

Comparison Of Fartlek Training Versus Agility Drills Exercises For Women Kho-Kho Players

Saranya E¹, Parthasarathy R² & Murali R^{3*}

Meenakshi College of Physiotherapy, Meenakshi Academy of Higher Education & Research, K.K. Nagar, Chennai 600 078, Tamil Nadu, India.

*Corresponding Author
Mr. Murali Ravi

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Abstract:

To determine the comparative of agility drills versus fartlek training exercises for kho-kho players. The study was comparative design Pre and Post test type. The study setting was at Faculty of Physiotherapy, Meenakshi academy of higher education and research, in OPD, Gym room and basket ball court. 30 female subjects between the age group of 18-25 years with kho-kho player based on were randomly divided into 2 groups. Group A consisted of n=15 subjects and Group B consisted of n=15 subjects. Subjects who are undergoing other Agility drills, Any previous surgeries to lower limb, Ligament instability in lower limb was excluded from study. Outcome measures were 10m shuttle run test, 40 Yard Dash Test. A total of 30 subjects with kho-kho players were randomly assigned into two groups. Group A and Group B- Experimental group each with 15 subjects is each group. Pre -Assessment of the physical fitness and speed noted for the subjects Group A Agility training exercise there are lateral plyometric jump, forward running, high knee drills, dot drills, L drills, agility drills for fartlek training there are Jump Squat, Vertical Jump, Burpee Jump, Hop Jump, 20m interval sprint training exercises for 35-75 min. Warm up and cool down exercise was included to avoid injuries. On comparing the mean values of groups A and B on the 10- meter shuttle run and 40-yard dash score, It showed a significant increase in the post-test value in both groups, but Group A Both the 10-metre shuttle run and the 40-yard dash times improved significantly after the intervention. The p-values are extremely low, indicating a highly significant improvement. Group B There were also significant improvements in both tests but the improvements were much smaller compared to Group A. The present study concluded that a 6 week's Agility drills exercise and fartlek training program was comparative subjects with kho-kho players in improving speed and performance. Both the group have shown improvement in all outcome measure but Group B was superior.

Keywords: Kho-kho players, agility drills, fartlek training, 10m Shuttle run test, 40-Yard Dash.

INTRODUCTION

One of the native games in our nation is kho-kho. Physical fitness is a prerequisite for a sportsman's performance in any given game or competition. Sports and neuron physiological factors are the two key motor abilities that make up physical fitness or condition. In all sports, these skills play a major role in performance. The primary goal of sports training is to maintain and improve physical fitness (1-2). In the Indian sport of kho-kho, athletic training is the basis, necessitating strong endurance, motor skills, sensory perception, neurological, cardiac-respiratory, and muscular-skeletal systems. The main goal of the motor skills are strength, speed, agility, and coordination. Each team plays four alternating nine-minute innings (chaser and runner) (3-4). The total game time is 36 minutes. The runner's task is to stay inside the boundary lines and continue to protect himself from the chaser for as long as possible. As a result, the player needs to accelerate from walking to sprinting (5). In Swedish, "speed play" is referred to as fartlek. This is an approach to training where sessions alternate between fast and slow intervals. This training might involve running, sprinting, jogging, walking, and brisk walking (6). Because of its unstructured pattern protocol, unstructured fartlek is appropriate for both novice and expert runners (7). Fartlek training can be scheduled or organized based on the participant's level of endurance (8). All three body

systems—the anaerobic galactic system, the aerobic system, and the active aerobic system—will benefit from the variation in speed and intensity (9). A fartlek session can be conducted alone or with another runner or in a group and develops speed and running strategies (10). The topic might remain difficult by quickening the pace and substituting the previous progression process. The ability to quickly change direction of the body or its components is known as agility, and it is influenced by muscle coordination, strength, reaction time, and movement speed (11).

Agility is the ability to move quickly, efficiently, and under control while changing the body's direction and posture. It requires responsiveness to changing circumstances, balance, coordination, rapid reactions, and speed (12).

Agility is one of the most important components of fitness and is helpful in many different sports and physical activities. Consider the sports where agility is necessary. In team sports like volleyball, rugby, basketball, hockey, football, and soccer, you have to react quickly to other players and the ball's movements (14).

