Chapter III

PROCEDURE AND METHODOLOGY

The purpose of the study was to gather scientific evidence in connection with the utility of speed, agility and quickness drills in the promotion of the skills performance of volleyball players. In order to achieve the purpose, selection of subjects, variables, drill tests, tool, instructions to raters, design of study, criterion measure, orientation of subjects, administration of drill tests, training procedure, collection of the data, and statistical technique used have been described in this chapter.

Selection of Subjects

The scientists and physical education teachers and coaches agree that the best time to teach games & sports and physical activity to become a star athlete is adolescence. If the process of learning a new movement is delayed beyond these years, the attainment of the highest degree of skill may not be possible. Though some improvement can be made at later stage but once the golden of youth is passed, then to the novice must not expect to reach great heights. Early adolescence age is considered best as the period of
preparation and later adolescence age for participation in competition, therefore, for the present study the subjects were 50 junior and 50 senior male volleyball players from Delhi state participating in junior & senior national, school national and university level Championships conducted by the VFI, SGFI & AIU. They were selected randomly for the purpose of the study.

**Selection of Variables**

Skills performance in volleyball is composed of numerous known and unknown factors. Therefore keeping the feasibility criterion in mind, the researcher had been selected the following variables for the present study:

**A. Dependent Variable:**

The skills performance ability of volleyball was considered as dependant variable for the present study.

**B. Independent Variables:**

1. Speed.
2. Agility.
3. Quickness.
Selection of the Drill Tests

Skills performance of players is mostly depending upon physical variables generally these variables are performance oriented and are dependent upon functioning of different systems. Scientific and specific training of these variables tends to improve definite and identifiable improvement in the skills performance of the athletes. In majority of the sports events and competition it is the level of the physical variables such as speed, agility, and quickness etc, which often decide the fate of the game. The following drill tests were used to collect data on selected skills performance variables.

<table>
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<tr>
<th>Performance Factors</th>
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Agility

- Forward Roll
- Backward Roll
- Sprawl and Stand Up
- Carioca
- Side-to-Side with Cone Reach
- Side-to-Side with Volley

Quickness

- Hip-Twist Ankle Jumps
- In-Place Tuck Jumps
- Pike Jumps
- MB Wall Chest Passes
- Tap Drills
- One-Handed Tap Drills with Partner

Speed, Agility,

And Quickness

- Foot-Tapping Frequency to Bounce and Catch
- Side Shuffle to Bounce and Catch
- Side Shuffle to Sprawl and Stand Up
- Stand Up From Four Points
Stand Up From a Sitting Position
Stand Up From a Lying Position

**Speed and Quickness**
- MB Overhead Throw to Sprint
- MB Overhead Throw to Vertical Jump
- MB Overhead Throw to Sprint
- Repeated Vertical Jumps
- Side Shuffle to Quick Hands Toss
- Side Shuffle to Ball Drops

**Agility and Quickness**
- Backward Roll to Vertical Jump
- Forward Roll to Vertical Jump
- Sprawl and Stand Up to Vertical Jump
- Side Shuffle to Quick Hands Toss
- Lateral Skaters to Bounce and Catch
- Lateral Skaters to Quick Hands
The detail description of the drill tests, which were used as a tool, was following:

1. **Standing Stationary Arm Swings**

**Purpose:** Improve running mechanics and speed by providing teaching cues to the upper body while in a stationary position.

**Procedure:**

- Stand with feet together and swing arms in a sprinting motion.
- Each arm should move as one piece with the elbow bent at about 90 degrees.
- Keep hands relaxed.
- Hands should come up to about shoulder level in the front and should pass the gluteus in the back.
- The arm action should be forward and back without crossing the main line of the body.

**Variations:**

- Weighted Arm Swings- Use light dumbbells in the hands to work on shoulder strength. Use enough resistance to provide a good training but not enough to alter good arm mechanics.
Contrast Resisted Arm Swings - Perform arm swings with 1 to 2 pound weights for 10-20 arm swings, then drop the weights and perform 10-20 arm swings without resistance.

Run keeping the legs straight and the foot dorsiflexed.

Figure No.1
Pictorial Presentation of the Standing Stationary Arm Swings
2. **Straight Leg Shuffle**

**Purpose:** Increase hip strength and elastic ankle strength.

**Procedure:**

- Run keeping the legs straight and the foot dorsiflexed.
- Emphasize fast ground contact with the ball of the foot and pulling through with the hips.

