



# COMPARISON OF STAR EXCURSION BALANCE TRAINING VERSUS PILATES TRAINING FOR IMPROVING AGILITY IN YOUNG CRICKETERS

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## ABSTRACT

**BACK GROUND AND OBJECTIVE:** Agility is the ability to move and change direction and position of the body quickly and effectively while under control. This is an important component of many sports training sessions. Improved agility means better performance, faster response and gives edge over their competition. Stability is achieved through the co-activation of trunk muscles; therefore, Pilates training has been postulated to be beneficial in training trunk muscles to provide agility. To compare the effectiveness of Star Excursion Balance Training versus Pilates Training for improving agility in young cricketers.

**METHODS:** Randomized control trial. In this study, 250 subjects out of 232 were screened between the age group of above 18 years and were randomly allocated into two groups. Each group containing 116 subjects. Group-A received Star Excursion Balance Training and Group received Pilates Training. Participants received 3 session per week for 6 weeks. The outcome measures of this intervention were measured by agility T test.

**RESULTS:** Independent t-test was used to compare the mean significance difference between continuous variables. Paired t-test was used to assess the statistical difference between pre-test and post-test scores p value of (0.001). Statistical analysis of the data revealed that within the group comparison, both groups showed significant improvement in all parameters.

Whereas, in between the group's comparison Pilates training group showed better improvement.

**CONCLUSION:** The present study concluded that 6 weeks program of Star Excursion Balance Training and Pilates Training were shown to be statistically significant in improving Agility in cricket players. However, Pilates Training was shown more effective in improving Agility than Star Excursion Balance Training in Young Cricketers.

**KEY WORDS:** Pilates Training (PT), Star Excursion Balance Training (SEBT), Agility T Test (ATT), Young Cricketers.

## INTRODUCTION

Cricket is a popular sport played throughout the world<sup>1</sup>. Depending on how long the game lasts, it is played in three standard formats: a test match, which is the oldest format, lasts for four to five days and consists of 90 overs per day; a one-day match is shorter and consists of 50 overs per side; and the T-20 match, which is the newest format, lasts for twenty overs per side<sup>2</sup>. Players need to possess a wide range of strategies, abilities, and physical fitness in the form of strength, endurance, speed, power, flexibility, and agility because each format has different physical requirements<sup>3</sup>.

The levels of physical fitness required for each game style differ. While speed is necessary for pursuing the ball, fielding, and running between the wickets and is the primary asset of fast bowlers, strength is essential for batting, chasing the ball, running between the wickets, bowling, fielding, and throwing. In cricket, power is crucial since it's needed to smash boundaries and toss a ball for a run-out. Additionally, flexibility is crucial because it facilitates the dynamic, multidirectional motions needed for bowling, batting, and wicket keeping<sup>4</sup>.

Finally, to change direction when sprinting between the wickets and to catch and return the ball, one must possess agility, which is the capacity to abruptly and effectively alter the direction of the body in accordance with criteria<sup>5</sup>. Additionally, a variety of body composition, physical characteristics, and psychological qualities have an impact on cricket players' technical and tactical proficiency, physical fitness level, and ultimately their performance<sup>6</sup>. A good balance between skills, techniques and physical fitness is needed to ensure optimum performance<sup>7</sup>. Most conventional methods of training are aimed at increasing strength, with the targeted muscles generally being sports specific<sup>8</sup>. However, more recently, cricket events have become more competitive and more frequent, and are now randomly spaced throughout the year in a range of formats<sup>9</sup>.

The new T-20 format also increases the chance of injury in players; for example, since its introduction, the prevalence of injury among batsmen, spin bowlers and wicketkeepers has been found to increase by approximately 3%<sup>10</sup>. To compensate for this increased risk of injury in the game, high levels of physical fitness and skills are required.

Agility is the ability to move and change direction and position of the body quickly and effectively while under control<sup>11</sup>. This is an important component of many sports training sessions. Improved agility means better performance, faster response and gives edge over their competition<sup>12</sup>. Agility testing is generally confined to tests of physical components such as change of direction speed, or cognitive components such as anticipation and pattern recognition<sup>13</sup>.

Due to the complex skills and rules in cricket, the players require a good physical fitness, skills and efficient strategies for an effective motor task performance in maintaining the body positions during sudden location and directional changes in activities of acceleration and deceleration which demands good balance<sup>14</sup>. This task performance of sudden acceleration and deceleration rapidly with good balance and the ability to change direction or body position rapidly and to proceed with another movement is the ability defined as "Agility"<sup>15</sup>.

The agility is the ability of a player to change position in space or to change direction quickly and effectively<sup>16</sup>. It is thought to be a reinforcement of programming through neuromuscular conditioning and neural adaptation of muscle spindle, Golgi tendon organ and joint Proprioceptors<sup>17</sup>. The agility is a complex ability depending on coordination, mobility of joint system, dynamic balance, strength and speed<sup>18</sup>. The balance training is effective in improving static postural sway and dynamic balance through neuromuscular control and performance enhancement<sup>19</sup>.

