CHAPTER-I

INTRODUCTION

There has been a progressive and continuous development through the conclusive sphere of homo-sapience, till today. Contemporary to early human civilization, sports was not more than a recreational phenomenon. With the progress of modern civilization to the computer era, the field of sports also gets sophisticated beyond the recreational approach. The interest in games and sports has motivated the researchers toward a number of scientific researches and observations. An attempt has been made to observe the performance of sportsperson in different fields with a view to find out various factors which affect the performance. The performance of sportsperson has become a subject matter of national importance, prestige and prosperity.

The basic fundamental to success in any field of living renders around the good health. The health is not a single parameter of physical wellness but it includes other mental aspects also like human personality, motivation and learning ability. Without the development of physique and skill efficiency the objectives and goal of significant performance cannot be achieved.

Sports and physical education are necessary components of human development, good health, and companionship sand to have a spirit of friendly competition. This has a positive impact
on the overall development of the personality. Brilliance in sports enhances a person sense of achievement, national pride and patriotism. Sports in India include both indoor games like chess, snooker, and playing cards and outdoor games like football, cricket, badminton and tennis (Patricia A. Floyd 2003).

Supremacy in sports is aimed at with a view to exhibiting a country’s overall superiority at the international for a. sports serve well to highlight the national pride and culture. Stress is laid of sporting talent, research and training, so that the excellence on the field being with it, international name, fame and laurels to enhance a national prestige in the eyes of world. Winning or losing in sporting is construed as a nation’s victory or loss socially and politically. “Winning” has a great significance in our society. Therefore, every player or team participates in any games Sports want to win. Sports is competitive in nature and every sportsman strives to shatter the previous records, nowadays records are broken more rapidly since the sports have become prestigious aspect to prove one’s superiority, the philosophy of participating in games and sports has undergone a great change (Nick Cipriano 1988).

Games and sports keeps physically and mentally fit. They keep one away from diseases relating to heart, obesity, mental stress an sleeplessness. They instil in the player a spirit of self-confidence, self-reliance, discipline, justice, fair play and patriotism. Games provide us with recreation and enjoyment.
Games are very essential for students but they are neglected in schools. Even parents do not have high opinion about games and they want their children to devote more time to studies. India lacks funds, and proper training facilities are not provided to the players. Sports bring rich dividends to sportsmen. The government has formulated a New National Sports Policy. Effective measures should be taken to popularize, and encourage participation in games and sports.

We all are familiar with the maxim 'Health is wealth'. According to the World Health Organization, Academics serve the purpose of nourishing the mind. But a healthy mind resides in a healthy body. One can develop and maintain a healthy body by actively participating in games and sports.

The national games, teams, gymnasts and other teams from several different countries exchange visits and tour to other countries. Many coaches help different national with the development of their athletic program. Olympic competitions, Asian Games, dance festivals boxing matches, international track and field meets. International golf, tennis, skating and other tournaments provide for initiating increased social interaction and a broader discussion of people, training methods and ways of life which in turn provide interest and understanding quite beyond the “won and lost” column.

“A nation possesses the key to its future if it understanding the purpose and inner logic of its own culture. Education used intelligently is the means of obtaining that key.
Games, sports, and dances are aspects of culture which act as important cultural bridges between people of the world. International competition in games and sports has so far been amazingly free from unsportman like conduct (Arthur Moehlmen and Hoseph Roucek 1990).

**Power lifting**

Power lifting competition takes place around the globe but mostly in Canada. United States, Russia, United Kingdom, and Ukraine. In India, the sports is managed under the Indian Power lifting Federation is a member of the International power lifting Federation (IPF), the governing body of power lifting internationally. It is classified as Men Power Lifting and Women Power lifting. National Championships Events are organized here on the large platform with candidates participating in all corners of the country, but mostly from Haryana & Punjab.

Indian P/L Federation organized local and regional events, based on which a successful candidates qualifies for national events. It gives a fair opportunity to the candidates to test their performance against other candidates while giving them hope to participate in national events as top competitors are selected by Indian Power lifting Federation to participate and compete in seven IPF world championships.

