

Chapter -I
INTRODUCTION

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Sports and games are looked upon as avenues for achieving and establishing supremacy, prestigious social recognition. To achieve this recognition, one requires extra-ordinary talent, skills, sustained interest, determination, training and so on.

Science applied to sports has enabled modern youth to develop physical capacities beyond imagination. Professionalism has entered in today's competitive sports demanding the athletes of a very high level of performance. Because of increased popularity, mass participation and high competition level, the sportspersons preparations are not just left with only training or facilities. The whole performance structure in sports has become a dynamic stage for many research and developments, which facilitated sports professionals to enact and introduce many new ideas both in training and team making. To name few; training methods, anthropometric assessments to describe the structural suitability, physiological investigations as a functional inventory, motor performances to establish the background of innate potentialities and so on. Sports psychology is also in forefront to assess the inner strength of mind and its toughness while in training and competition.

Ever since the first modern Olympic games, there has been growing interest among masses towards sports performance has captured attention of wide segment of the population throughout the world. One of the challenges being faced by the coaches, physical education teachers and trainers, is to locate and find out methods to optimize sports performance. It has been found that many factors influence sports performance.

Physical education and sport, being an integral part of education have also experienced the impact of scientific advancements. Now, the sportsmen have been able to give outstanding performance because of involvement of new scientifically substantiated training methods and means of execution of sport exercises such as sports techniques and tactics, improvement of sports wear and equipments, as well as other components and conditions of the system of sports training.¹

It is evident in this modern world that, sports and games are no more only an area of play and pass time; indeed it is an active area of new findings and experimentations, with an aim to enhance the performance of each sports person.

Around the world, in third world countries, education sector takes

¹ John T. Powell, "Development of Olympic Athletes" Olympic Review, No. 193 (November 1983):752.

central stage in the society to develop the sports among youth. Schools identifies talented one, and starts grooming them. Where as universities are the store houses of classic sports potentialities.

While handling with care, the sports persons in the university level, many sensitive and practical issues are to be address frequently. The concern may ranges from very selection of sportsperson in the team to the training, planning, managing and so on. The managerial demands are unique and different in different sports and games. More we know about the sports person more the advantageous result is.

It is not a surprise to note that, universities of third world are producing world class sports persons; it could be possible only through thorough understanding of their demands with specificity of the sports and games.

Sports, games and physical education activities are looked upon as avenues for achieving and establishing supremacy, prestigious social recognition and etcetera. To achieve this recognition, one requires extraordinary talent, skills, sustained interest, determination, training and so on.

By definition, a sportsman is one who challenges himself to show superior ability in tasks which do not bestow any benefit other than the

spiritual satisfaction of achieving something which was not achievable till then by the individual concerned.

Today in the modern competitive era every sports-man is in a race to excel others, and competition has become a fundamental mode of human expression as it is one of the very important functions by which National and international recognition and prestige is gained. From its very simple form, sports have emerged into highly organized activity of human society and it has become a complex social and cultural phenomenon.

Winning laurels in International sports has become a prestige issue linked with political systems and ideologies and as such nations compete with others to produce top class sportsman for international competitions. For this research to identify the factors that help in achieving level of skill which a player can attain through proper coaching and evaluation.

Understanding the demand of every sports and games for optimum performance is a basic skill of university level coach and administrators. It is also vital to know the demanded abilities in terms of structural, functional and motor and psych dimensions. There are many scholarly works to depict the demand of many individual and team games on sports

persons engage them self in those events. This facilitated the professionals to contribute more effectively in terms of team operations. Further more; it is necessary to know the status of various performance parameters among different game players and their similarities and difference from each other.

Different activities require different levels of fitness. That means, to say, that different activities demand different elements or components of physical and motor fitness, motor abilities, athletic ability, and so on.

Most of the games and sports activities, which originated as leisure pursuits and recreational activities have acquired a strong competitive and challenging form. Technological and scientific advancement has influenced the mode of selection, screening and training the athletes in various sports activities.

What contributes to success in a given sport? Aerobic capacity, the ability to use anaerobic reserves, balance, mobility, agility, speed, power (realizing that there is no second class level in the body's make up), endurance of the repetitive and sustained type, skill, technique, intelligence, hand eye coordination, acute hearing, excellent eye sight, peripheral vision, reaction time, experience, perceptual ability, (anticipation) large hands, motivation, dedication, adequate rest, food,

sleep, preparation, economic security, emotional stability, emotional support from family and friends, and countless other psychological reinforcements and physiological factors cohere to aid achievement. Naturally all the athletes do not have all these advantages at their disposal.

In today's advanced world, the research and product oriented sports authorities throughout the world would very much prefer to investigate, analyze and find out the various components desired to be developed in young athlete for various sports competitions from school level to international level.