This ability to enhance the maintenance or control of body positions while quickly changing the direction during a series of movements should improve agility<sup>20</sup>. The trunk muscles have stabilizing functions that the body requires in order to fix distal segments to do their specific function such as running, agility, kicking and throwing<sup>21</sup>. Trunk muscle endurance also permits core muscle stabilization for prolonged duration and in turn it facilitates persistent force transmission and production throughout the game.<sup>22</sup> Pilates is a system of exercises using special apparatus, designed to improve physical strength, flexibility, and posture and enhance mental awareness<sup>23</sup>. The method was designed by Joseph Hubertus Pilates from Germany. Pilates is a system of repetitive exercises performed on a yoga mat<sup>24</sup>. Pilate exercises develop the body through muscular effort that stems from the core. The technique cultivates awareness of the body to support everyday movements that are efficient and graceful.<sup>25</sup> As such, Pilates has been popular among dancers but it appeals to a wider audience. "Pilates is an excellent choice for developing a baseline of muscular fitness and flexibility, which is what is needed to couple one's practice with more vigorous cardio activity," says Michele Olson, PhD, a Pilates researcher who works with student athletes<sup>26</sup>.

"Pilates will prepare virtually anyone for the requirements of more intense exercise by helping to build good balance and strong, spine-saving core muscles, while also helping to improve mood and ease stress." Although many leading athletes swear by Pilates, there is little high-

quality published research related to the method and sports performance. Olson is among researchers who have seen direct evidence of its effectiveness<sup>27</sup>. Research shows the ability of Pilates to recruit the deep core for spinal stabilization.

Training with rapid stretching of a muscle (eccentric action) immediately followed by a concentric or shortening action of the same muscle produces more force than the force produced by a concentric action alone because of the stored elastic energy within the muscle<sup>28</sup>. The components of stopping, starting and changing direction in the training programs assists in developing agility.<sup>29</sup> Training the above components through Star Excursion Balance Training (SEBT) among young men cricket players may be effective in improving the agility by increasing the balance and control of body positions during movements by neuromuscular conditioning and neural adaptation of the Proprioceptors<sup>30</sup>.

Therefore, the purpose of this study is to determine whether there is any effect of star excursion balance training program for 6 weeks on Agility among young men cricket players. Several studies done on Pilates and star excursion balance training on improving agility in sports athletes. But there is no study comparing the effect of star excursion balance training and Pilates to improve agility in young cricket players. Hence our study aims to see the effect of star excursion balance training versus Pilates to improve agility in young cricket players

### NEED OF THE STUDY

Cricket players require significant level of agility for satisfactory performance and prevention of injuries. agility play an important role in the performance of athletes. Due to the complex skills and rules in cricket, the players require a good physical fitness, skills and efficient strategies for an effective motor task performance in maintaining the body positions during sudden location and directional changes in activities of acceleration and deceleration which demands good balance.

This task performance of sudden acceleration and deceleration rapidly with good balance and the ability to change direction or body position rapidly and to proceed with another movement is the ability defined as Agility. several studies have focused on showing the importance of dynamic balance and agility in professional athletes.

There are several interventional studies have been done and proved in improvement of the agility, among these studies SEBT and Pilates have been shown to produce a very significant effects in improvement of agility.

There are no studies done to compare effectiveness between SEBT training and Pilates training and hence the need of study arises to check for the superior form of training in improving agility.

### MATERIALS AND METHODS

**STUDY DESIGN:** Quasi Experimental Study Design.

**ETHICAL CLEARANCE AND INFORMED CONSENT:** The study design and intervention was approved by the Ethical Committee of GSL Medical College and Hospitals, Rajamahendravaram (Annexure - I). The participants were explained by the investigator about the purpose of the study and information sheet was given to them. The subjects were requested to provide their consent for participation in study (Annexure - II). All participants signed the informed consent and the rights of the included participants have been secured.

**STUDY POPULATION:** Collegiate young cricket players who were willing to participate in the study were 232 subjects age above of 18 years.

**STUDY SETTING:** The study was conducted in the sports arena of G.S.L Medical College Rajamahendravaram, Andhra Pradesh, India.

**STUDY DURATION:** The Study was conducted during a period of one year.

**INTERVENTION DURATION:** Both the groups received intervention of 3 sessions per week for 6 weeks.

**SAMPLING METHOD:** Simple Random Sampling method

**SAMPLE SIZE:** A total 250 students were screened for eligibility; out of which 232 collegiate young cricketers' players were recruited and were explained about the process and relevance of the study. Those willing to be voluntarily included in the study received informed consent and were asked to sign the forms. All the participants were consecutively randomized to either Pilates training group or star excursion balance training group with 116 subjects in each group.