**Figure No. 2**

Pictorial Presentation of the Straight Leg Shuffle
3. **Forward Roll over Shoulder**

**Purpose:** Development of total body agility and kinaesthetic awareness.

**Procedure:**

- Start in a two point stance.
- Bend over and start to fall forward.
- As you are about to make contact with the ground, roll over the shoulder.
- Roll and come back up to your feet.
- Perform forward rolls over both shoulders and with either foot forward.

![Pictorial Presentation of the Forward Roll over Shoulder](image-url)
4. **Carioca**

**Purpose:** Development of balance, flexibility in hips, footwork, and lateral speed.

**Procedure:**

- Start in two point stance.
- Begin standing sideways at one end of the ladder.
- Laterally step with the right foot over the left leg.
- Cross the left foot behind the right leg.
- Step with the right foot in the front of the left leg.

**Figure No. 4**

Pictorial Presentation of the Carioca
5. **Hip-Twist Ankle Jumps**

**Purpose:** Improve elastic strength in ankles and enhance rotational mechanics.

**Procedure:**

- Stand in a relaxed position with feet shoulder-width apart.
- Perform ankle jumps, rotating 90 degrees in midair.
- Land and immediately jump back to the starting position.
- Repeat to the other side.

**Figure No. 5**

Pictorial Presentation of the Hip Twist Ankle Jumps
6. **Medicine Ball Wall Chest Passes**

**Purpose:** Improve total body transmission of power.

**Procedure:**

- Using the wall, the thrower performs chest passes to the wall and receives the ball with arms extended before performing the next pass.

**Figure No. 6**

**Pictorial Presentation of the Medicine Ball Wall Chest Passes**
7. "A" Skips

**Purpose:** Increase hip extension, flexion strength, and ankle muscle stiffness.

**Procedure:**

- March using perfect posture and arm action.
- The knee on the recovery leg should be brought high, while staying fully flexed, keeping the ankle close to the gluteus and dorsiflexed.
- When the recovery knee is at the highest point, the opposite "ground" foot should emphasize planter flexion.
- The foot strike should be quite but explosive, emphasizing muscle stiffness at ankle.
- Be careful not to slam the foot onto the ground.

**Variation:**

- Skipping for Height- While performing emphasizing the pronounced mechanics practiced in the "A" Skips.
Figure No.7

Pictorial Presentation of the “A” Skips

Purpose: Developing physical endurance and awareness.

Procedure:

1. Start in a low-point stance.
2. Bend the legs and start to sit on the ground behind you.
3. As you are about to make contact with the ground, roll back over your shoulders.
4. Perform backward rolls over your shoulders.

Note: This figure demonstrates the correct technique for performing "A" skips, which are a form of physical exercise designed to develop strength and endurance.
8. **Backward Roll over Shoulder**

**Purpose:** Development of total body agility and kinaesthetic awareness.

**Procedure:**

- Start in a two point stance.
- Bend the legs and start to sit on the ground behind you.
- As you are about to make contact with the ground, roll back over the shoulder.
- Continue to roll and come back up to your feet.
- Perform backward rolls over both shoulders.

**Variation:**

- Upon reaching the right side, touch the cone with your outside hand.
- When you reach the right side, touch the cone with your outside hand again and repeat.

**Figure No. 8**

**Pictorial Presentation of the Backward Roll over Shoulder**
Pictorial Presentation of the Side to Side with Cone Reach

Figure No. 9

Volley instead of cone.

Side to Side with Volley - Repeat the same mechanics while using.

Variation:

When you make contact with the cone, push off again and repeat.

When you reach the right side, touch the cone with your outside hand.

Pass off the ground and slide to your right side.

Drop into a slight squat.

Start in a two point stance with a slight bend in the knees.

Place a cone each side of volleyball court.

Procedure:

Purpose: Lateral agility, rotational transition, and balance.

Side-to-Side with Cone Reach
10. **In-Place Tuck Jumps**

**Purpose:** Improve power in the lower body.

**Procedure:**

- Standing in the power position, load the lower body by swinging both arms back while flexing the hips and knees.
- Begin the extension of the hips and knees and finally the ankle as the arms swing forward but close to the body.
- Jump straight in the air tucking both knees to the chest.
- Upon landing, repeat immediately with the same technique.