Power lifting is the modified sport, modified from weightlifting. In a power lifting competition, a lifter has to clear three such as squat, Bench Press. Press and dead lift and the best performance of all the three event are added.
Keeping in view the numerous factors involved three event of sports performance, the researcher has opted to study in dept. and detail the most important area i.e. psychological and anthropometric variables which effect and predict the performance of power lifters.

**Power lifting measured through the three types of the lifting.**

**Squat:**

Start with relatively light weight during the learning stage. The bar should rest across the shoulders and back of the neck with the hands grasping it at somewhat greater than shoulder with apart. The exercise puts the bar in position by executing a clean and press and lowering the bar to the shoulders behind the neck. When very heavy weight are desired become necessary to have two assistants place the bar across the shoulder. Many weight lifting rooms are equipped with squat racks or stands to hold the bar so the training has only to stop under it, slightly to be in lifting position. The feet should be comfortably positioned usually about shoulder with apart with the body is lowered into a three quarter squat position and raised to a straight position as many times derived. In having as the legs flex and exhaling while they extend. A small part may be placed under the bar at the back of lifting neck. Greater balance will be called for it the squat is on toes. This is more difficult than the heel supported squat and shoulder be performed with comparatively light weight.
**Bench press:**

Assume a supine position on the bench with the head, shoulders and hips contacting it and the legs. Straddling it feel that on the floor, take the barbell of the track or from two assistants in a straight arm supporting position use an overhead grip and grasp the barbell slightly wider than shoulder with lower the bar to the chest old press it to the straight arm position as many time as desired. Nobody motion is permitted, so refrain from bridging and buttocks off the bench during the press. Inhaling while pressing and exhale as are locked holding the elbow wide will bring the pectoral muscles into greater use.

**Dead lift:**

Assume a crouch position with the head up and back straight. Grasp the barbell with the hand shoulder with apart. Using an alternate grip, keeping the shoulder back and the chest high, stands up to an erect position, lifting the bar bell to the thigh rest position and report. Inhale while lifting and exhale while returning to the standing position.

**Anthropometry**

Anthropometry is the study of the measurement of the human body in terms of the dimensions of bone, muscle and adipose (fat) tissue. Measures of subcutaneous adipose tissue are important because individuals with large values are reported to be at increased risks for hypertensions, adult-onset diabetes mellitus, cardiovascular disease, gallstone, arthritis, and other disease, and forms of cancer, Combined with the dietary and
related questionnaire data, and the biochaminations, anthropometric is essential and critical information needed to assist in describing the data collected from persons in the NHANES III sample (Framzen and Palmar 1934).

Actual stature, weight, and body measurements including, skin fold, girth and breadths will be collected in the MEC for purpose of assessing growth, body fat distribution, and for provision of reference data. Measurement of stature and weight will allow for a revision of the child growth charts which are based in part on data collected in NHES cycles II and III and data from the Fels Longitudinal study. Anthropometric measurements such as skin fold and circumference and bioelectrical impedance (a method used to estimate the amount of lean tissue) will allow cross-sectional analysis of the relationship between obesity and risk of disease. Therefore, many of the measurements included in NHANES III will repeat ones made in previous NHANES and HHANES so that trend analyses can be conducted. Some measures have been added to provide further information on body frame size and fat distribution, while others have been dropped because new data have determined that other measures are more informative.

Man’s interest in the body structure of his own species can be traced back to ancient civilization. History reveals how in ancient Greece, a new born was produced before a council of elders who decided whether a child may be allowed to be brought up or not. After examining the physical features and prospects of
physical development, greek sculptors, painters and poets visited the place trace and athletic contest arena to observe the beauty of human form in action and response, in order to express their impressions in their artifacts (Van Dalan et.al. 1971).

The origin of scientific approach in physical education and sports could be traced back to, who applied first time a science of anthropometric to physical education. He thus, laid the foundation for scientific approach of investigation by physical educators of that early era, and by doing so, he contributed substantially to the establishment of physical education as a science. The use of scientific method has become wide spread in sports. It is a well-established fact that practice alone cannot ensure improvement in performance because the sports movements are highly specific. The staggering number of conditional components such as reaction that might be involved in various combinations in a single sports movement makes specificity quite logical (Hitchcock Edqard (1971).

