Chapter-I

INTRODUCTION

Handball (also known as team handball, Olympic handball) is the team game there are 7 players each which passes ball to through it into the goal post of another team, in the time duration of 30 min. the declaration of winning weaning team depends on more goal in opponent goal post.

Handball is played indoor as well as outdoor in the form of field handball Czech handball (which were played in past) and beach handball also called sandball.

Physical and physiological profiles may help to understand the suitability of Players for handball game. Handball required a combination of endurance training and resistance. In the game of handball, movement pattern keeps on changing in response to different defensive and offensive situation.

The Handball is fast game and includes body contact to stop the attackers from reaching the goal. Contact is allowed when the offensive-defensive players are completely in front between the offensive players and the goal. Any contact from back is consider as foul and is usually penalties are given to opponent. When a defender get successful in stopping the attacking player, the play get stopped and restarted on 9-meter line. Unlimited fouls are allowed in the game considering good defense.

The human physique differs in a thousand ways. It can be analyzed by studying the size, shape and form of an individual. For this purpose, a set of selected anthropometric measurements is taken on an individual. The intergroup comparisons are made to understand the physical peculiarities of a population.
From such anthropometric body measurements, it is also possible to estimate the distribution of fat and development of bone muscle in the case of athletes and sportsmen where the physical fitness plays a vital role in the competitive performances. **Tanner (1960)** examined the physique and body composition of Olympic athletes at Rome during 1960, and inferred that the athletes were both *born and made*.

The measurements of different body dimensions and ratios are of great relevance to the physical activity, especially in sports. The anthropometric assessment of physique include careful use of body landmarks specific positioning of the subject and use of useful instruments. The measurements that are taken on an individual are highly objective and highly reliable in the hand of a trained anthropometrics. **Malina** pointed out that the biological or functional significance of many dimensions has not yet been adequately established.

The Competitive sports demand event specific physique and body composition to achieve the success. **De Garay et al. (1974)** concluded that top-level performance in a particular event demands a particular type of body size and shape, if other aspects are being similar. Showed high correlation between the body profile of an athlete and specific task (event) in which he/she excelled. Various other studies also suggest that different body sizes, shapes and proportions are beneficial in different physical activities. **Hirata (1966)** suggested that a nation with people whose general physique is limited to the characteristics of champions in certain events must concentrate their sports training on those specific events only. He also concluded that Japanese with small body-builds are best for gymnastics, long-distance running, boxing and weight lifting etc. whereas the Americans who are large and lean are best for basketball, female Handball, swimming, long jump, short and middle distance running. **Carter (1982)** suggested
that the athletes who wish to achieve success in sports at a high level should compare their physique with Olympic athletes. If the athlete's bodily structure is within the limit of the Olympians, he/she may achieve high performance subjected to the optimization of other factors. Behnke and Royce (1996) concluded that long distance runners are characterized by excessive leanness, relatively small body size and a deficiency of arm girth compared to chest size and leg length. The anthropometric and compositional study on cross-country runners revealed that runners are characterized by a relatively large calf and small biceps and abdominal girths. Mc Ardle et al. pointed out that athletes generally have physique characteristics unique to their specific sports. For example field event athletes have relatively large quantities of lean tissues and a high percentage of body fat whereas long distance runners have the least amount of lean tissue and fat mass. He also pointed out that football players are amongst the heaviest and leanest of all sports men.

In complex kinesiological activities such as sport games, successful performance is determined by a number of factors, first of all by anthropologic features of the players. Motor abilities are the main anthropologic component that is responsible for kinesiological performance. In modern elite sports based on the scientific approach to the training process, athletes have been ever more aligned according to their motor, morphological and functional characteristics, thus psychological features becoming ever more important for achievement of top results. Kinesiologists are interested in motor abilities because some of them can to a considerable extent be modified via kinesiological operators, whereas Psychological characteristics, being mostly genetically determined, are more important in player selection. In sport games including handball, some playing positions that require appropriate anthropologic types of players consistent with
specific functions and needs of the position have been distinguished. According to playing positions, players mainly differ in their morphological features. Studies tackling differences in other anthropologic and technical-tactical player properties according to playing position are lacking. Considering the role of motor and psychological characteristics in the player’s performance in handball, and inadequate scientific knowledge of the respective variation according to particular playing positions. Differences in the basic motor abilities and psychological characteristics of elite female handball players according to playing positions is the aim of study. (Rogulj et.al. 2005).