Agility is the ability to start, stop, and change direction quickly while maintaining proper posture. Agility training, then, is a kind of physical activity that involves

quick bursts of movement that need direction changes. Exercises like cone drills and/or ladder drills, in which the participant must quickly execute various foot patterns or movement patterns, are frequently included in the agility training program (15). The two most popular methods for running the 40-yard dash are running alone and running against a competitor who is about equal in skill. To our knowledge, no research has been done to evaluate the effectiveness of these two widely accepted methodologies in terms of yielding better outcomes than the other. It makes sense that task-oriented individuals would do better in the absence of competition, but competition-oriented individuals would not perform as well without extrinsic motivation. A combination of competition and cooperation (inter-group competition) has been demonstrated to improve intrinsic motivation and performance (16). The 10 m Shuttle Run Test is an exercise frequently used extremely easy to execute and minimal equipment is needed in the realm of sports and training. This test allows for the measurement of acceleration, speed, and the subject's capacity to alter position and direction (17).

This study aims to compare simple, cost-effective exercise interventions that can be easily performed by women kho-kho players, focusing specifically on the effectiveness of fartlek training versus agility drills. By evaluating these two training methods, the research seeks to determine which intervention provides greater benefits in enhancing the players' performance, endurance, and agility, thereby offering practical and efficient strategies for improving fitness levels in women kho-kho players.

MATERIAL AND METHODS

Study design:

Comparative study

Study type:

Pre- and post-test type

Study setting:

The study will be conducted at the faculty of physiotherapy, Meenakshi Academy of Higher Education and Research, in the OPD, Gym room, and basketball ground.

Study duration:

6 weeks.

Study sampling method:

Conventional sampling method

Sample size:

30 subjects

Inclusion criteria:

- 1) Participants should be actively engaged in playing kho-kho at a competitive level
- 2) Age 18 to 25 years
- 3) Without any previous injuries to the ankle
- 4) Players should have a minimum level of game experience
- 5) Participants must be willing to commit to the study and be available

Exclusion criteria:

- 1) Subjects who are undergoing other Agility drills.
- 2) Any previous surgeries at lower limb
- 3) instability of the ligament in lower limb
- 4) Recent fractures in lower limb
- 5) Back injury like strain or sprain

Procedure

Exercise protocol:

Warm up: Both subjects in group A and B were performed the warm up for 5mins. (Dynamic stretching) Arm circles, Shoulder rolls, Side bends, Leg swings, Ankle circles, Torso twists

Cool down: Static stretching like Quadriceps stretch, Hamstring stretch, Calf stretch, Groin stretch for 5 mins.

Both groups will be trained for 6 weeks. 3 sessions per week for 45 - 85 minutes. At the end of the 6th week, the post-test values will be measured using the outcome measure.

Group-A Fartlek training (Three alternate days/ per week for six weeks) for 35 - 75mins

Unstructured fartlek training: Comprised this Fartlek was completed based on the subject's physical sensations. Jogging, running, or sprinting was done until the subject's body recovered if they felt fatigued or exhausted while walking. Therefore, none of the participants had any particular portions or pace combinations.

Jump squats, Vertical Jump, half Burpee Jump, Hop Jump, 20m Interval sprint training exercises.

Week 1:	10 repetitions in each set*	3set
Week 2:	15 repetitions in each set*	3sets
Week 3:	20 repetitions in each set*	4sets
Week 4:	25 repetitions in each set*	4sets
Week 5:	30 repetitions in each set*	5sets
Week 6:	35 repetitions in each set*	5sets

RESULTS AND OBSERVATIONS:

15 seconds rest given between the sets.



Fig 1 : Jump squat
Fig 2: Vertical jump



Fig 3: Half burpee
jump
Fig 4: Hop jump



Fig 5: 20m interval sprint training exercises.



Group- B: Received agility training for 6 weeks of 3 sessions per week for 35 - 75 mins

Agility training exercise

1. Lateral plyometric jump:

Jump so that your feet are no wider than your hips, then straighten your knees to squat. Push sideways and upwards towards the other side of the line while rapidly forcing through your heels. Land gently, then squat down to take in the shock. Maintaining your shoulders and hips square and your face front, hop back and forth over the line many times. performance for 30-60 seconds with intervals. Rest for 60 to 90 seconds for one set.

