participants was position like quadruped with support the help of upper limb both hands elbows will be straight and lower limb support help of knees and in hip flexion, knee 90 degree flexion player were asked to stabilize quadruped position withtheraband and therapist in comfortable position.

3. PUSH UP: The participants prone like position with the help of upper limb, both hands straight in elbows lower limb with help of support toes player to ask push-ups with the therabandtherapist infront of participant.

OUTCOME MEASURE:

Flexibility: Sit and Reach test, Reliability: ICC =0.92,

Balance: The Star Excursion Balance Test (SEBT), Reliability: ICC=0.87

STATISTICAL ANALYSIS:

A sample of 28 subjects, between 18 years to 25 years of age, was selected for the study. A participant's flowchart is shown in Fig. 1. After the enrolment phase, 7 subjects were excluded due to different reasons. Forty satisfied the inclusion criteria, agreed to participate, and were allocated to Group A (Experimental) and Group B (Control). The data was carefully collected and calculated. In this study independent student t- test, Chi square test and Student Paired t Test were used a statistically tool for detecting the significant difference within and between the Group A and Group B. Descriptive statistics (mean and standard deviation) were also calculated for all the measurements consideration for the study. Statistical Package for Social Sciences [SPSS] for macintosh Version M1 Released 2020. Armonk, NY: IBM Corp., was used to perform statistical analyses.

Sample size formula: $n = (Z1 - 1/\alpha)^2$

$$(SD) / (d)2 (Z1 - 1/\alpha)2 = 1.96SD = 1.86$$

$$d = 0.5$$

Table no. 1 Age and gender distribution among 2 groups

Variable	Category	Group A		Group B		P- value
		Mean	SD	Mean	SD	
Age	Mean/SD	22.92	1.33	23.92	1.21	0.51 ^a
	Range	18-25		18-25		
		N	%	N	%	
Gender	Males	11	79%	13	93%	0.75 ^b
	Female	3	21%	1	7%	

