Original Research Article

COMPARISON OF STATIC BALANCE IN MALE FOOTBALL AND GYMNASTIC PLAYERS BY USING BALANCE ERROR SCORING SYSTEM

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ABSTRACT

Background: Balance is a combination of automatic reactions of the body combined with external environmental factors. Balance can be sharpened by adding physical and mental training routines as a part of sports rehabilitation. It is as much a leant skill as it is innate function of the body. Even though the contact sports like football require more of dynamic balance training it is essential for them to have the static balance skills for a penalty strike or during shoot out. It is in these situations that the static balance is maximally challenged. While in the case of gymnastic players their static balance is challenged during maintaining certain postures or while landing. It is widely believed that gymnastic players are more flexible and adapt to automatic situations however football players are equally required static balance skills. This study was an attempt to compare their respective balance skills.

Aim: To compare a static balance of male football & gymnastic players by using balance error scoring system.

Objectives: To assess and compare static balance in gymnastics and football players.

Materials and Methods: Clinical trial. All the subjects were selected by snowball sampling method.

Results: The result of this study by paired t-test showed that the static balance has significant difference between football and gymnastics players (P= <0.00001) showed a significant difference.

Conclusion: The above study concludes that football players displayed inferior static balance compared with gymnastics players by using balance error scoring system.

KEY WORDS: Balance error scoring system, Football, Gymnastics, static balance.

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INTRODUCTION

Balance means the power to keep the body's centre of mass in its base of support with the least oscillation or the most stability. Keeping the body balance requires the co-ordination of sensory, neurotic, and musculoskeletal system.

The height status control or balance can be classified as static or dynamic. In the sport fields the athletes face situation where their balance changes by each step they take, their sprint and jump. The athletes normally have better balance ability than the non-athlete individuals. Football

is not just a game it is a religion for the football players and their fans. Football is popular sport in European countries like cricket in Asian games. Football though uncommon in Asian countries is gaining more popularity among the adolescents recently. Almost every school and college going individuals nowadays likes to indulge themselves in this sport. Gymnastic is also popular sport in European countries as well as Asian countries. Facilities are not though available for this sport in many Asian countries.

Football is a tough, physical game requiring a wide range of attributes including explosive power, strength, agility, speed, physical and mental toughness. Gymnastics is a sport involving the Performance of exercises requiring physical strength, flexibility, power, agility, coordination, grace, balance and control [1,2].

Each sport likely requires different levels of sensorimotor processes to perform skills and protect the neuromuscular system from injury. Gymnasts often perform leaping and tumbling maneuvers as well as static poses while barefoot on surfaces that vary in stiffness. Many of their skills require great strength and sometimes exaggerated joint ROM. Soccer players often perform lower extremity passing, shooting, and dribbling skills while wearing cleated or no cleated shoes on variable turf conditions. The skill requirements and environmental demands of these aforementioned sports likely pose different challenges to the sensorimotor systems that cumulatively may influence the balance abilities of trained athletes. To our knowledge, studies comparing balance abilities among athletes competing in different sports do not exist. Balance ability has a significant effect on athletic performance. Athletes have presented with superior balance ability compared to non-athletes suggesting that sports participation improves balance. Athletic training stimulates neurosensory pathways which improve balance and proprioception. Poor balance ability has been associated with an increased risk of ankle injury in a number of sports [3].

Balance is a combination of innate sense and the development of combined physical and mental training. Balance is fundamental to gymnastic success, no matter how otherwise skilled and fit the athlete may be. Balance is the achievement of physical harmony in both movement and stationary positions; a gymnast must incorporate the notion of balance into every aspect of the execution of every routine. Balance error scoring system is a test having 91% of specificity and reliability is 0.60 to 0.90 [4]. It is a test which is done to check the static balance of a person. Prescription of balance exercises to athletes in different sports may be an important to recognize performance variations [5]. Gymnasts often perform leaping and tumbling maneuvers as well as static poses while barefoot on surface s that vary in stiffness. Many of their skills requires great strength and ROM [6]. Football players often perform lower extremity passing, shooting, and dribbling skills. Previous study concludes that there is no significant difference of static balance in football and gymnasts. So purpose of this study is to compare a static balance in INDIAN male Football & Gymnastic players.