2*12 repetition for 1-3 weeks.

4*15 repetitions for 4-6 weeks.

2. Forward running, high knee drills Keep your posture straight and raise your arms like you're sprinting. Complete one set of 15 seconds of high knees, then two sets with a 15-second break in between. 2*12 repetition for 1-3 weeks

4*15 repetition for 4-6 weeks

3. Dots drills

To make five dots that form an x, mark a dot in each of the box's corners and the fifth dot in the center. Put a dot using tape or chalk in the center of each square, with a dot about 4 inches in diameter at each corner. Starting from the center dot and hopping to each corner dot while standing on the injured ankle, return to the central dot after each jump.

*12 repetition for 1-3 weeks

4*15 repetition for 4-6 weeks

4. L drills:

A right angle is formed by three cones spaced five yards apart from one another. The competitor begins by placing one hand on the ground, then sprints to the centre cone and makes contact with it. The athlete then turns around once more, but this time, instead of going around the centre cone, they sprint around the far cone.

2*12 repetition for 1-3 weeks

4*15 repetition for 4-6 weeks.

5. Lateral lunges:

Leap onto your right leg, placing your left foot outside the ladder and your right foot in the first square. Leap while reversing your stance such that your left foot is in the square. Once more, jump and switch legs, but this time, hop forward to the following square. Run back to the beginning and repeat after reaching the top of the ladder.

2*12 repetition for 1-3 weeks

4*15 repetitions for 4-6 weeks



Fig 1: Lateral plyometric



Fig 2: High knee drills

Fig 3: Dots drills



Fig 4: L drills



Fig 5: Lateral lunges

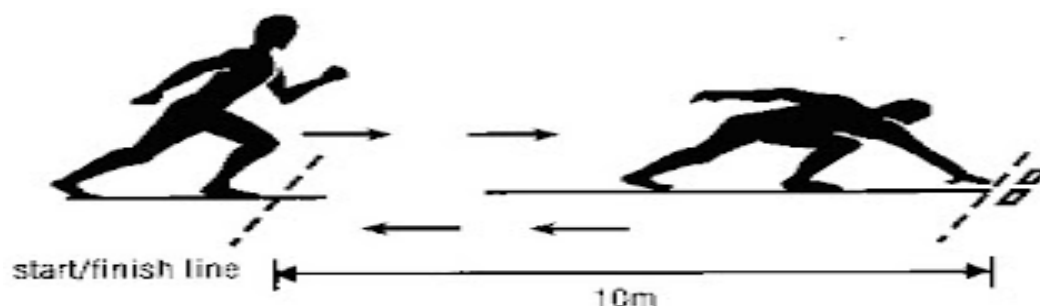
Outcome measure

1)10m shuttle run test:

Required Material: Four cones and markers, tape measure, and a stopwatch

Procedure: As seen in the figure, four cones are positioned ten meters apart, and between each pair of cones, two parallel lines are drawn. In order to prepare for the test, the subject places one foot behind cone A, the starting line, in a sprint start position. When the assessor signals, the subject will start the A-B-A-B-A course, trying to cover it in the shortest possible time. The test is considered over when the participant crosses cone A, the finish line, with any part of their body after completing the four 10-meter parts, or 40 meters. The stopwatch will be stopped there, and the amount of time that has passed will be noted. A participant's attempt will be deemed invalid and disregarded if they are unable to cross the cone lines.

Assessment: The time is expressed in seconds (sec), and the participant may try up to three times. The lowest time, mean, and median can all be noted.