Mohan Singh (1978) has reviewed the literature on human physique and performance. He has emphasized that an individual differs significantly in his basic traits and participation in physical activities will not appreciably change his maturity, body size and physique type, these individual differences will drastically influence physical performance. Thus, these traits should be considered in judging individual potentials for participating in physical activities of different type. Evidence of this is commonplace observe the well proportional physique of
Boxers and Gymnasts, the super structure of great Basketball players, the solidarity of top flight football players, the wiriness of champion distance runners and massive built of great shot putters and discus throwers. The hurdlers have been found to have long legs and short trunk. The gymnasts are found to be short and high jumper tall. Various other studies also suggest that different body size, shapes and proportions are beneficial in different physical activities. The Japanese who are best for small built such as Gymnastics, long distance running, light class in boxing, weight lifting etc are the best. Similarly, for Americans, who are large and lean, such sports as Basketball, Volley Ball, Swimming, Long jumping and short and middle distance running are the best.

In recent past years, the selected and development of talent in sports have been gaining emphasis of course it involves integral approach of different sports science specialists. However, the role of anthropometry as a sports science in perhaps one of the most crucial in this regard. This is essential because the physique, body composition, physical growth and one’s motor development are of fundamental importance in developing the criteria of talent selections and developments in sports (Sodhi 1991).

It may be referred that every male and female begins life with morphological and functional potential which seats limits for the health and physical fitness, the body shape and composition, the bone structure, the size and conditioning of the
heart and lungs and other organs. Evidently, all the persons cannot conform to these attributes. It seems that some person possess with high potential for physical fitness and work performance, while other are not. Thus it is not possible to control all these constitutional variables as such, there would inevitably be difference in the performance of each individual. It can be inferred that the body size and the type of physique are important factors to ascribe the ultimate limit of attainment of a sportsman. It follows that certain body specifications may be conducive to efficiency in some apparatuses, while the same way be impediment in smooth and easy performance on others (Bawa, 1981).

Kang, Kaur et.al. (2005) have conducted a study which is based on the longitudinal somatometric measurement of national female Hockey Players (Senior, N=19, Junior, N=40) and data were taken at NSNIS, Patiala during the last five years, fifteen anthropometric measurements were taken. From their study they found that height, weight and mesomorphic components of international players showed significant dominance over India national players and also shows significant differences of t-test values. The senior Indians players were heavier in weight, less in height, having high percentage of body fat, low percentage of lean body mass and having lesser musculoskeletal development when compared to the international players.

Anthropometry is the measure of woman (anthro=man, pometry=measure). The study of anthropometry is the study of
human body measurements to assist in understanding human physical variations and aid in anthropological classification.

Anthropometry is the study of the dimensions and abilities of the human body. Wheeled mobility devices are used by people with mobility impairments to support their mobility in buildings and in the community, e.g. manual wheelchairs, power wheelchairs and scooters. Static anthropometry is the measurement of body sizes at rest and functional anthropometry is the measurement of abilities related to completing tasks. In the case of wheeled mobility, static anthropometry includes measurement of people and their devices. Functional anthropometry includes measurement of reaching abilities, maneuvering and other aspects of space and equipment use from a wheeled mobility device (Clarke, 1957).

Studies have shown that champions in different sports differ in their anthropometric and psychological characteristics that correspond to some extent with particular requirement of their respective games/ sports. Therefore, physique may be useful in choosing a suitable physical activity for an individual whose main objective is competition. suggested that physical characteristics have been consisted pre-requisites for players to score the top level performance in the game. The modem era is full of competitions. In each and every field, the competitions have become so intense that no one can leave anything to change (Smith (1982)1, Uppal and Rajinder (1983).
Psychological

A sport is a psycho-social activity. It has both psychological and social dimensions, besides, physical, physiological and technical aspects. Man’s interest in sports is found in all societies of the world. Most of the nations share a common interest in sports competitions, especially at certain times during the Olympic Games, where people from all nations focus their attention on that drama of competition. But the quality of the participation of the athletes and sportsmen is determined by their psychological factors. In this modern era of competition, the psychological preparation of a team is as much important as teaching the different skills of a game on the scientific lines. The teams are prepared not only to play the games, but to win the games, and for winning the gamers, it is not only the proficiency in the skills which bring victory but more important is the spirit of the players with which they play and perform the best in the competitions (Aldermen, 1974).

