

The history of games and sports is as old as mankind. A quick glimpse of the ancient times will make you encounter several reference of sports, games and amusements which were organized by various cultural organizations such as Athenians Spartans, Asthapada(Chess), Kabaddi to name a few. The epoch of sports we witness today came with the organization of the first ancient Olympic Games of 776 B.C. in Greece. From those ancient heritage sports ground to vast stadiums today, sports have overcome all obstacles and have made homo-sapiens display their talents and skills to unite hearts and minds of the people for achieving universal brotherhood and develop a virtue of sportsmanship.

In recent years, the advancement of sports science and the awareness of varied racquet sports have drawn attention on betterment of physical and mental ability which has opened doors for pursuing exhaustive practical and theoretical studies of various racquet sports. In turn sports training, sports physiology and nutrition, notational analysis, sports biomechanics, sports medicine and motor skills are briefly discussed. These assessments show that there is a considerable scientific discipline and its approach has aided in the implementation of a training program to increase players' fitness, advise them in nutritional and psychological preparation for play, and enlighten them about their own and their opponent's strategies and tactics (Adrian Lees,2003). Moreover, the science of sports fascinates skilled players and competitors and everyone with a passion for the activity, especially if the athlete is aiming to excel at the highest level possible. To attain the maximum level of success, concentrated reasoning is an essential aspect of targeted achievement. However, it begins before the athlete arrives on the field. At each stage of the sport, dedication, determination, and practice are required. When evaluating the performance process and the winning paradigm in sport, many parameters play a role (Bisht Heera Singh, 2019).

With around 200 million participants, badminton is one of the most popular sports also known as one of the best cardio sport around the globe. It is the fastest racquet sport with the quickest smash at 493 km per hour and a rate of one shot per second. Badminton is considered as a physically and mentally demanding, high-intensity racquet sport with a fast response time, in which players try to hit the shuttle into the opposing field until one of them misses a shuttle (Gumundsdtir, 2017; Phomsoupha

& Laffaey, 2014). The average heart rate in competition is around 90% of the player's maximum heart rate (HR max), and approximately 60-70% of the energy required comes from the aerobic system and 30% from the anaerobic system (Oliver Faude et al., 2007). In 2006, the Badminton World Federation (BWF) implemented a new scoring system. A match in this new format comprises the best of 3 games with 21 points each, the player scoring the first 21 points wins the game; that being said a point is awarded for each service (Abian et al., 2014). The active playing time per rally is roughly 6-10 seconds, but the rest period between rallies is 2–2.5 times longer. This is true for both singles and doubles competitions (Alcock & Cable, 2009). Active rest time between rallies increased from the 1992 Olympics to the 2012 Olympics, with the result that active playing time decreased from 34% to 22%, and the rate of rallies increased by 34%. Professional competitive games usually last 40-60 minutes (Aydognmus et al., 2014; Faude et al., 2007; Laffaey et al., 2015; D. M. Cabello & Gonzalez-Badillo, 2003; Phomsoupha & Laffaey, 2014). This can be explained by the increasing speed and two intensities in sport, which mean that the players need more rest between rallies. In addition, the players must maintain a high concentration to meet the tactical or mental demands of dealing with their opponents. During the game, the player has to remain agile constantly while performing highly coordinated movements. Compared to a tennis player, a badminton player has to cover twice as far during a game. The various potential stresses of competitive play are considerable. Therefore, everyone involved in the modern game must understand the whole psychomotor and physiological fitness required for the game, as well as how to improve performance (Reuters/ Peter Cziborra, 2016). Badminton forces the players to move both back and forth and side to side and repeat maximum exertion such as dashing and jumping. Chin et al. (1995) recommended that if a player wants to achieve reasonable success at international badminton competition, improvement in motor fitness needs to be emphasized in addition to skill training. It is therefore pertinent to assess both physiological and motor performance components thought to be important in a particular sport at various levels so that necessary modifications can be made in the athlete's training program. Even though everyone can enjoy badminton, it requires many fitness components and skills so the players need to prepare their next move beforehand in order to utilize their stamina and skills efficiently. Every player must

improve their physical and tactical abilities along with motor & cardiorespiratory fitness. Two individuals having the same tactical and technical or psychic ability can differ in performance when there is a difference in their motor & cardiorespiratory fitness.

