Chapter - I

INTRODUCTION

The world of games and sports is ever expanding with intensity of competition, and enlarging scientific studies of human movement. Sport is dynamic in nature and progressive in outlook. It is not confined to "what has been", but it target is to fix new targets.\(^1\)

The field of Physical Education and Sports are international disciplines, because they develop international understanding and universal brotherhood in the present politically conflicting lives. Sport movements are considered as one of the major adhesive forces for developing world peace. It may also serve as one of the effective means in solidifying national integration and developing national character. Sport has become the media of international relationship of the countries.\(^2\)

Physical education, as a part of human education has always existed in the human society in one form or other. Since time immemorial, even before the dawn of civilization and culture, physical exercise has been a very important aspect of human existence. In the primitive societies the necessity for survival i.e. protection against hostile environment and wild beasts, motivated man to keep himself physically fit.

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and strong enough in comparison to stronger forces of nature, his life was hard most of his working hours were devoted for hunting animals for food. In those days there were no machines to help man in his work. That is way he has to depend solely upon his physical powers and physical skill. He considered his body to his prize possession and its maintenance and protection were his primary concern. Survival of the fittest was the order of the day. Man lived in such a state for thousands of years. There was neither any organization nor system. Most acts were learnt by the young generation by virtue of imitation rather than instruction. Experience latter gave rise to individualized instruction as a tradition from father to son and from mother to daughter gradually leading to enforcement of hard discipline and rigorous training.

Sports and games are no longer just sports games. They are big business all over the world. The boom in Prize Money and the practice of internationally renowned sportsman signing on the product has made sports, big business. Sports lover/shall over the World are happy that reputed sportsman are no longer obliged to follow a regime of high thinking and low living.

Today, sports have become a part and parcel of our culture. It is being influenced and does influence all our social institutions including

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education, economics, art, politics, law, mass-communication and even
international diplomacy\textsuperscript{4}. In fact, its scope is awesome.

Sports by their nature are enjoyable, challenging and absorbing,
and require a certain amount of skills and physical condition\textsuperscript{5}.

In the order of human values conquest in field of sports hold a
unique plane. It is the combination of success, victory, triumph and
domination of mover other team mates and friends. The sublimity of
competition is in the loser’s acclaim for the winners, which along with the
friends and shake acknowledge both defeat and triumph\textsuperscript{6}.

Change and challenges are the twin laws of nature as they affect
every aspect of human life. Changes are taking place all around and
because of these changes new challenges present them selves. Man is
constantly trying to meet these challenges and excel his previous
performance every time\textsuperscript{7}.

Technology covers all aspects of life and sports in no exception to it. Sports science has enabled modern youth to developed physical

\textsuperscript{4} Johan W. Lay O’ McPharson and Gerald Kenyon, \textit{Sports and Social System}

\textsuperscript{5} Denish Seten et al, \textit{Basic Book of Sports} (England Cliffs, N.J. Prentice Hall,

\textsuperscript{6} German Rieckhoff, \textit{The Purpose of Sports}, Olympic Review 118 August
1977:471.

\textsuperscript{7} M. S. Panner, "\textit{Course in Physical Fitness}" , Journal of Physical Education
capacitive beyond any time imagined. Sports have become highly competitive and records are being broken with greater rapidity.

The Netball game invented by Dr. Naismith was first time introduced in the year 1895, it known as women's basketball there well no printed rules and no court lives, boundaries.

Two year later the game was first played outdoors; the English students introduced rings instead of baskets, a larger ball and divided the ground into three equal playing area known as thirds of the court. The first recorded rules were published in England in 1901.

Netball was recognized by the international Olympic committee in 1993 and gained permanent recognition in 1995. The first Asian championship was held at Kualalumpur in 1985. The first Asian championship was held at New Delhi in 1990. The game was introduced in India by Dr. Henry Buck in 1920 at YMCA College of Physical Education at Madras. The netball federation of India was formed in 1978 and the first national championship was held in 1979 at Jind, Haryana.

Now a day the game is popularizing day by day in India keeping the popularizing of the game, it was also introduced in college and university level than by All Indian interuniversity championship for men.

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and women was organized at Lakshmibai National Institute of Physical Education Gwalior in the year 2001 as a demonstration even. After that it becomes a regular features or event of intervarsity championship which was being organized at GNDU Amritsar for the 2002-03 and 2003-04.

