CHAPTER – I

INTRODUCTION

"The game of Volleyball introduced by William G. Morgan on 1895 at the YMCA, Holyoke, USA. Then the game developed a new look, as a net and a specially made leather ball were introduced. Further a few simple rules were formulated to organise competition between teams. Morgan originally named the game, he invented as 'Mintonette'. Dr. A.T. Halstead of the Springfield College who once watched the game suggested changing the name to 'Volleyball' which was more appropriates the basic idea of the game was volleying. His suggestion gained acceptance and Morgan's game came to be known as Volleyball. Volleyball is an excellent all-round team-sport, and it has been widely accepted as highly competitive and recreational game throughout the world. It is interesting to note that the speed of a powerfully spiked ball in the game of Volleyball is about 45 metres per second which is much faster than the movement of the ball in most other games. The game offers a wider opportunity for the development of strength, speed, endurance, agility, neuro-muscular skills and coordination of all parts of the body by the actions involved in the game. The game situations demands coordinated team-work, thereby instilling in every player a sense of personal and group responsibility by his individual performance and his ability to combine with the rest of the team. Volleyball was introduced in India by the YMCA during the early part of the 20^{th} century. The YMCA college of physical education at Madras was one of the first institutions to take up Volleyball and the physical education teachers trained there have taken the game to almost all parts of the Indian sub-continent. Volleyball has an added advantage in being suitable for both sexes, regardless of age and physical activity, as it is highly adaptable. It is a game easy to learn and since there is no body contact between opponents. The game requires only a small play area and the equipment needed is

within the reach of all income groups. Volleyball has immense recreational and carry-over values and thus meets all the requirements of an ideal form of physical activity" (Hubert Dhanaraj, 1991).

The game Volleyball played with 12 players six in play and six in substitute. There were no timing restriction of this game. This game playing under Rally Point system. The game will start with zero and ends in two points lead from the opponents after reaching 24th points. The game playing starts by servicing followed by referee whistle and end with the ball should touch on opponent side or same side ground or immovable objects. One game consist of 5sets and each set have 25 points, fifth sets 15 points. Both teams have two time outs and six substitution change allowed per set.

1.1 VOLLEYBALL GAME SKILLS

According to American Volleyball Coaches Association (AVCA, 2006), the six major skills in Volleyball namely Servicing, Receiving, Setting, Spiking or Attacking, Blocking and Digging.

1.1.1 SERVICE

"The Server should stand in between service restriction lines which is drawn continuity of two side lines. After referee blow the whistle within eight seconds, server should toss the ball and using the hands to serve above the net in between two antennas. The four types of serve in Volleyball such as Underarm Serve, Float serve, Tennis serve, Jump Serve and Jump with Float serve".

1.1.2 RECEIVING

"The receiver can receive by using hands together on the place of forearm which is called underarm receive or using 10 fingers above the head in bowl shape which is called overhead receive. In investigator views underarm receive preferable for all level of players".

1.1.3 SETTING

“Setter is the heart of the team. The main concept of setter is to lift up or boost the ball for spiking to the spikers”.

1.2 KINANTHROPOMETRY

“Kinanthropometry is the study of human size, shape, proportion, composition, maturation and gross function in order to understand growth, exercise, performance and nutrition” (Ross et al., 1978).

1.3 IMPORTANCE OF KINANTHROPOMETRY FOR VOLLEYBALL PLAYERS

- The main purpose of kinanthropometric techniques is to acquire a knowledge regarding body parts and size.
- It helps to prepare training capsules based on players body measurements.
- It helps to predict and recruit perfect players depends on nature of position wise demands in Volleyball.
- For instance height helps to adopt their blocking skill, to covering a maximum area in play court and explore their spiking ability in Volleyball.
- The Arm length measurement helps and be advantaging in blocking situation in Volleyball.
- In toto serving, setting, spiking and ball collection abilities are enhanced with arm length.
- Calf girth measurements shown positive relationship with leg explosive power and whole body reaction.
- Calf girth may be act as major role on whole body reaction at the time of play.

