CHAPTER - 1

INTRODUCTION

Sports and games are no longer just sports and games. They are big business all over the world. The boom in Prize Money and the practice of internationally renowned sportsmen signing on the dotted line to endorse the products has made sports, big business. Sports lovers all over the World are happy that reputed sportsmen 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 education, economics, arts, politics, law, mass-communication and even international diplomacy\(^1\). In fact, its scope is awesome.

Most sports have become a form of mass communication, and others are being adopted as fashion by some. They attract the masses either for recreation or physical fitness or as a full time profession.

Physical Education and Sports, being an integral part of education, have also experienced the impact of scientific advancement. In present times, it is very difficult to participate in national or international competitions unless the individual chooses the right sports as per his/her Physical, Physiological abilities and undergoes a very systematic training.

\(^1\)John W.Lay O'McPherson and Gerald Kenyon, Sports and Social System (London: Addition Wesley Publishing Company Inc.1978) p.3
The literal meaning of the word 'talent' according to the Oxford English Dictionary is a faculty or aptitude for certain skill - mental or, physical.

With increasing competitiveness and rising standard in sports, talent search has become important as young talent has to be spotted at an early age and nurtured with the right kind of scientific training in order to get excellent performance. Even the most gifted sportsman may not be able to produce outstanding performance if he is not been chosen for the sport at the right time. It is as good as fitting a particular part into an object. We require to have the shape of the part exactly as the shape of the portion of the object, where the part is to be fitted; we try to find a piece of object as such and then sharpen the edges according to the required shape. At the same time, starting from an arbitrary shape is comparatively more difficult to get the required shape for fitting. Talent resembles that shape which is required for a particular sports.

Physical Educationist plays an important role to find out the hidden talent at a very young age and then train the talented players to attain excellent performance.

Every sportsman has to be physically, physiologically and psychologically fit. All motor performance regardless of a person's ability is a function of the marking of these dimensions - fitness, skill, physical endowment, and psychological or behavioral dimensions.
There are various accounts of how and when the game of badminton started. The account usually accepted is that a game with rackets and shuttlecock was played at the estate of the Duke of Beaufort in Gloucestershire in the 1860s. The estate was called badminton and hence the game was given the name of badminton. 2

Generally it is accepted that some British Army Officers first started Badminton in India in the year 1868 in a town called Poona. Although some sort of "badminton" had been played in various countries like China, Poland, England for centuries, the game acquired it name in 1869 when a group of British Army Officers, having learnt it in India, played the game at the Duke of Beauforts Country Estate, Badminton Hall, Gloucestershire in London 3 The game of badminton, as it is played these days, has undergone a lot of improvement since its origin in the year 1870.

In the modern game of Badminton, a player is required to continuously be in movement over a certain period of time (upto 75 minutes depending upon the standard of the player) varying his pace from fast to slow, medium and vice-versa, and many a time hopping, skipping, jumping, lunging and changing direction while in movement. This demands a great deal of cardio-vascular endurance on the part of the badminton player.


In the international arena, one can differentiate between top-notch contenders from one another in terms of their fitness level (cardio-vascular endurance). However, the deciding factor some times remains with fitness in terms of its finer aspect.

The world's top most badminton playing nations, specially China, Indonesia, Malaysia and Korea, are very much aware of these and concentrate on the development of basic physical fitness variables and related aspects. They start training a child, concentrating on those fitness factors 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 standards within fitness are to some extent built into fitness components. The fit player should be strong, fast, powerful, agile, flexible, lean, athletic muscular, and with a lot of endurance. In addition, there are links to aesthetic standards with respect to the quality of movement. We might also expect the player to be dynamic and explosive. Some of the standards the fit player should attain to meet the demands of the games are strength, power, speed, flexibility, agility, cardio-vascular endurance and other fitness components. The aesthetic standards are not measurable in the same way, for they refer to the quality of the player's fitness. But such aesthetic standards of fitness are dependent on the physical measurable aspect of fitness. A higher level of fitness is often reflected in a better quality of fitness shown in movements around the
court. This is to be expected, for if this fitness is specific to badminton and one becomes fit by training on these movements, then necessarily one is going to become a better (more skillful) mover in the game. Thus, the quality of the skilled movement in the game, fitness and skill are inseparable in the performance of quality movement, which attains aesthetic standards. 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 arise from the demands of the game. In the eighteenth and nineteenth centuries the important of physical exercise began to attract the attention of educationists, in Denmark, Germany, Sweden, China, Indonesia and Korea and so once more, in various forms, Badminton became popular.

