

Short Communications

Effectiveness of isolated ankle strengthening and functional balance training in single leg drop jump land in football players and measuring the stabilityG. Vaishnavi¹, SaipavithraV.², G. Yuvarani¹, K. Kirupa¹, G. Tharani¹, S. Sathya¹, R. Vidhyalakshmi Vikram³¹Assistant Professor, ²BPT Student, Faculty of Physiotherapy, Dr. MGR Educational and Research Institute, Velappanchavadi, Chennai 600077, Tamil Nadu, India³Physiotherapist/Yoga Consultant, No 46G1 Smart Builders, Moorthy Nagar, Chennai 600050, Tamil Nadu, India*(Received: March 2020 Revised: June 2020 Accepted: August 2020)*Corresponding author: **G. Vaishnavi**. Email: vaishnavi.physio@drmgrdu.ac.in**ABSTRACT**

Introduction and Aim: Football is one of the famous sports in the world and associated with many ankle injuries in football players. Many football players use single leg drop jump landing ranging from 13 to 20 out of 1000 players. Functional balance maintain or improve activities of daily living and quality of life. Strength training increases the density of bone and reduces the risk of fractures. Aim of this present study is to analyze the effectiveness of the isolated ankle strengthening and functional balance training in single leg drop jump land in football players.

Materials and Methods: 30 football players with single leg drop jump were randomly selected to participate in this pre and post test experimental study. Study is done at ACS medical college. Selected players were asked to perform the exercise for about 8 weeks, 40 minutes per day. The subjects performed ankle strengthening for 20 minutes and functional balance training for 20 minutes. Dorsiflexors are at high-risk injury during single leg drop jump land in football players. Thus, exercise is given for strengthening and functional balance and prevailing stability of ankle is measured using foot and ankle measure (sub scale) (FAAM), Star Excursion Balance Test (SEBT).

Results: On comparing mean values of SEBT within group between pretest and post-test values, it shows statistically highly significant difference and improvement in balance between pre-test (89.67) and post-test (94.18) at $P < 0.001$. On comparing the mean value of FAMM sports subscale within group between pretest and post-test values, it shows statistically highly significant difference and improvement in ankle and foot physical function between pretest (45.34) and post-test (60.81) at $P < 0.001$.

Conclusion: This study shows that isolated ankle strengthening, and functional balance training is effective in improving the ankle strength and balance in football players.

Keywords: Stability threshold; single leg drop jump land; foot and ankle ability measure scale sports subscale (FAAM); star excursion balance test (SEBT)

INTRODUCTION

The single leg drop jump consists of first landing, after dropping down from the starting position and a second landing after a minimal jump rebounding from the drop. For the purpose to goal, the strikers strike the ball with his head. In this process he tends to jump and hit the ball with his head and during landing the single leg drop is achieved, during the whole process because of the weakness of dorsiflexors downfall of the players accounted (1, 2). Football is the most popular sports in the worldwide. The frequency of single leg drop jump land are to be estimated that 10 to 30% of 100 players. Among football players, the single leg drop jump landing is common (3). In most of the players, single leg drop jump landing is common and is caused due to weakness of dorsiflexors (4, 5). The risk factors can be due to intrinsic and extrinsic. Intrinsic factors includes previous injury, joint instability, poor physical condition, age, poor football skill, poor functional balance. Extrinsic factors

include tapping, shoe type, intensity of the competition and players position. The physical activity of the football players assessed by the foot and ankle ability measure scale (sports subscale). The foot and ankle ability measure scale is a self-reported outcome instrument developed to assess the physical functional activities for individual with foot and ankle related impairments. The star excursion balance test (SEBT) is a dynamic test that needs proper strength, flexibility and proprioception. Dynamic balance, which provides a significant challenge to athletes and physically active individuals, is measured using SEBT (6).

MATERIALS AND METHODS

The study was done after obtaining clearance from the ethical committee, faculty of physiotherapy, Dr. MGR Educational and research institute. Materials used are band, wobbleboard, measuring tape, and stool. A total of 30 football players with single leg drop jump were recruited by random sampling to

participate in this pretest-posttest experimental study. Study setting includes ACS medical college students. Players selected based on the inclusion criteria were asked to perform the exercise prescribed for about 8 weeks, 40 minutes per day. The subjects performed ankle strengthening for 20 minutes and functional balance training for 20 minutes. Football players only male of age group 19-22 years old, players with ankle muscle weakness are included in the study. Players with history of peroneal nerve palsy in last 3 months, vestibular disorder, post trauma, malignant tumor of knee and ankle, recent fracture and dislocation, female football players were excluded. The ankle

muscle strength and functional balance is measured by the foot and ankle measure (FAAM), SEBT.

Data analysis

The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for social science (SPSS) version 24. Paired t-test was adopted to find statistical difference within the groups and Independent t-test (Student t-Test) was adopted to find statistical difference between the groups.