Netball occupies a significant place among all other games and sports. In some respects it is unique as a sport. It is an ideal sport and a grand energetic game, giving enjoyment and pleasure, determining fitness and dedication. It requires physical and metal attitudes to be on top geol to tackle all eventualities in the match. In order to achieve optimum performance in game and sports, physical education teachers, coaches and trainees has to understand about all these factors. That contributes to overall performance, these factors one physical fitness, technical and tactical level of sportsman, physiological fitness, physiological make up and finally anthropometrics measurement of the performer and the trainer. Teachers or coaches must train the performer through there aspects of training.

Physical fitness is the ability to carry out daily tasks with vigor and alertness without undue fatigue and ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies. These imply that fitness in necessary for during any work and at the same time they very in individuals and on the other hand it vary time to time in the same person. The continuously changing life process creates different need and emphasis for different individuals, as they grow older. There is an
optimum level of fitness for different age groups for better undue standing of physical fitness the components of physical fitness must be known. The components of physical fitness as listed by Larson and Yocomare: Resistance to diseases, muscular strength, muscular power, muscular endurance, cardiovascular endurance, flexibility, speed, agility, coordination, balance and accuracy.

Today the preparation of an athlete for top notch achievement is a completely dynamic state characterized by a high level of physical and physiological efficiency and degree of perfection of the necessary skills and knowledge, technique and tactical preparation. An athlete arrives at this stage only as a result of appropriate training. Thus, athletes training today are a multisided process of expedient use of aggregate factor so as to influence the development of an athlete and ensure the necessary level of participation\(^{11}\).

The success or failure of an individual athlete depends on the blending of physical ability, conditioning, training mental preparation and the ability to perform well under pressure. It is not uncommon to hear coaches and athlete express disbelief on how poorly their team performed against a certain opponent or how they field in the crucial situation\(^{12}\).


Athletes for superior performance in any sports are selected on the basis of his physical structure and body size, which has proved to be appropriate for high performance in the given sports\textsuperscript{13}.

After an intensive study of anthropometric measures of Olympic athletes, Gray, Levine and Lindsay Carter concluded that level of performance in a particular event demand a particular type of body size and shape, other aspect being similar, they established high relationship between structure of an athlete and the specific task (event) in which he excelled\textsuperscript{14}.

Anthropometrics measurements were central concerns of the fist phase of the scientific era of measurements, which have been began in the 1860's current interest in anthropometrics measurements focus in three areas, girth measures, body type and body composition. The assess of such measures include classification, prediction of growth patterns and prediction of success in motor activities as well as assessment of ability\textsuperscript{15}.

Various sports seem to put varying intensity and amount of physical stress on the players depending open the area of the playfield, fundamental skills of running, jumping, throwing etc. involve in sustained


\textsuperscript{15} Allen Phillips and James E. Harnok, \textit{Measurement and Evaluation in Physical Education}, (New York: John Willey & Sons, 1979), P. 223
movement or movement interrupted by brief periods of rest etc. obviously, they should make different influence on the fitness of the players.

Start training a child, concentrating on those fitness factor which are supposed to play a significant role in the future performance of a player such as flexibility, agility, balance, cardio-vascular endurance, strength, reaction time, power, etc. (General motor ability qualities) which are appropriate for a specific age group.

The raising of the fitness standards is the key aim for any player who wants to become better in terms of becoming a more complete player as well as wanting to climb the pyramid of success. These are necessary standards for him which arises from the demands of the game.

Physical fitness is an inseparable part of sports performance and achievements. The quality of its utilization value is directly proportional to the level of performance. That means the greater the level of fitness, the greater the ability of a person to attain higher levels of performance\(^{16}\).

Today there has been a more systematic search for spotting talent and in determining a combination of factors responsible for ultimate success. The sport scientists, who are working day and night with top coaches in the sports concerned, single out the basic qualities which might be the performance limiting factors. It is, therefore, necessary to find individuals with these attributions and characteristics using a series of tests at a very young age. But, perhaps, the major obstacle in expanding

our knowledge on prediction method is the need for longitudinal studies ideally starting in childhood and continuing through adolescence to adulthood, which is in fact difficult to continue.

There are numerous factors which are responsible for performance of sportsmen and women. The physique and the body composition including the size, shape and form are known to play a significant role in this regard. Therefore, it is evident that the body builds. popularly known as "Physiognomy" gets primary emphasise at the time of selection of players concerned to sports where superior competitions is involved. Hence, the trend of physical education, games and sports are to assess the related components as a part of the total body build and size of each player and also to interpret how far these components are helpful to perform in games and sports under competitive condition.\(^\text{17}\)

For the physiological system of the body to be fit, the system must function well enough to support the scientific activity that the individual is performing. Moreover, different activities make different demands upon the organism with respect to circulatory, respiratory, metabolic, neurological and temperature-regulating functions. Physiological fitness is specific to activity. Physiological systems are highly adaptable to exercise. Each task requires effective functioning for the appropriate system.\(^\text{18}\)


