Chapter – I

1.0 Introduction:

Education is a continuous process which involves the individual in changing the attitude and behavior through experiencing the activity. It is continuous focus of construction and reconstruction of experiences which ultimately widen the vision, enlarges the outlook promotes the optimum development of personality.

Bucher and Wuest (1987) quoted John Dewys definition of education as “the reconstruction of events that compose the lines of individual so that new happenings and new events become more purposeful and more meaningful. Further more as a result of education individuals will be better able to regulate the direction of ensuring experience”.

Education is an attempt on the part of the adult members of the human society to shape the development of the coming generation in accordance with their own ideals of life.

Education develops man’s faculty, especially his mind so that he may be able to enjoy the contemplation of supreme truth, goodness and beauty in which perfect happiness essentially exists. Education is a continuous and life long process. It is the process of development from infancy to maturity. It includes the effects of everything which influences human personality.
Every educational programme which does not ensure physical development is meaningless because now it is an accepted principle that a sound mind is to be found in a sound body. Social programme therefore, has provision for teaching basic principles of health and hygienic to the adults and also train them in the ways so that they can prevent diseases, take balanced diet and provide first-aid when required and also cure minor ailments.

Education is a means of bringing out what is the best within a man. It is also responsible for bringing out the best with the latest potentialities of a person.

Education is a unique investment in the present and the future. Education is the development of all those capacities in the individual which will enable him to control his environment and fulfill his responsibilities. Education is growth and growth never stops. It is a continuous process.

Education is often regarded as synonymous with learning, as the acquired experience of any sort-intellectual, emotional or Sensory motor. Education is a product of experience. It is a process by which and through which the experience of the race i.e., knowledge, skills and attitudes are transmitted to the members of the community.

Education is a fostering, nurturing and cultivation process dealing with the all round development of the moral, intellectual and physical powers of the whole man. Education has become increasingly a heritage of all and is defined as “a series of experiences which enable one to better understand new experiences”. It is very often told that education is just for earning a living of one’s self. This is not acceptable because education is not solely for attaining ones own selfish ends. Every individual is part of a society and education must be broad enough to include the welfare of the individual and the good of society.
The welfare of society is of supreme importance. Education helps the individual to adjust to the group and thereby the welfare of society as a whole may be advanced.

The values of all educational effects at home, school and in society are judged by the personality and is the result of the education in thought and practice. Education should be broad based attending to the needs of the child at various stages of growth and to the development of right habits, attitudes and qualities of character to enable our young generation to share the responsibilities of democratic citizenship. The school is an agency set by society to keep alive in a child those interests which are socially desirable. A large part of the time in school is devoted to the growth of intelligence. Acquisition of knowledge alone should never be an end in itself. Education must provide opportunity for acquiring knowledge. It is not that one may have knowledge; but that knowledge should be made to function. Physical exercise has great effect on the mental development of the individual. So, general education should have physical education as a part of it. Education should help in the proper use of leisure. A proper and wise use of leisure will enable an individual to attend to his work with a high degree of efficiency. In brief, “Education is for behavior”.

1.1 AIMS AND OBJECTIVES OF EDUCATION

The aim of education is to make people physically fit, mentally alert and morally upright. Education should be a liberation process. It should free children not only from ignorance but also feel of inferiority. Education should teach what we know and that we need not accept what we do not know as being unworkable.
The aim of education is to facilitate the optimum growth and development of each individual which will afford the maximum adjustment to his physical, mental and social situations today and in the future.

The aim of education has been variously stated. Ordinarily it is interpreted in terms of knowledge. To be more clear and appropriate, education develops the abilities of individuals and growth of culture and morality. Education should help people to make decisions constant with their own feelings and interest. It should reach the people to order their own social structure so that there is no blind hatred of authority. Childhood is not only preparation of adult life, but also a significant part of life in its eternity. A person in school is not only learner preparing for the future but also he is a person living in the present with a very vital position of his life span. Childhood deserves to be a happy and fulfilled time in every one’s life and school should construct the conditions that allow for maximum growth and development.

Vivekananda says that education is the manifestation of the perfection already existing in man. To him, education is not the amount of information put into one’s brain which may be the process of imparting to an individual certain information and knowledge which society deems necessary.

Child is active by nature. He plays and does things but these undifferentiated rich and practical experiences, do not lead to education unless they are guided and properly directed. So the experiences of the child should be given coherence, unity and organization and education is to be consciously and deliberately planned by providing rich and creative activities and experiences to children.
The experiences of the child should be well knit to give them meaning. Education is to bring about the growth of the educate through experience and activity. Every experience and activity leads to some sort of learning and enrichment of the mind of the learner. These in turn enter into combinations and thus increase the ability of the new learner to direct further noble activities and experiences.

1.2 Physical education

Sports and physical education are an integral part of the learning process, and will be included in the evaluation of performance. A nationwide infrastructure for physical education, sports and games will be built into the education edifice.

Physical education, health education and sports form an integral part of the educational process as they contribute to the all round development of the human personality, especially in nurturing health, strength and fitness of the body, endurance, courage, decision making, resourcefulness, respect for others, faithfulness, loyalty to duty and concern for the common goal.

The area of physical education is not merely a glamorous area of sports. It also fulfills certain valuable social functions due to which it has been accorded high importance all over the world. Physical education contributes towards the all round development of personality. Performances in any of the sports depend upon many factors. It depends upon anthropometry, physical fitness, physiological etc. Each sports requires different type of physique. To achieve the aim of showing high level performance, one should have the required quality of physique.
Physical Education of today is conceived not merely as a vast reservoir of knowledge, but also a source of human development in all aspects, leading to the highest achievement of an individual. Physical education has become an important part of our life. Physical education has become a part of the curriculum in schools, colleges and universities.

Physical education is an education that has its aim to improve the human performance through the medium of physical education activities.

Physical education is evaluation through physical activities for the development of physical, mental, social and emotional well being of a human being.

Physical education is not only concerned with the physical outcomes that accrue from participation in activities but also the development of knowledge and attitudes conducive to lifelong learning and participation.

Physical education is an education process that has its aim the important of human performance through the medium of physical activities to realize this outcome.

In recent years we find a worldwide realization of the importance of physical education. Physical education is a judicious blending of the education of body and mind. Physical education is education through physical activity for the development of physical fitness, social fitness, moral fitness and emotional fitness. A balanced physical education programme not only contributes to the development of the physique but also develops the mental, moral and social qualities. So the co-education of mind and body should be of paramount importance. Physical education activity disseminates the principles of democratic citizenship.
The physical education programme provides each student with an opportunity to assess his fitness and to develop skill and understanding that will enable him to enjoy a productive stay in school/college and a more meaningful existence after school/college.

In a broad view of education, physical education has unique opportunities for developing desirables character and social traits as well as defined responsibilities towards the physical development of the individual. A person physically fit will be mentally alert and sound and will be more spectacular in all walks of life. A week child is a weak brick in the wall of the nation. If today’s child is weak and meek, he is considered as a liability not only to himself and his family but also to the entire nation. The wealth of a nation depends entirely upon the health of every citizen of the country.

Physical education is an education. The term ‘Education’ implies the drawing out and development of all powers of an individual – physical, mental, moral as well as social. The concept of the psycho-physical unity of the human organism has influenced significance and meaning both with regard to the child and the attitude of the teachers towards the child.

All schools should implement a planned Physical Education curriculum that maximize participation, enjoyment and skill learning. Physical Education classes offer the maximal amount of opportunities for physical activity. Physical education consists of two words. Physical and Education. The word ‘Physical Education” has been defined by various authors keeping in view the needs of the persons at the relevant time and relevant place and no definitions can be termed physical education in entirely. ‘Physical Education’ is one of the essential ingredients of general education as it is necessary to develop physical instincts in human beings.
Unless and until the human beings are fit physically, the mental development cannot be achieved because it is well established fact that a sound mind recites is a sound body. ‘Physical Education’ studies that aspects of the needs of the developing child right from the beginning till he passes out from the University, which is necessary for the upkeep and development of his body including physical exercise, practice of yoga, games and sports.

1.3 Importance Of Physical Education

Education, health and medical authorities have long recognized the need for a programme of directed education activities in the school curriculum. Physical education provides opportunities to recreation to situation which are physically wholesome, that is promoting physical growth, development of skill in fundamental movements (running, jumping, throwing, balancing) and correct posture.

The purpose of physical education is to optimize ones quality of life through a long term commitment to an enjoyable, personal exercise program that will meet needs in a changing world.

Physical education is necessary because it will make all physically fit to keep all healthy to stimulate and satisfying the mind to keep all socially secured and give leadership training. It is a must for young students who would like to have mental stimulation and satisfaction. There has been a keen awareness of the need of physical fitness on a nation wide basis.
Education is taking place in three learning domains, cognitive, effective and psychomotor. Physical education contributes to the domains of social needs and trends which influence not only the objective of education but also affect the role of a physical education and sports within a society as well within the education process. Recent years have been marked by calls for educational reform specially realization and strengthening education process. The nature of educational reform that are being implemented may have far reaching consequences on the conduct of physical education programme in schools.

1.4 Aims and Objectives of Physical Education

The aim of physical education is to provide facilities, leadership and opportunities of participation in physical activities through which the fullest development of man is attained, so that he may live an enriched, radiant and abundant life.

In 1965 the American Association for Physical Education Health and Recreation states five major objectives of physical education as follows:

i. To help children move in a skillful and effective manner in all the physical education programmes.

ii. To develop an understanding and appreciation of movement between the children and the youth so that their lives may become more meaningful, purposive and productive.

iii. To develop an understanding and appreciation of certain scientific principles concerned with movements.

iv. To develop through the medium of games and sports, interpersonal relationships.
v. To develop the various organic systems of the body so that they will expand in a healthful way to the increased demands placed on them.