**Variation:**

- Pike Jumps—Perform with keeping your legs straight while tucking.

*Figure No. 10*

**Pictorial Presentation of the In Place Tuck Jumps**
11. **Tap Drills**

**Purpose:** Improve quickness in the upper body and enhance elastic response of a pushing action.

**Procedure:**

- Using a partner or trainer, the athlete reacts to the toss of volleyball and taps the ball to a target.

- The target location is decided prior to the toss.

![Pictorial Presentation of the Tap Drills](image-url)
12. Sprawl and Stand Up

Purpose: Development of total body agility and kinaesthetic awareness.

Procedure:

➢ Start in a two point stance.

➢ Perform a squat thrust, then a roll, and then get up as fast as possible.

Variation:

➢ Add a sprint after standing up.

Figure No. 12

Pictorial Presentation of the Sprawl and Stand Up
13. **One Handed Tap Drills with Partner**

**Purpose:** Improve quickness and elastic upper body strength.

**Procedure:**

- With arms extended, two athletes react to each other by tapping volleyball back and forth.
- Each touch uses a single hand, and the ball placement should progress to challenge your partner.

**Figure No. 13**

Pictorial Presentation of the One Handed Tap Drills with Partner
14. Foot-Tapping Frequency

**Purpose:** Improve quickness in the lower body.

**Procedure:**

- Stand with knees and hips slightly flexed, arms relaxed, and shoulders over toes, prepared to react to stimulus to start.
- On either a visual or auditory cue, begin to tap your feet alternately as fast as possible for a predetermined amount of time.

**Figure No. 14**

Pictorial Presentation of the Foot Tapping Frequency
15. **Bounce and Catch**

**Purpose:** Improve hand and eye coordination and first-step quickness.

**Procedure:**

- Player "A" must stand in ready position as player "B" bounce the ball on the ground.
- Player "A" catches the ball after it bounces one or two times.

![Figure No. 15](image)

**Pictorial Presentation of the Bounce and Catch**
17. **Medicine Ball Overhead Throw**

**Purpose:** Improve explosive power in throwing or overhead activities.

**Procedure:**

- Using the wall, the athlete loads the ball over and behind the head, extending the entire body.
- Keep parallel stance and feet flat during the loading or "cocking" phase.

*Figure No. 17*

**Pictorial Presentation of the Medicine Ball Overhead Throw**
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![Diagram of Medicine Ball Overhead Throw](image-url)
8. Ploy to Sprint

Purpose: Improve quickness and power in the lower body.

Procedure:

➢ Perform plyometric exercise (Medicine ball overhead throw) and sprint immediately upon landing.

➢ The plyometric exercise may be stationary or movement-oriented.

Figure No. 18
Pictorial Presentation of the Ploy to Sprint
19. **Vertical Jump**

**Purpose:** Improve quickness and power in the lower body.

**Procedure:**

- Stand with the feet shoulder - width apart (with the knees and hips flexed in a prestretched position and with the arms back and shoulder over the toes) and quickly dip into the “power position.”

- Perform a vertical jump by sequentially extending the ankles, knees, and hips, followed by the arms reaching straight up into the air.

**Figure No. 19**

**Pictorial Presentation of the Vertical Jump**
20. Side Shuffle

Purpose: Improve quickness in the lower body.

Procedure:

➢ Begin in the athletic position.

➢ Shuffle inline in a determined direction without crossing the feet from point A to point B.

➢ This should be done by accelerating and then decelerating in order to stop as closely to point B as possible.

➢ Repeat this drill for time.

Figure No. 20

Pictorial Presentation of the Side Shuffle
21. **Quick Hands Toss**

**Purpose:** Improve hand and eye coordination and quick change of direction.

**Procedure:**

- Player “A” stands on a line in athletic position.
- Player “B” then tosses a ball with either hand as player “A” react, catching the ball.

**Figure No. 21**

Pictorial Presentation of the Quick Hands Toss

![Pictorial Presentation of the Quick Hands Toss]
22. **Stand Up From a Sitting Position**

**Purpose:** Development of total body agility, and kinaesthetic awareness.

**Procedure:**

- Start in a sitting position on the ground.
- Explode as you stand up as fast as possible.
- Practise rolling to either side to get up.
- Repeat.