Under modern conditions especially related to training for sports and games with a focus on superior performance, adequate emphasis is given for the physical structure and body builds of each individual participant for each sports or games. Therefore, it is very evident that the body build properly known as 'physiognomy' gets primary emphasis at the time of selection of players for concerned sports where superior competition is involved. Hence, the trend in the field of games, sports and physical education is to assess the related components scientifically as a part of the total body build and size of each players and also to interpret how far these components are helpful in the performance in games and sports under competitive conditions.

At each Olympic games and international competitions, the standard of performance is raised and new records are set for human skills and endurance. Partially it is due to the improvement in sports facilities and equipments but mainly due to the development of modern training methods and adaptation of sports training on more scientific lines. Sport training has become more efficient and effective as a result of the applied and fundamental research in the area of mechanics, physiology, psychology, nutrition and sports medicine. It also aims at understanding and assessing the athlete in totality. Competition at all levels are so keen that no coach or player can afford to neglect the application of scientific training principles that can give him an advantage over or at least keep him in pace with his opponent.²

Traditionally sports have been conceived as a physical endeavour. However, as the scientists began to explore this area, it came to be known as psycho-social activity and not merely the physical one. In other words, it is the interplay of talent, training and other factors like, physical, physiological, anthropometrical and psychological which considerably contribute to the top performance.

The analysis of the highest achievers in any sports shows that

² Harri Dhetrich, Principles of Sports Training, (Berlin: Sport Verlag, 1982), p.1.

excellence in sports and games are the product of different physical, physiological, psychological and sociological features. There are many detailed studies regarding the specific characteristics of athletes participating in wide variety of sports. But it is not much clear how far each of these components contribute to the achievement of top level performance.

Physiological systems are highly adoptable to exercise. Each task has major physiological components and fitness, for the task requires effective functioning of the appropriate system. Involvement in systematic programme of training brings about desirable changes in the physical and physiological factors, contributing to the development of functional ability which enhances the athlete's performance in his sport.³

Balsevitch and Siris⁴ have pointed out that the Russians are strongly guided by the anthropometric data derived from statistics of large number of world champions. The knowledge of Science is easy to formulate but too difficult to practice. The system is quite complicated in this regard. However, a theoretical base-line once formulated can help

³ Larence E. Morehouse and Augustus T. Miller, Physiology of Exercise (Saint Louis: The C.V. Mosby Co., 1976), p.225.

⁴ V. Balsevitch and S. Siris, "Die Lehc der Leichaathletic" English Version Track Technique, No.42 (January 1970): 342 Cited by H.S. Sodhi and L.S. Sidhu, Physique and Selection of Sportsman (Patiala: Punjab Publishing House, 1984), p. 173-174.

to add to the knowledge by further analysis and interpretations and therefore it seems reasonable to work on this system. The physique is however not the only instrument. There are combinations of factors which may help us to reach some useful conclusions. For example if an athlete possesses the required body size of a middle and long distance runner, but less of aerobic capacity, then it seems logical for a coach or a trainer to decide his or her future. Therefore we can depend on such tests that may be formulated by understanding the structure of performance in a sport.

One aspect that is emphasized and has become increasingly vital during the recent years is the study of psychological characteristics that limit the performance of an individual in a given sport during high level competition. The personality of an individual is formed early in life and it can be modified by late experience, psychologists recognize that participation in games and sports satisfy such basic needs, as recognition, belonging, self respect and feeling achievement as well as provide a wholesome outlet for the drive of physical activity and creativity. These are desirable psychological traits as they help in moulding socially acceptable personality.⁵

⁵ Charles A. Bucher, Foundation of Physical Education, (Saint Louis; The C.V. Mosby Co., 1972), p.413.

To sustain the competitive tension and to reach the international competitive sport standards, one has to be well equipped in all aspect of a particular game. Such players, therefore, have to be physically, physiologically, psychologically and technically fit.

There is ample number of research work carried out to reveal various parameters of players in different games, but on university level players, the research studies are very scanty.

To explain the qualitative frames which are specific to various games and sports in terms of structural and functional and skill level the investigations are very scanty. In the field of comparative researches on various performances factors, such as anthropometry, psycho-somatic and psycho-physiological and skill related are not much heard in our society. It is vital to understand these factors in depth, before selection of sports persons in competitive preparations, failing which chances of optimizing the performance is considerably less. Most of our universities are not in access to these types of literatures.

Hence, it is the need of the present hour to conduct research studies to understand various factors in terms of physique, motor

performance, physiological and psychological variables of university intercollegiate level team game players. This was the basic motivational factor for the research scholar to take up a research topic on university intercollegiate level players to understand the physical growth, motor performance, physiological and psychological variables status to be a winner in Football, Basketball, Volleyball and Kabaddi games.