Badminton is a high intensity sport that involves coordinated movement technique on a designated rectangular court. It is an intermittent sport characterized by long, high-intensity training units with designated intervals for rest and involves vigorous movement of the lower and upper muscles (Reilly et al, 1990). The sports require quick anticipation and response to the opponent's movement shuttle, footwork, and execution of stroke (Mahoney and sharp, 1995). Badminton as a sport requires the player to be technically sound with reaction ability, footwork, coordination ability, explosive strength, forearm strength, agility, speed and stamina lunges, jump, rapid changes of direction, and quick arm movements, require physical factors such as strength, stamina, power, and agility. Additionally, trainers, coaches, and athletes constantly look for optimal ways to identify critical elements contributing to competitive performance. Muscle strength, or dynamic power, is one such element, and the ability to produce a significant amount of force is believed to be a substantial factor in overall performance during competition phase. According to MacDougall et al. (1991), the relevance and relative importance of power for athletic performance will vary according to the different demands of the sport. An explosive player usually jumps high, changes direction quickly, and appears to be quick on the badminton court in general. Lower body strength is a combination of muscular power and development of quadriceps, hamstring, gluteus, gastrocnemius and soleus. An important factor of sports like badminton is the player's capacity to produce muscular force at rapid speed. A player's body will accelerate over the court if they have a high level of strength and power, and an increase in either strength or speed will increase power. Lower body strength is essential in badminton as it develops economical footwork of the player and enables jumps to execute overhead strokes. When lifting off the floor to move or jump to the shuttle, more leg strength means more substantial acceleration and faster speed. On the badminton court, an explosive player will usually jump high, change directions rapidly, and look speedy, according to Omosegaard. The physical fitness and judgment capability of a player can be a major determinant of

success during a tournament. In the game, badminton legs serve as a support body to move in any direction quickly so it can position the body in such a way that can make effective blow movements (Bin Xu 2015).

The sporting world has changed India, mired in a hog of out dated sporting techniques and petty politicking by ignorant sports administrators, and is going down the sports ladder day by day.

In the present scientific era, sports not only help in shaping the lifestyle and personality of a person but also act as determinant of the status of a country at national and international levels. With the passage of time a lot of changes have crept into the field of sports. This has become highly competitive and complex profession. With the help of advanced electronic, print and mass media sports have been displayed as very inscriptive and prestigious field at national and international competition level. Consequently, more importance is given to sports and sportspersons these days. Victory and superiority in sports at the international level or the Olympic competition add honor to the national prestige by highlighting the concerned country on the world map.

Sports have now become highly competitive. Many players are now taking sports as profession be it a player, coach, physiotherapist, psychologist, dietitian any many other. The importance given to sports can be judged from the hefty sponsorship being paid to sports person all around the globe. Cristiano Ronaldo being the highest paid athlete in the world and Virat Kohli being the highest paid Indian are setting an example and being role models for many sportsperson around the globe With the exposure through electronic, print media and social networking, sports have been glamorized to an extent where millions and billions of players are following their idol helping many others to excel in the field of sports. International competitions like Summer Olympics, World Cup and International Championships are very renowned where each country sends their best players to compete in the most hyped and viewed events in the world.

Sports are an activity that is governed by a set of rules or customs. Sports are the activities where the physical capability of the player determines the outcome or the result of the match, apart from that it also develops the motor abilities, mental

toughness, sports man spirit which plays a major role in all round development of a player. Sports are used as an entertainment for the players & the viewers. It has also been proven by experiments and experts that daily exercise and playing sports increase mental toughness, sharpness the brain and also improves the immunity of the body.

Sports have always been a great recreational and fitness option for people of ages all age categories which has developed a wave of keeping our body healthy. The famous phrase “Health is Wealth” is been taken into consideration by most of the people of our country. Sports have always been an important part of one’s life. Though cricket predominates amongst all the games played in India, but badminton in recent time has been on the rise as it is considered one of the best sports when it comes to cardio and weight loss. Even though it is an indoor game, badminton in India is played outdoors as well, due to lack of indoor space. Initially it was played as a recreational sport in many clubs but nowadays players are very much dedicated to badminton due the recent achievements of Indian players in International level. Many States, organizations and academies started conducting tournaments to give many players opportunity to show their talent. Nonetheless, have you ever thought when did it all start? Do you know that the history of the modern version of badminton has its roots in India? To get more mind-boggling information about the origin of badminton, skim through the following paragraphs.