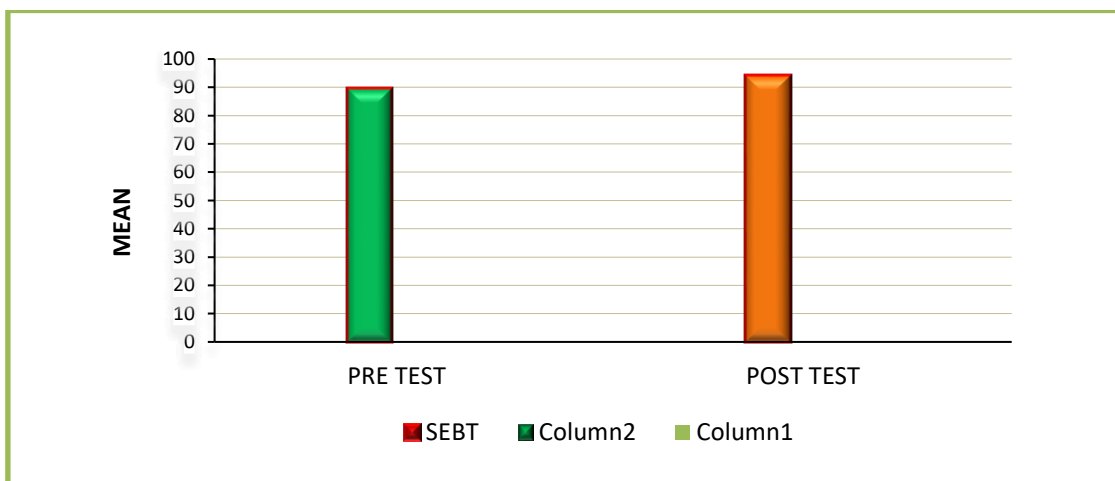


Fig. 1: Comparison of SEBT between pre and post-test values

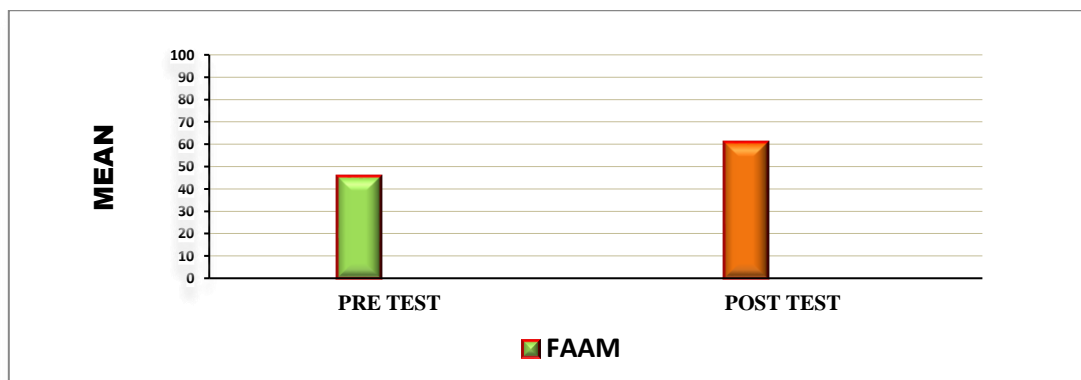


Fig. 2: Comparison of foot and ankle ability measure (FAAM) sports sub scale between pre and post-test values

RESULTS

On comparing mean values of SEBT within group between pre-test and post-test values, it shows statistically highly significant difference and improvement in balance between pre-test (89.67) and post-test (94.18) at $P \leq 0.001$.

On comparing mean values of FAAM sports subscale within group between pre-test and post-test values, it shows statistically high significant difference and improvement in ankle and foot physical functions between pre-test (45.34) and post-test (60.81) at $P \leq 0.001$.

DISCUSSION

The purpose of the study is to determine the effectiveness of isolated ankle strengthening and

functional balance training in single leg drop jump land in football players (7). Wobble board training program designed by Mcguine and Keene is utilized to train balanced in the football players with single leg drop jump land (8). The foot and ankle ability measure (sports sub-scale) and star excursion balance test is proven to be a reliable and valid tool in measuring results concluded that foot and ankle strength and proprioceptive ability of individuals (9, 10). The foot and ankle strengthening and proprioceptive feedback plays a vital role in maintaining the ankle stability. Functional balance is the integration of balance training to maintain or improve functional activities. Functional balance helps to improve stability and mobility during sports activities(11). Hence,these isolated ankle-strengthening and proprioceptive balance training

programs are incorporated into the training session to reduce ankle weakness and fall during single leg drop jump land. Further studies should be performed by increasing the sample size and by using advanced system for objective evaluations training.

CONCLUSION

On comparing the pre and post-test values of FAAM (sports sub-scale) and SEBT for post ankle strengthening in single leg drop jump in football players there is significant difference. The post-test value shows significant increase in improving ankle strength and balance. This study proves that isolated ankle strengthening and functional balance training are more effective in improving the ankle strength and balance in football players.

ETHICAL CONSIDERATION

The manuscript was approved by the institutional review board [IRB REG NO: IV C – PHYSIO/IRB/2018-2019] of faculty of physiotherapy. Proposal and procedures were performed in accordance to the ethical standards of the responsible ethical committee both (institutional and national) on human experimentation and the Helsinki Declaration of 1964 (as revised in 2008).

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CONFLICT OF INTEREST

Authors declare no conflict of interest.

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