The first sport psychologist is said to have been Norman Triplett, a North American man from Asia, born in 1861. Triplett’s first finding as a sport psychologist was that cyclists cycle faster in pairs or a group, rather than riding solo.

Carl Diem, a German, founded the world’s first sport psychology laboratory in 1920. Five years later, A.Z. Puni opened a lab at the Institute of Physical Culture in Leningrad. Also in 1925, Coleman Griffith opened the first sport psychology lab in North America at the University of offered the first ever sport psychology course. The International society of Sport Psychology (ISSP) was formed by Dr. Ferruccio Antonelli of Italy in 1965. In 1966, a group of sport psychologists met in Chicago to form the North American Society of Sport Psychology and Physical Activity (NASPSPA). In the 1970’s, sport psychology became a part of the curriculum on university campuses. These courses which were generally found in the kinesiology programs taught students how to develop positive attitudes in athletes using cognitive and behavioral modification techniques. In the 1980’s, sport psychology became more research focused. Sport psychologists looked into performance enhancement, the psychological impact of exercise and over training as well as stress management. Today, sport and exercise psychologists have begun to research and provide information in the ways that psychological well-being and vigorous physical activity are related. This idea of psychophysiology, monitoring brain activity during exercise has aided in this research. Also, sport psychologists are beginning to consider exercise to be a therapeutic addition to healthy mental adjustment.
Just recently have sport psychologists begun to be recognized for the valuable contributions they make in assisting athletes and their coaches in improving performance during competitive situations, as well as understanding how physical exercise may contribute to the psychological well-being of non-athletes. Many can benefit from sport psychologists: athletes who are trying to improve their performance, injured athletes who are looking for motivation, individuals looking to overcome the pressure of competition, and young children involved in youth sports as well as their parents. Special focus is geared towards psychological assessment of athletes. Assessment can be both, focused on selection of athletes and the team set up of rosters as well as on professional guidance and counseling of single athletes.

1.5 Sport

A sport is an organized, competitive and skillful physical activity requiring commitment and fair play in which a winner can be defined by objective means. It is governed by a set of rules or customs. In a sport the key factors are the physical capabilities and skills of the competitor when determining the outcome (winning or losing). The physical activity involves the movement of people, animals and/or a variety of objects such as balls and machines or equipment. In contrast, games such as card games and board games, though these could be called mind sports and some are recognized as Olympic sports, require primarily mental skills and only mental physical involvement. Non-competitive activities, for example as jogging or playing catch, are usually classified as forms of recreation. Physical events such as scoring goals or crossing a line first often define the result of a sport. However, the degree of skill and performance in some sports such as diving, dressage and figure skating is judged according to well-defined criteria.
This is in contrast with other judged activities such as beauty pageants and body building, where skill does not have to be shown and the criteria are not as well defined. Records are kept and updated for most sports at the highest levels, while failures and accomplishments are widely announced in sport news. Sports are most often played just for fun or for the simple fact that people need exercise to stay in good physical condition. However, professional sport is a major source of entertainment. While practices may vary, sports participants are expected to display good sportsmanship, and observe standards of conduct such as being respectful of opponents and officials, and congratulating the winner when losing.

**Etymology and meaning**

“Sport” comes from the Old French desport meaning “leisure”. American English uses the term “sports” to refer to this general type of recreational activity, whereas other regional dialects use the singular “sport”. The Persian word for “Sport” is based on the root bord, meaning “winning”. The Chinese term for “sport” tiyu connotes “physical training”. The Modern Greek term for sport is athlitismos, directly cognate with the English terms “athlete” and “athleticism”.

The oldest definition of sport in English (1300) is of anything humans find amusing or entertaining. Other meanings include gambling and events staged for the purpose of gambling; hunting; and games and diversions, including ones that require exercise. Roget’s defines the noun sport as and “Activity engaged in for relaxation and amusement” with synonyms including diversion and recreation. An example of a more sharply defined meaning is “an athletic activity where one competitor or a team of competitors plays against another competitor or group of competitors [with] a conclusive method of scoring… not determined by a judge.”
History

There are artifacts and structures that suggest that the Chinese engaged in sporting activities as early as 4000 BC. Gymnastics appears to have been a popular sport in China’s ancient past. Monuments to the pharaohs indicate that a number of sports, including swimming and fishing, were well-developed and regulated several thousands of years ago in ancient Egypt. Other Egyptian sports included javelin throwing, high jump, and wrestling. Ancient Persian sports such as the traditional Iranian martial art of Zourkhaneh had a close connection to the warfare skills. Among other sports that originate in ancient Persia are polo and jousting.

A wide range of sports were already established by the time of Ancient Greece and the military culture and the development of sports in Greece influenced one another considerably. Sports became such a prominent part of their culture that the Greeks created the Olympic Games, which in ancient times were held every four years in a small village in the Peloponnesus called Olympia.

Sports have been increasingly organized and regulated from the time of the Ancient Olympics up to the present century. Industrialization has brought increased leisure time to the citizens of developed and developing countries, leading to more time for citizens to attend and follow spectator sports, greater participation in athletic activities, and increased accessibility. These trends continued with the advent of mass media and global communication. Professionalism became prevalent, further adding to the increase in sport’s popularity, as sports fans began following the exploits of professional athletes through radio, television and the internet—all while enjoying the exercise and competition associated with amateur participation in sports.
In the new millennium, new sports have been going further from the physical aspect to the mental or psychological aspect of competing. Electronic sports organizations are becoming more and more popular.

**Sportsmanship**

Sportsmanship is an attitude that strives for fair play, courtesy toward teammates and opponents, ethical behavior and integrity, and grace in victory or defeat.

Sportsmanship expresses an aspiration or ethos that the activity will be enjoyed for its own sake. The well-known sentiment by sports journalist Grantl and Rice, that it’s “not that you won or lost but how you played the game,” and the Modern Olympic creed expressed by its founder Pierre de Coubertin: “The most important thing … is not winning but taking part” are typical expressions of this sentiment.

Violence in sports involves crossing the line between fair competition and intentional aggressive violence. Athletes, coaches, fans and parents sometimes unleash violent behavior on people or property, in misguided shows of loyalty, dominance, anger, or celebration. Rioting or hooliganism are common and ongoing problems at national and international sporting contests.

**Professional sports**

The entertainment aspect of sports, together with the spread of mass media and increased leisure time, has led to professionalism in sports. This has resulted in some conflict, where the paycheck can be seen as more important than recreational aspects, or where the sports are changed simply to make them more profitable and popular, thereby losing certain valued traditions.
The entertainment aspect also means that sportsmen and women are often elevated to celebrity status in media and popular culture.

Politics

At times, sports and politics can have a large amount of influence on each other. When apartheid was the official policy in South Africa, many sports people, particularly in rugby union, adopted the conscientious approach that they should not appear in competitive sports there. Some feel this was an effective contribution to the eventual demolition of the policy of apartheid, others feel that it may have prolonged and reinforced its worst effects.

The 1936 Summer Olympics held in Berlin was an illustration, perhaps best recognized in retrospect, where an ideology was developing which used the event to strengthen its spread through propaganda.

In the history of Ireland, Gaelic sports were connected with cultural nationalism. Until the mid-20th century a person could have been banned from playing Gaelic football, hurling, or other sports administered by the Gaelic Athletic Association (GAA) if she/he played or supported soccer, or other games seen to be of British origin. Until recently the GAA continued to ban the playing of soccer and rugby union at Gaelic Venues. This ban is still enforced, but has been modified to allow football and rugby by played in Croke Park while Landsdowne Road is being redeveloped. Until recently, under Rule 21, the GAA also banned members of the British security forces and members of the RUC from playing Gaelic games, buts the advent of the Good Friday Agreement in 1998 led to the eventual removal of the ban.
Nationalism is often evident in the pursuit of sports, or in its reporting: people compete in national teams, or commentators and audiences can adopt a partisan view. On occasion, such tensions can lead to violent confrontation among players or spectators within and beyond the sporting venue (see Football War). These trends are seen by many as contrary to the fundamental ethos of sports being carried on for its own sake and for the enjoyment of its participants.

**Physical art**

Sports have many affinities with arts. For example, figure skating, artistic gymnastics, dance sport, and Tai chi can be considered artistic spectacles. Similarly, there are other activities that have elements of sport and art in their execution, such as bodybuilding, free running, martial arts, performance art, Yoga, boss ball, dressage, and culinary arts. Perhaps the best example is bull-fighting, which in Spain is reported in the arts pages of newspapers.

All sports involve physical and mental activities that are pursued for more than simply utilitarian reasons. For instance, running, when done as a sport, occurs for reasons beyond simply moving from one place to another. Value is gained from this activity when it is conducted simply for its own sake. This is similar to the concept of aesthetic value, which is seeing something over and above the strictly functional value coming from an object’s normal use. For instance, an aesthetically pleasing car is one which doesn’t just get from A to B, but which impresses with its grace, poise, and charisma. In the same way, a sporting performance such as jumping doesn’t just impress as being an effective way to avoid obstacles. It impresses because of the ability, skill, and style that is demonstrated in its performance.
Art and sports were clearly linked at the time of Ancient Greece, when gymnastics and calisthenics invoked admiration and aesthetic appreciation for the physical build, prowess and ‘arête’ displayed by participants. The modern term ‘art’ as skill, is related to this ancient Greek term ‘arête’. The closeness of art and sport in these times was revealed by the nature of the Olympic Games, which were celebrations of both sporting and artistic achievements.