“Sports Psychology’ is a term used to refer to the psychological aspects of sports, physical recreation. Physical education, exercise, health, and related physical activities. The international society of Sport Psychology (ISSP) is dedicated to the development and professionalization of the field of sport psychology from a global perspective. The following ethical principles are guidelines that regulate ISSP professionals in sports psychology to act responsibly and ethically in the provision of services to insure the dignity and welfare of
individuals, athletes, professionals, volunteers, administrators, teams and the general public. These ethical standards are expressed in general team in order that they can be applied to sports psychologists engaged in varied roles. The application of the ethical standards may vary depending upon the context (i.e., country and organization) the ethical standards outlined in this statement are not exhaustive, and the fact that a conduct is not addressed by these principles does not indicate that ISSP endorses it as either ethical or unethical.

Today no young talented kid can be groomed into a star performer without assistance from different bio science such as physiology, biomechanics, and psychology, nutrition, health science etc. from simple play pranks of infants and children involving variety of motor skills, to highly complex gymnastics or tennis as Olympic sports there is some sort of continuity in such psychological variables as growth, development, learning, emotions training, motivation, achievement and performance. The interplay of innumerable observable and non-observable factors and forces that influence muscle and mind preparation for performance excellence. Makes sports a difficult psycho-social phenomenon to deal with by a single tribe of individuals called coaches (Dr. M. L. Kamlesh, 1996).

The application of the psychological principles of the improvement of the performance in sports has received greater attention in these days. There are certain accepted psychological principles which have to be applied, so that the athletes and
players are able to show their best in their performances. Coaches, physical educational and spots scientists have always expressed a great need to know more about those psychological principles, which are helpful in improving the motor skills of the players (Dr. Agyajit Singh, 1992).

Psychology as a behavior science, had made a great contribution to the efforts of coaches, trainers and physical education teachers to improve the standard in sports.

Psychological assessment and preparation of athletes have been undertaken and publicized in on several European countries. The authors write, it is clear that coaches must be familiar with psychology as they are with team strategies and techniques.

The involvement of psychology in sports has largely arisen from a traditional interest in areas such as emotional motivation and individual personality and psychology. The teacher therefore should value the personal experience of the athletes and give them due importance in training programme to drive the maximum benefit out of it (Dr. Llewelly and Blucker (1982)5 observe that same 1979).

The specialized field of sports psychology has developed rapidly in recent years. The importance of sport psychological as an integral part of the coaching and health care teams is widely recognized. Sports psychology can teach skills to help athletes enhance their learning process and motor skills, cope with competitive pressures fine-tune the level of awareness needed for
optimal performance, and stay focused amid the many
distraction of team travel and in the competitive environment.
Psychological training should be an integral part of an athlete’s
holistic training process, carried out in conjunction effort among
the coach, the sport psychological, and the athlete; however, a
knowledgeable and interested coach can learn basic
psychological skills and impart them to the athlete, especially
during actual practice (Martin MS 2007).

The ability of a person to perform in any athletic event is
obviously limited to sports person’s physical characteristics. But
beyond these broad restrictions. Psychological factors play a
deceive role. May coaches and physiologists believe that future
records will be broken. Primarily because of increased attention
to the psychological features of the personality more than the
physiological and mechanic aspects of performance.

**Achievement motivation**

Several studies have reported higher level of achievement
motivation for female athletes than the general female
population (Dayries & Grimm, 1970; Neal, 1963; Plummer,
1969). However, while the tendencies are clear, the result are not
always statistically and significant. Other studies have measured
the relationship between level of achievement motivation and
success in sports. Best result have been reported hence sports
scientific measured as used to test achievement motivation
(Daugert, 1966) and when both need to achieve and fear of
failure are assessed (Roberts, 1975; Yeary, 1971) in these case,
results are in the predicted direction, level of achievement motives is positively related to success.