1.4 MOTOR FITNESS

"Suitability or preparedness for preforming big muscle activity without undue fatigue; it is composed of muscular strength and endurance, cardiovascular endurance, power, flexibility, coordination, balance, speed and agility" (Davinder K. Kansal, 2008).

1.5 IMPORTANCE OF MOTOR FITNESS FOR VOLLEYBALL PLAYERS

- The knowledge and understanding of the concept of motor fitness helps to understand playing efficiency of Volleyball players.
- It helps to prepare capsules of training based on Volleyball players level of fitness.
- For instance muscular power helps to determine players explosiveness and spiking ability.
- Agility helps for better blocking and spiking abilities.
- Shoulder strength helps to execute on service, spiking, blocking and passing in an efficient manner.
- The players reaction time helps to the specific reaction ability during spiking, blocking and ball collecting moments.
- Abdominal strength helps directly on the core power on air check and body co-ordination on during game situation.

1.6 PSYCHOLOGY

"Psychology is the scientific study of behaviour and mental process. Behaviour includes all of our outward or overt actions and reactions, such as talking, facial expressions and movement. Mental processes refer to all the internal, covert activity of our minds such as thinking, feeling and remembering" (Ciccarelli Saundra, 2008).

1.6.1 IMPORTANCE OF PSYCHOLOGY IN SPORTS

- "Improving functional fitness while preventing excessive fatigue and accelerating recovery.
- Improving technical motor sequences through proper mental imagery and of the execution of movements.
- Improving technical preparation with activity programmes for variations in competitive situations.
- Improving the athletes psychological states through positive emotional influences" (Sheokand Daisy, 2007).

1.7 OBJECTIVE OF THE STUDY

This study will helps to understand importance and predict the kinanthropometric, motor fitness, psychological and game skill variables on playing ability of Volleyball among players of intercollegiate level.

1.8 STATEMENT OF THE PROBLEM

The purpose of the study was to predict playing ability in Volleyball from selected kinanthropometric, motor fitness, psychological and game skill variables among players of intercollegiate level.

1.9 HYPOTHESIS

1. It was hypothesised that the Volleyball playing ability would be successfully predicted from selected kinanthropometric variables among players of intercollegiate level.
2. It was hypothesised that the Volleyball playing ability would be successfully predicted from selected motor fitness variables among players of intercollegiate level.
3. It was hypothesised that the Volleyball playing ability would be successfully

predicted from selected psychological variables among players of intercollegiate level.

4. It was hypothesised that the Volleyball playing ability would be successfully predicted from selected game skill variables among players of intercollegiate level.

1.10 SIGNIFICANCE OF THE STUDY

1. This study will help to know about influence of kinanthropometric variables in Volleyball playing ability.
2. It will help to know about involvement of motor fitness components in Volleyball playing ability.
3. It will help to assess the major role of psychological variables in relation to playing ability in Volleyball.
4. It will help to understand the perfection in game skill performance in executing total playing ability.

1.11 DELIMITATIONS

1. This study was delimited 200 subjects of Volleyball players.
2. The subjects selected for the study were winner/Runner up of the tournament of the concerned university.
3. The subject were selected from different district of Tamilnadu state.
4. The subject were selected from the age group of 18-25.
5. The following Kinanthropometric Variables were selected to this study. To determine body size difference: General body measurements: Body weight, Stature/ Height, Sitting Height. Skeletal Diameters: Biacromial Diameter (Shoulder Width), Bicristal Diameter (Abdominal Width). Bitrochantric diameter (Hip width), Humerus Bicondyler width (Elbow width), Wrist

diameter, Femur Bicondyler diameter (Knee width), Ankle diameter. Circumference: Chest circumference, Upper-Arm circumference, Fore-Arm circumference, Thigh circumference, Calf circumference. Skinfold measurements: Biceps Skinfold width, Triceps Skinfold width, Fore-Arm Skinfold width, Subscapular Skinfold width, Suprailiac Skinfold width, Thigh Skinfold width, Calf Skinfold width. To determine body forms (Somatotyping) Ectomorph, Endomorph and Mesomorph.

