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Effect of Dot Drills Exercise on Balance and Agility among Young Male Kabaddi Players

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Abstract: ***Background: Agility andbalance are important components of skill related to physical fitness aiding in prevention of injury as well as skill development. Dot drills are good for improving foot speed and strengthening the muscles in the lower leg below the knee. Purpose: Effect of dot drills exercise on agility and balance among young male kabaddi players. Method: In this pilot study, 15 beginner kabaddi players were selected form Sri Venkateshwaraa College of physiotherapy. They were given dot drills exercise, 3 sessions in a week for 4 weeks, the outcome measure was T - agility test and Y - balance test. Result: In this study 15 subjects were taken, the t value of T - agility test was + (16) = 16.3 the outcome statistical analysis is done with paired 't' test within the analysis shows the significance of (P<0.001). The t value of Y - balance test for Anterior is + (14) = 19.6, for postero - lateral was + (14) = 10.5, for postero - medial was + (14) = 15.2. Conclusion: This study has concluded that dot drills exercise shown effective improvement on Balance and Agility among kabaddi players after 4 weeks of training.***

Keywords: kabaddi, t - agility test, y - balance test, dot drills

1. Introduction

Kabaddi is a 4000 - year - old team sport originated in India and played by many south Asian nations. The name derived from Tamil name meaning 'Holding hand', which is crucial aspect to play[1]. It requires stamina, both physical and mental skills, extraordinary reflexes and exceptional eye hand leg coordination[2]. It is the most popular contact, speedy, exhaustive, intermittent outdoor game played almost in all rural and urban Indian schools and colleges. Agility is defined as "a rapid whole - body movement with change in velocity or direction in response to stimulus"[3]. Balance is an important component of skill related physical fitness aiding in prevention of injury as well as skill development[4]. Dot drills are good for improving foot speed and strengthening the muscles in your lower leg below the knee. It involves jumping around a dice like 5 - point pattern, moving quickly from dot to dot. It improves foot quickness and reaction time while strengthening the ankle and calf[5].

Balance and agility are the most common seen among Kabaddi players. Already some had proven that dot drills have improved some harmonic abilities and level of skill performance of technical gymnast. But no one has done that effectiveness of dot drills exercise to improve agility and balance among young male kabaddi players. So, this study aims to check the effectiveness of dot drills exercise to improve agility and balance among young male kabaddi players.

2. Materials and Methodology

This a pilot study that includes 15 beginner kabaddi players form Sri Venkateshwaraa College of physiotherapy, Puducherry - 605102. The other inclusion criteria of the study were, players with running time greater than 11 seconds (based on t - agility test), Players with y - Balance point > 88%. The exclusion criteria were, players who have undergone surgery in lower limb in past 6 months and players with any fractures or dislocations in hand or legs. The pre and post test were done using T agility test and the Y balance test. The study was conducted for a period of 6 months and the dot drills exercise treatment was given for a duration of 4 weeks, 3 sessions per week.

3. Procedure

Outcome measure:

T - agility test: The 3 cones are arranged in a straight line with a distance of 5 meters between each cone. A cone is placed perpendicular to the centre cone at a distance of 10 meter so that the four cones form a T shape. Kabaddi player is asked to start at the end of 4th cone and touch the centre cone by crossing 10 meters straight. Then the player is asked to touch the left cone by crossing 5 meters in side steps. Again, the player is said to touch the centre cone. The same is repeated on the other side. Then the player is said to touch the starting 4th cone by stepping backwards. The time taken to complete this is measured using stop watch.



Figure 1: T - agility test

Y - balance test: The dynamic balance was assessed for the dominant leg of the players using y balance test. The subject stands in single leg stands while reaching as far as possible with contralateral leg in three direction (anterior, postero - medial and postero - lateral) and measures the distance using measuring tape the two lines extended at an angle of 135 degree from the anterior line. The accurate examination of

dynamic balance to hold their both hands - on pelvic tilt and completes their practice trails in each direction with dominant leg. The non - dominant leg is placed in the centre of the intersection of two lines each participant was given 1 minute interval between each test for dominant leg. The mean values of three readings were taken and documented.



Figure 2: Y - balance test

4. Treatment:

Dot drills exercise: Dot drill is a tool used to increase agility. It is a chart consists of 4 circle dots around a center circle. At first players are instructed about the kind of procedure to this exercise. Player is asked to stand on the center dot and once started he have to jump on other dots and return back as fast as he can by following the guide commands.3 sets of 4 repetitions on different dots will be given. Exercise will be given 3 sets of 4 repetitions for 4 weeks.