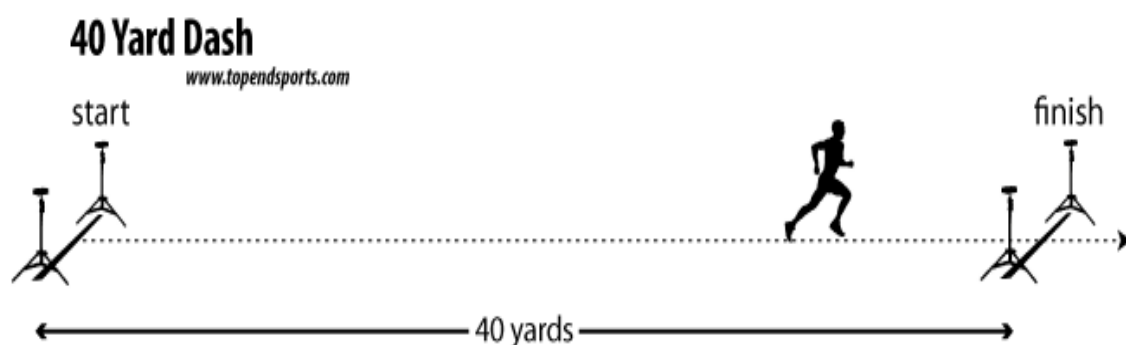


2) 40 Yard Dash Test:

Equipment Required: Cone markers, stopwatch, unobstructed grass/track surface of 60 yards, measuring tape/measured track.

Procedure: This test's objective is to ascertain acceleration and a reliable indicator of quickness, agility, and speed. Examinee must time themselves while running a single, 40-yard maximal sprint. There's a full warm-up with some practice accelerations and starts. The test begins when athlete in their most comfortable, familiar 3-point stance, standing motionless. The front foot has to come down on top of the line of initiation or behind it.

The initial position must be maintained for three seconds before the start. The subjects are free to cross the starting line, but they are not permitted to rock. The researcher offers advice on how to run as quickly as possible as well as motivation to keep going over the finish line. Two trials were used to get the findings. The closest two decimal places are used to record the best time. When the chest crosses the finish line, the start is determined by measuring the initial movement or the activation of the timing system.



Statistical analysis

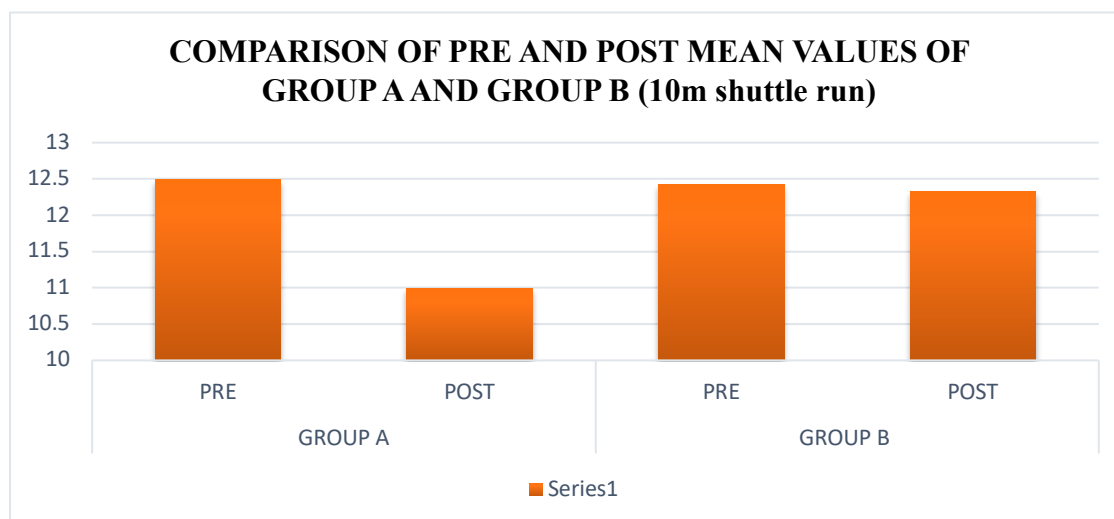
The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for social science (SPSS) version 27. Paired t-test was adopted to find the statistical difference within the groups. And Independent t-test was adopted to find the statistical difference between the group.