**Technology**

Technology has an important role in sports, whether applied to an athlete’s health, the athlete’s technique, or equipment’s characteristics.

- **Equipment** – As sports have grown more competitive, the need for better equipment has arisen. Golf clubs, (American) football helmets, tennis racquets, baseball bats, soccer balls, hockey skates, and other equipment have all seen considerable changes when new technologies have been applied.

- **Health** – Ranging from nutrition to the treatment of injuries, as the knowledge of the human body has deepened overtime, an athlete’s potential has been increased. Athletes are now able to play to an older age, recover more quickly from injuries, and train more effectively than previous generations of athletes.

- **Instruction** – Advancing technology created new opportunities for research into sports. It is now possible to analyze aspects of sports that were previously out of the reach of comprehension. Being able to use motion capture to capture an athlete’s movement, or advanced computer simulations to model physical scenarios has greatly increased an athlete’s ability to understand what they are doing and how they can improve themselves.
In British English, sporting activities are commonly denoted by the mass noun “sport”. In American English, “sports” is more used. In all English dialects, “sports” is the term used for more than one specific sport. For example, “football and swimming are my favorite sports”, would sound natural to all English speakers, whereas “I enjoy sport” would sound less natural than “I enjoy sports” to North Americans. The term “sport” is sometimes extended to encompass all competitive activities, regardless of the level of physical activity. Both games of skill and motor sport exhibit many of the characteristics of physical sports, such as skill, sportsmanship, and at the highest levels, even professional sponsorship associated with physical sports. Air sports, billiards, bridge, chess, motorcycle racing, and power boating are all recognized as sports by the International Olympic Committee with their world governing bodies represented in the Association of the IOC Recognized International Sports Federations.

**Spectator sport**

As well as being a form of recreation for the participants, much sport is played in front of an audience. Most professional sport is played in a ‘theatre’ of some kind; be it a stadium, arena, golf course, race track, or the open road, with provision for the (often paying) public.

**Australian Rules football**

Large television or radio audiences are also commonly attracted, with rival broadcasters bidding large amounts of money for the ‘rights’ to show certain fixtures. The football World Cup attracts a global television audience of hundreds of millions; the 2006 Final alone attracted an estimated worldwide audience of well over 700 million.
The Cricket World Cup is another sporting event which attracts a global audience. The 2007 Cricket Cup attracted about 2.3 Billion viewers all over the world. In the United States, the championship game of the NFL, the Super Bowl, has become one of the most watched television broadcasts of the year. Super Bowl Sunday is a de facto national holiday in America; the viewership being so great that in 2007 advertising space was reported as being sold at $2.6m for a 30 second slot.

Nationalism and sport

Nationalism and sport are often intertwined, as sports provide a venue for symbolic competition between nations; sports competition often reflects national conflicts, and in fact has often been a tool of diplomacy. The involvement of political goals in sport is seen by some as contrary to the fundamental ethos of sport being carried on for its own sake, for the enjoyment of its participants, but this involvement has been true throughout the history of sport.

Sports diplomacy

Most sports are contested between national teams, which encourages the use of sporting events for nationalist purposes, whether intentionally or not. The signaling of national solidarity through sport is one of the primary forms of banal nationalism.

Several sporting events are a matter of national pride; The Ashes is a matter of national pride between England and Australia. Also in cricket an India vs Pakistan match puts both countries on a virtual standstill as it is all about national pride during those matches.
The Olympic Games are the premier stage for nationalist competition, and its history reflects the history of political conflict since its inception at the end of the 19th century. The 1936 Summer Olympic held in Berlin was an illustration, maybe best acknowledged in hindsight, where an ideology was developing which used the event to strengthen its spread through propaganda. The boycott by the United States and politically aligned nations of the 1980 Summer Olympics and the Soviet Union of the 1984 Summer Olympics were part of the Cold War conflict.

When apartheid was the official policy in South Africa, many sportspeople adopted the conscientious approach that they should not appear in competitive sports there. Some feel this was an effective contribution to the eventual demolition of the policy of apartheid, others feel that it may have prolonged and reinforced its worst effects. Many African nations boycotted the 1976 Summer Olympics in Montreal, as a result of then New Zealand Prime Minister Robert Muldoon allowing the All Blacks to tour South Africa. The issue would later come to a head during the 1981 Springbok Tour. George Orwell’s essay “The Sporting Spirit” examines the effect nationalism plays on sport, where Orwell argues that various sporting events trigger violence between groups for the very reason of competition.

**Nationalist sports**

In the history of Ireland, Gaelic sports were clearly carried on with nationalist overtones: for example, for most of the last century a person could have been banned from playing Gaelic football, hurling, or other sport, if the person was seen to have played soccer, cricket, rugby or any other game which was perceived to be a British origin. Furthermore, the Old Firm derby in Glasgow featuring Celtic, historically linked to the city’s Catholic community, and Rangers
similarly linked to the city’s Protestant community, have also historically seen trends along religion-political lines.

The nationalistic Italian fascists also created Volata as their own home-grown alternative to soccer and rugby. It was intended to be a replacement for the popular games perceived to be of British origin that would be of a more local character, tracing its heritage back to the earlier Italian games of Harpastum and Calcio Fiorentino. However, unlike its Gaelic equivalents, Volata was short-lived and is no longer played.

The policy of Spanish football team Athletic Bilbao of picking only Basque players is strongly linked to Basque nationalism.

**Olympic Games**

The Olympic Games are a major international event featuring summer and winter sports, in which thousands of athletes participate in a variety of competitions. The Games are currently held every two years in even-numbered years, with Summer and Winter Olympic Games alternating, although they occur every four years within their respective seasonal games. Originally, the ancient Olympic Games were held in Olympia, Greece, from the 8th century BC to the 5th century AD. Baron Pierre de Coubertin founded the International Olympic Committee (IOC) in 1894. The IOC has since become the governing body of the Olympic Movement, whose structure and actions are defined by the Olympic Charter. The evolution of the Olympic Movement during the 20th and 21st centuries has resulting in the IOC adapting the Games to the world’s changing social circumstances.
Some of these adjustments included the creation of the Winter Games for ice and snow sports, the Paralympics Games for athletes with physical disabilities, and the Youth Olympic Games for teenage athletes. The IOC also had to accommodate the Games to the varying economical, political, and technological realities of the 20th century. As a result, the Olympics shifted away from pure amateurism, as envisioned by Coubertin, to allow participation of professional athletes. The growing importance of the mass media created the issue of corporate sponsorship and commercialization of the Games.

The Olympic Movement currently comprises international sports federations (Ifs), National Olympic Committees (NOCs), and organizing committees for each specific Olympic Games. As the decision-making body, the IOC is responsible for choosing the host city for each Olympic Games. The host city is responsible for organizing a celebration of the Games consistent with the Olympic program, consisting of the sports to be contested at each Olympic Games, is also determined by the IOC. The celebration of the Games encompasses many rituals and symbols, such as the Olympic flag and torch, as well as the opening and closing ceremonies. There are over 13,000 athletes that compete at the Summer and Winter Olympics in 33 different sports and nearby 400 events. The first, second, and third place finishers in each event receive gold, silver or bronze Olympic medals, respectively. The Games have grown in scale to the point that nearly every nation is represented. Such growth has created numerous challenges, including boycotts, doping, bribery of officials, and terrorism. Every two years, the Olympics and its media exposure provide unknown athletes with the chance to attain national, and in particular cases, international fame. The Games also constitute a major opportunity for the host city and country to promote and showcase themselves to the world.
Sport psychology is the scientific study of people and their behaviors in sport. The role of a sport psychologist is to recognize how participation in sport exercise and physical activity enhances a person’s development. The first sport physiologist is said to have been a North American man from Asia, born in 1861. Triplett’s first finding as a sport psychologist was that cyclists cycle faster in pairs or a group, rather than riding solo a German, founded the world’s first sport psychology laboratory in 1920. Five years later, opened a lab at the Institute of physical Culture in Leningrad. Also in 1925, opened the first sport psychology lab in North America at the University of Illinois. He began his research in factors that affect sport performance in 1918, and in 1923, offered the first ever sport psychology course.

Beginning, in the 1970’s, sport psychology became a part of the curriculum on university campuses. These courses which were generally found in the kinesiology programs taught students how to develop positive attitudes in athletes using sport psychology and drugs. In the 1980’s, sport psychology became more research focused. Sport psychologists looked into performance enhancement, the psychological impact of exercise and over training as well as stress management. Today, sport and exercise psychologists have begun to research and provide information in the ways that psychological well-being and vigorous physical activity are related. This idea of psychophysiology, monitoring brain activity during exercise has aided in this research. Also, sport psychologists are beginning to consider exercise to be a therapeutic addition to healthy mental adjustment.
Just recently have sport psychologists begun to be recognized for the valuable contributions they make in assisting athletes and their coaches in improving performance during competitive situations, as well as understanding how physical exercise may contribute to the psychological well-being of non-athletes. Many can benefit from sport psychologists: athletes who are trying to improve their performance, injured athletes who are looking for motivation, individuals looking to overcome the pressure of competition, and young children involved in youth sports as well as their parents. Special focus is geared towards psychological assessment of athletes. Assessment can be both, focused on selection of athletes and the team set up of rosters as well as on professional guidance and counseling of single athletes.