Sport can be determined as an environment where development of physical activities takes place. Participation in athletic activities is a with an increasing anxiety. That leads to young or beginner players not performing according to their potentialities (Hardy, Jones, & Gould, 1996; Orlick & Partington, 1988). Anxiety refers to situations of emotional arousal and intensity.

This evidence has illustrated that playing different ball games requires different characteristics of physical fitness however other researchers have questioned that due to the limited number of variables used in the analysis and the selection of fitness tests being generally used for all sport events these differences may not exist in ball games. Moreover attempts have not been made to investigate the differences among different ball game sports to dig out the physical fitness variables that discriminate effectively among them (Hong 2002).

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The development of a sport branch depends on the process of talent seeking and also on the scientifically based selection therefore selection of the players by their height is very important. Problem in selection correlates with the prediction of sportsmen accomplishments. Different sports disciplines have some specific demands concerning body posture the level of development of motorics and functional abilities of the sportsmen. Selection, according to Vujaklia (1980), is by dictionary definition: a choice, in our case a choice of future female Handball players who could satisfy the basic requirements of female Handball, as far as anthropometric features are concerned. Criteria of selection in specific sport branches are different; one of the most important is physical posture especially the process of determining the final height and body proportions. The initial level of sport practice, selection plays a crucial role. These sports demands sportsmen with accelerating height, while other sports (gymnastics) demand sportsmen with impeded height.

The best way of developing the skill of an individual in a competitive situation is working. In the game of handball we find several physical challenges. We may find two players having same skill but their performances can be different due to their physical and mental response.

Individual can experience his own conditions at a time of poor performance. That time, he is uptight and anxious. The nature of anxiety is shown by the feeling of apprehension and uncertainty and the experiencing of physical symptoms like butterflies in the stomach, sweaty palms and a thumping heart. Than any thing else, during the competition individual feel these anxiety symptoms. Tendency for individuals to remain anxious in sport has made ready researchers to attempt to identify the sources of anxiety and to know how different individuals perceive them.
Anxiety experienced during competition, known as competitive anxiety, may be defined as the feeling of apprehension an individual may experience in response to perceived threats during competition (Martens, 1977). Clearly there are situations in sport where athletes doubt their own ability to put across a desired impression either because of their own perceived lack of ability or due to external factors. Example a skilled athlete who feels he needs to win to demonstrate his ability may still lose to a better competitor or because of factors beyond his control such as illness or injury. These situations the inability to convey the desired impression may be perceived as a threat to athletes social-identity which may result in feelings of anxiety.

Swain and Jones (1991) suggest that all athletes may not have different somatic anxiety intensities, and highly and intermediate skilled athletes may have similar cognitive anxiety intensities. However, compared to lesser skilled athletes, those with higher skills generally perceived anxiety Symptoms as more beneficial to performance. Although it is not unknown for highly competitive athletes to experience low level of precompetitive anxiety, any first hand observation of organized youth sports would confirm that many highly competitive individuals are prone to suffering debilitating state anxiety immediately before competition.

The problem of anxiety has been considered important in all areas of human activity including sports. Nearly every concern of human Endeavour is thought to be affected somehow by anxiety (Levitt 1967). A number of theories exist concerning the effect of anxiety on performance. Denying the interactive effect of anxiety on the performance of certain specific tasks. The all theories seem to agree that maximum performance is reduced by too much anxiety (Duffy 1962 and Weiner 1965). Anxiety is greater in individual sports
participants than those in team sports. In an individual sports success of failure lies solely with the individual participants. Where as in team games error go unnoticed because of the general activity of the contest and more over success and failure are commonly shared considering.

Inter-relation between the physique and performance has led to more common examination of the physical requirements necessary to achieve top performance. The main objectives of the sport and physical educationists working in this field in the determination of the optimal indices of the physique for the particular sport disciplines and event. as well as the presentation of morphological differentiations occurring among them. Hence, the recent researchers are interested in finding the relationship and prediction of selected anthropometric variable with long distance runner performance of the national, all India University and state level athletes.