Roberts, (1975)

Recently Zender (1974) expressed this surprise in distinguishing between group and individual achievement motivation. His experiments and those of his co-workers demonstrated that individuals may work hard to achieve success for a group when they may not have been scored as processing high achievement motivation at an individual level. Zender (1974)

Personality

In recent years, there has been an increasing amount of attention to the inter relationships of personality variables and psychological factors with athletic performance. It is assumed that the physical abilities of an individual are related to his personality structure, because the environment in which physical abilities are displayed (i.e. games & sports) constitutes an ideal setting for the development of desirable personality characteristics such as sociability, emotional stability, confidence, cooperativeness, personal adjustment and extraversion which are very essential for increasing the athletic ability of the players and sportsmen. (Samiran Charaborty, 1998)

According to Alderman (1974), Eyesencks view can be interpreted as indicating that extraverts are low on excitation and high on inhibition, which introverts being the opposite.
Athletes, then would react quite differently to a rise in arousal level from competitive circumstances depending on whether or not they are mainly extraverts or introverts. For example, on athlete, high on extraversion would have more trouble but would be better able to handle and channel arousal later in the game because of strong inhibitory mechanism. Alderman (1974)

Self Evaluation

Developing the process is an essential resource if you are involved in evaluating physical education in schools.


Through the self evaluation procedure, a program conducts a systematic and thorough examination of all its components in light of its started mission. Such an evaluation allows a program to determine self evaluation goals and objectives through careful evaluation of input obtained from individual and group directly and indirectly involved with the program.

The content and the resulting activities are closely linked to government criteria for high-quality physical education.

Self-evaluation in Physical Education: Developing the process can be used as a stand-alone CPD resource for schools, higher education institutions and LEAs or can be used in conjunction with a national CPD course that further develops
self-evaluation skills, where opportunities will be available for accreditation.

**afPE, Gillian Salter-Smith & John Pearson (2006)**

Developed in response to the need for a better understanding of how to measure and evaluate physical skill performance in an economical and practical manner, this book provides data which should augment the physical educator’s evaluation skills. The objectives were to develop within the prospective physical education teacher a greater understanding and appreciation of the need for and application of tests and measurements in the evaluation process (some basic statistical techniques are discussed); to offer several tests in each of fifteen subject areas which can be used by the average physical education teacher in a typical school situation; to discuss the various qualities and present brief summaries of pertinent research findings; and to identify problems that arise in isolating and measuring the particular abilities. The tests included were selected from those already published or were developed and modified by the authors. Extensive bibliographies support each of the twenty-two chapters and normative data for the measurement of particular physical abilities is provided. (PR)


**Statement of the Problem**

The purpose of the study is to determine the relationship of power lifting performance of women with anthropometric and psychological variables and also to develop regression equitation
for the prediction of performance of women power lifters and hence the problem is stated as fellow:

“PREDICTION OF PERFORMANCE OF WOMEN POWER LIFTERS IN RELATION TO THEIR PSYCHOLOGICAL AND ANTHROPOMETRIC VARIABLES.

Objectives of the Study

1. To investigate the relationship between selected anthropometric variables and power lifting performance of women.

2. To determine the relationship between power lifting performance of women and psychological variables.

3. To set up the regression equation for predication of power lifting performance of women on the basis of anthropometric and psychological variables.

Hypotheses

Keeping in view the objectives and the related literature, the following hypotheses were formulated.

• There would exist significant correlations between anthropometric variables and power lifting performance of women.

• There would exist significant correlations between psychological variables and power lifting performance of women.
• The power lifting performance of women could optimally be predicted on the basis of anthropometric and psychological variables.

**Delimitations**

• The study was delimited to include three psychological variables, i.e. Self-Evaluation, Personality and Sports Achievement Motivation and selected anthropometrics variables.

• The study consisted of 120 women power lifters of age range of 18 to 25 years.

• The anthropometric variables were measured with the help of anthropometric rod, steel tape, vernier, caliper and skin fold caliper.

• Women Power lifting performance was measured by three events such as squad, bench press and dead lifts and the best performance of all the three events were recorded.

**Limitations**

1. The subjects had different diet habits and belonged to different socio-economic status.

2. The subjects belonged to different geographical regions and different racial groups of India.

3. No motivational technique was used to encourage the subjects.

4. The data was collected throughout the year and hence the seasonal variations were minimized.
DEFINITION OF THE TECHNICAL TERMS

The various technical terms which were used in present study have been defined as under:

**Kinanthropometry**

Kinanthropometry is defined as the study of human size, shape proportion, composition, maturation, and gross functions, in order to understand growth, exercise, performance, and nutrition.