Table 1 : Comparing pre & post test mean values of group A (10m shuttle run test & 40m yard dash)

Group A	10m shuttle run test		40m yard dash	
	Pre	Post	Pre	Post
Mean	12.48933	10.99667	5.772667	5.288
Sd	0.196558	0.244414	0.10278	0.102414
T test	10.643		7.468	
P value	0.0001		0.0001	

(* - $P > 0.05$ - Not Significant) & (** - $P \leq 0.05$ - Significant). The above table reveals the Mean, Standard Deviation (S.D), t-test, degree of freedom (df) and p-value in Group A & pre test and post test in MBEST & SF12. This table shows that there was a significant difference in pre test and post test values of Group A at $P > 0.05$

Graph 1: Comparison of pre and post mean values of group A and group B (10m shuttle run)



Graph 2: Comparison of pretest and post test mean values of group A and group B (40m yard dash)

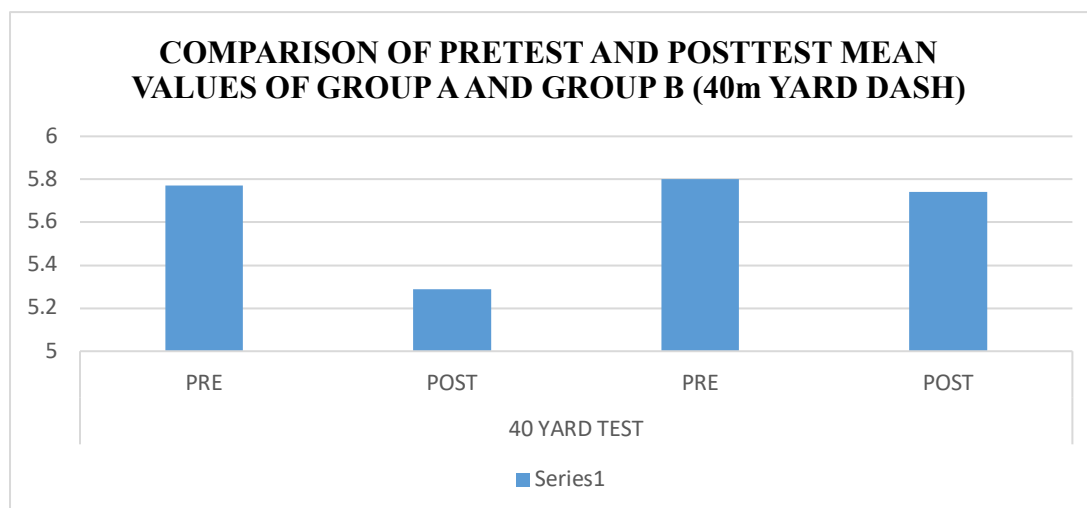


Table 2: Comparing pre & post test mean values of group B (10m shuttle run test & 40m yard dash)

Group b	10m shuttle run test		40m yard dash	
	Pre	Post	Pre	Post
Mean	12.4226	12.325	5.802	5.7406
Sd	0.153	0.1536	0.0845	0.0935
T test	1.0086		1.084	
P value	0.342		0.3077	

(* - $P > 0.05$ - Not Significant) & (** - $P \leq 0.05$ - Significant). The above table reveals the Mean, Standard Deviation (S.D), t-test, degree of freedom (df) and p-value of Group B in pre test and post test. This table shows that there was significant difference in pre & post test values of Group B at $P > 0.05$. The above table shows that statistically significant difference in pre & post test values of Group B at $P \leq 0.05$.

Graph 3: Comparing post test mean values of 10m shuttle run test between group A & group B