STATEMENT OF THE PROBLEM

The purpose of the study was to compare and analyse the variations in selected anthropometric, motor performance, physiological and psychological variables among Football, Basketball, Volleyball and Kabaddi players of Kuvempu University Intercollegiate level medal winning team players.

DELIMITATIONS

- 1) The study was delimited to Kuvempu University Inter-Collegiate level medal winning team players of Football, Basket ball, Volley ball and Kabaddi games.
- 2) The study was further delimited to male players.
- 3) The study was further delimited to a sample of 30 players from each of four selected game.

4) The study was delimited to the following anthropometric measurements, motor performances, physiological and psychological variables. They are:

a. Anthropometric Measurements

- *Height*
- *Weight*
- *Upper arm girth*
- *Chest girth*
- *Thigh girth*
- *Calf girth*

b. Motor performance variables:

- *Strength*
- *Speed*
- *Agility*
- *power*
- *Endurance*

c. Physiological Variables:

- *Resting Pulse rate*
- *Blood pressure*
- *Vital Capacity*
- *Body fat percentage*

d. Psychological Variables:

- *Sports achievement motivation*
- *Sports competition anxiety*

LIMITATIONS

1. All the tests, which were used for the collection of data except body fat percentage estimation tests and psychological variables, were field tests.
2. Body fat percentage was assessed through indirect method that is, the skin fold measurement method.
3. Non availability of sophisticated instruments for measuring the body fat percentage, motor performances and physiological variables were considered as one of the limitations for the study.
4. Factors such as socio-economic status, dietary habits and geographical variations etc. which might have affected the morphological variables were not taken into consideration, which was considered as another limitation.
5. No special motivational techniques were used while conducting the tests, was considered another limitation.

HYPOTHESES

For the purpose of the study the following hypotheses were formulated

Hypothesis 1: There would not be any significant difference in the anthropometric measurements namely height, weight, upper arm

girth, chest girth, thigh girth and calf girth of Football, Basketball, Volleyball and Kabaddi players of Kuvempu University intercollegiate level.

Hypothesis 2: There would not be any significant difference in the motor performance namely strength, speed, agility, power and endurance among Football, Basketball, Volleyball and Kabaddi players of Kuvempu University intercollegiate level.

Hypothesis 3: There would not be any significant difference in the physiological variables namely resting pulse rate, blood pressure, vital capacity and body fat percentage among Football, Basketball, Volleyball and Kabaddi players of Kuvempu University intercollegiate level.

Hypothesis 4: There would not be any significant difference in the psychological variables namely sports achievement motivation level and sports competition anxiety level among Football, Basketball, Volleyball and Kabaddi players of Kuvempu University intercollegiate level.

SIGNIFICANCE OF THE STUDY

This study may contribute to the field of knowledge in the following ways:

1. This study may be helpful in understanding the status of anthropometric measurements in selected team game players, which in turn formulates the knowledge of physique, shape and size demanded for the selected games.
2. This study may be helpful in selecting the players for the team games under study, where demand of anthropometry is a major issue to address.
3. This study may be helpful in understanding the motor performance variables which decides the player's potentialities at university intercollegiate level. This knowledge in turn helps the physical education directors and coaches to chalk out appropriate programmes for their needs.
4. This study may bring out information about the vital physiological variables status among selected team games players of university intercollegiate level. This knowledge reflects the functional status of the players, with which, a comprehensive and effective training loads can be formulated.
5. The study may help the professionals for the screening, assessing and classifying the players.

DEFINITION OF TERMS

Inter-Collegiate Players

Players who are selected to represent the college team in the inter-collegiate tournament.

Team Games

Games in which a specific number of players compete collectively against equal number of opponents.

Anthropometric Variables

Anthropometric variables are dimensions of the structure of the human body taken at specific sites to give measures of length, girth and width.

Motor Performance Variables

Motor performance variables refer to the player's status on those components, which are essential for efficient functioning in the psychomotor domain. These components are performance oriented and are dependent upon functioning of different system of the body in an integral manner.

Strength

Strength is the force that a muscle or muscle group can exert against resistance in one maximal effort.⁶

Speed

Speed may be defined as “rapidity with which successive movements of the same kind are performed.”⁷

According to Barrow and McGee⁸ it is the capacity of the individual to perform successive movements of the same pattern at the fastest rate.

Agility

It is the skill related motor ability, which enables the individual to rapidly change body position and direction precise manner.

Agility is the ability to change both rapidly and accurately the

⁶ Donald K. Mathew and E.L. Fox, The Physiological Basis of Physical Education and Athletics, (Philadelphia: W.B. Saunders Co., 1976), p.554.

⁷ H. Harrison Clarke ed. “Basic Understanding of Physical fitness”, Physical Fitness Research Digest, No. 1 (July 1971): 2.

