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Compare the effectiveness of agility ladder drills and plyometric on agility among volleyball players

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Abstract

Volleyball was invented 100 years ago in 1895 by the American William Morgan. Today it is generally considered to be the world's largest sport in terms of the number of active players, estimated of 200 million players. AGILITY is defined as the ability to sprint accelerate and de accelerate alongside change of direction. PLYOMETRICS was created by doctor Yuri verkhoshansky former soviet sports scientist and coach in the 1960's. Plyometrics are the training technique used by athletes in all types of sports to increase Strength and explosiveness. A Comparative study involving volleyball players of convenient sample and the sample size is 24 students - 12 in each group. Group A-plyometric training Group B-agility ladder drills. It shows a significant effect in statistical analysis with p-value (0.05) within the group A and B. The present data indicate that both the training was effective in improving agility among volleyball players. The pre and post-test values of T test for agility between the group-A and group B is analyzed using un paired t-test for 22 degree of freedom and at 5% of significance, the t table value is 2.074 and the calculated t value is 3.72. since the calculated t value is greater than the table t value. The study concludes that (GROUP-A) plyometric training and (GROUP-B) agility ladder drills show a significant effect on improving agility, when comparing both groups plyometric training (GROUP-A) shows more improvement than (GROUP-B) Agility ladder drills among volleyball players.

Keywords: Volleyball players, agility, plyometrics, agility ladder drills, plyometric training

Introduction

Volleyball was invented 100 years ago in 1895 by the American William Morgan in the beginning it was thought to be the recreational or training sports for athletics. Today is generally considered to be the world „s largest sport in terms of number of active players, estimate of 200 million players. In volleyball the performance depend on agility, acceleration, strength and vertical jump and decision making skills.



AGILITY is defined as the ability to sprint accelerate and de accelerate alongside change of direction.

Agility has been indeed defined as a rapid whole body movement with change of velocity or direction in response to stimulus. It is related to athletic abilities like strength, power, speed and balance and it is determined of sports performance in field and court sports like volleyball soccer and rugby.

PLYOMETRICS was created by doctor Yuriverkhoshansky former soviet sports scientist and coach in 1960's. plyometrics are the training technique used by athletes in all types of sports to increase

Strength and explosiveness. It also consists rapid stretching of muscle immediately followed by a concentric or shortening of the same muscle and connective tissue. Plyometric training, when used with a periodized strength training program, can contribute to improvement in vertical jump performance, acceleration, leg strength, muscular power, increased joint awareness and overall proprioception. Plyometric drills usually involves stopping, starting and change in direction in an explosive manner. These movements are components that can assist in developing agility.

Ladder drills are an important part of many team sport workouts. They require athletes to move their feet quickly in a precise and specified motion. Agility ladder benefits the athlete by teaching him to move in a swift yet deliberate fashion. Agility ladder drills help you to move quickly in your chosen sport.

Hence the study is to find out the effectiveness of agility ladder drills and plyometric training on agility among volley ball players.

Aim of the study

The aim of the study is to compare the effect of plyometric training and agility ladder drills in agility in volleyball player

Need of the study

Recent studies show that there was a significant benefit in agility ladder drills and plyometric training on agility among volleyball players. But there was no study to comparing the effectiveness of agility ladder drills and plyometric training on agility among volleyball players. to know the effective training method to improve the agility performance, this Study compare the agility ladder drills and plyometric training.

Objective of the study

To find out the effects of agility ladder drills in volleyball players.

To find out the effect of plyometric training on agility in volleyball players.

To compare the effectiveness of Agility ladder drills and plyometric training on agility among volleyball players.

Methodology

- Research design : comparative study
- Study population : volleyball players
- Sample technique : convenient sample
- Sample size : 24 students - 12 in each group

Group A-plyometric training Group B-agility ladder drills

- Study setting: Aditya Vidhyasharam esidential school, Puducherry.
- Study duration: 6 months
- Treatment duration: 6 weeks
- 25 mins per session
- 3 days per week

Selection criteria

Inclusion criteria

- Age 16-19
- Male
- At least 6 month of regular practice.