**Sports Psychology – Makes Sportsmen Perform Better**

Modern day sports are very demanding. It requires for the sportmen and athletes alike to perform to the very best of their abilities and beyond. So it becomes all the more important that the athletes do get the maximum help that they can in order to compete and win in a highly competitive environment. While it is important that the athlete should have the necessary skills required to excel in a particular sporting event, the sports team that he or she is a part of also forms an equally important contributing factor for the athlete’s success. The team includes supporters, trainers and sports doctors among others, who are all doing their bit in ensuring that the athlete performs in competitions at the height of the mental, physical and emotional abilities that he or she is capable of. In all of this, one area of psychology has an important part to play, and that is sports psychology.
Sports psychology is concerned with preparing the athlete or teams to be able to handle the high emotional stress levels that come with participating in sports competitions. Psychologists and sports trainers can work in tandem to enhance the performance levels of the athlete. The coach can give appropriate information about the particular athlete to the psychologist, who will then be able to derive the psychological and behavioral patterns of the athlete before an event. With the help of this mental picture as well as the characteristic mental attitude of the athlete, the coach will be able to set up the most effective training schedule that will bring out the best in all of the athlete’s capabilities. Thus, sports trainers can use psychology and help their charges better and get the best performance out of them.

In order to better equip the athlete or team for sports competitions, the coaches will have to have an idea about sports psychology. Event though it is not necessary for them to be experts in psychology, it does help their wards a lot if coaches are able to gauge the mental condition of the athlete before and during a competition. One of the best examples of the benefits of sports psychology can be witnessed in and during several sports competitions that are held over long periods and test the endurance levels of the different sportsmen. In such events, you will be able to see that certain of the athletes will be handling themselves through the competition with much lesser effort than others. These athletes and sportsmen will be turning up their peak performances with high levels of endurance and focus not withstanding the length of the sporting competition. Now it becomes clear that these athletes would have had a coach with an idea about sports psychology and the advantages that it brings along to the performing athletes. On the other hand, you will also see other athletes who appear to be struggling to maintain focus and complete goals; these will be the ones who might not have had the benefit of sports psychology.
Like in the other fields of psychology, sports psychology also deals with the complex human mind. Only it is more oriented towards extending the advantage of understanding the athletes’ minds and giving them every chance of outperforming themselves and others. So a sports psychologist forms a necessary part of every sports team.

Sports psychology: Mental toughness: do you have what it takes to maintain focus, motivation and self-belief when the going gets hare?

There are certain moments during competition that appear to carry great psychological significance, when the momentum starts to shift in one direction or another. These situations require athletes to remain completely focused and calm in the face of difficult circumstances. Tennis players talk of the ‘big’ points during a tight match, such as a fleeting chance to break serve; for an athlete, it could be the final triple-jump in the competition after seriously under-performing; for a footballer, it could be how you react to a perceived bad refereeing decision or to going behind in a match your team are expected to win. Think about times when things have not gone quite to plan and how you reacted. The journey towards peak performance is rarely a perfectly smooth road and we learn from our mistakes- or should do. Do setbacks shake your self-belief and lower your motivation or act as a catalyst for even greater effort?

Even great athletes and teams suffer setbacks. Olympic Steve Backley is a prime example. In his book The Winning Mind, Backley cites his psychological strengths and, at times, his weaknesses as major determinants of whether he performed near to or below his own strict targets in competition.
He talks of the transition from young up-and-coming javelin thrower to major international competitor when, after experiencing success so often as a junior, he found himself under-prepared for the mental hurdles and barriers created by higher-level competition. Backley says psychological strategies were the key to helping him to deal with this competitive stress.

Most top athletes and coaches believe that psychological factors play as crucial a role as physical attributes and learned skills in the make-up of champions. When physical skills are evenly matches – as they tend to be in competitive sport – the competitor with greater control over his or her mind will usually emerge as the victor. Mental strength is not going to compensate for lack of skill, but in close contests it can make the difference between winning and losing. A key question for sport and exercise psychologists is whether champions have simply inherited the dominant psychological traits necessary for success or whether mental toughness can be acquired through training and experience. Recent research has attempted to explore the concept of mental toughness in sport more thoroughly, and it appears that, while some people are naturally more tough-minded than others, people can be ‘toughened-up’ with the correct approach to training.

Ancient Olympics

The Ancient Olympic Games was a series of competitions held between representatives of several city-states and kingdoms from Ancient Greece, which featured mainly athletic but also combat and chariot racing events. During the Olympic games all struggles against the participating city-states were postponed until the games were finished.
The origin of these Olympics is shrouded in mystery and legend. One of the most popular myths identifies Heracles and his father Zeus as the progenitors of the Games. According to legend, it was Heracles who first called the Games “Olympic” and established the custom of holding them every four years. A legend persists that after Heracles completed his twelve labors, he built the Olympic stadium as an honor to Zeus. Following its completion, he walked in a straight line for 200 steps and called this distance a “stadion”, which later became a unit of distance. Another myth associates the first Games with the ancient Greek concept of Olympic truce. The most widely accepted date for the inception of the ancient Olympics is 776 BC; this is based on inscriptions, found at Olympia, of the winners of a footrace held every four years starting in 776 BC. The Ancient Games featured running events, a pentathlon (consisting of a jumping event, discus and javelin throws, a foot race and wrestling), boxing, wrestling, and equestrian events. Tradition has it that Coroebus, a cook from the city of Elis, was the first Olympic champion.

The Olympics were of fundamental religious importance, featuring sporting events alongside ritual sacrifices honoring both Zeus (whose famous statue by Phidias stood in his temple at Olympia) and Plops, divine hero and mythical king of Olympia. Plops was famous for his chariot race with King Oenomaus of Pisatis. The winners of the events were admired and immortalized in poems and statues. The Games were held every four years, and this period, known as an Olympiad, was used by Greeks as one of their units of time measurement. The Games were part of a cycle known as the Pan-Hellenic Games, which included the Pythian Games, the Nemean Games and the Isthmian Games.
The Olympic Games reached their zenith in the 6th and 5th centuries BC, but then gradually declined in importance as the Romans gained power and influence in Greece. There is no consensus on when the Games officially ended, the most common-held date is 393 AD, when the emperor Theodosius I declared that all pagan cults and practices be eliminated. Another date cited is 426 AD, when his successor Theodosius II ordered the destruction of all Greek temples. After the demise of the Olympics, they were not held again until the late 19th century.

Modern Games

Forerunners

The first significant attempt to emulate the ancient Olympic Games was the L’Olympiade de la Republique, a national Olympic festival held annually from 1796 to 1798 in Revolutionary France. The competition included several disciplines from the ancient Greek Olympics. The 1796 Games also marked the introduction of the metric system into sport.

In 1850 and Olympian Class, to improve the fitness of locals, was started by Dr William Penny Brookes at Much Wenlock, in Shropshire, England. In 1859, Dr Brookes renamed the Olympian class to Wenlock Olympian Games and this annual games continues to this day. The Wenlock Olympian Society was founded by Dr Brookes on November 15, 1860.

Revival

Greek interest in reviving the Olympic Games began with the Greek War of Independence from the Ottoman Empire in 1821. It was first proposed by poet and newspaper editor Panagiotis Soutsos in his poem “Dialogue of the Dead”, published in 1833.
Eveangelis Zappas, a wealthy Greek philanthropist, first wrote to King Otto of Greece, in 1856, offering to fund a permanent revival of the Olympic Games. Zappas sponsored the first Olympic Games in 1859, which was held in an Athens city square. Athletes participated from Greece and the Ottoman Empire. Zappas funded the restoration of the ancient Panathenaic stadium so that it could host all future Olympic Games.

Dr. Brookes adopted events from the program of the Olympics held in Athens in 1859 into future Winlock Olympian Games. In 1866, a national Olympic Games Britain was organized by Dr. William Penny Brookes at London’s Crystal Palace.

The Panathinaiko Stadium hosted Olympics in 1870 and 1875. Thirty thousand spectators crowded in to and around the stadium in 1870 – bigger than almost any crowd at Coubertin’s IOC Olympics from 1900 to 1920.

In 1890, after attending the Olympian Games of the Wenlock Olympian Society, Baron Pierre de Coubertin was inspired to founded the International Olympic Committee. Coubertin built on the ideas and work of Brookes and Zappas with the aim of establishing internationally rotating Olympic Games that would occur every four years. He presented these ideas during the first Olympic congress of the newly created International Olympic Committee (IOC). This meeting was held from June 16 to June 23, 1894, at the Sorbonne University in Paris. On the last day of the Congress, it was decided that the first Olympic Games, to come under the auspices of the IOC, would take place two years later in Athens. The IOC elected the Greek writer Demetrios Vikelas as its first president.
1896 Games

The first Games held under the auspices of the IOC was hosted in the Panathenaic stadium in Athens in 1896. These Games brought 14 nations and 241 athletes who competed in 43 events. Zappas and his cousin Konstantinos Zappas had left the Greek government a trust to fund future Olympic Games. This trust was used to help finance the 1896 Games. George Averoff contributed generously for the refurbishment of the stadium in preparation for the Games. The Greek government also provided funding, which was expected to be recouped through the future sale of tickets to the Games and from the sale of the first Olympic commemorative stamp set.

The Greek officials and public were enthusiastic about the experience of hosting these Games. This feeling was shared by many of the athletes, who even demanded that Athens be the host of the Olympic Games on a permanent basis. The IOC did not approve this request. The committee planned that the modern Olympics would rotate internationally. As such they decided to hold the second Games in Paris.

