

ORIGINAL ARTICLE

IJPHY

COMPARISON OF STATIC BALANCE IN MALE FOOTBALL AND BASKETBALL PLAYERS BY USING FLAMINGO BALANCE TEST

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ABSTRACT

Background: Balance plays a vital role in many sports. Static Balance has an exceptional effect on the performance of sports players and for injury prevention. Football and Basketball players require static balance for execution of sports specific skill. Thus, the purpose of this study was to compare the static balance in male football and basketball players.

Methods: A total of 50 healthy male players, football (n=25) and basketball (n=25) from Sports Academies of Ahmedabad, Gujarat were selected for the study with purposive sampling. Static balance was assessed by using Flamingo Balance test.

Results: Mann-Whitney Test was used to determine the significant difference between football and basketball players. The result of the study showed that there was a significant difference in static balance between male football and Basketball players(p<0.01).

Conclusion: Basketball players displayed inferior static balance than the football players by using Flamingo Balance Test.

Keywords: Flamingo Balance Test, Static Balance, Football, Basketball, Balance, Sports Performance.

Received 17th July 2018, accepted 28th September 2018, published 09th October 2018



www.ijphy.org

10.15621/ijphy/2018/v5i5/177432

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INTRODUCTION

Balance can be defined as the ability to maintain the body's center of gravity over the base of support [1]. Optimal balance is a result of neuromuscular actions in response to continuous feedback from the visual, vestibular and somatosensory system by continuously adjusting and maintaining correct body position about the supporting surface and the surrounding environment [2-5].

In Sports, Players require co-ordination abilities to maintain balance whether in a static or dynamic position which helps to protect them from falling and prevent injury [6]. Static balance defined as the ability to maintain an upright posture and to keep the center of gravity within the limits of the base of support while sustaining specific stance for a prolonged period [7-10].

For successful sports performance, static balance is a key factor in the development of sensory-motor systems. In the field of sports, especially in basketball and football, static balance play a fundamental role in sports specific postural control and contribute to efficient performance.

Various level of the sensory-motor system differs according to sports practiced to perform skillfully and protect the neuromuscular system from injury which encourages to excel in sports like basketball and football players [11]. For, a football player unipedal posture is performed by different technical movement like passing, shooting and dribbling by wearing football cleated shoes on a grass field [12]. In football, the stability of the supporting foot plays an important role while kicking the ball to pass or shoot. So, motor based balance skill is required during this unipedal stance in football players [13,14]. Whereas a basketball player has to perform upper extremity passing, shooting, and dribbling skills with wearing shoes on flat, stiff surfaces [15]. Various actions like basketball specific accelerations and deceleration, change in direction, cutting maneuvers, defense position recovery and jump landings are executed in very limited space and require high coordination ability which places a high demand on static stability in basketball players [1,16]. Differences between the two sports are there because of distinctive features according to the type of sport, which remains present during a practice session and as well as competition level [17].

Sport specific skill and environmental demands need balance which is necessary for safe and effective execution in sporting movements without losing balance [11]. To achieve effective performance on the field a player should be able to maintain balance in a situation like a footballer has to conserve the balance while receiving a ball and interrupting by opponent player whereas basketball player must be able to keep the balance when falling on the ground after a rebound battling with an opponent [18,19]. Both football and basketball sports, habitually the players address physical contact during above mention sports specific skills which involve static balance instability.

Every sport has common activities like cutting, running, jumping which majorly impose injury risk at lower extrem-

ities [16,20]. Impaired stability and balance can be found in these sports specific movement. Researchers suggested that balance impairment has been one of the risk factors for injuries in a variety of sports [21-23] LeleniSreekarini et al. found the prevalence of sports injuries in Adolescent Athletes. Based on their findings, the rate of injury in lower extremity for football 58% and basketball 60%. They observed that sprain and strain are the most usual injuries at knee and ankle joint. In these usual injuries, an ankle sprain is the commonest type of injury observed 30% in basketball and 20% in football players [24].

Many authors suggested that decreased in static balance is a risk factor for ankle sprain injury in basketball and football players [25,26]. Players are recommended to have a good balance control, particularly the static balance because it not only reduces injury of lower extremities but also to improves sports performance.