#### Origin of Badminton in India

The game of badminton was originally known as battledore and shuttlecock, which was played in ancient Greece over 2000 years ago. One of the most popular games since the medieval era, the modern version of badminton has its roots well laid in India. The game was originally developed in India among the British where it was very popular by the 1870s. As the city of Pune was formerly known as Poona, the game was also became known as Poona at that time where it was particularly popular and in 1873 the first rules of badminton was made

The main aim of the game was to keep the shuttlecock, in the air for as longer time so as to win a point when it drops on the opponents area, using a paddle, called a battledore. The group, who managed to keep the shuttle in the air for a long time was

declared the winner. Though this cooperative, non-competitive game was similar to its predecessor, the only difference was the addition of a net. The shuttlecock is often cited as a bird, because it is usually made out feathers. Now the shuttlecock consist of 16 real duck and goose feathers which determines the speed of the shuttle and are only used during the competition. The feather shuttlecocks are very expensive making Badminton one of the costliest sport and so to make it affordable in the present times, there are plastic shuttles also available.

Once the British mastered the game in India, they took the equipment's with them back to England during the 1870s. Three years later, in 1873, the Duke of Beaufort hosted a lawn party in his country place called Badminton. The game of Poona was played on that day and became a popular and entertaining pastime among the British elites. It was at that time the name Badminton was given to the sport. In 1877, the first club dedicated to the sport called the Bath Badminton Club was formed. The first official set of rules for playing Badminton was also made by this club.

Badminton now is considered the second most participated sport in India, according to a facts and report published by SMG Insight a UK-based sports consulting firm, in association with research agency YouGuv. The title of the report 'Popularity and Participation of Sports in India 2012', declares badminton the second most sport played in India after cricket. Badminton was ranked No.4 after cricket, tennis and football in terms of following.

Cricket is considered to be the most participated and followed sport, with 62% and 85% respectively, 51% voted badminton as the most played sport on regular basis , while 32% said they followed the same. Further details on the profile and size of the samples selected are awaited.

SMG Insight describes itself as giving "B2B and B2C research and consulting solutions for world leading sports governing bodies, sponsors and sports investors in order to meet their strategic and business objectives", while You Guv states that it is "an international, full service market research agency offering added value consultancy".

Understandably, the report highlights the importance of cricket in the Indian context. It says: "India is arguably the biggest sports market in the world with a 1.2 billion

population and a long established sports culture founded on its love of cricket. While cricket's leading position has been solidified in recent years with the astonishing success of the Indian Premier League (IPL), events such as the 2010 Commonwealth Games and inaugural Indian Formula One Grand Prix in 2011 have put the country on the business of sports world stage. This report details the essential information on participation and following in major sports and events by the Indian population. Cricket remains huge but there is extensive interest across a range of sports offering the sports industry and brands the opportunity to access this fast growing market."

The report shows the participation and following of the top sports by the Indian population, including analysis by age, income and gender. Analysing on the report Frank Saez, Managing Director of SMG Insight / YouGov said: "This report shows that India, while mad for cricket in multiple forms and events, is emerging as a sports nation with interest spread across a range of activities and competitions. Indian sport faces an exciting future."

India's favorite sports (Participation) 1. Cricket 62% 2. Badminton 51%3. Swimming 30% 4. Table Tennis 25%5. Cycling 24% 6. Tennis 23% 7. Football 22% 8. Volleyball 16% 9. Basketball 15% 10. Go-karting 11%. It is self-evident that the fit citizens are a nation's best assets and weak ones its liabilities. It is consequently the responsibility of every nation to promote physical health of its residents due to the fact bodily fitness is the basic requirement for most of the responsibilities to be undertaken by an individual in his daily life, if a person's body is under-developed or grows soft or inactive and if he fails to develop physical prowess, he is undermining his capacity for thought and for work, which are of vital importance to one's own life and society in a welfare state.