Changes and Adaptations

Following the success of the 1896 Games, the Olympics entered a period of stagnation that threatened their survival. The Olympic Games held at the Paris Exposition in 1900 and the World’s Fair at St. Louis in 1904 were side-shows. The Games at Paris did not have a stadium, however this was the first time women took part in the games. The St. Louis Games hosted 650 athletes, but 580 were from the United States. The homogeneous nature of these celebrations was a low point for the Olympic Movement. The Games rebounded when the 1906 Intercalated Games were held in Athens.
These Games are not officially recognized by the IOC and no Intercalated Games have been held since. These Games, which were hosted at the Panathenaic stadium in Athens, attracted a broad international field of participants, and generated great public interest. This marked the beginning of a rise in both the popularity and the size of the Olympics.

Winter Games

The Winter Olympics were created to feature snow and ice sports that were logistically impossible to hold during the Summer Games. Figure skating (in 1908 and 1920) and ice hockey (in 1920) were featured as Olympic events at the Summer Olympics. The IOC desired to expand this list of sports to encompass other winter activities. At the 1921 Olympic Congress, in Lausanne, it was decided to hold a winter version of the Olympic Games. A winter sports week (it was actually 11 days) was held in 1924 in Chamonix, France; this event became the first Winter Olympic Games. The IOC mandated that the Winter Games be celebrated every four years on the same year as their summer counterpart. This tradition was upheld until the 1992 Games in Albertville, France; after that, beginning with the 1994 Games, the Winter Olympics were held on the third year of each Olympiad.

Paralympics

In 1948, Sir Ludwig Guttman, determined to promote the rehabilitation of soldiers after World War II, organized a multi-sport event between several hospitals to coincide with the 1948 London Olympics. Guttman’s event, known then as the Stoke Mandeville Games, became an annual sports festival. Over the next twelve years, Guttman and others continued their efforts to use sports as an avenue to healing.
For the 1960 Olympic Games, in Rome, Guttmann brought 400 athletes to compete in the “Parallel Olympics”, which became known as the first Paralympics. Since then, the Paralympics have been held in every Olympic year. As of the 1988 Summer Olympics in Seoul, South Korea, the host city for the Olympics has also played host to the Paralympics.

**Youth Games**

Starting in 2010, the Olympic Games will be complemented by Youth Games, where athletes between the ages of 14 and 18 will compete. The Youth Olympic Games were conceived by IOC president Jacques Rogge in 2001 and approved during the 119th Congress of the IOC. The first Summer Youth Games will be in Singapore in 2010, while the inaugural Winter Games will be hosted in Innsbruck, Austria, two years later. These Games will be shorter than the senior Games; the summer version will last twelve days, while the winter version will last nine days. The IOC will allow 3,500 athletes and 875 officials to participate at the Summer Youth Games, and 970 athletes and 580 officials at the Winter Youth Games. The sports to be contested will coincide with those scheduled for the traditional senior Games, however there will be a reduced number of disciplines and events.

**Recent Games**

From 241 participants representing 14 nations in 1896, the Games have grown to about 10,500 competitors from 204 countries at the 2008 Summer Olympics. The scope and scale of the Winter Olympics is smaller. For example, Turin hosted 2,508 athletes from 80 countries competing in 84 events, during the 2006 Winter Olympics. During the Games most athletes and officials are housed in the Olympic village.
This village is intended to be a self-contained home for all the Olympic participants. It is furnished with cafeterias, health clinics, and locations for religious expression.

The IOC allows nations to compete that do not meet the strict requirements for political sovereignty that other international organizations demand. As a result, colonies and dependencies are permitted to set up their own National Olympic Committees. Examples of this include territories such as Puerto Rico, Bermuda, Taiwan and Hong Kong, all of which compete as separate nations despite being legally a part of another country.

**International Olympic Committee**

The Olympic Movement encompasses a large number of national and international sporting organizations and federations, recognized media partners, as well as athletes, officials, judges, and every other person and institution that agrees to abide by the rules of the Olympic Character.

As the umbrella organization of the Olympic Movement, the International Olympic Committee (IOC) is responsible for selecting the host city, overseeing the planning of the Olympic Games, updating and approving the sports program, and negotiating sponsorship and broadcasting rights.

The Olympic Movement is made of three major elements:

- International Federations (Ifs) are the governing bodies that supervise a sport at an international level. For example, the International Federation of Association Football (FIFA) is the IF for football (soccer), and the Federation Internationale de Volleyball (FIVB) is the international governing body for volleyball. There are currently 35 Ifs in the Olympic Movement, representing each of the Olympic sports.
• National Olympic Committees (NOCs) represent and regulate the Olympic Movement within each country. For example, the United States Olympic Committee (USOC) is the NOC of the United States. There are currently 205 NOCs recognized by the IOC.

• Organizing Committees for the Olympic Games (OCOGs) constitute the temporary committees responsible for the organization of a specific celebration of the Olympics. OCOGs are dissolves after each Games, once the final report is delivered to the IOC.

French and English are the official languages of the Olympic Movement. The other language used at each Olympic Games is the language of the host country. Every proclamation is spoken in these three languages, or the main two depending on whether the host country is an English or French speaking country.

Criticism

The IOC has often been criticized for being an intractable organization, with several members on the committee for life. The leadership of IOC presidents Avery Brundage and Juan Antonio Samaranch was especially controversial. Brundage was president for over 20 years, and during his tenure he protected the Olympics from untoward political involvement. He was accused of noth racism, for his handling of the apartheid issue with the South African delegation, and anti-Semitism. Under the Samaranch presidency, the office was accused of both nepotism and corruption. Samaranch’s ties with the Franco regime in Spain were also a source of criticism.

In 1998, it was uncovered that several IOC members had taken bribes from members of the Salt Lake City bid committee for the hosting of the 2002 Winter Olympics, to ensure their votes were cast in favor of the American bid.
The IOC pursued an investigation which led to the resignation of four members and expulsion of six others. The scandal set off further reforms that would change the way host cities are selected, to avoid similar cases in the future. A BBC documentary entitled Panorama: Buying the Games, aired in August 2004, investigated the taking of bribes in the bidding process for the 2012 Summer Olympics. The documentary claimed it was possible to bribe IOC members into voting for a particular candidate city. After being narrowly defeated in their bid for the 2012 Summer Games, Parisian Mayor Bertrand Delanoe specifically accused the British Prime Minister Tony Blair and the London Bid Committee (headed by former Olympic champion Sebastian Coe) of breaking the bid rules. He cited French President Jacques Chirac as a witness; Chirac gave guarded interviews regarding his involvement. The allegation was never fully explored. The Turin bid for the 2006 Winter Olympics was also shrouded in controversy. A prominent IOC member, Marc Hodler, strongly connected with the rival bid of Sion, Switzerland, alleged bribery of IOC officials by members of the Turin Organizing Committee. These accusations led to a wide-ranging investigation. The allegations also served to sour many IOC members against Sion’s bid and potentially helped Turin to capture the host city nomination.

**Commercialization**

The IOC originally resisted funding by corporate sponsors. It was not until retirement of IOC president Avery Brundage, in 1972, that the IOC began to explore the potential of the television medium and the lucrative advertising markets available to them. Under the leadership of Juan Antonio Samaranch the Games began to shift toward international sponsors who sought to link their products to the Olympic brand.
Budget

During the first half of the 20th century the IOC was run on a small budget. As president of the IOC from 1952 to 1972, Avery Brundage rejected all attempts to link the Olympics with commercial interest. Brundage believed the lobby of corporate interests would unduly impact the IOC’s decision-making. Brundage’s resistance to this revenue stream meant the IOC left organizing committees to negotiate their own sponsorship contracts and use the Olympic symbols. When Brundage retired the IOC had US$2 million in assets; eight years later the IOC coffers had swelled to US$45 million. This was primarily due to a shift in ideology toward expansion of the Games through corporate sponsorship and the sale of television rights. When Juan Antonio Samaranch was elected IOC president in 1980 his desire was to make the IOC financially independent.

The 1984 Summer Olympics became a watershed moment in Olympic history. The Los Angeles-based organizing committee, led by Peter Ueberroth, was able to generate a surplus of US$225 million, which was an unprecedented amount at that time. The organizing committee had been able to create such a surplus in part by selling exclusive sponsorship rights to select companies. The IOC sought to gain control of these sponsorship rights. Samaranch helped to establish The Olympic Program (TOP) in 1985, in order to create an Olympic brand. Membership in TOP was, and is, very exclusives and expensive. Fees cost US$50 million for a four year membership. Members of TOP received exclusive global advertising rights for their product category, and use of the Olympic symbol, the interlocking rings, in their publications and advertisements.
Effect of television

The 1936 Summer Olympics in Berlin were the first Games to be broadcast on television, though only to local audiences. The 1956 Winter Olympics were the first internationally televised Olympic Games, and the following Winter Games had their broadcasting rights sold for the first time to specialized television broadcasting networks—CBS paid US$394,000 for the American rights, and the European Broadcasting Union (EBU) allocated US$660,000. In the following decades the Olympics became one of the ideological fronts of the Cold War. Superpowers jockeyed for political supremacy, and the IOC wanted to take advantage of this heightened interest via the broadcast medium. The sale of broadcast rights enabled the IOC to increase the exposure of the Olympic Games, thereby generating more interest, which in turn created more appeal to advertisers who purchased advertising time on television. This cycle allowed the IOC to charge ever-increasing fees for those rights. For example, CBS paid US$375 million for the rights of the 1998 Nagano Games, while NBC spent US$3.5 billion for the broadcast rights of all the Olympic Games from 2000 to 2008. Viewership increased exponentially from the 1960s until the end of the country. This began as a result of the beginning of the usage of satellite in 1964 and the introduction of color television in 1968. Worldwide audience estimates for the 1968 Mexico City Games was 600 million, whereas at the Los Angeles Games of 1984, the audience numbers had increased to 900 million; that number swelled to 3.5 billion by the 1992 Summer Olympics in Barcelona. However, at the 2000 Summer Games in Sydney, NBC drew the lowest ratings for any Summer or Winter Olympics since 1968. This was attributed to two factors; one was the increased competition from cable channels, the second was the internet, which was able to display results and video in real time.
Television companies were still relying on tape-delayed content, which was becoming outdated in the information era. A drop in ratings meant that television studios had to give away free advertising time. With such high costs charged to broadcast the Games, the added pressure of the internet, and increased competition from cable, the television lobby demanded concessions from the IOC to boost ratings. The IOC responded by making a number of changes to the Olympic program. At the Summer Games, the gymnastics competition was expanded from seven to nine nights, and a Champions Gala was added to draw greater interest. The IOC also expanded the swimming and dividing programs, both popular sports with a broad base of television viewers. Finally, the American television lobby was able to dictate when certain events were held so that they could be broadcast live during prime time in the United States. The result of these efforts was mixed: the ratings for the 2006 Winter Games, held in Torino, Italy, were significantly lower than those for the 2002 Games, while there was a sharp increase in viewership for the 2008 Summer Olympics, staged in Beijing.