It is a scientific discipline that is concerned with the measurement of individual is a variety of morphological perspectives, its applications to movement and those factors which influence movement, including: components of body build, body measurement, proportions, composition, shape and maturation; motor abilities and cardio respiratory capacities; physical activity including recreational activity as well as highly specialized sports performance. The predominant focus is upon obtaining detailed measurement upon the body composition of a given person.

Kinanthropometry is the interface between anatomy and movement. It is the applications of a series of measurement made on the body and from these we can use the data that we gather directly or perform calculations using the data to produce various indices and body composition predications and to measure and describe physique.
Kinanthropometry is a scientific specialization dealing with the measurement of persons in a variety of morphological perspectives, its application to movement and those factors which influence movement, including: components of body builds, body measurement, propositions, compositions, shape and maturation; motor abilities and cardio respiratory capacities; physical activity including recreational activity as well as highly specialized sports performance.

Anthropometry is a branched of anthropology that is concerned with the taking of measurement commonly used in association of performance with body building. Anthropometry measurements are dimensions of structure of human body taken at specific sites to give measure of length, girth and width (Mathews, 1978)

Anthropometry is the measurement of man (living or dead) and consists primarily in the measurement of the dimensions of the body. (Carter 1972)

Anthropometry variables are dimensions of structure of human body taken at specific sites to give measure of length, girth and width (Mathews, 1978)

**ANTHROPOMETRIC VARIABLES MEASUREMENTS**

**Leaner Measurements**

1. Height
2. Trunk length
3. Total Arm length
4. Upper Arm Length
5. Fore Arm Length
6. Leg Length
7. Thigh Length
8. Lower Leg Length
9. Foot Length

**BODY DIAMETER MEASUREMENTS**
10. Shoulder Diameter
11. Hip Diameter
12. Knee Diameter
13. Chest Diameter
14. Wrist Diameter

**GIRTH MEASUREMENTS**
15. Thigh
16. Arm
17. Abdomen
18. Shoulder
19. Chest
20. Hip

**SKIN FOLD MEASUREMENTS**
21. Biceps
22. Triceps
23. Sub-scapular
Psychological variables

Sports Achievement Motivation:

Sport achievement motivation is an effective arousal state directing behavior in an achievement oriented activity cognitively appraised potentially satisfying.

It is an athlete’s pre-disposition to approach or avoid a competitive situation. (M.L. Kamlesh, 2006)

Personality:

Personality is the individual’s characteristic reaction to social stimulate and the quality of his adaptation to the social fitness of his environment.

Self-Evaluation:

Self-knowledge is a useful think. The better you understanding yourself, the better the choice we can make in many context and the more accurately we can predict our reactions to many events and situations. In addition, several theories of personality suggest that the more accurate his self evaluation, the better the athlete performance (Kutty S, 1994)
SIGNIFICANCE OF THE STUDY

1. The result of the study might reveal psychological characteristics i.e. Personality, Achievement Motivation, of different level weight category of the Women Power lifters.
2. The study might help coaches to analyze their coaching programme related to the psychology of the power lifters.
3. This study would help to reveal the knowledge of psychological characteristics which may change the preprational process of Power lifters.
4. The result of study might help the coaches and trainers of the game to develop suitable activities for the players.
5. The results might also help the coaches and physical educators, selectors and experts by providing them the information on the selected psychological characteristics which the player requires for better achievement in power lifting performance.
6. The results and findings of this study might provide the criteria for selecting potential players in National Level women power lifters.
7. In future due consideration may be given by the selectors to the psychological variables which are most relevant to the higher performance.
8. Once the causes of psychological problems in the athletes are understood by the coach with the help of sports psychologists, various kinds of remedial techniques may be
applied and help may be rendered to overcome which would affect their performance.

9. The quality of sportsmen can be assessed by using the results of the study as screening tools.

10. This study may motivate others to take up similar study so that sportsmen in India may be become more and more scientific and the result oriented.