⁸ H.M. Barrow and R. McGee, A Practical Approach to Measurement in Physical Education, (London: Henry Kimpton Publishers, 1979), p.112.

position or direction of the body through large range of movement.⁹

Agility is the capacity to change the directions quickly and to control body movements.¹⁰

Speed in changing body position or in changing direction.¹¹ For the purpose of the study this definition was considered best suited.

Power

Power is the capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed.¹²

Power is the combination of speed and strength and may be defined as the ability to release maximum force in the shortest possible time.¹³

⁹ Sarry L. Johnson and Jack K. Nelson, Practical Measurements for Evaluation in Physical Education, (3rd Ed., Delhi: Surjeet Publications, 1982), p.215.

¹⁰ Ibid., p. 93.

¹¹ H. Harrison Clarke, Application of Measurement to Health and Physical Education, (Englewood Cliffs, N.J.: Prentice Hall Inc., 1967), p. 222.

¹² Barrow and McGee, A Practical Approach to Measurement in Physical Education, p. 574.

¹³ Allen Philips and J.C. Hornak, Measurement and Evaluation in Physical Education, (New York: John Wiley and Sons, 1977), p.225.

Endurance

Schmolinsky (1983) defines endurance as “the ability to carry out a given amount of work during a prolonged period of time deterioration in the quality of such work”. Building up endurance is always connected with the functioning of the entire organism, which must work against the resulting fatigue.

Physiological Variable

Physiological systems are highly adaptable to exercise. Each task has major physiological components and fitness for the task requires effective functioning of the appropriate system. Involvement in systematic programme of training brings about desirable changes in the physical, physiological and psychological ability, which enhances the athlete's performance in his sports.

Pulse Rate

Ross and Wilson have defined pulse rate as a wave of distension and elongation that is felt in an artery wall due to the contraction of the left ventricle forcing blood into the already full aorta. When the aorta is distended, a wave passes along the walls of the arteries and can be felt at

any point where an artery can be pressed gently against the bone.¹⁴

Blood Pressure

It is the lateral pressure exerted by blood on the vessel wall while flowing through it.

Blood pressure is the pressure exerted on the walls of the arteries as the heart pumps blood through the body. Systolic pressure is obtained when blood is ejected into the arteries. Diastolic pressure is obtained when the blood drains from the arteries.¹⁵

Systolic Blood Pressure

When the left ventricle contracts and pushes the blood into the aorta the highest pressure produced is known as the systolic blood pressure.¹⁶

Diastolic Blood Pressure

When complete cardiac diastasis occurs and the heart is resting

¹⁴ J.S. Ross and K.S. Wilson, Foundation of Anatomy and Physiology, (Edinburgh: The English Book Society Churchill Living Stone, 1973), p. 151.

¹⁵ H. Harrison Clarke, Ed, Physical Fitness Research Digest, No.2 , (Washington D.C.: President Council on Physical Fitness and Sports, October 1972): 8.

¹⁶ Ross and Wilson, Foundation of Anatomy and Physiology, p.64.

following the ejection of blood, the least pressure within the arteries is termed as the diastolic blood pressure.¹⁷

Blood Pressure is the lateral pressure exerted by blood on the vessel wall while flowing through it.¹⁸

Vital Capacity

Vital capacity is defined as the largest volume of air that can be exhaled after deepest possible inhalation.¹⁹

Fat

Fat is the most variable tissue in the body and is distributed through the body primarily under the skin and in the abdominal cavity.

Achievement motivation

Achievement motivation is an effective arousal state directing behaviour in an achievement-oriented activity cognitively appraised as

¹⁷ Ibid.

¹⁸ C.C. Chatterjee, Human Physiology, (Calcutta: Medical Allied Agency, 1980), p.297.

¹⁹ David H. Clarke, Exercise Physiology, (New Jersey: Prentice Hall. Inc., 1975), p.159.

potentially satisfying.²⁰

Sports Competition Anxiety

Sports competition anxiety is the tendency to perceive competition situation as threatening and to respond to this situation with feeling of apprehension or tension prior to a competition.²¹

The skin fold measurements are the measurements taken at selected sites of the human body with the help of skin fold calipers to evaluate the status of adipose tissue.

Motivation

It is the tendency for the direction and selectively of behavior to be controlled by the conditions to consequences, and the tendency of this behavior to persist until a goal is achieved.

Motivation is anything that implies an organism to action is reflected in the selection interesting and persistence of behavior.

Anxiety

Cratty opines that anxiety appears to be a general or foreboding a personality trait marked by a lower threshold to stressful events.

²⁰ Elric Curter Burton, "State and Trait Anxiety, Achievement Motivation and Skill Attainment in College Women" Research Quarterly, (October 1979): 140.

²¹ R.D. Martens, Sport Competition Anxiety Test, (Champaign: Human Kinetics publishers, 1982), pp. 89-97.