Controversy

The sale of the Olympic brand has been controversial. The argument is that the Games have become indistinguishable from any other commercialized sporting spectacle. Specific criticism was leveled at the IOC for market saturation during the 1996 Atlanta and 2000 Sydney Games. The cities were awash in corporations and merchants attempting to sell Olympic-related wares. The IOC indicated that they would address this to prevent spectacles of over-marketing at future Games. Another criticism is that the Games are funded by host cities and national governments; the IOC incurs none of the cost, yet controls all the rights and profits from the Olympic symbols.
The IOC also takes a percentage of all sponsorship and broadcast income. Host cities continue to compete ardently for the right to host the Games, even though there is no certainty that they will earn back their investments.

**Symbols**

The Olympic Movement uses symbols to represent the ideals embodied in the Olympic Charter. The Olympic symbol, better known as the Olympic rings, consists of five intertwined rings and represents the unity of the five inhabited continents (America, Africa, Asia, Australasia, Europe). The colored version of the rings—blue, yellow, black, green and red—over a white field forms the Olympic flag. These colors were chosen because every nation had at least one of them on its national flag. The flag was adopted in 1914 but flown for the first time only at the 1920 Summer Olympics in Antwerp, Belgium. It has since been hoisted during each celebration of the Games.

The Olympic motto is Citius, Altius, Fortius, a Latin expression meaning “Faster, Higher, Stronger”. Coubertin’s ideals are further expressed in the Olympic creed.

**1.6 Psychology**

Unlike self-awareness, self-consciousness can be a problem at times. It is often associated with shyness and embarrassment, and can affect self-esteem. In a positive context, self-consciousness may affect the development of identity, because it is during periods of high self-consciousness that people come the closest to knowing themselves objectively. Self-consciousness affects people in varying degrees, as some people are constantly self-monitoring or self-involved, while others are completely oblivious about themselves.
Psychologists frequently distinguish between two kinds of self-consciousness, private and public. Private self-consciousness is a tendency to introspect and examine one’s inner self and feelings. Public self-consciousness is an awareness of the self as it is viewed by others. This kind of self-consciousness can result in self-monitoring and social anxiety. Both private and public self-consciousness are viewed as personality traits that are relatively stable over time, but they are not correlated. Just because an individual is high on one dimension doesn’t mean that he or she is high on the other. Different levels of self-consciousness affect behavior, as it is common for people to act differently when they “lose themselves in a crowd”. Being a crowd, being in a dark room, or wearing a disguise anonymity and temporarily decrease self-consciousness. This can lead to uninhibited, sometimes destructive behavior.

**Self-esteem**

Self-esteem encompasses beliefs (for example, “I am competent\incompetent”) and emotions (for example, triumph\despair, pride\shame). Behavior may reflect self-esteem (for example, assertiveness\timorousness, confidence\caution). Psychologists usually regard self-esteem as an enduring personality characteristic (trait self-esteem), though normal, short-term variations (state self-esteem) occur. Self-esteem can apply specifically to a particular dimension (for example, “I believe I am a good writer, and feel proud of that in particular”) or have global extent (for example, “I believe I am a good person, and feel proud of myself in general”).

Synonyms or near-synonyms of self-esteem include: self-worth, self-regard, self-respect, self-love (which can express overtones of self-promotion), self-integrity. Self-esteem is distinct from self-confidence and self-efficacy, which involve beliefs about ability and future performance.
History of the concept

The Oxford English Dictionary (OED) traces the use of the word “self-esteem” in English back as far as 1657. John Milton is argued to have first coined this term. After a career in the proto-psychological lore of phrenology in the 19th century the term entered more mainstream psychological use in the work of the American psychologists and philosophers Lorne Park and William James in 1890.

Self-esteem has become the third most frequently occurring theme in psychological literature: as of 2003 over 25,000 articles, chapters, and books referred to the topic.

1. Self-esteem as a basic human need, i.e. “it makes an essential contribution to the life process”. “is indispensable to normal and healthy self-development, and has a value for survival”.

2. Self-esteem as an automatic and inevitable consequence of the sum of individuals’ choices in using their consciousness.

3. Something experienced as a part of, or background to, all of the individuals thoughts, feelings and actions.

Self esteem is a concept of personality, for it to grow, we need to have self worthy, and this self worthy will be sought from embracing challenges that result in the showing of success.

Compare the usage of terms such as self-love or self-confidence.
Implicit self-esteem refers to a person’s disposition to evaluate them positively or negatively in a spontaneous, automatic, or unconscious manner. It contrasts with explicit self-esteem, which entails more conscious and reflective self-reflective self-evaluation. Both explicit and implicit self-esteem are subtypes of self-esteem proper.

Implicit self-esteem is assessed using indirect measures of cognitive processing. These include the Name Letter Task and the Implicit Association Test. Such indirect measures are designed to reduced awareness of, or control of, the process of assessment. When used to assess implicit self-esteem, they feature stimuli designed to represent the self, such as personal pronouns (e.g., “I”) or letters in one’s name.

Measurement

For the purpose of empirical research, psychologists typically assess self-esteem by a self-report inventory yielding a quantitative result. They establish the validity and reliability of the questionnaire prior to its use. Researchers are becoming more interested in measures of implicit self-esteem. Popular lore recognizes just “high” self-esteem and “low” self-esteem.

The Rosenberg Self-Esteem Scale (1965) and the Coopersmith Self-Esteem Inventory (1967\1981) feature among the most widely used systems for measuring self-esteem. The Rosenberg test usually uses a ten-question battery scored on a four-point response-system that requires participants to indicate their level of agreement with a series of statements about themselves. The Coppersmith Inventory uses a 50-question battery over a variety of topics and asks subjects whether they rate positive or negative characteristics of someone as similar or dissimilar to themselves.
Theories

Many early theories suggested that self-esteem is a basic human need or motivation. American psychologist Abraham Maslow, for example, included self-esteem in his hierarchy of needs. He described two different forms of esteem: the need for respect from others and the need for self-respect, or inner self-esteem. Respect from others entails recognition, acceptance, status and appreciation, and was believed to be more fragile and easily lost than inner self-esteem. According to Maslow, without the fulfillment of the self-esteem need, individuals will be driven to seek it and unable to grow and obtain self-actualization.

Modern theories of self-esteem explore the reasons why humans are motivated to maintain a high regard for themselves. Sociometer theory maintains that self-esteem evolved to check one’s level of status and acceptance in one’s social group. According to terror management theory, self-esteem serves a protective function and reduces anxiety about life and death.

Quality and level of self-esteem

Level and quality of self-esteem, though correlated, remain distinct. Level-wise, one can exhibit high but fragile self-esteem (as in narcissism) or low but stable self-esteem (as in humility). However, investigators can indirectly assess the quality of self-esteem in several ways:

1. In terms of its constancy over time (stability)
2. In terms of its independence of meeting particular conditions (non-contingency)
3. In terms of its ingrained nature at a basic psychological level (implicitness or automatized).
Humans have portrayed the dangers of excessive self-esteem and the advantages of more humility since at least the development of Greek tragedy, which typically showed the results of hubris.

**Self-esteem, grades and relationships**

From the late 1970s to the early 1990s many Americans assumed as a matter of course that students’ self-esteem acted as a critical factor in the grades that they earn in school, in their relationships with their peers, and in their later success in life. Given this assumption, some American groups created programs which aimed to increase the self-esteem of students. Until the 1990s little peer-reviewed and controlled research took place on this topic.

The self-concept is composed of relatively permanent self-assessments, such as personality attributes, knowledge of one’s skills and abilities, one’s occupation and hobbies, and awareness of one’s physical attributes. For example, the statement, “I am lazy” is a self-assessment that contributes to the self-concept. In contrast, the statement “I am tired” would not normally be considered part of someone’s self-concept, since being tired is a temporary state. Nevertheless, a person’s self-concept may change with time, possibly going through turbulent periods of identity crisis and reassessment.

The self-concept is not restricted to the present. It includes past selves and future selves. Future selves or “possible selves” represent individuals’ ideas of what they might become, what they would like to become, and what they are afraid of becoming. They correspond to hopes, fears, standards, goals and threats. Possible selves may function as incentives for future behavior and they also provide an evaluative and interpretive context for the current view of self.
Peer-reviewed research undertaken since then has not validated previous assumptions. Recent research indicated that inflating students’ self-esteem in and of itself has no positive effect on grades. One study has shown that inflating self-esteem by itself can actually decrease grades.