Physical fitness is an inseparable part of sports performance and achievements. The quality of its utilisation 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.

Power seems to be a vital factor in badminton since a player is required to make constant front and back movements, repeated jumps during smash and tap etc. Power is also a key ingredient in performing certain techniques in badminton which demand jumping activity such as jump and smash, tap etc.

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Stamina, speed, strength, skill and strategy are essential ingredients of all sports disciplines. A variation in degree in which these ingredients are present marks out special feature of any particular sport. Badminton at its best is a game of swift and graceful movement, a power play contrastingly highlighted by a delicacy of touch, of wrong-footing deception, of incredible retrieving and lighting interception, and of varied chess-like tactics of singles, doubles and mixed doubles each an absorbing and different game on its own.

A complete badminton player should possess the agility of an acrobat, the power of a race horse, the killer instinct of a panther, the accuracy of a marksman, the sophistication of a dancer, the speed of a sprinter, the leap of a high jumper, the stamina of a marathon runner, the creativity of an artist, the agility of a gymnast, and so on. His judgement has to be so sharp and accurate that he should be repeatedly able to send a shuttle to inner edge of a line and if a shuttle is likely to fall even an inch outside, he should leave it confidently. Instant co-ordination of all the above mentioned faculties is a must for success. Any wavering can spell his doom. The top class world and national players today require speed, power, unlimited endurance and absolutely top physical and mental fitness to withstand the stress and strain of competitions. Physical fitness on the one hand and psychological prerequisites on the other


are equally important to maintain the equilibrium of the individual. It is strictly so for top-level players because of high level achievement in the competition; they need to be physically and mentally well-balanced. A wise man from India, Swami Nityananda has said: "A strong mind is more important than a strong body". It is well known that when you train so intensely, if your mind isn't on the same wavelength, you usually don't do so well.

Badminton occupies a significant place among sports. It is a game of masterful skills and deception, anticipation and concentration. It is an energetic game giving enjoyment and pleasure while it demands fitness and dedication. It requires physical and mental attributes to be in the top gear to tackle all eventualities in the match. The match is won by a perfect amalgam of physical condition, mental attitudes, courage, intelligence, experience and skills. It is estimated that in a typical three game match, a player will run about a mile, make 350 sharp direction changes, and hit the bird 400 times. If the match lasts 45 minutes (average time), the bird will actually be in flight approximately 20 minutes. By contrast a 60-minute football game boils down to only about 14 minutes of play.

9 Hussain Ahmed Khan "Utility of Psychological Assessment in Selection of Top Level Sportsmen and Sports women" SNIPES JOURNAL 7 (July 1984), P.12.

10 Kurt A. Krueger "Practical Sports Psychology" (January 1984): P.63

Various research projects have further convinced the skeptics of the rigorousness of badminton.

An interesting comparison of the performance of West Germany's Boris Becker and the United State's Kevin Curren in the 1985 Wimbledon finals with the performance of Han Jean of China and Morton Forst of Denmark in the 1985 World Badminton Championship in Calgary was done by R. Stanton Hales, Past President of United State Badminton Association. Becker-Curren match, in which Becker claimed the prestigious title after four sets, lasted 3 hours and 18 minutes with the ball in play 18 minutes. In contrast, the badminton final lasted 1 hour and 16 minutes with the shuttle in play 37 minutes. The Wimbledon match involved 299 rallies comprising 1,004 individual strokes with an average of 3.4 shots per rally. Han Jean and Forst produced 146 rallies with a marked contrast of 1,972 shots and an average of 13.5 shots per rally. Hales revealed another observation: 5.1 shots were made per minute at Wimbledon and astounding 25.9 shots per minute at Calgary. The amplified demands of badminton were revealed in the distance travelled by the computations: at Calgary, the badminton finalists ran four miles in an hour, while the tennis finalists ran two miles. 12.