MATERIALS AND METHODS

Study Type: Observational.

Study Design: Clinical trial.

Sample Size: 60. (30 gymnastics and 30 football players)

Sampling Technique: Snowball method.

Duration- 3months.

Sampling Frame: Nearby Gymnastics Arena and football clubs.

60 samples (30 experimental group, 30 control group) of age group (64.23±5.04) involved voluntarily. Male participants of age group 15-25 years who all were playing since last 2-3 years at least 3 hrs in a day were included in study. Subjects with the presence of any recent musculoskeletal injury, subjects who has undergone a recent surgery and subjects who all are medically unfit were excluded from the study.

Materials used were pen and paper, cones, measuring tape, stopwatch, 50*41*6 cm foam.

Groups of football and gymnastic players were studied: male players, members of an amateur football club playing locally in the nearby football ground sports club and male players, members of gymnastics arena. They were tested for

BALANCE ERROR SCORING SYSTEM. They were explained why this study was done and how they can contribute to this. The procedure for the BESS test involved three stance positions each on the stable and unstable surfaces. The three stance positions were double-leg stance with feet together, single leg stance on test contralateral knee in approximately 90 degrees of flexion, and tandem stance with the foot of the test limb in line and anterior to the foot of the contralateral limb. Each position was held with eyes closed and hands on hips for 20 seconds in duration, and scoring was done by recording of errors. Subjects were asked to perform the test thrice and best score was taken[7].

Fig. 1: Materials used - pen and paper, cones, measuring tape, stopwatch, foam.


Errors included: Opening eyes, Lifting hands from hip, Touchdown of non-stance foot, Step, hop or other movement of the stance foot or feet, Lifting forefoot or heel, Moving hip into more than 30 degrees of flexion or abduction, Remaining out of position for more than 5 seconds.

This test was done when the team members gather before the match so as to get efficient and precise result. They were given consent form.

A- Double leg stance on firm surface, B- Single leg stance on firm surface

C. Tandem stance on firm surface, D- Double leg stance on foam surface, E- Single leg stance on foam surface, F. Tandem stance on foam surface
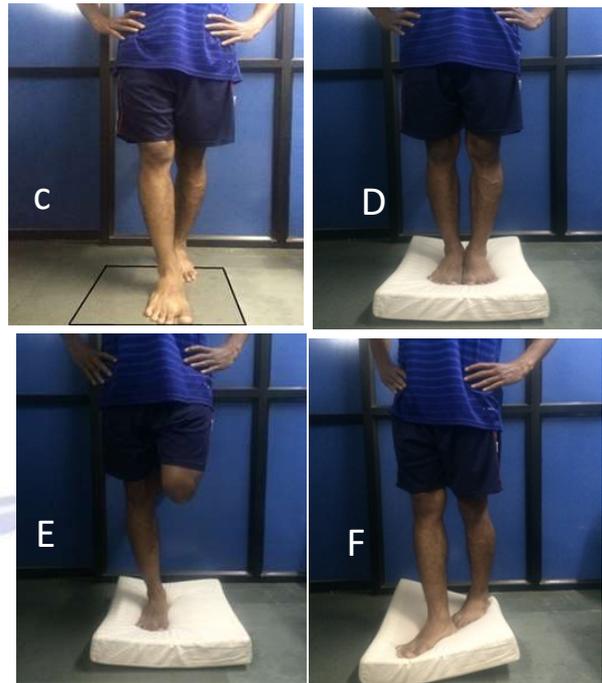

Findings: Statistical calculations and analysis of data was performed using a software package SPSS for windows, version 19.0 and results were calculated at 0.005 level of significance. Normal distribution of data was tested for all baseline parameters using **Shapiro Wilk test**.