High self-esteem correlates highly with self-reported happiness. However, it is not clear which, if either, necessarily leads to the other. Additionally, self-esteem has been found to be related to forgiveness in close relationships, in that people with high self-esteem will be more forgiving than people with low self-esteem.

The relationship involving self-esteem and academic results does not signify that high self-esteem contributes to high academic results. It simply means that high self-esteem may be accomplished due to high academic performance.

**Bullying, Violence and Murder**

Some of the most interesting results of recent studies center on the relationships between bullying, violence, and self-esteem. People used to assume that bullies acted violently towards others because they suffered from low self-esteem.

These findings suggest that the low-esteem theory is wrong. But none involves what social psychologists regard as the most convincing form of evidence: controlled laboratory experiments. When we conducted our initial review of the literature, we uncovered no lab studies that probed the link between self-esteem and aggression. In contrast to old beliefs, recent research indicates that bullies act the way that they do because they suffer from unearned high self-esteem.
Violent criminals often describe themselves as superior to others – as special, elite persons who deserve preferential treatment. Many murders and assaults are committed in response to blows to self-esteem such as insults and humiliation. (To be sure, some perpetrators live in settings where insults threaten more than their opinions of themselves. Esteem and respect are linked to status in the social hierarchy, and to put someone down can have tangible and even life-threatening consequences)

The presence of superiority-complexes can be seen both in individuals cases, such as the criminals Roy Baumeister studied, and in whole societies, such as Germany under the Nazi regime.

The findings of this research do not take into account that the concept of self-esteem lacks a clear definition and that differing views exist of the precise definition of self-esteem. In his own work, Baumeister often uses a “common use” definition: self-esteem is how you regard yourself (or how you appear to regard yourself) regardless of how this view was cultivated. Other psychologists believe that a “self-esteem” that depends on external validation of the self (or other people’s approval), such as what seems relevant in the discussion of violent people, does not, in fact, equate to “true” self-esteem. Nathaniel Branden labeled external validation as “pseudo self-esteem”, arguing that “true self-esteem” comes from internal sources, such as self-responsibility, self-sufficiency and the knowledge of one’s own competence and capability to deal with obstacles and adversity, regardless of what other people think.
Psychologists who agree with Branden’s view dismiss Baumeister’s findings. Such psychologists say that Baumeister mistakes narcissism as “high self-esteem” in criminals. They see such narcissism as an inflated opinion of self, built on shaky grounds, and opine that violence comes when that opinion comes under threat. Those with “true” self-esteem who valued themselves and believed wholly in their own competence and worth would have no need to resort to violence or indeed have any need to believe in their superiority or to prove their superiority.

**Contingencies of self-worth**

Contingencies of self-worth comprise those qualities a person believes he or she must have in order to class as a person of value; proponents claim the contingencies as the core of self-esteem.

According to the “Contingencies of Self-Worth model” (Crocker & Wolfe, 2001) people differ in their bases of self-esteem. Their beliefs – beliefs about what they think they need to do or who they need to “be” in order to class as a person of worth -- form these bases. Crocker and her colleagues (2001) identified seven “domains” in which people frequently derive their self-worth:

1. Virtue
2. God’s love
3. Support of family
4. Academic competence
5. Physical attractiveness
6. Gaining others’ approval
7. Outdoing others in competition.
Intelligence

Intelligence is an umbrella term used to describe a property of the mind that encompasses many related abilities, such as the capacities to reason, to plan, to solve problems, to think abstractly, to comprehend ideas, to use language, and to learn. There are several ways to define intelligence. In some cases, intelligence may include traits such as creativity, personality, character, knowledge, or wisdom. However, most psychologists prefer not to include these traits in the definition of intelligence.

Theories of intelligence can be divided into those based on a unilinear construct of general intelligence and those based on multiple intelligences. Francis Galton, influenced by his cousin Charles Darwin, was the first to advance a theory of general intelligence. For Galton, intelligence was a real faculty with a biological basis that could be studied by measuring reaction times to certain cognitive tasks. Galton’s research on measuring the head size of British scientists and ordinary citizens led to the conclusion that head size had no relationship with the person’s intelligence.

Alfred Binet

Alfred Binet (July 8, 1857 – October 18, 1911), French psychologist and inventor of the first usable intelligence test, the basis of today’s IQ test. His principal goal was to identify students who needed special help in coping with the school curriculum. Along with his collaborator Theodore Simon, Binet published revisions of his intelligence scale in 1908 and 1911, the last appearing just before his untimely death.
A further refinement of the Binet-Simon scale was published in 1916 by Lewis M. Terman, from Stanford University, who incorporated William Stern’s proposal that an individual’s intelligence level be measured as an (I.Q.). Terman’s test, which he named the Stanford-Binet Intelligence Scale formed the basis for one of the modern intelligence tests still commonly used today. They are all colloquially known as IQ tests.

**Early Years**

Binet was born as Alfredo Binetti in Nice, at the time part of the Kingdom of Sardinia. He was the only child of a physician father and an artist mother. His parents separated when he was young, and Binet then moved to Paris with his mother. He attended law school, and earned his degree in 1878. He planned on going to medical school, but decided that his interest in psychology was more important. Reading books by Charles Darwin, Alexander Bain and others, Binet became a somewhat self-taught psychologist. Introverted and a loner, this self-educating suited him. What he did not realize was that he would later pay, because of what he was deprived of by not attending a university and formally studying psychology. Binet published the first modern intelligence test, the Binet-Simon intelligence scale, in 1905.

**Binet and Chess**

In 1894, Binet conducted one of the first psychological studies into chess. It investigated the cognitive facilities of chess masters. Binet hypothesized that chess depends upon the phenomenological qualities of visual memory but after studying the reports by master participants, it was concluded that memory was only part of the chain of cognition involved in the game process.
The players were blindfolded and required to play the game from memory. It was found that only masters were able to play successfully without seeing the board for a second time and that amateur or intermediate players found it to be an impossible task. It was further concluded that experience, imagination, and memories of abstract and concrete varieties were required in grand master chess. The line of psychological chess research was followed up in the 1950s by Reuben Fine and in the 1960s by Adriaan de Groot.

**Later career and the Binet – Simon test**

In 1899, Binet was asked to be a member of the Free Society for the Psychological Study of the Child. French education changed profusely during the end of the nineteenth century, because of a law that passed which made it mandatory for children ages six to fourteen to attend school. This group to which Binet became a member hoped to begin studying children in a scientific manner. Binet and many other members of the society were appointed to the Commission for the Retarded. The question became “What should be the test given to children thought to possibly have learning disabilities, that might place them in a special classroom?” Binet made it his problem to establish the differences that separate the normal child from the abnormal, and to measure such differences. L’Étude experimental de l’intelligence (Experimental Studies of Intelligence) was the book he used to describe his methods and it was published in 1903.

Development of more tests and investigations began soon after the book, with the help of a young medical student named Theodore Simon. Simon had nominated himself a few years before as Binet’s research assistant and worked with him on the intelligence tests that Binet is known for, which share Simon’s name as well.
In 1905, a new test for measuring intelligence was introduced and simply called the Binet-Simon scale. In 1908, they revised the scale, dropping, modifying and adding tests and also arranging them according to age levels from three to thirteen. In 1904 a French professional group for child psychology, La Societe Libre pour l’Etude Psychologique de l’Enfant, was called upon by the French government to appoint a commission on the education of retarded children. The commission was asked to create a mechanism for identifying students in need of alternative education. Binet, being an active member of this group, found the impetus for the development of his mental scale.

Binet and Simon, in creating what historically is known as the Binet-Simon Scale, comprised a variety of tasks they thought were representative of typical children’s abilities at various ages. This task-selection process was based on their many years of observing children in natural settings. They then tested their measurement on a sample of fifty children, ten children per five age groups. The children selected for their study were identified by their school teachers as being average for their age. The purpose of this scale of normal functioning, which would later be revised twice using more stringent standards, was to compare children’s mental abilities relative to those of their normal peers (Siegler, 1992).

The scale consisted of thirty tasks of increasing complexity. The easiest of these could be accomplished by all children, even those who were severely retarded. Some of the simplest test items assessed whether or not a child could follow a lighted match with his eyes or shake hands with the examiner. Slightly harder tasks required children to point to various named body parts, repeat back a series of 3 digits, repeat simple sentences, and to define words like house and fork.
More difficult test items required children to state the difference between pairs of things reproduce drawings from memory or to construct sentences from three given words such as “Paris’ river and fortune”. The hardest test items included asking children to repeat back 7 random digits, find three rhymes for the French word obeisance and to answer questions such as “My neighbor has been receiving strange visitors. He has received in turn a doctor, a lawyer, and then a priest. What is taking place?” (Fancher, 1985).

For the practical use of determining educational placement, the score on the Binet-Simon scale would reveal the child’s mental age. For example, a 6 year old child who passed all the tasks usually passed by 6 year olds buts nothing beyond – would have a mental age that exactly matched his chronological age, 6.0. (Francher, 1985).

Binet was forthright about the limitations of his scale. He stressed the remarkable diversity of intelligence and the subsequent need to study it using qualitative, as opposed to quantitative, measures. Binet also stressed that intellectual development progressed at variable rates and could be influenced by the environment; therefore, intelligence was not based solely on genetics, was malleable rather than fixed, and could only be found in children with comparable backgrounds (Siegler, 1992). Given Binet’s stance that intelligence testing was subject to variability and was not generalizable, it is important to look at the metamorphosis that mental testing took on as it made its way to the U.S.