A badminton player operates at 140-150 heartbeats per minute during the game, the count going up to 180 and above in a fast rally. He should recover in a maximum of ten seconds. He has to continue at such a level throughout the match, which may be anywhere between half an hour to one hour or even more.

To perform creditably, a player must possess speed, strength, cardio-vascular endurance, agility, faster flexibility, reaction time etc. There is therefore no doubt that the physical and physiological variables should be woven together to enhance performances at world level. Even though certain physical and physiological variables have been discussed and reviewed in their relationship to performance in badminton, it still remains to be established scientifically. Therefore, the present study was undertaken with a view to make generalizations in regard to physical and physiological variables as predictors of playing ability of badminton players.

**Statement of the Problem**

The purpose of the study was to determine the physical and physiological variables as predictors of the playing ability of badminton players.

**Delimitations**

The study was limited to the Maharashtra Men Badminton players.

The study was further limited to the selected physical and physiological fitness variables.
Limitation

The lack of sophisticated instruments for the measurement of physical and physiological variables may be recognized as a limitation for the study.

Hypothesis

On the basis of available literature and the scholar's own understanding of the problem, it was hypothesised that the selected physical and physiological variables might help in predicting playing ability in badminton.

Definition and Explanation of Terms

The research scholar has gone through several books available in the library of LNIPE, Gwalior, IIT Bombay and Hanuman Vyan Prasarak Mandal, Amravati, to find out the definitions of certain terms used in the scholar's study. However, most suitable definitions of terms related to the scholar's study have been mentioned below:

Speed

Speed may be defined as the capacity of the individual to perform successive movements of the same pattern at a fast rate.\(^\text{13}\)

\(^\text{13}\)Barry L. Johnson and Jack K. Nelson, Practical Measurements for Evaluation in Physical Education (Delhi: Surjeet Publications, 1982), p.245
Agility

Agility is the ability to change direction quickly with control while travelling at speed.14

Blood Pressure

Blood pressure has been defined as the force which blood exerts on the walls of the blood vessels, in which it is obtained. When left ventricle contracts and pushes the blood into aorta, the pressure produced is known as systolic blood pressure, and when the cardiac diastole occurs and the heart is resting with no blood ejection, the pressure within the blood vessel, is termed as diastolic blood pressure.15

Heart Rate

The delineation of the arterial wall at the beginning of systolic ejection of blood is not confined to aorta but travels down the arteries as a wave followed by a wave of recoil in the arteries that lie close to the body such as radial artery of the wrist. The arrival of the wave of distension and subsequent recoil may be felt as a distinct throb, the pulse, which offers a convenient method of counting of the heart rate.16

**Reaction Time**

Reaction time is the interval of time between the presentation of the stimulus and the initiation of the response 17.

**Flexibility**

Flexibility, as a component of physical fitness, is the ability of an individual to move the body and its parts through as wide a range of motions as possible without undue strain to the articulation and muscle attachments 18.

**Cardio-vascular Endurance**

Johnson and Nelson19 have defined cardio-vascular endurance as the ability of the circulatory and respiratory system to adjust and to recover from the effects of exercise or work.

**Explosive Strength**

According to Clarke20, explosive power is the ability of a muscle or a group of muscles to release maximum force in the shortest possible time, in an explosive manner, projecting the body or an object.


18 Ibid, p.76.

19 Ibid, p.142.

**Body Composition**

Body composition is the proportion of the lean body mass and depot fat. Body composition is concerned with different kinds of tissues and consists of measured variables such as biceps, triceps, suprailiac and subscapular skinfold measurements and estimated variables like, lean body mass, percentage of fat and fat weight 21.

**Significance of the Study**

Physical Educators and coaches are concerned at times with team selection as well as the training and preparation of the player for competitions. Their job as such demands a pertinent knowledge of the game concerned as well as the techniques and tactics in relation to that game along with an understanding of the physical and physiological fitness variables, which form the basis of good techniques and tacts. Therefore, the results of this study will be of significance in the following ways:

1. The study will be of significance in extending the horizon of knowledge in the field of Badminton.

2. It will help in apprising the physical education teachers and coaches of the physical fitness and physiological variables underlining the performance in the game of badminton.

3. The results of the study will provide criteria for team selection.

4. The results of the study will further assist in preparing specific conditioning training programmes.

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