Elite level sports performance in various sports are influenced by many factors such as level of physical, physiological and psychological abilities, technique, tactics, physique, body size, body composition etc. **Tanner (1964)** had shown that those who became the best in the world in 1960, Olympic, had definite body characteristics that were clearly specific for the different events in which they competed. There is a wealth of scientific and empirical evidence to support claim that there are body difference among athletes in different games and sports and among events.

Discipline is required to develop the necessary top performance age in different sports disciplines is associated with the time to start sports training in a particular sport, conditional, tactical, technical abilities and sports performance. Regarding to weight, height, body size, body composition, certain dimension is necessary for success in selected events and sports. Age, height, body weight, body
size and body composition of the Olympic, International and national athletes have been subject of great interest for many research workers.

The first pre-requisite for success in any activity depends on high motivation. Therefore, while preparing the athletes, it is the important first of all to form and develop in his striving constability induce in him an urge to systematically useful results. Desire for around harmonious development of personality through preparation for creative work and defence, the desire to make one’s contribution to the progress of the sports and to glorify one’s collective and countering by sporting achievement.

Motivation is a general process which indicates the people participate. when competing to struggle, The urge to run and play when young to excel, when challenged to escape, when hindered to prove something, when confined to be aggressive, when angered and to flee, when frightened are typical of man as he matures and develops and moves through life’s many dangerous and competitive situations.

An understanding of achievement motivation is help full in understanding kinds in general as well as individually in terms of what they do, how was they do and how long they continue in sports once one comes to know as to that works as a “driving force” it becomes easier to guide the athletes in to achieving excellence. When the aspiration for achievement becomes a foremost concern for the person, it is believed in restless driving energy expected at achieving excellence, getting ahead, betterment of past records, defeating competitors, doing things better, faster, more efficiently and findings unique solution to difficult problems.

Age body Size and body composition of the sports women belonging to gymnastics swimming (Sprinter only) and athletics (sprinter only) differ from each
other. Hirata (1966) while examining the gymnasts of 1964 Olympic stated that female gymnasts were smaller in size than other participants of 1964 Olympic. He stated that small, lean and mesomorphic physique was well suited to the requirement of women gymnastics. Sprynova and Parizkova (1969) reported that female gymnasts had lesser stature when compared with female swimmers.

According to Wilmore. (1982), the appropriate, size, shape, build and composition of the athletes body is of major importance in almost all athletes Endeavour’s. Each athlete has a genetic profile that largely dictates limits for both body build and composition. While studying the role of various factor in swimming performance, councilman (1982) emphasized the role of physique in swimming performance. He state that physique in swimming was specific to event and to much extent it could be changed with training.

According to Arnot and Gains. (1984),” to any one who has looked Olympic swimmers, it is apparent that the tend to have wide shoulder, muscular arms ,long hands and narrow high and hip” Parizkova et al. (1987) reported that female swimmers had the highest body weight and fat percentage while gymnasts and distance runners had the lowest among all athletes.

Eiben, (1981) studied the importance female athletes, size, shape and body composition and reported that female sprinters were smaller in stature than female hurdlers, jumpers and throwers. De Garay et. al. (1974) in a study conducted on 148 Maxico Olympic athletes reported that female gymnasts, divers, sprinter and swimmers averaged close to 3 units in ectomorphy and were significantly more ectomorphy than canoeists and throwers.

From the above cited literature and investigation, it is evident that there is a difference in physique, body size and body composition among international and
Olympic female gymnasts, swimming, sprinters and track sprinters. The present investigation has been conducted with an aim to find out significant difference in age physique, body size body composition and somatotype variables among elite female Indian gymnasts, swimming sprinters.

In recent year the determination of the fat percentage of body has become widely used and recommended as one of indicators of fitness by monitoring fat percentage and body mass regularly. There are many aspects of a men can learn about his fitness and any changes in fitness as progresses that can not be cultured the most significant element is the monitoring of body fat percent was find out while weight is factor in determining health and fitness, consumers want to know how much their weight is body fat. There is some procedure or methods by which we can know about the fat % in our body. Like hydro densitometry, water displacement method, ultra sound technique, bioelectric impedance method, height-weight chart. Skin fold caliper and girth method etc.