The primary work of exercise physiologist is to describe the change that occur in organ and organism function as a result of single (acute) or repeated (Chronic) dosage of exercise and to explain how those functional changes occur. The first part of this task, i.e. describing changes brought on by exercise, is much nearer completion than the second explaining the mechanism that produce changes.\(^{19}\)

Today the preparation of an athlete for achievement is a complex dynamic state, characterised by high level of physical, physiological and psychological efficiency and the degree of perfection of the necessary skill and knowledge, techniques and tactical preparation. Many other factors are also brought into action in this preparation means of rehabilitating strength after loads, special nutrition, organisation of general regime i(-in accordance with the conditions of sports activity etc. Thus, athlete's training today is multi-sided process of expedient use of aggregate factors (means, methods and conditions). So, as to influence the development of an athlete and ensure the necessary level of preparation.\(^{20}\)

There are numerous studies which have been conducted in this field out side the country but in India no attempts have been made in this direction. Hence, there is a need to conduct an elaborate study on Indian Netball players of different levels.


Statement of the Problem

The purpose of this study was to know about the physical and physiological profiles of different level of Netball players.

Delimitations

1. The study was delimited to the male Netball players of 17-35 years of age consisting of three groups.
   i. Beginners (College level)
   ii. Intermediate (University level)
   iii. Advanced (National level)

2. Study was further delimited to the following physical and physiological variables:

   Physical Variables

   a) Standing height
   b) Sitting height
   c) Leg length
   d) Upper arm length
   e) Fore arm length
   f) Hand length
   g) Body composition
Physiological Variables

a) Resting Pulse Rate  
b) Resting Blood Pressure  
c) Vital Capacity  
d) Resting Respiratory Rate  
e) Maximum Breath Holding Time  
f) Air-flow Rate  
g) Cardio-vascular Efficiency

Limitations

1. Non availability of sophisticated instrument was considered as limitation of this study.

2. Rest, sleep, exercises and dietary habits etc. were again limitation of this study.

Definition and Explanation of the Terms

Physical and Physiological Profiles

Physical and Physiological Profiles may be defined as physical and physiological characteristics of an individual including various factors which involved in tasks performance of an individual.
Resting Heart Rate

Resting heart rate means expansion and elongation of the arterial walls passively produce by the pressure changes during systole and diastole of the ventricles.\textsuperscript{21}

Resting Blood Pressure

The driving force that move blood through the circulatory system when the subject in resting condition. Systolic pressure is obtained when the blood is ejected into the arteries; diastolic pressure is obtained when the blood drains from the arteries.\textsuperscript{22}

Vital Capacity

The vital capacity is the amount of air expelled from the lungs after a deep inspiration.\textsuperscript{23}

Chatterjee\textsuperscript{24} has defined vital capacity as the volume of air that can be breathed out by force expiration after taking forced inspiration.

\textsuperscript{21} C.C. Chatterjee, \textit{Human Physiology} 6\textsuperscript{th} ed. (Calcutta: Books and Allied Private) p.178.

\textsuperscript{22} Fox and Mathews, \textit{The Physiological Basis of Physical Education and Athletics}, p. 663.

\textsuperscript{23} Roper, \textit{Pocket Medical Dictionary}, p.320.

\textsuperscript{24} Chatterjee, p.205.
Resting Respiratory Rate

Respiration is the act or function of breathing, by using the diaphragm and abdominal muscles.\textsuperscript{25}

Maximum Breath Holding Time

As defined by Moses, breath holding time is the duration of time, through which one can hold his breath without inhaling or exhaling.\textsuperscript{26}

Cardio-Vascular Efficiency

Cardio-vascular Efficiency is an important aspect which is concerned with closed tubes and pump, which assists to transport essential elements throughout the body, and in the process, collects waste materials generated by the body's metabolic activity. In addition to the transportation of nutrients and oxygen to the cells, it also carries: (a) the water and electrolytes required to maintain homeostasis; (b) hormones and enzymes which control and integrate widespread body function; and (c) anti-bodies which protect the body from invading pathogens (disease germs).\textsuperscript{27}

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Significance of the Study

1. The present study may indicate some of the Physical and physiological variables as good predictors for the selection of Netball players.

2. Result of this study will help as the basis in the training methods applicable to the athletes and the player in the various games and sports.

3. Result of this study will be helpful for the physical education teachers, coaches and athletes for the enhancement of knowledge of Netball.

4. The study might motivate the Netball lovers and scholar to take up similar studies so that game might become more scientific in India.