**Figure No. 22**

Pictorial Presentation of the Stand up from a Sitting Position
23. **Lateral Skaters**

**Purpose:** Improve cutting ability and first-step lateral quickness.

**Procedure:**

- Begin with both feet together and push off laterally with one leg.
- Upon landing, immediately push off in the opposite direction and continue the drill for reps or time.

**Figure No. 23**

**Pictorial Presentation of the Lateral Skaters**
24. **Stand Up From a Lying Position**

**Purpose:** Development of total body agility, and kinaesthetic awareness.

**Procedure:**

- Start lying down in any position.
- Stand up as fast as possible.
- When facing up, practise rolling to either side to get up.
- Repeat.

![Pictorial Presentation of the Stand up From a Lying Position](image)

*Figure No. 24*

Pictorial Presentation of the Stand up From a Lying Position
25. Ball Drops With a Partner

**Purpose:** Improve visual stimulus response and first-step quickness.

**Procedure:**

- Using a ball, which can be specified to the target sport, has a partner stationed about 5 yards away and drop the ball from shoulder height.
- The retriever must catch the ball before the second bounce.

**Figure No. 25**

**Pictorial Presentation of the Ball Drops with a Partner**
Tool to measure Skills Performance Ability in Volleyball

Every athletic skills performance is believed to be psycho-physical. Observable sports skills performance can be seen being expressed through verbal, written or concrete i.e. active and many more type of performance. The measurement of these expressions can be either qualitative or quantitative.

Unfortunately objective measures of performance of volleyball skills are conspicuously absent. The inherent game situations offer immediate hindrance in construction and development of such objective measures. No objective skill test in volleyball is available at present to the knowledge of research scholar.

Scott and French ¹ Suggested method of assessing skills performance ability of players and to observe them in action. They state that, "In many activities objective measures should be supplemented with subjective rating or charts on which detail performance are recorded". A chart on which a tally is kept of the number of times a player is successful in executing some of these skills can be used. Subjective rating or evaluation of

performance with respect to some standard can be very useful, if made while the players are engaged in game play. They further add that, phases of performance that can be rated on in the game situation should be broken into units and rated. This method is prefers to watch players only in the game situation and then assigning a single score. Since it directs the attention toward more aspects of the game and tends to prevent by giving an undue amount of credit out of proportion or real ability to a player who makes one spectacular and perhaps lucky play. This procedure enables the summariser of the rating to weight the more important items. The present experimenter used overall rating of performance to assess overall skills performance ability of volleyball players.

To minimize common rating errors the experimenter has prepared rating form (Appendix-A) representing serial numbers, name of the players, age, and level of participation, rating out of ten for each volleyball skill and total scores/points respectively. The judges have to assign scores on the basis of ten points rating scale for each basic skill performance while doing so Judges were required to take into consideration the essential elements of each basic skill which were mentioned in appendix - F. Further they can categorise the players scores in five different categorises i.e. excellent, good, average, fair and poor, on the basis of scores achieved by each player for
each basic skill. Finally they have to provide a score to each player after adding scores for each skill.

**Instructions to Raters**

Instructions to raters are shaped, as it is a sort of challenge to their ability of rating and coaching. A group of volleyball players have to be observed while playing the game in which you are expert. Consider, would this player be able to fit in to the performance model set by you and comparing your estimate of that player with your own concept of requirement of particular class corresponding with your concept model of performance and for actual performance of player place a marks for each skill, best representing the performance of player for each skill. Be honest in estimating the player, remember the maximum score you can allot to a player is ten and the least score is zero for each skill. This is the only method the experts and coaches in volleyball are traditionally listing owing to the long familiarity with the rating procedure based on the general impression about the skills performance ability of the players.

Here the observer watches the players in playing action and assigned single score keeping in mind all the points related to the skills performance in volleyball explain earlier, which considered skill performance ability of
the players. Average score of the three observers were recoded as skills performance ability. The panel of three qualified matured and competent judges was advised to follow the guide line as mention above and grade the players.