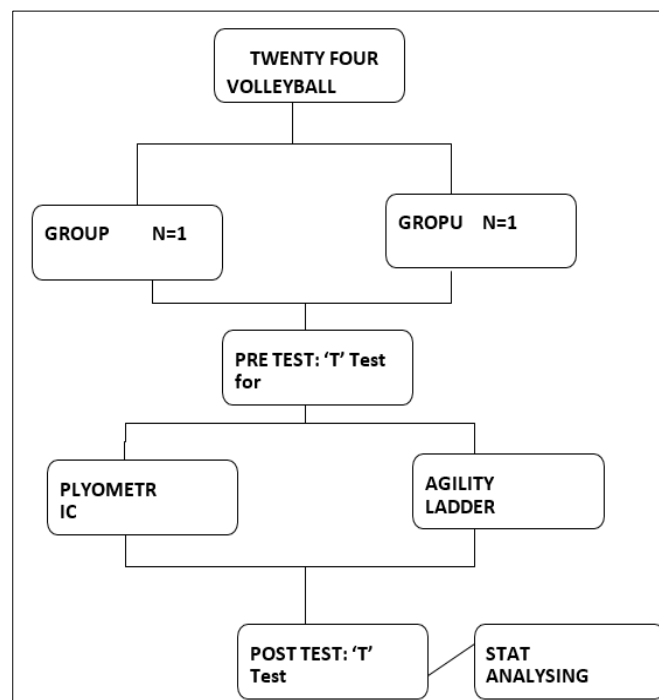
Exclusion criteria

- Any recent injuries
- Fractures
- Non cooperative patients

Outcome measure T test for Agility

- Athlete starts at the base of the "T"
- Examiner gives signal to go and when athlete crosses the photocell the time begins
- Athlete runs to middle cone and touches it
- Athlete side steps 5 m to the right cone and touches it
- Athlete side steps 10 m to the far cone and touches that one
- Athlete side steps 5 m back to the middle cone and touches it
- Athlete runs 10 m backwards and touches the cone at the base of the "T"
- Time stops when athlete crosses the photo cell.

Study protocol



Procedure

Table 1: (Group –A) Plyometric Training program

Training Week	Training Volume (Foot Contacts)	Plyometric Drill	Sets ×Reps	Training Intensity
Week 1	80	Side To Side Ankle Hops Standing Jump And Reach Front Cone Hops	2 ×12 2 ×12 5 ×4	Low Low Low
Week 2	100	Side To Side Ankle Hops Standing Long Jump Lateral Jump Over Barrier Double Leg Hops	2×10 5 ×6 2 ×12 5× 4	Low Low Medium Medium
Week 3	110	Side To Side Ankle Hops Standing Long Jump Front Cone Hops Double Leg Hops Lateral Cone Hops	2 ×10 4×6 2×10 3×8 2×8	Low Low Medium Medium Medium
Week 4	100	Diagonal Cone Hops Standing Long Jump With Lateral Drills Lateral Cone Hops Single Leg Bounding Lateral Jump Single Leg	2 ×10 4×6 2×10 3×8 2×8	Low Medium Medium High High
Week 5	100	Diagonal Cone Hops Standing Long Jump With Lateral Drills Lateral Cone Hops Cone Hops With 180 Deg Turns Single Leg Bounding Lateral Jump Single Leg	2×5 4×4 4×5 4×7 4×5 2×7	Low Medium Medium Medium High High
Week 6	100	Diagonal Cone Hops Hexagon Drill Cone Hops With Change In Direction Double Leg Hops Lateral Jump Single Leg	2×10 2×10 4×6 3×4 4×6	Low Low Medium Medium High