5. The following Motor Fitness variables were selected to this study: Muscular Strength, Muscular Endurance, Cardio-Vascular Endurance, Flexibility, BMI, Power, Speed, Agility, Balance and Reaction Time.
6. The following Psychological variables were selected to this study: Self-Awareness, Empathy, Effective Communication, Interpersonal relationships, Creative Thinking, Critical Thinking, Decision Making, Problem Solving, Coping with Emotions, Coping with Stress.
7. The following Volleyball Game skills were selected to this study: Service, Pass and Set.

1.12 Limitations

1. The cultural and environmental factors of the subjects were not considered.
2. Extend factors like socioeconomic status, religion and environmental factors were not considered.
3. The emotional status and food habits of the subjects were not considered.
4. Their training ages of the players were not considered.
5. Variations in educational qualification and educational background were not considered.

1.13 DEFINITION OF THE MAIN TERMS

1.13.1 Prediction

"Prediction is estimating a person score on one measure based on the persons score on one or more of other measures" (**Baumgartner and Jackson, 2001**).

1.13.2 Kinanthropometry

"Kinanthropometry is the study of human size, shape, proportion, composition, maturation and gross function in order to understand growth, exercise, performance and nutrition" (Ross et al., 1978).

1.13.3 Body Weight

"Weight of the nude human body with empty bowels, is known as body weight" (Davinder K. Kansal, 2008).

1.13.4 Height

"A straight line, point measurement, usually measured from the floor as the subject stands, or from the horizontal surface on which the person sits" (Kevin Norton & Tim Olds, 2006).

1.13.5 Sitting Height

"It is the height of point vertex from the horizontal table top on which the subject sits with their legs hanging down while the thighs rest completely on the table top" (Davinder K. Kansal, 2008).

1.13.6 Biacromial Diameter (Shoulder Width)

"It is the straight distance between the left and right acromiale points" (Davinder K. Kansal, 2008).

1.13.7 Bicristal Diameter (Abdominal Width or Waist Width)

"It is the straight distance between the right and left iliocristale points on the iliac crests or bicristal diameter is the abdominal width measuring the maximum

distance between the iliac crests on the two sides of the abdomen**”** (Davinder K. Kansal, 2008).

1.13.8 Bitrochantric Diameter (Hip Width)

“It is straight distance between the right and left trochanterion points**”** (Davinder K. Kansal, 2008).

1.13.9 Humerus Bicondylar Diameter (Elbow Width)

“It is the maximum straight distance across the outer most points on the two lateral condyles on the lower end of humerus” (Davinder K. Kansal, 2008).

1.13.10 Wrist Diameter

“It is the straight maximum distance between the lateral styloid processes of radius and ulna” (Davinder K. Kansal, 2008).

1.13.11 Femur Bicondylar Diameter (Knee Width)

“It is the maximum straight distance across the outermost points on the condyles at the lower end of the femur” (Davinder K. Kansal, 2008).

1.13.12 Ankle Diameter

“It is the straight maximum distance across the ankle between the two malleoli on the lower end of the tibia and fibula” (Davinder K. Kansal, 2008).

1.13.13 Circumference

“A closed measurement following a body contour” (Kevin Norton & Tim Olds, 2006)

1.13.14 Chest Circumference

“It is the circumference of chest at the level of nipples in front of subscapular region at the back and is measured at the end of a normal expiration” (Davinder K. Kansal, 2008).

