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A COMPARATIVE STUDY OF STANDING BALANCE PERFORMANCE BETWEEN FEMALE CRICKETERS COMPARED WITH NORMAL AGE MATCHED CONTROLS

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BLUF

To compare standing balance performance between female cricketers with normal age matched controls

ABSTRACT

AIM OF THE STUDY

The intent of this study is to compare the effects of balance performance between female cricketers compared with normal age matched controls

BACKGROUND OF THE STUDY

Balance can be defined as the ability to maintain the body's center of gravity over its base of support with smallest sway or maximum firmness. Therefore, it is important to investigate the effects of balance performance in female cricketers to prevent frequent fall, one of the factors to be addressed for preventing injuries.

PROCEDURE

A total of 40 subjects have been selected and divided into two groups and explained about this study. Group A consists of 10 subjects are cricket players who have been required to evaluate fall frequency. Group B consists of 10 subjects who have been trained with control group where they are non sporting population .

RESULT

On comparing mean value between group-A and group-B. On functional reach score. Group-A shows higher significance which compared Group-B.

On comparing mean value between group-A and group-B. Group-A shows higher significance which compared Group-B. (p value <0.001)

CONCLUSION

To conclude from the results of this study fall group female cricketers having significant loss of (Proprioception) balance performance compared with normal age matched controls.

KEY WORDS: cricketers, frequent fall, functional reach score, fall injury prevention

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INTRODUCTION

Balance is a complex function involving numerous neuromuscular mechanisms. Control of balance is dependent upon sensory input from the vestibular, visual, and somatosensory systems. Central processing of this information results in coordinated neuromuscular response that ensures the center of mass remains with in the base of the support in situation when balance is disturbed[3]

Effective control of balance exercise routine will work on relive not only on account sensory input but also on timely response of strong muscles. Balance is an integral component of activities of daily living. Balance impairments are associated with an increased risk of falls and poorer mobility .

The recent literature are suggests that sports players having significance loss of proprioception that leads to imbalance and injuries . So, this study helps to find out balance performance among elite female cricketers compared with normal age matched controls.

STATEMENT OF THE STUDY

A COMPARATIVE STUDY OF STANDING BALANCE PERFORMANCE BETWEEN FEMALE CRICKETERS COMPARED WITH NORMAL AGE MATCHED CONTROLS

NEED FOR THE STUDY

Balance is a complex function involving numerous neuromuscular mechanisms. The recent literatures are suggests that athletes having significance loss of proprioreception that leads to imbalance. So, this study helps to find out balance performance among elite female cricketers compared with normal age matched controls

HYPOTHESIS

Null hypothesis

There is no significant difference in STANDING BALANCE PERFORMANCE BETWEEN FEMALE CRICKETERS COMPARED WITH NORMAL AGE MATCHED CONTROLS

Alternate hypothesis

There is significant difference in STANDING BALANCE PERFORMANCE BETWEEN FEMALE CRICKETERS COMPARED WITH NORMAL AGE MATCHED CONTROLS

DESIGN AND METHODOLOGY

Research design

The research design of the study is Descriptive study

Study set up

First step injury prevention and rehabilitation center sports medicine department, India

Inclusion criteria

1. Subjects must be aged between 18– 35years.
2. Subjects diagnosed with frequent falls and
3. Has concern about balance issue
4. Participants who are able to walk short distance with or without pain .
5. Cricketer Body mass index (BMI) value between (25-30) Kg/m^2

Exclusion criteria

1. Knee surgeries.
2. Recent trauma to knee joint.
3. Ligament injury.
4. Recent fracture of lower limbs
5. Osteoporosis
6. Osteomyelitis
7. Uncorrected visual impairments
8. H/o stroke and cerebellar disorder

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Population and sampling

Female cricket Players from areas around Chennai were chosen as population and 20 subjects were selected by Non probability convenient sampling and assigned into two group.

- 20 subjects were selected by Non probability convenient sampling

Materials used

- Inch tape
- Weight machine
- Wooden Scale

PROCEDURE

The functional reach test is developed as a quick screen for balance problems in female cricketers . For performing this test subject's stand with feet shoulder distance apart and with the arm raised to 90° flexion without moving their feet, subjects reach as for forward as they can, while still maintaining their balance. The distance reached is measured and compared to age-related norms[3].

Ten frequent fall players and twenty normal subjects were participated in this study. To assess the balance performance the functional reach test is administered to both the groups. Before applying the test, the procedure was clearly explained to the patient.

To perform the functional reach test subjects stand with feet shoulder distance apart and with the arm raised to 90^0 flexion without moving their feet, subjects reach as for forward as they can, while still maintaining their balance. The measuring scale is placed on the wall.

SAMPLE

The sample consists of 10 frequent fall players, and 10 control subjects with no history of falls.

DATA ANALYSIS

STATISTICAL TECHNIQUE

The following statistical tools were employed to analyze the data and testing of hypotheses.