The participants were given numbers 1 and 2. All those who received number 1 were included in group A who received Star Excursion Balance Training and all the participants who got the number 2 were allocated to group B who underwent Pilates Training.

**GROUP A** - Star Excursion Balance Training along with conventional physiotherapy (116 Subjects)

**GROUP B** – Pilates Training along with conventional physiotherapy (116 Subjects)

**MATERIALS USED**

1. Measuring Tape
2. White Athletic Tape
3. Agility Cones
4. Stop Watch
5. Yoga Mat
6. Marker

**CRITERIA FOR SAMPLE SELECTION****INCLUSION CRITERIA:**

- Healthy young male cricketers
- Age above 18 years
- Agility: poor more than (>11.sec)
- Participant should have played cricket for 6 months

**EXCLUSION CRITERIA:**

- Subjects with previously injured (within 6 months), un cooperative, less motivational subjects
- Subjects with immediate post operative status
- Subjects with pain or inflammation
- Subjects with participant taking any kind drug therapy
- Subjects with any physical disability
- Subjects who are uncooperative and unwilling to participate
- subject with Agility less than (<11.sec)

**OUTCOME MEASURES****AGILITY T-TEST:**

T-TEST for agility is used to evaluate agility. The athlete stands at the base of the T that is made of four cones. Once the examiner gives the signal to start, the athlete runs to the middle cone (10 yards). From there the athlete sidesteps to the right cone and touches the base of it (5 yards or 4.57m). Then the athlete sidesteps to the left to the distant cone and touches the base of it (10 yards or 9.14m). Again, the athlete sidesteps to the middle of the cone and touches the base. In the final stage of the testing, the athletes run backwards from middle cone position and touches the base of the cone(10yards), and the total time is noted by using a stopwatch. Three trials of the test will be performed, and the average of the three was taken for analysis. The subjects will be instructed to run as quickly as possible, and a 2 min rest period will be given between each trial to avoid fatigue. The performance of the subjects will be calculated in seconds.<sup>31</sup>



**FIG 1: SUBJECT PERFORMING AGILITY T TEST**

## INTERVENTION

After allocating the participants into their respective groups. Participants were made to get familiarized with the exercises. Proper precautions were explained regarding the exercise regimen which were to be employed. The exercise training program for group A consisted of star excursion balance training for three sessions for six weeks. Group B received Pilates training program for three sessions per week for a period of six weeks. The warm up exercises included slow jogging, jump rope for 2 minutes, dynamic stretching such as lunging, quadriceps, hamstring and lower leg stretches. Cool down session included static stretches, slow jogging.

### GROUP A: STAR EXCURSION BALANCE TRAINING

Subjects in the group A would receive the star excursion balance training. Prior to starting of the training program, the preparation for star excursion balance training had been performed, initially by selecting a flat and non-slippery surface. Then four (4) strips of white athletic tapes of 6 feet in length was cut. In order to form the star grid shape on the floor, two strips were pasted in the form of “+” and the other two strips pasted across on the top in the form of “x”. It had been assured that the stripes pasted were arranged to each other from a centre pointed at angle of 45 degrees with each other. This star shaped grid arrangement involves a series of single-leg squats with the stance limb and a dynamic maximal reach used the non-stance limb. The subjects in the training group were informed to come in shorts and barefoot. To start with star excursion balance training (SEBT) and conventional exercise training. The subjects from the SEBT group performed the star excursion balance training initially by standing in bilateral stance with barefoot on the middle of the star grid. The weight bearing leg was the stance limb and the unsupported leg was the reaching limb.

Then the subjects instructed to balance their body weight on the stance limb on the middle of the star grid where the strips of tapes were placed at an angle of 45 degrees. By keeping the hands on the pelvis, the subjects would be made to reach a distance of 2 feet marked on the tape in all the 8 directional tape positions with the tip of toe of the reaching limb without shifting weight on the reaching limb. The 8 directional tape positions were anterior, anteromedial, medial, posteromedial, posterior, posterolateral, lateral, anterolateral. After each directional reach the subject returned the reaching limb to the started position at the middle of the grid, resuming a stable bilateral stance with 3 seconds of rest between each tape direction. The training with SEBT program had been done with 12 rounds in clockwise and 12 rounds in counter-clockwise reach.<sup>14</sup>

During each session, the subjects had been given with a period of 30 seconds rest, to perform the same exercises by changing the stance limb and the reaching limb. The training had been administered for 6 weeks with the frequency of three sessions per week. The limb to be reached as far as possible along eight designated lines radiating from a central point at an angle of 45°.