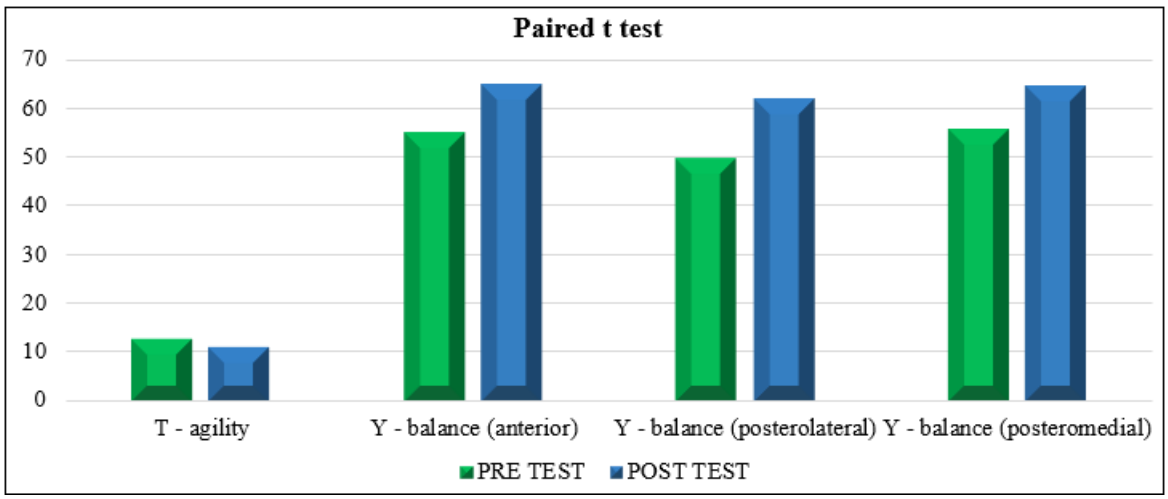
Figure 3: Dot drill exercise

Statistical analysis:
In this study, pre and post interventional differences within the group were analyzed using paired 't' test and between the two groups were analyzed using unpaired 't' tests for each of the outcome measures.

Paired t test:

Table 1: Shows the pre and post test values of paired t - test

Test	Mean	SD	't' - value	'p' - value
Pre test (T – agility)	12.8	0.9	16.2	<0.001
Post test (T – agility)	11.3	0.8		
Pre test [Y - balance (anterior)]	55.2	6.9	19.6	<0.001
Post test [Y - balance (anterior)]	65	6		
Pre test [Y - balance (posterolateral)]	49.9	8.3	10.5	<0.001
Post test [Y - balance (posterolateral)]	62.2	7.9		
Pre test [Y - balance (posteromedial)]	55.7	7.6	15.2	<0.001
Post test [Y - balance (posteromedial)]	64.8	6.5		



Graph 1: Shows within the group analysis of t - agility test and Y - balancetest

5. Result

In this study 15 subjects were taken with the age group of mean and SD. The mean and standard deviation of t agility test for the pre and post test are 12.28 + 0.9 and 11.3 + 0.8 and the t value is + (16) = 16.3 the outcome statistical analysis is done with paired 't' test within the analysis shows the significance of (P<0.001).

The mean and standard deviation of Y BALANCE TEST for the pre and post test are
Anterior - 55.2 + 6.9 and 65 + 6 t value is + (14) = 19.6
Postero - lateral – 49.9 + 8.3 and 62.2 +7.9 t value is + (14) = 10.5
Postero - medial – 55.7 + 7.6 and 64.8 + 7.6 t value is + (14) = 15.2

The outcome statistical analysis is done with paired 't' test within the analysis shows the significance of (P<0.001).

6. Discussion

The present study is a pilot study conducted to find out the "effectiveness of dot drills exercise to improve balance and agility among kabaddi players". This study was selected for the purpose to improve the agility and balance among kabaddi players. **Richard dharodet. al (2020**) has studied that effect of plyometric training on explosive power, agility, balance and Aerobic performances – specific physical fitness in kabaddi players. The aim of this study was to investigate the relationship of height, weight and BMI with agility and speed of male kabaddi players.45 male players have been selected as subjects Hence it is recommended that plyometric training increases performance for kabaddi players[1]. **Salah El - Din Mohamed et. al (2020)** has studied that the effect of a training program using the dot drill tool exercises on some harmonic abilities and the level of skill performance of technical gymnast beginners. The aim of this study is to improve skill performance of technical gymnast using dot drill exercises.30 gymnast beginners were taken as subjects[7]. It is recommended that dot drill exercise increases harmonic abilities and the level of skill performance of technical gymnast beginners. Number of 15 young male kabaddi players was taken as subjects and given dot drills exercise to improve balance and agility.3 sets of 4 repetitions were given for 4 weeks. T agility test and y balance test were used as outcome tools. The outcome measures showed the significant improvement of both balance and agility using dot drill exercise among young male kabaddi players. Dot drill exercise can help to increase the speed and balance of footwork while also increase cardio. It mostly targets calf muscles. From the above discussion, it is shown that, the benefit of dot drill exercise helps to improve both balance and agility, also the 4 weeks of training shows significant difference on balance and agility performance in young male kabaddi player.

7. Conclusion

This study has concluded that dot drills exercise shown effective improvement on balance and agility among kabaddi players after 4 weeks of training.

8. Limitations and Recommendations

The limitations were, small samples size, short study duration and only beginner players were selected. The recommendations are large sample size can be selected, other outcome tools can be used. Further study can be done for female players.

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