1. Mean $\overline{X} = \frac{\sum x}{n}$

2. Standard deviation SD = $\sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$

3. Paired t – test $t_{cal} = \frac{\bar{d}}{S_d / \sqrt{n}}$

Where $\bar{d}$ = mean difference

S_d = Standard deviation of difference

$d = \frac{\sum di}{n} : S_d \sqrt{\frac{\sum (di - \bar{d})^2}{n-1}}$

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4. Independent t – test $t_{cal} = \left| \frac{X^1 - X^2}{SE} \right|$

$$SE = S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

Where S = $SE = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$

n1, n2 = Size of the samples of two groups

TABLE -1
Functional Reach Scores of Control Group Subjects

FALL GROUP	CONTROL
11.2	16.3
10.5	15.6
9.5	15.2
10.4	16
11	17
8.9	14.8
9.3	15.6
10.6	16.8
8.5	16.5
9.2	16.7

TABLE 2
Between Group Analysis Using Paired T-Test

FALL GROUP		CONTROL		SIGNIFICANT
Mean	9.91	Mean	16.05	
SD	0.9409	S.D	0.7337	(p <0.001)

RESULTS

Table 2 shows the value of mean and S.D functional reach test score between Fall group players and control subjects. For fall group mean value is 9.91 and standard deviation (S.D) 0.9409. For control subjects mean value 16.05 and S.D 0.7337. In order to find out the level of significance paired T- test is done. The results shows that level of significance p value <0.001.

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TABLE 3
Functional Reach Scores Of Fall Group Subjects

FALL GROUP	CONTROL
9.3	14.6
8.5	13.3
9.4	12.6
10.5	14.5
8.9	13.3
9.2	14
10.1	14.2
9.5	12.5
8.5	13.9
10.2	14.5

TABLE 4
Between Group Analysis of Female Atheltes Using Paired T-Test

FALL GROUP		CONTROL		SIGNIFICANT
Mean	9.4	Mean	13.74	(p <0.005)
SD	0.688	S.D	0.7763	

RESULTS

Table 4 shows the value of mean and standard deviation of functional reach test score between Fall group cricketers and control subjects. For fall group mean value 9.4 and SD 0.688. For control subjects mean value 13.74 and SD 0.7763. In order to find out the level of significance,paired t-test is done. The results shows that the level of significance p-value < 0.005.

RESULT

The aim of this study is to identify the standing balance performance between OA knee patients and age matched normal controls.

Table -1 Shows that value of functional reach test score The value of functional reach score which is high for control subjects compared with fall group players.

Table 2 shows the value of mean and S.D functional reach test score between fall group players and control subjects. For fall group mean value is 9.91 and standard deviation (S.D) 0.9409. For control subjects mean value 16.05 and S.D 0.7337. In order to find out the level of significance.paired T- test is done. The results shows that level of significance p value <0.001.

Table – 3 Shows that the value of functional reach test score for female cricketers. The value of functional reach test score which is high for control subjects compared with fall group players.

Table 4 shows the value of mean and standard deviation of functional reach test score between fall group and control subjects. for fall group mean value 9.4 and SD 0.688. For control subjects mean value 13.74 and SD 0.7763. In order to find out the level of significance, used paired t-test,The results shows that the level of significance p-value < 0.005.

DISCUSSION

It is concluded that fall group having significant loss of (Proprioception) balance performance compared with normal controls. While comparing the functional reach test score value between fall and control group, fall group obtaining more value than control group It suggests that fall group having more risk of imbalance than control group.

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CONCLUSION

To conclude from the results of this study fall group female cricketers having significant loss of (Proprioception) balance performance compared with normal age matched controls**.**

Practical application-this study clearly stated the effectiveness and importance of implementing balance assessment test followed by exercises and evaluation for a sports player.

REFERENCES

1. *KORALEWICZ L.M, ENGH G.A 2000 knee propriception in middle aged and elderly persons with advanced knee arthritis are reduced in compariswith that in middle aged and elderly persons without arthritis.*
2. *HASSON B.S.MOCKETTS, et-all 2001 June concludes compared with age and sex matched controls, subjects have quadriceps weakness reduced knee propriception and increased postural sway.*
3. *DOHERTY M, et-all 2002 May concludes reduction in knee pain through entire peripheral or central mechanisms resulted in increased maximum voluntary contraction. This increase however, did not result in improvement in propriception or static postural stability.*
4. *S MOCKETT, et-all 2002 concludes in subjects with frequent falls application of an elastic bandage around the knee can reduce knee pain and improve static postural sway. This outcome depends on the size of the applied bandage.*
5. *DIRACOGLU D, AVLIN F. et-all 2005 December concludes additive positive effects of kinesthesia and balance exercise in atheletes have been demonstrated used in clinical application they should be able to increase the functional capacities of patients. Long term studies about efficacy and cost effective of these exercises are needed.*
6. *PAI Y.C, RYMER WZ, et-all, 2005 concludes propriception declines with age and is further impaired in sports population . Poor propriception may contribute to functional impairment.*