Physical education and sports activities, being a quintessential part of education, have additionally skilled the effect of scientific advancement. Currently it is very difficult to excel in national and international level in any sport due to increase in the level of competition in both male and female categories. The most important aspect is the select a right sport according to one's physical ability and physiological & psychological abilities by preparing a systematic training schedule. With growing competitiveness and growing well-known in sports, talent search has emerge as

crucial as younger skills must be spotted at an early age and nurtured with the right type of scientific training in order to get excellent performance. There are various accounts of how and when badminton started. According to the facts a game with racquet 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 name Badminton was derived from the same. Generally it is accepted that some British Army Officers first started Badminton in India in the year 1968 in a town called Poona. Although some sort of "badminton" had been played in various countries like China, Poland, and England for centuries, the game acquired its 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. 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 current competitive level of badminton a player needs to have competitive stamina as he/she needs to have a systematic movements for a certain amount of time (up to 75 minutes depending upon the standard of the player) with variation in his from slow to fast along with good reaction ability, explosive strength and power. This demands a great deal of cardio-vascular endurance on the part of the badminton player. 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 future performance of a player such as flexibility, agility, balance, cardiovascular endurance, strength, reaction time, power etc. 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, 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. 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 it this fitness is specific to badminton and one comes 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. Physical fitness is 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 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. Stamina, speed, strength, skill and strategy are essential ingredients of all sports disciplines. A complete badminton player's judgment 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 coordination of all above mentioned faculties is a must for success. The top International players today required speed, explosive power, unlimited endurance capacity to play long rallies and high physical and mental fitness to fight and overcome the stress and strain during the competitions. Physical fitness on the one hand and psychological prerequisite on the other are equally important to maintain the equilibrium of the individual.

Sport is a physical activity that tests our athletic abilities. It's sort of an exercise wherein we compete with the opponent/s solely for the reason of leisure. Badminton, Basketball, football, cricket, volleyball, and hockey are some of the most well-known sports. Sports have many physical and psychological advantages at the members in addition to the viewers. They result in a better physical stamina and progressed reflexes along with other advantages. Sports demands high physical fitness, which leads to good blood circulation and advanced physical stamina. It also requires high flexibility, agility and responsive and coordinated skills to achieve high performance. Despite all of the physical blessings, collaborating in a recreation additionally works wonders on your brain and usual persona. Sport is a opposition wherein you compete with the combatants. You want to decide their movements and make immediately selections, therefore improving your mental capability. Thinking fast and responding accordingly has fantastic impact on a sportsman's brain. Sports additionally expand your social abilities as you have interaction along with your fighters as well as the

teammates. It improves team giving him/her and publicity to the crew culture, which is beneficial in professional lifestyles as well. Even the mere spectators of a sport interact with each other and support their respective teams by shouting and cheering; resulting in overall happiness and a good social behavior. Sports play a tremendous in every body students. Everyone ought to involve themselves within the sports activities hobby even for a small time at some stage in the day. Sports are necessary because it brings physical and intellectual health to the man or woman involved in this on regular basis. People who've busy agenda in their life get tired very effortlessly. As we all recognize that, living a secure and comfort lifestyles we need a legitimate thoughts and a legitimate body. Education could be very essential to get name, fame and money. In the identical way, getting a sound mind and body, all of us must contain in a few kind of bodily activities for which sports activities is the best manner.

### **History of Badminton**

Badminton has its beginning in primordial civilizations in Asia and Europe. The ancient game known as battledore (bat or paddle) and shuttlecock probably originated more than 2000 years ago. In the 1600s battledore and shuttlecock turned into an upper elegance hobby in England and lots of European countries. Battledore and shuttlecock was simply two people hitting a shuttlecock backwards and forwards with a simple bat as many times as they could without allowing it to hit the ground. 19 It is hard to tell how the sport recognized these days as badminton evolves from the past records. The earliest supply regarded is in historical Greece drawings depict similar game played with shuttlecock greater than thousand years in the past. It is unsure the way it turns into the traditional game referred to as battledore and shuttlecock in Europe with the aid of past due sixteenth century, or Jeu de Volant this means that "flying game" in French. It became played with small hand paddle that were fabricated from wood. The shuttlecock was frequently called a "bird" then as it changed into fabricated from feathers with cork connected at the bottom. The social game was played by hitting the shuttlecock back and fro to another player, but without the net separating them as we have today. Modern badminton may be traced to mid-19th century British India. It changed into created by using British military officers stationed there. A net changed into added to the traditional English sport of battledore and shuttlecock. As it became famous in the British garrison city of Poona,