**FIG 2: SUBJECT PERFORMING SEBT ANTERIOR**



**FIG 3: SUBJECT PERFORMING SEBT POSTERIOR**



**FIG 4: SUBJECT PERFORMING SEBT POSTEROMEDIAL**



**FIG 5: SUBJECT PERFORMING SEBT ANTEROMEDIAL**



**FIG 6: SUBJECT PERFORMING SEBT ANTEROLATERAL**



**FIG 7: SUBJECT PERFORMING SEBT POSTEROLATERAL**



**FIG 8: SUBJECT PERFORMING SEBT LATERAL**



**FIG 9: SUBJECT PERFORMING SEBT MEDIAL**

## GROUP B: PILATES TRAINING

Pilates training included 7 exercises with conventional exercises.<sup>32</sup>

**Standing footwork:** It focuses on lower body strengthening, flexibility and core stability. It strengthens the muscles of the legs and pelvis, increased hip flexibility, strengthened the core, and improves balance. Breathing instructions for this exercise will be as follows: subjects inhaled after beginning the movement and exhaled when performing the movement. This exercise will be repeated ten times.



**FIG 10: STANDING FOOT WORK**

**Pilates V stance:** The subject began the training session while in Pilate's posture ("V" stance).

While maintaining the Pilates "V", the subjects will instruct to rise onto their legs as far as possible while keeping the heels together. Then they lowered to the ground while maintaining a neutral spine. Maintaining proper Pilate's posture, the subject will be then instructed to perform a pli  (bending at the hips and knees). The subjects will be given verbal feedback regarding corrections and progress.



**FIG 11: PILATES V STANCE**



**Hundred:** Players will ask to lie in supine lying position with arms at his sides and neutral pelvis. The subjects will be instructed to curl their head and shoulders off the floor. The arms then move up and down slowly, initiating the movement from shoulder joint. The subjects inhaled for a count of five and exhaled for a count of five.



**FIG 12: HUNDREDS**

**Plank:** Players will be in kneeling position on the mat on all fours with hands aligned directly beneath the shoulder and knees directly beneath the hips. While keeping the shoulders wide and flat, the subjects lifted into a push up position by placing one leg at a time on the floor behind him. While maintaining body alignment the subjects extended one leg at a time.



**FIG 13: PLANK**

**Reverse plank:** The subjects began by sitting with their arms behind them. Weight will be on the hands with the fingers pointing at the heel. The subject then lifted his torso and pelvis into plank position. Then they raise onto one leg at a time without losing proper body alignment 3 times with 5 alternating leg extensions on each leg. The subjects inhaled to prepare for movement, exhaled as they lifted the torso upward, inhaled at the top position and exhaled while lowering pointing at the heel.



**FIG 14: REVERSE PLANK**

**Side planks:** The subjects sat on the side of his hip with the legs extended slightly in front. They will be then instructed to cross the top leg over the bottom, resting on ball of his foot. The hand will place on the floor aligned comfortably with the shoulder. The subjects then lifted their hips off of the floor in the movement and swept their top arm upwards. The subjects then allowed the body to rest on the lower hand and foot. Ribs will be directly above the pelvis and the hip square with the body. This position will be held for few seconds and then lowered to the floor maintaining body alignment.