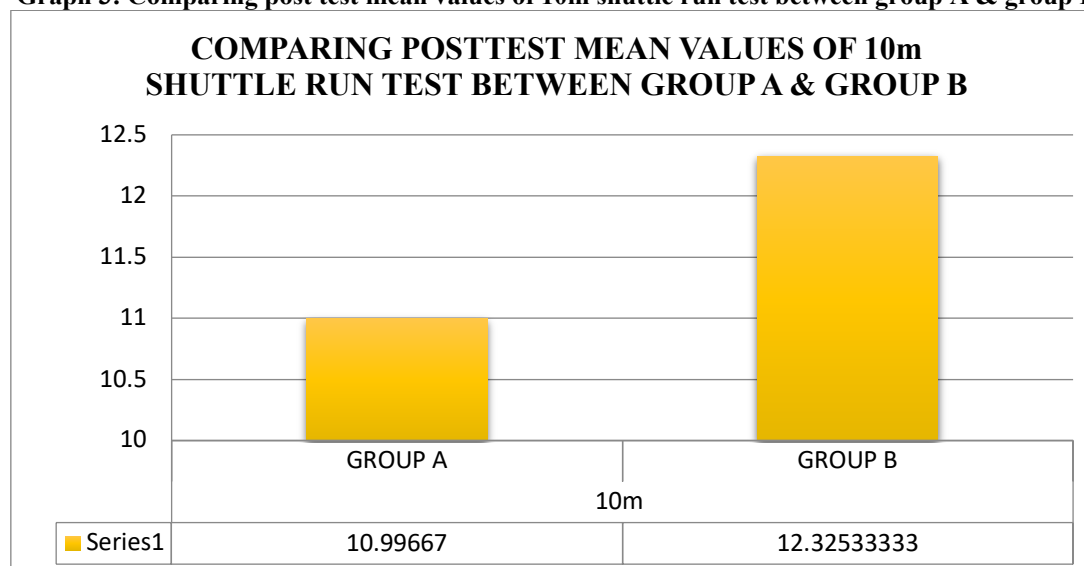
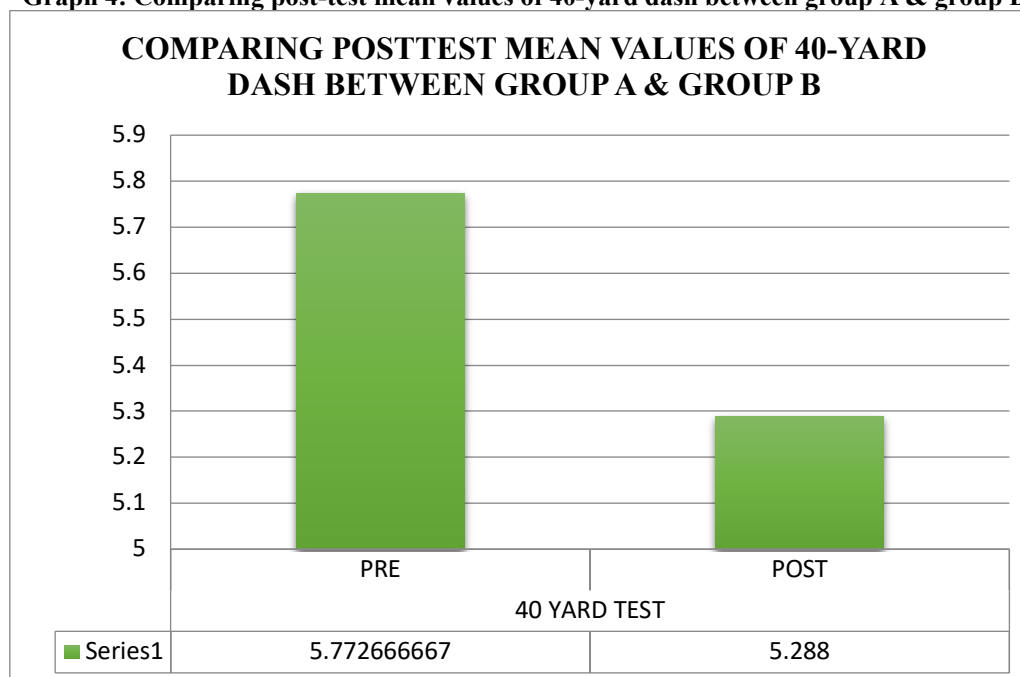


Table 3: Comparing post test mean values of group A & group B (10m shuttle run test & 40m yard dash)

Post test	10m shuttle run test		40m yard dash	
	Group A	Group B	Group A	Group B
Mean	10.999	12.32	5.7726	5.74067
Sd	0.1965	0.1587	0.1027	0.0935
T test	11.69		0.5152	
P value	0.0001		0.6203	

(* - $P > 0.05$ - Not Significant) & (** - $P \leq 0.05$ - Significant). The above table reveals the Mean, Standard Deviation (S.D), t-test, degree of freedom (df) and p-value between Group A & Group B in post test. This table shows that there was highly significant difference in pretest values between Group A & Group B at $P > 0.05$ The above table shows that Group A is highly statistically significant difference than Group B in post test at 10m shuttle run test & 40m yard dash)

Graph 4: Comparing post-test mean values of 40-yard dash between group A & group B



RESULT

On comparing the Mean Values of Group A & Group B on 10m shuttle run test, it shows a significant increase in the post test mean values in Group A (Group A) shows 25.4 ± 1.14 which has the lower mean value is more effective than (Group B) 20 ± 1.58 with (Significance 0.001) at $P \leq 0.05$. Hence the null hypothesis may be rejected and statement of alternate hypothesis may be accepted which states that, "There is significant effect of Resistant training with Proprioception training improves agility among kho-kho players.