Table 1: Demographic Data:

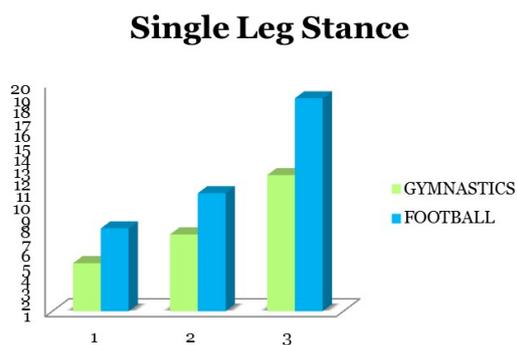| No. Of Samples	60
Mean (Age)	17.93
Standard Deviation	1.8
Range	15-25yrs.

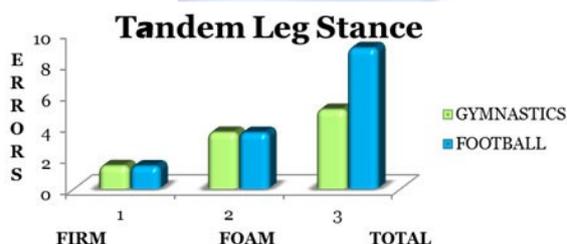**Graph 1:** Measures of Parameters (errors) in double leg stance.
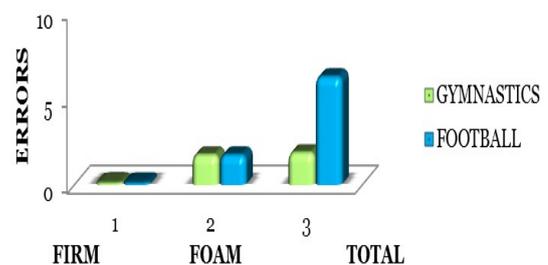
Graph 1 The above graph shows errors done by gymnastics and football players in double leg stance. No statistically significant change is seen by using unpaired t-test.

Graph 2: Measures of Parameters (errors) in single leg stance.

Single Leg Stance

Graph-2 The above graph shows errors done by gymnastics and football players in single leg stance. Statistically significant change is seen by using unpaired t-test.

Graph 3: Measures of Parameters (errors) in tandem leg stance.

Tandem Leg Stance

The above graph shows errors done by gymnastics and football players in tandem leg stance. Statistically significant change is seen by using unpaired t-test.

DISCUSSION

The purpose of this study was done to compare the static balance in male football and gymnastic players 60 healthy athlete (30 football players, 30 gymnastic players,) involved voluntarily. They were tested for balance error scoring system and this was done by using various tools. The results of the study showed that the static balance has a significant difference between the football and gymnastic groups (P= <0.00001) showed a significant difference.

We hypothesized that static balance scores would be different among collegiate athletes competing in football and gymnastics. Male football players' demonstrated inferior static balance compared with gymnasts.

Within our study, the statistical differences observed among sports may, in part, be related to the unique sensorimotor challenges imposed

by each sport [8]. Baqiue P. and Brukner P. et.al. in their study says that difference in static balance between football and gymnastics players can be attributed to the unique sensorimotor challenges imposed by each sport [9]. Davlin in his study on static balance in high level athletes says that football players, basketball players' shows superior dynamic balance compare to other athletes [10]. Gymnasts practice motionless balance skills on the balance beam, similar to skills required in BESS. Hence it is possible that gymnasts may develop superior attention focus on cues that alter balance performance. In contrast with football players rarely have immobile balance on one leg and after pay attention to the signs related to ball and players position [11]. As a result, it is possible that the static balance in football players is less developed than the gymnasts.

CONCLUSION

The above study concludes that football players displayed inferior static balance compared with gymnastics players by using balance error scoring system.

Conflicts of interest: None

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