**Design of the Study**

For the present study pre test – post test randomized group design\(^2\) which consists of control group and experimental group for each level, was used to find out effect of S.A.Q. drills training on the skills performance of volleyball players. Equal numbers (fifty) of subjects were assigned randomly to both the groups. The experimental treatment was also assigned randomly to both level groups’ i.e. experimental group for seniors and juniors and the other group served as the control group for seniors and juniors. Experimental groups were exposed to training with a set of drills selected for specific purpose. The experimental groups were trained with speed, agility, and quickness drills for a period of twelve weeks (84 days). The training sessions were conducted three days a week i.e. (Monday, Wednesday, and Friday). Measurement of skills performance ability was taken for both the groups

before, intermittently (after 6 weeks) and after the experimental period of twelve weeks.

**Criterion Measure**

Following criterion measures were selected to record the data on various drill tests.

1. **Speed:** - Time taken (nearest to 1/100 of a second) to complete the course or required action.

2. **Agility:** - Time taken (nearest to 1/100 of a second) to complete the course or required action.

3. **Quickness:** - Time taken (nearest to 1/100 of a second) to complete the course or required action.

4. Skills performance ability in volleyball as assessed by the three experts was recorded in single scorer in number.

**Orientation of Subjects**

Orientation was a programme designed to introduce the subjects in to a new situation and to bring out the best effort from the subjects it was highly essential to explain the subject in detail about the study. Hence before the collection of data the investigator held a meeting with the subjects in order to orient them about the purpose of study and explain to them about
the procedure to be adopted so that there was no ambiguity in their mind regarding the efforts required of them. All the subjects readily agreed to cooperate and to put in their best efforts in the interest of scientific investigation. The subjects were very enthusiastic and cooperative throughout the project. Before applying the skill performance rating method to both the groups, certain definite instructions were given on the day of the testing session to the subjects. An understanding was clearly given to all of them that for good play some points would be added to the individual score and they are told each one should aim at high scoring.

**Administration of Drills Training**

The training for experimental groups was administrated at Volleyball coaching centres namely S U block Pitampura and C.R.P.F. volleyball ground, Delhi. The experimental groups met thrice a week for the period of twelve weeks (September 1, 2007 to November 30, 2007). Each experimental session was of 30-45 minutes duration with additional 60-90 minutes, which were made available for the experimental and control groups for volleyball skills practice. The training commenced with one week of general physical conditioning for the experimental groups, so that the subjects were ready physically and mentally to take on specific load
administrated to them for the purpose of the study. After one week of conditioning the training was administrated to the experimental groups, which include speed, agility, and quickness drills respectively for three days in a week i.e. (Monday, Wednesday, and Friday). A week schedule was repeated to the proceeding week and the load was adjusted progressively. A detail program is appended.

The procedure adopted for the adjustment of load is as follows:

1. The load intensity was kept low to moderate in first week and increased progressively in proceeding week moderate to high.

2. The frequency of training was thrice in a week.

3. The density was adjusted according to intensity because it is inversely related to intensity.

4. The repetition and sets were increased progressively from first week to proceeding week.

5. The duration of training was 30-45 min. for each experimental day.

6. The duration of warm-up and volleyball skills practice were kept fixed at ten to fifteen minutes and sixty to ninety minutes respectively.

7. Control group was not allowed to take part in the specific experimental training programme expect they had daily general warming up and had their normal club activities.
### Training Schedule

<table>
<thead>
<tr>
<th>NEEDS</th>
<th>WEEK 1&amp;2 DRILLS</th>
<th>WEEK 3&amp;4 DRILLS</th>
<th>WEEK 5&amp;6 DRILLS</th>
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<td>NEEDS</td>
<td>WEEK 7&amp;8 DRILLS</td>
<td>WEEK 9&amp;10 DRILLS</td>
<td>WEEK 11&amp;12 DRILLS</td>
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Collection of Data

The data was collected before, after six weeks, and twelve weeks of training. All above mentioned drill tests were administered to collect data and skill performance tests were administered with the same three judges by doing subject rating. The coaches and subjects were consulted personally and the subjects volunteered to take part in the experiment and agreed to cooperate in the S.A.Q. drills training programme to the best of their abilities. The research scholar motivated the subjects by promising to send a separate abstract of conclusions of his study to each of the subjects. The daily activities of the subjects were not altered during the course of investigation.

Statistical Technique

The data was analysed by applying Analysis of Co-Variance (ANCOVA) Technique to find out the effect of S.A.Q. drills on skills of volleyball players. The level of significance was set at 0.05.