On comparing the Mean Values of Group A & Group B on 40m yard dash it shows a significant increase in the post test mean values in Group A (Group A) shows 42.4 ± 2.09 which has the lower mean value is more effective than (Group B) 33.09 ± 1.90 with (Significance 0.001) at $P \leq 0.05$. Hence the null

hypothesis may be rejected and statement of alternate hypothesis may be accepted which states that,

On comparing the mean values of groups A and B on the 10- meter shuttle run and 40- yard dash score, It showed a significant increase in the post-test value in both groups, but Group A Both the 10-metre shuttle run and the 40-yard dash times improved significantly after the intervention. The p-values are extremely low, indicating a highly significant improvement. Group B There were also significant improvements in both tests but the improvements were much smaller compared to Group A.

Overall, the intervention had a more pronounced and statistically significant effect on Group A compared to Group B, as evidenced by both the mean improvements and the statistical tests conducted.

DISCUSSION

The present study short team effect of the 6-week fartlek training program in subjects with kho-kho players. this study found that the level of performance and stamina improved significantly among subjects with kho-kho after the intervention of the exercise the result of our study confirmed that fartlek training improved signification after the exercise. described the to evaluate the effectiveness of two different training interventions on athletic performance, measured through the 10m shuttle run and the 40-yard dash. Group A received a specialized, intensive training program, while Group B received a standard training program. The results indicate a highly significant improvement in Group A's performance compared to Group B. Enhancing fartlek training's pace objectives on the inter-coastal muscles and thoracic movement are only two of its many great advantages. The thoracic movement of the patient is modest while walking; nevertheless, a rapid increase in pace will improve the inter-coastal muscle's mobility. The muscles will strengthen and adapt as a result of this activity. Resulting in a rise in efficiency during the recovery phase (18). A kho-kho player has the ability to concurrently adjust his position based on the circumstances of the game. The current study's findings align with those of Morre (2014) (19) and Patel (2013) (20).

This study supported the findings of Dr. Aditi Salgaonkar. et.al., It was noted that the individuals in the control group were either running at the same pace or increasing it gradually. Despite being able to travel a greater distance than before, the control group did not exhibit any appreciable changes in their physiological vitals or early stages of recovery. Because their cardio-respiratory endurance was not supported, the individuals experienced greater tiredness and covered less ground during the test (5-21).

This study supported the finding of geddayi sarika1.et.al., The dependent variable of interest was agility, which was measured using a 10-meter shuttle run test. This study used a random group research design with pre- and post-tests.

The data from the aerobic, anaerobic, mixed, and control groups were subjected to analysis of co-variance (ANCOVA) in order to ascertain the significant effects of aerobic and anaerobic

training on particular agility during the pretest and post-test independently for each variable. Group A (22).

As showed a substantial decrease in time from pre-intervention to post-intervention (mean improvement of approximately 1.5 seconds). This highly significant improvement (p-value $\approx 3.18 \times 10^{-17}$) suggests that the specialized training program was very effective. Similarly, Group A's performance improved markedly (mean improvement of approximately 0.5 seconds). The p-value ≈ 3.16

$\times 10^{-18}$) further supports the effectiveness of the intervention.

Therefore, it has been demonstrated that although fartlek groups and agility drills enhance college female kho-kho players' performance in comparison to groups, fartlek outperforms enhancing performance and speed, with changes that are statistically significant at the 0.06 levels, Bames Schilling and Falvo (2007) (23).

CONCLUSION

The present study concluded that a 6-week agility drills exercise and fartlek training programme were comparative subjects with women kho-kho players in improving speed and performance. Both groups have shown improvement in all outcome measures, but Group A was superior to Group B.

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