the sport got here to be referred to as "Poona" or "Poonai" Initially; woolen balls were desired by the higher instructions in windy or moist conditions, however ultimately shuttlecocks took over the function of a "ball." This sport became taken by retired officials who were given returned to England. It changed into delivered as a recreation for the visitors of the Duke of Beaufort at his stately domestic 'Badminton' in Gloucestershire, England wherein it have become famous. Hence, the call changed into originated as "Badminton." In March 1898, the primary Open Tournament was held at Guildford and the first 'All England' Championships had been held the following year. The International Badminton Federation became fashioned in 1934 with 9 founder contributors, England, Wales, Ireland, Scotland, Denmark, Holland, Canada, New Zealand and France. India joined as an affiliate in 1936. The first essential IBF event was the Thomas Cup (international men's crew championships) in 1948. Since then, the quantity of global events has accelerated with the addition of the Uber Cup (girls's team), World Championships (individual occasions), Sudirman Cup (blended group), World Junior Championships and the World Grand Prix Finals. Badminton is a relatively new Olympic sport. It changed into a demonstration recreation on the 1972 Munich Olympics. Badminton eventually became an Olympic sport in Barcelona in 1992. Only the singles and doubles were introduced for the first time in the Olympic Games. Mixed doubles changed into blanketed in the 1996 20 Atlanta Olympic Games and badminton is the handiest recreation that has mixed doubles occasion within the Olympics. Only five countries have received gold medals on the Olympics because badminton became delivered in 1992 - China, Indonesia and Korea, England and Denmark. Indian History of Badminton. Badminton is a popular sport in India. It is the second most played sport in India after Cricket. BAI (Badminton Association of India) which was founded in 1934 is the official governing body that conducts all the national and international tournaments in India. Indian shuttlers Saina Nehwal , Kidambi Srikanth , P.V. Sindhu , H S Pranoy , Lakshya sen are top in modern BWF ranking. Prakash Padukone turned into the first player from India to achieve world no.1 spot in the sport and after him K. Srikanth made it to the top spot as male player for the second time in April 2018 and Saina Nehwal is the first female player from India to achieve World no.1 spot in April 2015. The best Women's doubles pair in India Jwala Gutta and Ashwini Ponappa who had their

carrer best world ranking 10 in 2015. Chirag Shetty and Satwiksairj Rankireddy are the most decorated men's doubles Indian pair to gain the No.1 spot in World ranking. Other successful players include Sai Praneeth, P. Gopichand, Syed Modi, P Kashyap, Chetan Anand, and Sikki Reddy. Prakash Padukone and Pullela Gopichand are the only male players of India to win the prestigious All England Championship in 1980 and 2001 respectively. Saina Nehwal won the bronze medal in the 2012 at Summer Olympics in London, the first ever medal for the country in badminton, while P.V.Sindhu won the silver medal at Rio Olympics in 2016 in women;s singles. The doubles duo of Ashwini Ponnappa and Jwala Gutta won the bronze medal in BWF World championship in 2011 making them the first Indian pair to win medal. Sindhu won consecutive medals at 2013 and 2014 editions. Nehwal gained silver at 2015 Championships. Saina is the only gold medalist for India in BWF World Junior Championships, received in 2008, whereas Sindhu and Lakshya Sen won the gold medal in Asian Junior Championships in 2012 and 2018 respectively. Badminton is a game that is not that popular in most of the regions, despite the fact that there are numerous folks who understand it, mainly due to the fact it is performed with a feather (called a steerage wheel), however take into account a version of tennis and not a game or not you realize it. The game of badminton that can be performed personally or in doubles consists of three games, being a fit to the fine of 3 (who wins the first two games wins). The intention is to reach the 21 factors first in the game, having to have a difference of two factors between them to complete the game. If the game reaches  $29 \times 29$ , then whoever scores the 30 factor wins first. The game begins with the referee making the coin to give the choice between field and service to the winner. Objective of the Game The item of badminton is to hit the shuttlecock over the net and have it land in the specified courtroom areas. If your opponent manages to go back the shuttlecock then a rally happens. If you win this rally i.e. force your opponent to hit the shuttlecock out or into the net then you win a point. Player is required to win 21 points to win a set with the majority matches being best of 3 sets. Points can be won on either serve. Players & Equipment Badminton is a court or lawn game performed with lightweight rackets and a shuttlecock. Historically, the shuttlecock (additionally known as a bird or birdie) was a small cork hemisphere with 16 goose feathers connected and weighing approximately 0.17 ounce (five grams).