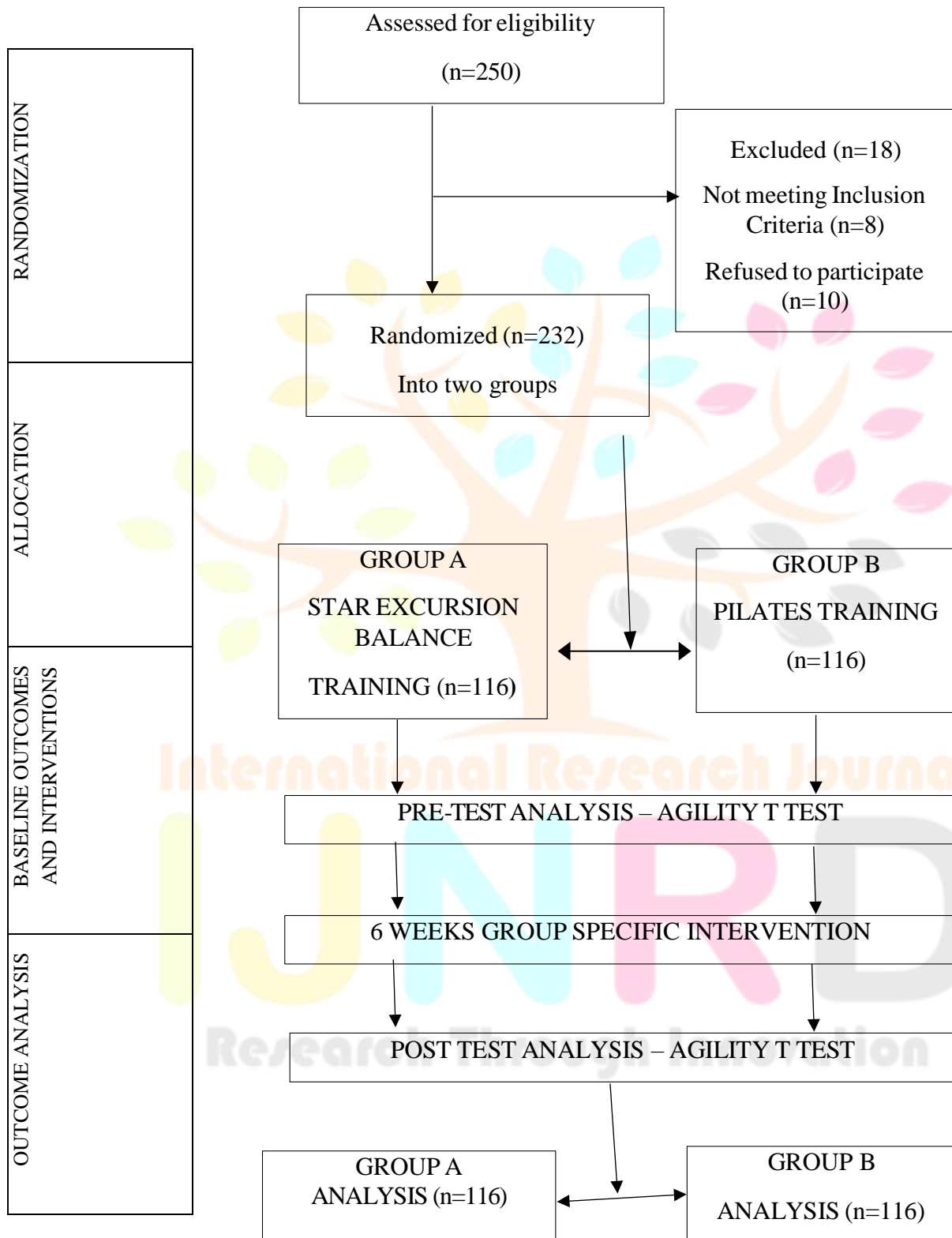
**FIG 15: SIDE PLANK**

**Rolling like a ball:** The subjects sat near the front of the mat with the knees bent and feet flat on the mat. They grasped their legs behind each knee and brought their chin toward their chest. The shoulders were down and the elbows positioned up away from the body. The subjects rolled backwards on their shoulder blades. The subjects then rolled back-up and balanced on the tailbone without letting their feet touch the floor, while keeping the same body position throughout the movement. The subjects inhaled while rolling back and exhaled when returning. The progression for this exercise will be to grasp the ankles and pull into a tighter ball.



**FIG 16: ROLLING LIKE BALL**

**FLOW CHART**



## STATISTICAL ANALYSIS

Statistical analysis was performed by using SPSS software version 21.0 and MS excel – 2007. Descriptive data was presented in the form of mean +/- standard deviations and percentages.

Data was tabulated and graphically represented and was analyzed using both descriptive and inferential statistics.

Within the groups: Paired 't-test' was used to compare the levels of pre and post test scores (non-parametric or parametric accordingly). It was used to assess the statistical difference within the groups for agility t test.

Between the groups: Unpaired 't-test' was used to compare the statistical difference between means of two independent group for agility t test.

For all statistical analysis,  $p \leq 0.05$  was considered as statistically significant.

## RESULTS

The aim of the study was to find the effectiveness of Pilates training and star excursion balance training on improvement of agility in young cricketers.

A total of 250 subjects were screened for eligibility, among them 232 subjects were found to meet the inclusion criteria. All the subjects underwent baseline assessment and included subjects were randomized into two groups consisting of 116 players in each group.

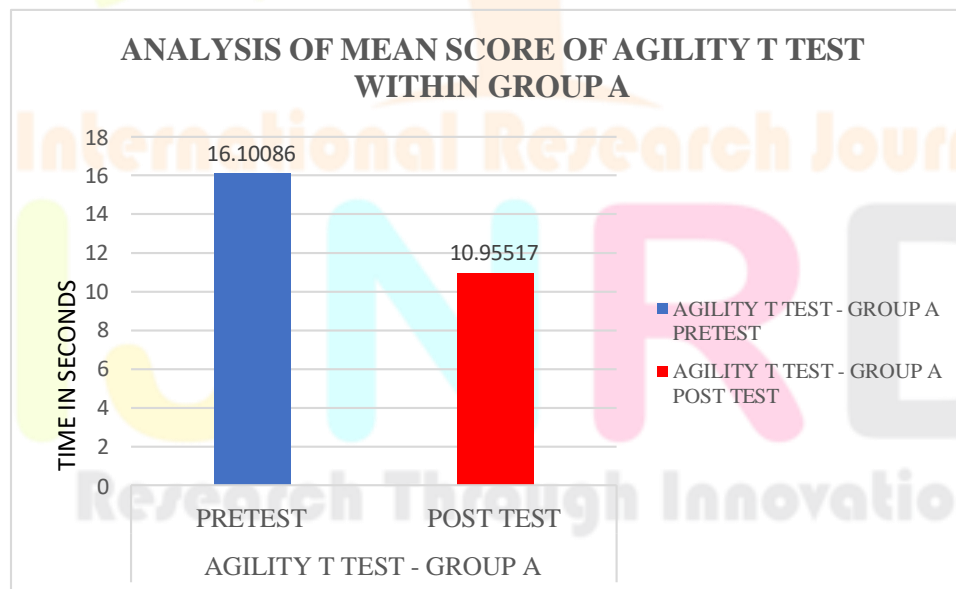
In this study the training sessions were given for 6 weeks, 232 participants completed sessions; with 116 subjects completed Pilates training sessions in group-A and 116 subjects completed star excursion balance training in group-B.