To some extent of most of the method prove to be fruitful in respect to reliability but some prove to be fatal with respect to money and time. Skin fold caliper and girth method can analyze the fat percentage in our body effectively in aspects.

According to research finding we found skin fold caliper and girth measurement were the most reliable process after under water weighing for measuring the fat percentage in our body. Out of these two method girth measurement are easily to use, inexpensive and easily accessible and time saving process. But it is also a fact that long distance runner body structures various from place to place and various competitions, high level and low level. So a new equation for Indian athletes is required.
Spielberger and his colleagues (Spielberger 1966. Spielberger et al. 1970) drew attention to the distinction between Trait Anxiety and State Anxiety. State Anxiety is believed to be a changing emotional state, which is characterized by feelings of apprehension and tension and increased activity in the autonomous nervous system. On the other hand, Trait Anxiety is considered to be a personality trait—a relatively stable tendency of disposition to perceive a wide variety of objectively non-dangerous situations as threatening.

Although Trait & State Anxiety are considered different, these are inter-related, since it is believed that individuals with greater trait anxiety respond to threatening situations with more intense state anxiety.

The first pre-requisite for success in any activity lies, as is well known, is high motivation. Therefore, while preparing the athletes, it is the important first of all to form and develop in his striving constability induce in him an urge to systematically useful results. Desire for around harmonious development of personality through preparation for creative work and defence, the desire to make one’s contribution to the progress of the sports and to glorify one’s collective and countering by sporting achievement.

Motivation is a process, which indicates why people contribute in sports, the way they do. The recommendation to run and engage in recreation when young to shine, when competing to great effort, when mired to prove something, when challenged to flight, when confined to be insistent, when angered and to flee, when anxious are typical of man as he matures and develops and moves through life’s many risky and aggressive situations.

Thus we see that the size, shape and form of the players are known to play an important role in the performance of sports persons. Numerous factors are
responsible for the performance of handball players. Fundamental skills of handball requires a specific type of physique having specific proportions with certain conditional abilities, which can be seen in psychological variables such as anxiety, achievement motivation and competition anxiety. The purpose of this research work is to place the role of anthropometrical and psychological variables on the performance level of Indian handball players.

**Statement of the problem**

The Objectives of the study had led the researcher to state the problem as “a study on Psycho-Physical profile of high and low performance of women handball players”.

**Hypothesis**

After contemplating various aspects of the study it was hypothesized that significant difference was observed between the psychological and physical characteristics of high and low performance handball players.

**Delimitation**

Keeping in view the resources at hand and various restrains, the study is delimited to following variables.

1. **High and low performance Indian handball women players**
   **High performers;** All India inter-varsity winners, runners and national players.
   **Low performers;** District, state, zonal and inter-varsity players.

2. **Selected anthropometrical parameters**
   Stature, sitting height, weight, femur biopic condyle diameter, humors biopic condyle diameter, lower arm length, shoulder width, hip width, upper arm length, lower leg length, thigh length, biceps muscle girth, calf muscle girth, skin
folds (biceps, triceps, calf, suprailiac and sub-scapular skin folds), wrist width, hand length, total arm length.

**Somatotype** – (Heath carter method, 1990).

3. **Selected psychological parameters**

* State and trait anxiety
* Achievement motivation
* Competition anxiety

**Significance of Study**

In India, choice of sports is determined by the child's interest, facilities available and popularity of the sports in that particular society. It is immaterial whether, his body structure is fulfilling the mechanical requirements of the game or not. If he chooses a wrong activity for which his body structure is not suited, a limit is set beyond which, his performance cannot be improved, however hard he and his coach may try.

The findings of our study are having theoretical as well as practical implications. It is showing us clear difference in majority of the anthropometrical and psychological variables of high and low performance handball women players of our country and thus indicating the performance limits decided by the undertaken variables of our study.

This research work shall in turn provide guidelines to our coaches, physical educationists, and sports scientists to select appropriate talent at an early age according to the inherited anthropometrical and psychological traits, comparable with model high performance female handball players of our country. As talent
selected at early childhood is the best period for nurturing the required neuromuscular coordination for various handball skills.