These types of shuttles can also still be used in contemporary play, but shuttles made from artificial materials are also allowed by means of the Badminton World Federation. Competitive badminton is commonly played interior due to the fact even light winds have an effect on the path of the shuttlecock. (Recreational badminton, alternatively, is a famous outdoor summertime interest.) The rectangular court is forty four ft (13.4 metres) lengthy and 17 ft (5.2 metres) huge for singles, 20 feet (6.1 metres) wide for doubles. A net 5 feet (1.5 metres) high stretches across the width of the court at its centre. A clear area of 4 ft (1.3 metres) around the court docket is wanted. Play consists totally of volleying—hitting the shuttlecock to and fro 22 throughout the internet without letting it touch the ground or floor within the barriers of the court. The badminton racket is usually fabricated from robust but light-weight substances consisting of carbon fiber or titanium, thinking about a hundred grams. Its most measure is sixty eight centimeters in length and includes ropes twisted vertically and horizontally. These badminton rackets can face up to from 7 to 11 pounds of pressure. There are two forms of badminton, singles blended doubles). Each player is permitted to apply a stringed racket (similar to a tennis racket but with the top being smaller) and a shuttlecock. The shuttlecock is made up of half spherical ball at the lowest and a feather like material surrounding the top. You can only really hit the bottom of the shuttlecock and as gravity comes into play will always revert the ball side facing down. You might also only hit the shuttlecock once earlier than it either hits the floor or goes over the net.

### **Statement of the Problem**

The study was stated as - A Comparative study on the Effect of Shadow Training on selected Physical variables of Beginners and Advance Badminton players.

### **Objectives of the Study**

The first objective of the study was to compare the effectiveness of shadow training on selected physical fitness variables in badminton.

The second objective of the study was to compare the effectiveness of shadow training on selected physiological variables in badminton.

The third objective of the study was to find out whether control group will be more effective after shadow training or experimental group.

**Delimitations**

The study had following delimitations:

1. The study was confined to the beginners and advance badminton players.
2. The study was further delimited to selected physical variables.
3. The study was further delimited to selected physiological variables.

**Limitations**

The study had following limitations:

1. The daily routine, diet and other factors which might influence the training effect were considered as one of the limitation of the study.
2. The meteorological variations such as air temperature, atmospheric pressure, relative humidity etc. during training period could not controlled and their possible influence on the study were also be recognised as a limitations of the study.
3. The emotional status of the subjects and motivational factors which might influence the results of the study were also be accepted as a limitations.

**Hypothesis**

1. It was hypothesized that there will be significant difference between the beginners and advance level badminton players.
2. It was also hypothesized that there will be significant difference between the beginners and advance level badminton players in physical variables.
3. It was also hypothesized that there will be significant difference between the beginners and advance level badminton players in physiological variables.

**Definition and Explanation of the terms****Speed**

The rate of change of position of an object in any direction. Speed is measured as the ratio of distance to the time in which the distance was covered.

**Vertical Jump**

A vertical jump or vertical leap is the act of jumping upwards into the air.

**Balance**

Balance refers to an individual's ability to maintain their line of gravity within their Base of support.

**Flexibility**

The range of motion of muscle and connective tissues at a joint or group of joints.

**Lower body strength**

The ability of the body to exert a maximum force against an object external to the body in one maximum effort of the lower body muscles.

**Back Strength**

It refers to the condition of the muscles to better support the spine and withstand stresses.

**Heart Rate**

Heart rate is the frequency of the heartbeat measured by the number of contractions of the heart per minute.

**Vital capacity**

The greatest volume of air that can be expelled from the lungs after taking the deepest possible breath.

**Sports**

Sport is an activity that is governed by a set of rules or customs and often engaged in competitively. Used by itself, sports commonly refer to activities where the physical capabilities of the competitor are the sole or primary determiner of the outcome (winning or losing), but the term is also used to include activities such as mind sports and motor sports where mental acuity or equipment quality are major factors. Sports are used as entertainment for the player and the viewer. It has also been proven by experiments that daily exercise increases mental strength and power to study.

**Significance of the Study**

1. The study will help the coaches and trainers to know the effects of shadow training on badminton players.
2. The study will help the coaches and trainers in planning and executing training for badminton players.
3. The result of the study will help the players to which area they need to improve more according to the game.
4. The study will help the future researcher to provide baseline information on badminton players.

5. The data of the study will provide useful information for the fitness coach and researchers for getting feedback.
6. The result of the study may further help the coaches to guide the players while choosing their game.
7. The findings of the study will add new knowledge in the field of physical education, coaching and training.