Both the groups showed statistically significant scores in the agility T test, where p-value was set at  $p \leq 0.05$  was significant.

### ANALYSIS OF MEAN SCORE OF AGILITY T TEST WITHIN GROUP A

| GROUP A        |           | MEAN  | SD   | P VALUE | INFERENCE          |
|----------------|-----------|-------|------|---------|--------------------|
| AGILITY T TEST | PRE-TEST  | 16.1  | 1.16 | 0.001   | HIGHLY SIGNIFICANT |
|                | POST TEST | 10.95 | 1.05 |         |                    |

TABLE – 1

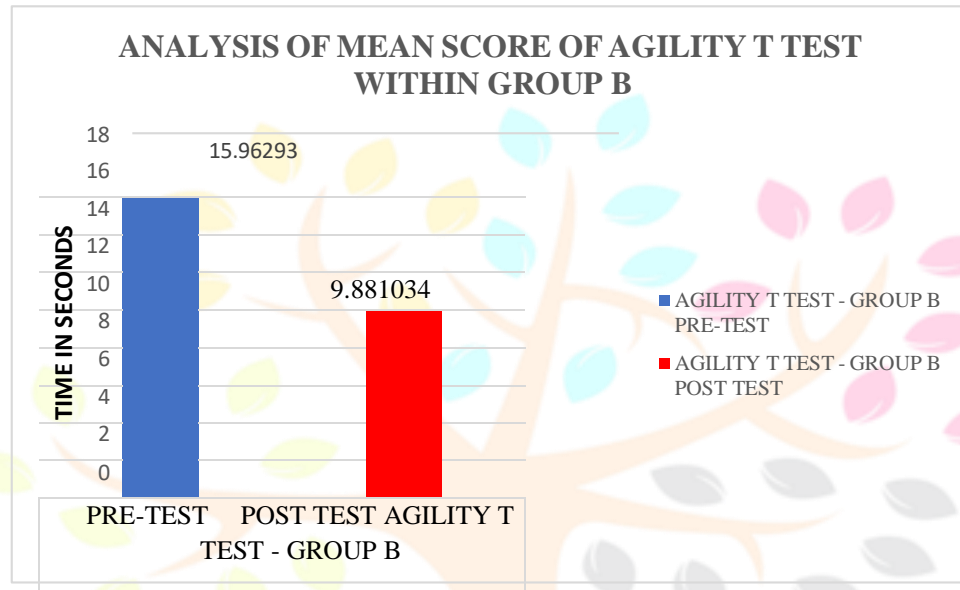


GRAPH -1

**RESULTS:** The above table and graph show that mean score of AGILITY T TEST from pretest to post-test values within group A were found to be statistically highly significant ( $p < 0.05$ ).

**ANALYSIS MEAN OF MEAN SCORE OF AGILITY T TEST WITHIN GROUP B**

| GROUP B        |           | MEAN  | SD   | P VALUE | INFERENCE          |
|----------------|-----------|-------|------|---------|--------------------|
| AGILITY T TEST | PRE -TEST | 15.96 | 1.22 | 0.001   | HIGHLY SIGNIFICANT |
|                | POST TEST | 9.88  | 1.14 |         |                    |