1.13.15 Upper-Arm Circumference

"The circumference of freely hanging upper-arm measured midway between the point acromial and radial is known as upper-arm circumference" (Davinder K. Kansal, 2008).

1.13.16 Fore-Arm Circumference

"It is the maximal circumference of the forearm" (Davinder K. Kansal, 2008).

1.13.17 Thigh Circumference

"It is the circumference of the thigh at a midpoint of femur length" (Davinder K. Kansal, 2008).

1.13.18 Calf Circumference

"It is the maximal circumference of the leg over the calf muscle" (Davinder K. Kansal, 2008).

1.13.19 Biceps Skinfold Width

"It is the thickness of the double layer of skin plus subcutaneous fat on the anterior side of upper-arm over the biceps muscle at a level mid-way between the points acromiale and radiale measured at a pressure of 10 gram per mm square" (Davinder K. Kansal, 2008).

1.13.20 Triceps Skinfold Width

"It is the thickness of the double layer of skin plus subcutaneous fat on the posterior side of the upper arm over the triceps muscle in the middle of upper-arm" (Davinder K. Kansal, 2008).

1.13.21 Fore-Arm Skinfold Width

"It is the thickness of double layer of skin plus subcutaneous fat on the lateral side of forearm at the level where forearm circumference is measured" (Davinder K. Kansal, 2008).

1.13.22 Subscapular Skinfold Width

"It is the thickness of double layer of skin plus subcutaneous fat below the inferior angle of left scapula" (Davinder K. Kansal, 2008).

1.13.23 Supra-Iliac Skinfold Width

"It is the thickness of double layer of skin plus subcutaneous fat over the iliac spine on the left lateral side of the abdomen" (Davinder K. Kansal, 2008).

1.13.24 Thigh Skinfold Width

"It is the thickness of the double layer of skin plus subcutaneous fat on the anterior side at the middle of thigh exactly at the level of thigh circumference measurement" (Davinder K. Kansal, 2008).

1.13.25 Calf Skinfold Width

"It is thickness of the double layer of skin plus subcutaneous fat on the medial side of calf in line with the long axis of the leg exactly at the level of calf circumference" (Davinder K. Kansal, 2008).

1.13.26 Motor Fitness

"Suitability or preparedness for preforming big muscle activity without undue fatigue; it is composed of muscular strength and endurance, cardiovascular endurance, power, flexibility, coordination, balance, speed and agility" (Davinder K. Kansal, 2008).

1.13.27 Muscular Strength

"It may be defined as the maxima muscular force or tension used in the creation or prevention of the movement in one maximal effort of a muscle group" (Davinder K. Kansal, 2008).

1.13.28 Muscular Endurance

"The ability of muscles or muscle group to apply force repeatedly or to sustain a contraction for a certain period of time" (Yobu, 2010).

1.13.29 Cardiovascular Endurance

"The ability to sustain a series of repetitions of an activity without unduly taxing the physiological systems that furnish the fuel and oxygen to the muscles" (Yobu, 2010).

1.13.30 Flexibility

"Flexibility may be defined as the range of movement in a joint" (Yobu, 2010).

1.13.31 Body Mass Index (Bmi)

"Crude index of obesity; calculated by body weight (kg) divided by height squared (m^2)" (Vivian H. Heyward, 2010)

1.13.32 Power

"Capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed" (Yobu, 2010).

1.13.33 Speed

"The capacity of the individual to perform successive movements of the same pattern at a fast rate" (Yobu, 2010).

1.13.34 Agility

"The physical ability which enables an individual to rapidly change body position and direction in a precise manner" (Yobu, 2010).

1.13.35 Balance

"Balance is the maintenance of equilibrium through neuromuscular control" (Yobu, 2010).

1.13.36 Reaction Time

"Reaction time is the period from the stimulus to the beginning of movement" (Yobu, 2010).

1.13.37 Psychology

Psychology can be defined as 'the science of mind and behaviour' (Gross, 1996).