Table 2: Group-B agility ladder drills

Week 1 And 2	Week 3 And 4	Week 5 And 6
Walk Through	Hopscotch	Double Step Icky Shuffle
One Foot Run	Backward Hopscotch	Scissor Skips
Two Foot Run	Jumpsut	Dead Leg Skips
Miss A Square Run	Icky Shuffle	Chimney Skips
Lateral Run	Straddle Hops	Linear And Lateral Two Feet Jump
Backward Run	Defence Slide Zigzag	Crazy Climber
High Knee Run	X Country Skier	180°straddle Hops
Walk Through (Fast)	Grapevines	Crown Dancer
Bunny Hops	Backward Straddle Hops	Ladder Drills Crawl Forward
Lateral Bunny Hops	Backward Icky Shuffle	Partner Races

Results

Paired T test

T -test for agility (Group-A)

The pre and post-test values of T test for agility in group-A is analyzed using paired t test for 11 degree of freedom and at 5% of significance, the t table value is 2.201 and the calculated t value is 10.66.since the calculated t value is greater than the table t value null hypothesis is rejected. Hence there is a significant effect of PLYOMETRIC TRAINING on t test for agility.

T -test for agility (Group-B)

The pre and post-test values of T-test for agility in group-A is analyzed using paired t test for 11 degree of freedom and at 5% of significance, the t table value is 2.201 and the calculated t value is 5.80.since the calculated t value is greater then the table t value null hypothesis is rejected. Hence there is a significant effect of AGILITY LADDER DRILLS on t test for agility.

Unpaired T test

T-test for agility between the Group a and Group B

The pre and post-test values of T test for agility between the group-A and group B is analyzed using un paired t test for 22 degree of freedom and at 5% of significance, the t table value is 2.074 and the calculated t value is 3.72.since the calculated t value is greater than the table t value. Hence between the Group shows significant.

Discussion

The study was selected for the purpose of comparing the effectiveness of agility ladder drills and plyometric training on agility among volleyball players and it shows there was significant effect in stastical analysis with p value (0.05) within the group A and B. The outcome measure for t test for agility. The present data indicate that both the training were effective in improving agility among volleyball players. There are more studies which proves that agility ladder drills and plyometric traing shows high impact on

improving agility among various athletes. In my study I compare both the training on volleyball players to find which is more effective in improving agility.

Michal G. Miller *et al.* (2006), the study was done on the effect of 6-weeks plyometric training on agility. The subjects were divided into two groups, 14 subjects in experimental group and 14 subjects in control group. The experimental group performed plyometric training protocol for 3 times in a week for 6 weeks. T test for agility done to find the results after pre and post-test values. Plyometric group showed significant improvement in agility. N Chandrakumar, C Ramesh (2015), the study was done on effect of ladder drill and SAQ training on speed and agility among sports club badminton players. 33 badminton players were taken for this study and after the training the results conclude that ladder drills and SAQ shows significant effect on both speed and agility. I have approached the head coach of Aditya Vidhyasharm volleyball team and I requested for best trained volleyball players in their school. I got junior and senior volleyball players of their team. 24 subjects were selected according to the inclusion criteria within the age group of 16-19. They were randomly divided into two groups 12 subjects on each group. Group-A performed plyometric training and Group-B performed agility ladder drills. 3 sessions per week for 6 weeks. T- test for agility was taken before and after 6 weeks of training. Statistical analysis done on both groups, within the group both Group-A and Group-B showed significant improvement, when comparing between the groups Group-A (plyometric training) showed more improvement than Group-B (agility ladder drills). Agility is the key for many types of team sport for improving sports performance and injury prevention. J SARAH, *et al.* (2019) used agility training to prevent musculoskeletal injuries. In this study I suggest using plyometric training are more effective in improving agility than agility ladder drills. Plyometric training not only improve the agility performance, they can improve their strength and explosiveness while working to become more agile.

Conclusion

The study concludes that (GROUP-A) plyometric training and (GROUP-B) agility ladder drills shows significant effect on improving agility, when comparing both groups. Plyometric training (GROUP-A) shows more improvement than (GROUP-B) agility ladder drills among volleyball players.

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