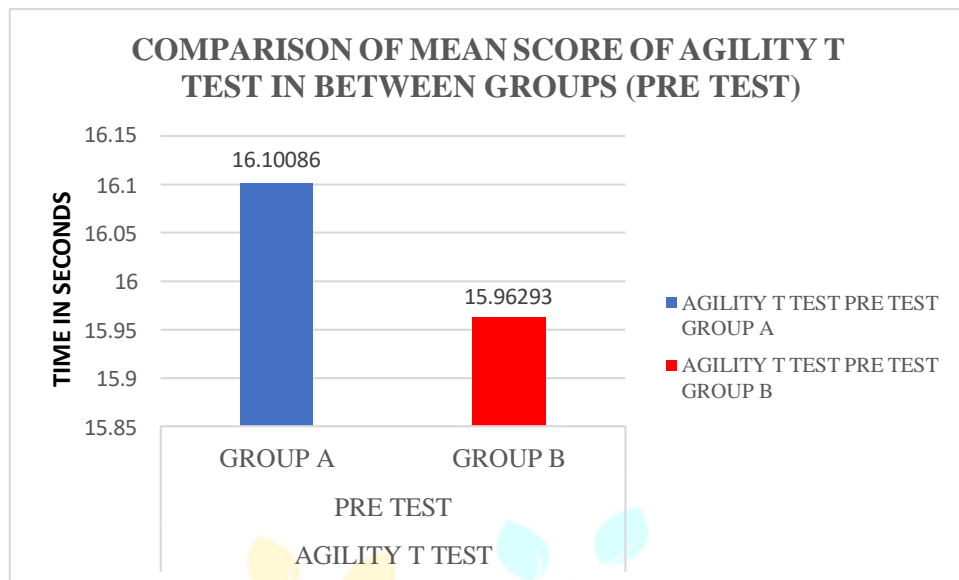
**TABLE - 2****GRAPH - 2**

**RESULTS:** The above table and graph that mean score of AGILITY T TEST from pre-test and post-test values within Group B were found to be highly significant ( $p < 0.05$ ).

**COMPARISON OF MEAN SCORE OF AGILITY T TEST IN BETWEEN THE GROUPS AT PRE-TEST (A AND B)**

| AGILITY T TEST |         | MEAN  | SD   | P VALUE | INFERENCE     |
|----------------|---------|-------|------|---------|---------------|
| PRE-TEST       | GROUP A | 16.1  | 1.16 | 0.3797  | INSIGNIFICANT |
|                | GROUP B | 15.96 | 1.22 |         |               |

**TABLE - 3**



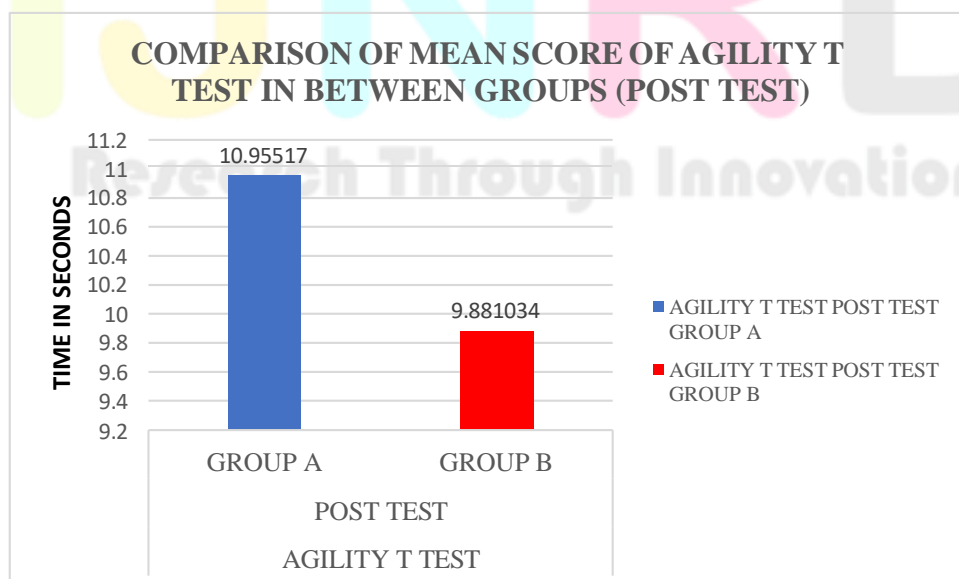
**GRAPH - 3**

**RESULTS:** The above table and graph shows the base line measurements of AGILITY T TEST mean score In group -A is 16.1 and in group-B is 15.96 which is statistically found to be Insignificant

**COMPARISON OF MEAN SCORE OF AGILITY T TEST IN BETWEEN THE GROUPS AT POST TEST (A AND B)**

| AGILITY T TEST |         | MEAN  | SD   | P VALUE | INFERENCE          |
|----------------|---------|-------|------|---------|--------------------|
| POST TEST      | GROUP A | 10.95 | 1.05 | 0.001   | HIGHLY SIGNIFICANT |
|                | GROUP B | 9.88  | 1.14 |         |                    |

**TABLE - 4**



**GRAPH - 4**

**RESULTS:** The above table and graph shows the mean score of AGILITY T TEST changes between the group A post-test is 10.95 and group -B post-test is 9.88 were found to be statistically highly significant.

## DISCUSSION

The main purpose of this study was to evaluate the effectiveness of star excursion balance training and Pilates training on improvement of agility in cricket players. In this study, subjects were assessed for agility using the outcome measures of agility T test. 232 subjects were divided into two groups and group-A (n = 116) received star excursion balance training and group-B (n = 116) received Pilates training, they underwent six-week program for three sessions per week. Assessment was done before and after six-week program.