TABLE NO 2 :Pre intervention scores for flexibility

outcome	exp	control	Difference
flexibility	25.6	24.685	1

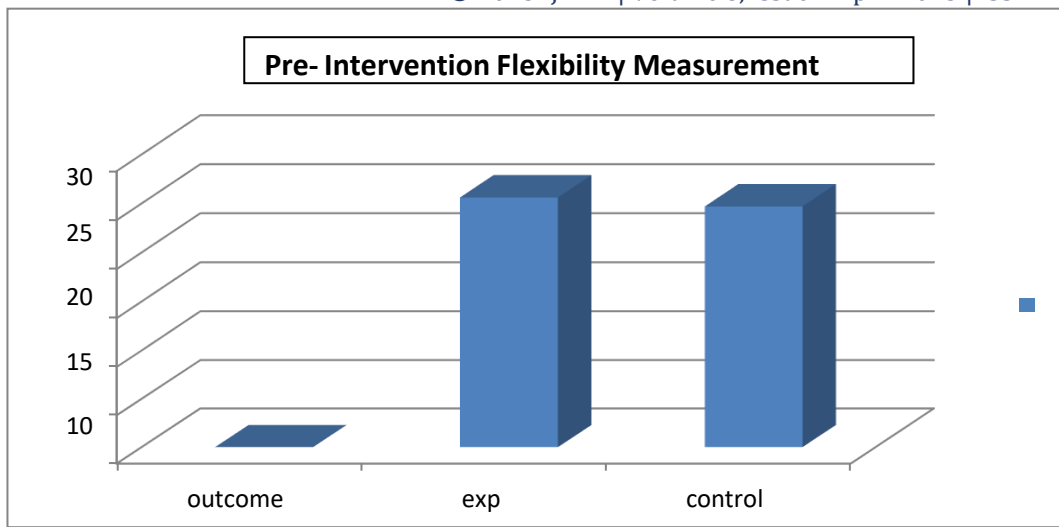


TABLE NO: 3 Pre intervention scores for balance

outcome	exp	Control	Difference
Balance	77.72	79.53	1.81

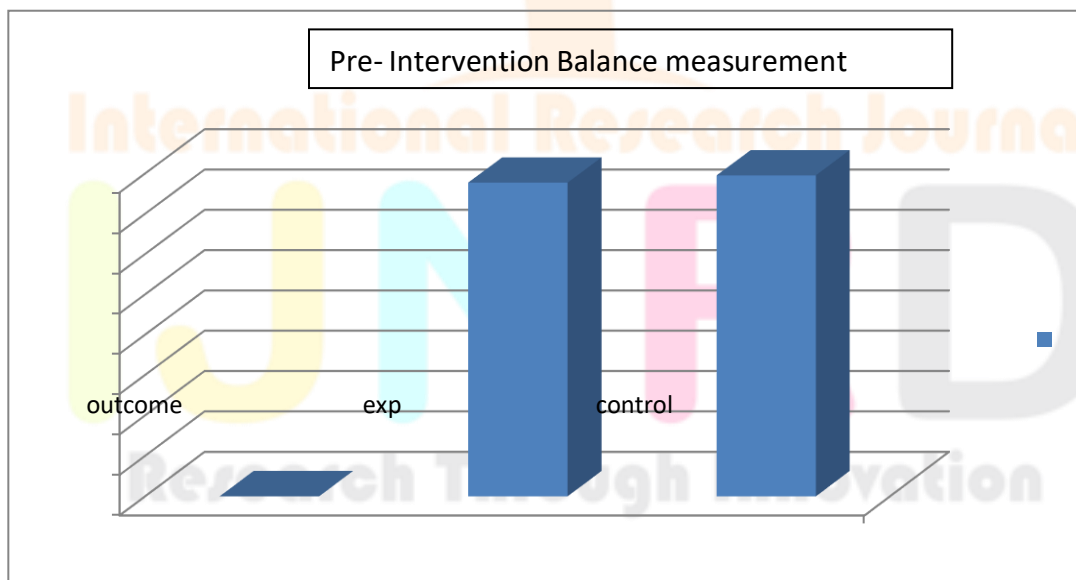
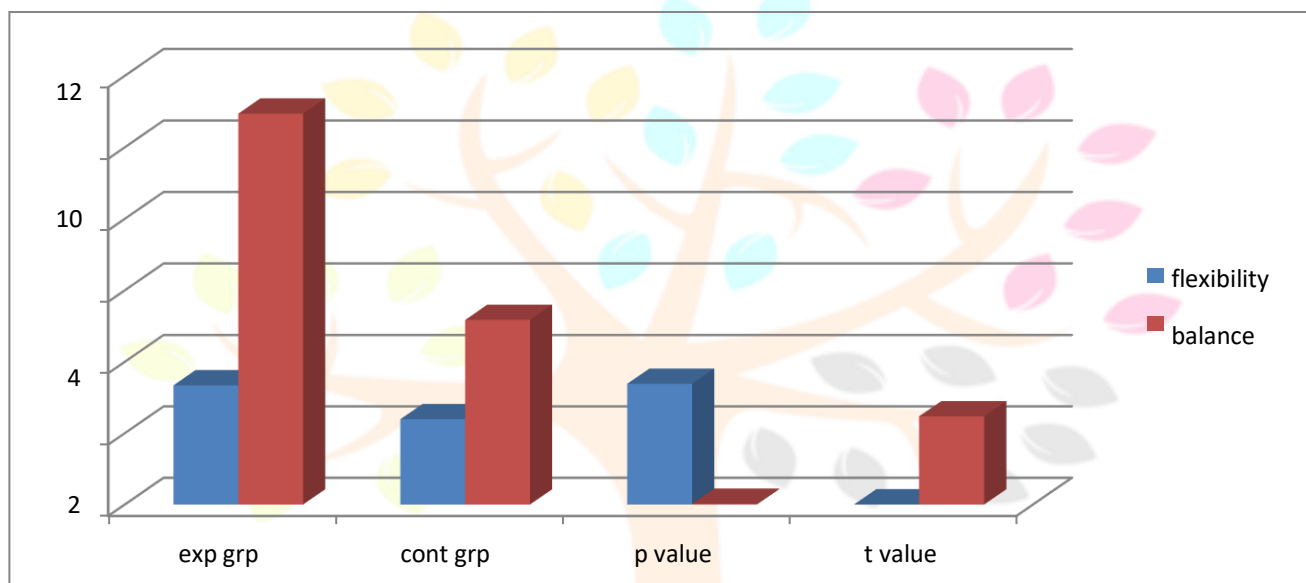


TABLE NO 6 : Experimental and control groups P-value and T- value				
Outcome	Exp gp	Contgp	P value	T value
Flexibility	3.34	2.39	3.3823	0.00228
Balance	10.94	5.17	0.0204	2.4699

Experimental and control groups P-value and T- value



DISCUSSION

present study, focused on the effects of core exercises, administered in male and female collegiate cricket players using Swiss Ball and Theraband on core muscle flexibility and balance. There was no pre- treatment difference in age and gender data between the groups, however, studies with non-sedentary individuals do not show a significant change

Swiss ball exercises 3 The days a week (35 min/day) for control group exercises are Prone Ball Push-up, Prone Ball hold with knee drive, Supine hip extension and knee drive gives to 6 weeks protocol 1st week 15 repetitions and 3 times, 2nd week 15 repetitions and 4 times, 3rd and 4th week 20 repetition 4 times, 5th and 6th week 20 repetitions for 4 times.

Theraband exercise 3 days a week (30 min/day) for experimental group exercise is

Theraband push-up, theraband quadruped stabilization, theraband Slide Bridge gives to 6 weeks protocol 1st week 15 repetitions and 3 times, 2nd week 15 repetitions and 4 times, 3rd and 4th week 20 repetition 4 times, 5th and 6th week 20 repetitions for 4 times.

Another aspect of the study is the effect of the Swiss ball and theraband on core muscle flexibility and balance improvement. For this purpose, in the first last tests, balance skills were measured by SEBT test. Flexibility skill measured by SIT AND REACH tests.

In experimental group flexibility 3.34%, balance 10.94% , control group flexibility 2.39 balance 5.17%. Flexibility and balance is improvement in experimental and control groups.

The results were core muscle flexibility and balance statistically significant.

CONCLUSION:

The study conclude that, the exercise programme intervention was found to be effective in improving the core muscle flexibility and balance using theraband and Swiss ball both interventions is more effectively work on collegiate cricket players.

This study was registered in (CTRI) clinical trial registry of India. (CTRI/2022/03/041112) Trial registered prospectively.

The study hereby accepts the alternative hypothesis that there is a significant difference between Swiss ball exercise and theraband exercise on core muscle flexibility and balance in collegiate cricket players.

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