Measurement of balance is a process of maintaining the center of gravity within the body support surface [19]. Assessment of the static balance is a common procedure in the sports training. Static balance can be evaluated by having a player to maintain a motionless position while standing on one or both legs. Many assessment procedures have been established for evaluation of static balance. Among various assessment test, Flamingo balance test is a total body balance test to evaluate static balance. It accomplishes the requirements of simplicity, low cost, and is capable of mass investigations [27].

Accurate measurement of balance is important for injury prevention, rehabilitation as well as finest sports performance. So, the purpose of the study is to compare static balance in male football and basketball players.

METHOD

A total of 50 male subjects participated in this study: 25 Football players and 25 Basketball players. Both players were selected by with purposive sampling and were recruited for the study from Sports Academies of Ahmedabad, Gujarat. The study design was a type of cross-sectional study.

The included subjects were male players; age 13-16 years, competing in only one sport from last one year and were not be involved in a balance training program outside of their typical sports training. Participants were excluded if they had a lower extremity injury, vestibular problems, and visual problems in the six months before the study, current history of hip, knee and ankle surgery. The Institutional Ethical Committee approved the study. From all players, informed consent was obtained after the purpose and procedure of the study were explained.

PROCEDURE

Static Balance: It was measured by Flamingo Balance Test (FBT). The subjects stood on the beam which was 50 cm long, 5 cm height and 3 cm wide. The subject was told to balance on one leg with bare foot, the free leg was flexed at the knee, and the foot was held close towards buttocks and hands were on the iliac crests, standing like a flamingo.

The evaluator starts the stopwatch, and the subjects were told to stand in the position mentioned above for 1 min. The stopwatch was stopped each time the subjects lost the balance and started again until they lost the balance. Every player performed three attempts with eye-open in each leg, the number of falls was recorded, and they were averaged for analysis [27,28].



Figure 1: Flamingo Balance Test

Statistical analysis

Statistical analysis was performed using SPSS version 20 and results were shown as a mean and standard deviation. Normality Distribution of data was verified using the Kolmogorov-Smirnov test. For investigating the difference of static Balance between groups (Basketball and Football players) was evaluated using the Mann-Whitney test. The significance level was accepted as $p < 0.05$.

RESULTS

Table 1: Demographic characteristics of both Groups

Groups	Number of Subjects	Age Mean±SD (Years)	BMI Mean±SD (Kg/m ²)
Basketball	25	14.40 ± 1.15	20.17 ± 2.26
Football	25	14.40 ± 1.08	18.75 ± 2.13

Table 2: Comparison of Static Balance between Football and Basketball Players

	FOOTBALL Mean (±SD)	BASKETBALL Mean (±SD)	p Value
Left	5.56±0.96	8.43±1.10	0.01
Right	5.32±0.94	8.20±0.96	0.01
Average	5.44±0.95	8.31±1.03	0.01

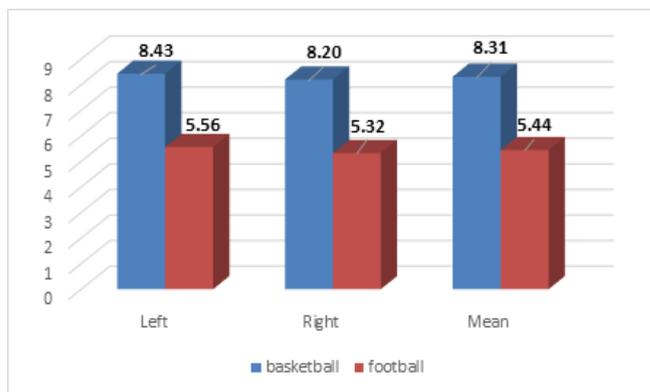


Figure 2: Mean Value of Static balance for Football and Basketball Players

In Table 1, the descriptive data of the subjects are shown. The mean (SD) age was 14.40 ± 1.15 years, Body Mass Index (BMI) was $20.17 \pm 2.26 \text{ kg/m}^2$ for Basketball players; the mean (SD) age was 14.40 ± 1.08 years, Body Mass Index (BMI) was $18.75 \pm 2.13 \text{ kg/m}^2$ for Football players.