By the end of the six-week program, the subjects of Group A who received star excursion balance training had significantly improved results in agility, which showed changes in outcome measures such as the agility T test mean score ( $p = 0.0001$ ). Group B who received Pilates training, also showed significant results in agility t test score ( $p = 0.0001$ )

The results of the study implied that there is a statistically significant improvement in both the star excursion balance training program and Pilates training program to effectively bring about changes in outcome measures and agility tests in cricket players. This study hypothesized around the concept that Pilates training will be more effective in improving agility than star excursion balance training.

The purpose of this study was to determine the effectiveness of a six-week Pilates training and star excursion balance training program on agility in cricket players. The physical component agility is commonly used in sports for evaluating fitness and is measured using specially designed tests

Pilates comprises a series of stretching and strengthening exercises and focuses on breathing control, concentration and control of the body, mainly the core. Its pillars are breathing,

centering, concentration, flow, precision and co-ordination. It has been found to improve lower limb strength, core muscle group stability, agility, lung capacity, flexibility, muscle tone and coordination in cricket players; it also reduces stress, improves mental focus, and enhances sense of well-being improving physical and mental conditioning, alongside improving posture and balance<sup>31</sup>.

Our present findings indicate significant improvements in agility in both groups at the end of week 6. However, experimental Group B, which practiced a combination of Pilates exercise training with conventional exercise, showed more improvement than Group A, which performed star excursion balance training. Hence, it appears that Pilates exercises brought better results in the tested physical component of the cricketers when combined with star excursion balance training.

Improvements were also seen in the players in Group A, who only received star excursion balance training. Such star excursion balance training programs generally comprise warm-up exercises, The 8 directional tape positions were anterior, anteromedial, medial, posteromedial, posterior, posterolateral, lateral, anterolateral. After each directional reached the subject returned the reaching limb to the started position at the middle of the grid, resuming a stable bilateral stance with 3 seconds of rested between each tape direction. The training with star excursion balance training program had been done with 12 rounds in clockwise and 12 rounds in counterclockwise reach.<sup>14</sup>These exercises are helpful in improving performance by maintaining flexibility, balance and agility and thus lower the risk of injury

Our findings are supported by those of several studies that have examined various physical components in different populations. Similar results were obtained in one study based on the implementation of four-week Pilates training in cricket players, indicating that Pilates training

appeared to be helpful in developing a significant improvement of core strength, agility, neuromuscular co-ordination and dynamic balance. It is reported that strengthening the core muscles by the performance of dynamic, eccentric, isometric stabilization contractions in response to momentum and gravity enhances the neuromuscular system. It also lowers the neural inhibitory reflexes and improves motor unit synchronization. A strong core allows better movement of inter-segments within the body and more sustained contraction of the deep spinal stabilizer muscles.

Similarly, the application of Pilates training has been found to have a significant effect on jump performance, lower limb strength and biological efficiency in volleyball players. The findings indicate that Pilates training can support the development of trunk muscle strength, which improves limb motor co-ordination and can increase the oxygen supply to the lungs by enhancing the passage of oxygen.

Our present findings are in line with those of another study performed in badminton players suggesting that five-week Pilates training was found to improve agility, lower limb strength, co-ordination and dynamic balance of the individuals in a Pilates group than a group receiving conventional training.

It has been proposed that significant improvements in speed are obtained by influencing kinetic chain activity: when the core is stable, its accessory muscles provide stability for the mobile distal segments. The large muscle groups of the core facilitate lower extremity movements by causing an increase in moment arm, generating and transferring forces to the upper limb from the lower limb and vice-versa. These factors could be the reason for the improvements observed in the speed of athletes after the implementation of Pilates exercise. It has previously been concluded that the implementation of Pilates training appears to have a significant effect on core muscle strength in cricket players, and this was attributed to the increase in activation and recruitment of motor neurons of the abdominal muscles. Therefore, improvement in these physical parameters may produce enhancement in overall performance of cricket players. Our findings suggest that Pilates training, or other exercises which focus on core muscle strength, may be included in regular cricket training. However, coaches should be informed about the benefits associated with Pilates exercises, and players and coaches should be counselled to make Pilates as part of their regular training.

**LIMITATIONS**

- The findings of this study are only applicable for young cricketers.
- No Blinding.
- No Follow up

**RECOMMENDATION FOR FURTHER RESEARCH**

- Follow- up after 6 weeks could be useful to determine the improvement of performance in the players.
- Training sessions per week can be increased to get better results.

**CONCLUSION**

Based on the study's results, it can be concluded that a 6-week program of both Star Excursion Balance Training and Pilates Training significantly improves agility in cricket players. However, Pilates Training appears to be more effective in enhancing agility, especially in younger cricketers. These findings suggest that incorporating Pilates into training regimens may offer a targeted and efficient approach to improving agility, which is crucial for success in cricket. Coaches and trainers working with cricket players, particularly younger ones, may consider prioritizing Pilates Training to optimize agility development and overall performance on the field.

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