In Table 2, the result of the Mann-Whitney test showed a statistically significant difference between the static balance value of Basketball players (8.31 ± 1.03) and value of Football players (5.44 ± 0.95) ($p < 0.01$). A high score shows that there were more errors in flamingo balance test. So it was seen that Football players had higher static balance than basketball players.

DISCUSSIONS

This study compared static balance in male football and Basketball players. The findings from this study suggested that there was a significant difference in static balance between Football and Basketball players ($p < 0.01$). The Football players had best score (5.44 ± 0.95) than basketball players (8.31 ± 1.03). So, the Football players were found to have a superior static balance than Basketball players.

Static balance has great importance in sports for achievable performance. Fundamental motor skills like throwing, kicking, jumping, striking, hopping, and skipping required accurate balance to get maximum field performance and minimize the lower extremities injuries in sports such as basketball and football [29].

This study shows that statistical differences observed with-in Basketball and Football players may be associated with different nature and skills of the game. Football players have to perform lower extremity actions such as passing, shooting and dribbling skills during the match which requires maintaining a strong static balance. A football player needs a unipedal posture to perform different skilled movement like running at high speed, powerfully kicking of the ball and rapidly changing the direction [12,18]. In comparison to football players, basketball players seldom maintain motionless one leg position and frequently pay attention to sign related to the ball and player's positions [11,30]. So, it is assumed that Basketball player might less develop static balance than Football players.

In earlier research, they studied the difference in balance ability among different sports players. Similar to the result

of our study, football players had a better static balance than swimmers, basketball and cricket players [30-32]. Matsuda et al. explained in their study in the context of the performance of football players require to stand on one leg to kick the ball, whereas other sports do not require this type of locomotor ability and players do not need to correct their body sway while performing a specific skill [31].

Accordance with, a study by k.Gokdemir et al., they compared dynamic and static balance performance of sedentary and different branches athletes. They found that the dynamic balance of basketball is higher than volleyball and football players and static balance performance of basketball players was lower than the performance of football and volleyball players. Due to their Hardly engrossment into unipedal stationary balance of basketball players might be the reason for the difference in balance ability [28].

Distinctive sensorimotor challenges forced football players required to control the ball on one leg stance in contrast to basketball players sports training reinforce the ability to use somatosensory and otolithic information which in turn to progress balance ability [33]. Th. Paillard, F. Noe suggested that football players have developed strong visual dependence in association to the ball, opponent players and team members by training practice. Football Players can preserve balance while handling the ball by enhanced proprioceptive abilities [34].

Tracey et al. found significant correlations between single-leg balance ability with kicking accuracy. They showed that better balance on the support leg was associated with greater kicking accuracy when kicking with the preferred leg [35]. Many researchers stated that during sports training repetition of certain movement enhance the balance control [36-38]. So, in this study, assumed that repeated work of kicking motor action on the field during practice and match was giving reason towards increased static balance in football players.

During a unipedal stance, postural control is playing an important role in the performance of sports players. In sports, appropriate static balance is having a direct connection with the reduction of risk in injuries. Poor balance leads to an increased risk of lower extremity injuries.

As per this study result, the maximum amount of postural sway observed during single leg stance in basketball players. The Basketball players were having lower balance ability than football players. The superiority of football player may be derived from sports specific skill training. So findings of our study suggest that basketball players require balance training programs to reduce the risk of injuries and improve sports-specific performance. Balance training effectively prevents injury re-occurrence and improve postural skill in term of enhancing motor performance in various sports. Balance exercise executed to not only focus on improving postural control but also the rate of force development and regeneration of injury.

Some limitation of this study should be recognized. This study was conducted only on the small size of the sample.

Another, our findings were limited to male players. Therefore, future studies should include a larger sample size and female players.

Conclusion

The result of this study may be concluded that there is a significant difference in static balance in between male Football and Basketball players. The football players demonstrate greater static balance compared with basketball players.

Acknowledgments

We would like to thank the football and basketball players for their participation. And also grateful to player's trainers for their generous help and support in conducting this research.

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Citation

Paryushi, V., & Prabhakar, M. M. (2018). COMPARISON OF STATIC BALANCE IN MALE FOOTBALL AND BASKETBALL PLAYERS BY USING FLAMINGO BALANCE TEST. *International Journal of Physiotherapy*, 5(5), 162-166.