While Binet was developing his mental scale, the business, civic, and educational leaders in the U.S. were facing issues of how to accommodate the needs of a diversifying population, while continuing to meet the demands of society.
There arose the call to form a society based on meritocracy (Siegler, 1992) while continuing to underline the ideals of the upper class. In 1908, H.H.Goddare, a champion of the eugenics movement, found utility in mental testing as a way to evidence the superiority of the white race. After studying aboard, Goddard brought the Binet-Simon scale to the United States and translated it into English.

Following Goddard in the U.S. mental testing movement was Lewis Terman who took the Simon-Binet was no longer used solely for advocating education for all children, as was Binet’s objective. A new objective of intelligence testing was illustrated in the Stanford-Binet manual with testing ultimately resulting in “curtailing the reproduction of feeble-mindedness and in the elimination of an enormous amount of crime, pauperism, and industrial inefficiency (p.7)”


It follows that we should question why Binet did not speak out concerning the new found uses of his measure. Siegler (1992) pointed out that Binet was somewhat of an isolationist in that he never traveled outside of France and he barely participated in professional organizations. Additionally, his mental scale was not adopted in his own country during his lifetime and therefore was not subjected to the same fate. Finally, when Binet did become aware of the “foreign ideas being grafted on his instrument “he condemned those who with “brutal pessimism” and ‘deplorable verdicts ‘were promoting the concept of intelligence as a single, unitary construct (White, 2000).
From 1905 to 1908, Binet and Simon developed a test primarily for kids ages 3 to 15 that would compare their intellectual capabilities to other children of the same age. He did a lot trial and error testing with students from his area. Binet studied groups of “normal” children, and also children who were mentally challenged. He had to figure out which tasks each group of students was able to complete, and what would be considered standard in the groups. The tests were held between one interviewer and one student, and determined what level of intellectual thinking the student had achieved. The invention of the intelligence test was extremely important to the field of education.

Binet published the third version of the Binset-Simon scale right before he died in 1911, but it was still unfinished. If it were not for his early death, Binet surely would have continued to revise the scale. Still, the Binet-Simon scale was and is hugely popular around the world, mainly because it is easy to give and fairly brief.

Since his death, many people in many ways have honored Binet, but two of these stand out. In 1917, the Free Society for the Psychological Study of the Child, to whom Binet became a member in 1899 and which prompted his development of the intelligence tests, changed their name to La Societe Alfred Binet, in memory of the renowned psychologist. The second honor was not until 1984, when the journal Science 84 picked the Binet-Simon scale, as one of twenty of this century’s most significant developments or discoveries. He studied sexual behavior, coining the term erotic fetishism to describe individuals whose sexual interests in nonhuman objects, such as articles of clothing. He also studied abilities of Valentine Dencausse, the most famous chiromancer in Paris in those days.
Alfred Binet and the French school of intelligence believed that intelligence was an average of numerous dissimilar abilities, rather than a unitary entity with specific identifiable properties. The Stanford-Binet intelligence test has been used by both theorists of general intelligence and multiple intelligence.

**Stanford-Binet Intelligence Scales**

The development of the **Stanford-Binet Intelligence Scales** initiated the modern field of intelligence testing. The Stanford-Binet test started with the French psychologist Alfred Binet, whom the French government commissioned with developing a method of identifying intellectually deficient children for their placement in special education programs. As Binet indicated, case studies might be more detailed and helpful, but the time required to test many people would be excessive.

**Development**

Later, Alfred Binet and physician Theodore Simon collaborated in studying mental retardation in French school children. Theodore Simon was a student of Binet’s. Between 1905 and 1908, their research at a boys school, in Grange-aux-Belles, led to their developing the Binet-Simon tests; via increasingly difficult questions, the tests measured attention, memory, and verbal skill, Binet warned that such test scores should not be interpreted literally, because intelligence is plastic and that there was a margin of error inherent to the test (Francher, 1985). The test consisted of 30 items ranging from the ability to touch one’s nose or ear when asked to the ability to draw designs from memory and to define abstract concepts.
Binet proposed that a child’s intellectual ability increases with age. Therefore, he tested potential items and determined that age at which a typical child could answer them correctly. Thus, Binet developed the concept of mental age (MA), which is an individual’s level of mental development relative to others. In 1916, the Stanford psychologist Lewis Terman released the “Stanford Revision of the Binet-Simon Scale”, the “Stanford-Benet”, for short. Helped by graduate students and validation experiments, he removed some Benet-Simon test items and added new ones. Soon, the test was so popular that Robert Yerkes, the president of the American psychological Association, decided to use it in developing the Army Alpha and the Army Beta tests to classify recruits. Thus, a high-scoring recruit might earn an A-grade (high officer material), whereas a low-scoring recruit with an E-grade would be rejected for military service. (Fancher, 1985).

Present use

Since the inception of the Stanford-Binet, it has been revised several times. Currently, the test is in its fifth edition, which is called the Stanford-Binet 5. According to the publisher’s website, “The SB5 was normed on a stratified random sample of 4,800 individuals that matches the 2000 U.S. Census. Bias reviews were conducted on all items for gender, ethnic, cultural\religious, regional, and socioeconomic status issues. Validity data was obtained using such instruments as the Stanford-Binet Intelligence Scale, Fourth Edition, the Stanford-Binet Form L-M, the Woodcock-Johnson III, the Universal Nonverbal Intelligence Test, the Bender-Gestalt, the WAIS-III, the WIAT-II, the WISC-III, and the WPPSI-R”.
Low variation on individuals tested more than once indicates the test has high reliability, although its validity is debated. In 1985, the test was revised to analyze an individual’s responses in four content areas: verbal reasoning, quantitative reasoning, abstract\visual reasoning, and short term memory. A general composite score also is obtained. Today the test is scored by comparing how the test taker performs compared with other people of the same age. The five factors assessed in the test are: Fluid Reasoning, Knowledge, Quantitative Reasoning, Visual-Spatial Processing, and Working Memory. Each is assessed in two separate domains, verbal and nonverbal, in order to accurately assess individuals with deafness, limited English, or communication disorders. Examples of test items include verbal analogies to test Verbal Fluid Reasoning and picture absurdities to test Nonverbal Knowledge. The test makers state that the Stanford-Binet 5 accurately assesses low-functioning, normal intelligence, and high-functioning individuals (Riverside Publishing, 2004). Students with exceptional scores on this test may be deemed bright, moderately gifted, highly gifted, extremely gifted, or profoundly gifted (contrast these with obsolete terms for low scores). These terms equate with progressively further standard deviations of IQ scores from the mean (100), bright being 1 standard deviation, moderately gifted 2 standard deviations, etc. Mensa currently requires a score of 132 on the Stanford-Binet. Since the test has standard deviation of 15 (Roid, 2003) this corresponds to 2 standard deviations above the mean in a normally distributed population. The Triple Nine Society currently requires a score of 146 on the SB-5 version, and 149 on all others. By administering the Stanford-Binet test to large numbers of individuals selected at random from different parts of the United States, it has been found that the scores approximate a normal distribution. The Stanford-Binet continues to be one of the most widely used individual tests of intelligence.
Criticisms

The validity of standardized tests such as Stanford-Binet for testing general intelligence has been disputed by a number of commentators. Stephen Jay Gould points out in his book, The Mismeasure of Man that Binet originally devised his test for detecting problem areas, rather than as a means of ranking the general intelligence of students. Over time, the purposes of intelligence testing have changed, however, and the Stanford-Binet 5, the 5th revision of Binet’s test, now bears little resemblance to his original work. Achievement tests, rather than intelligence tests, are now typically used to assess performance in particular areas.

As Brown & French point out, “IQ tests serve one function exceptionally well, they predict academic success or failure, they are composed of items that are representative of the kinds of problems that traditionally dominate school curricula,” (1979: 255) and thus only predict that category of school assimilation. Further, “children with the same current status on an IQ test item may vary quite widely in terms of their cognitive potential.”

Intelligence comes from the Latin verb intelligere, which means “to understand”. By this rationale, intelligence (as understanding is arguably different from being “smart” (able to adapt to one’s environment). At least two major “consensus” definitions of intelligence have been proposed. First, from Intelligence: Knowns and Unknowns, a report of a task force convened by the American Psychological Association in 1995:
Individuals differ from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought.

Although these individual differences can be substantial, they are never entirely consistent: a given person’s intellectual performance will vary on different occasions, in different domains, as judged by different criteria. Concepts of “intelligence” are attempts to clarify and organize this complex set of phenomena. Although considerable clarity has been achieved in some areas, no such conceptualization has yet answered all the important questions and none commands universal assent. Indeed, when two dozen prominent theorists were recently asked to define intelligence, they gave two dozen somewhat different definitions’ second definition of intelligence comes from “Mainstream Science on Intelligence”, which was signed by 52 intelligence researchers in 1994:

A very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our surroundings--- “catching on”, “making sense” of things, or “figuring out” what to do. Another simple and efficient definition is the ability to apply knowledge in order to perform better in an environment.
Researchers in the fields of psychology and learning have also defined human intelligence:

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Binet</td>
<td>Judgment, otherwise called good sense, practical sense, initiative, the faculty of adapting one’s self to circumstances…auto-critique.</td>
</tr>
<tr>
<td>David Wechsler</td>
<td>The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment.</td>
</tr>
<tr>
<td>Cyril Burt</td>
<td>Innate general cognitive ability</td>
</tr>
<tr>
<td>Howard Gardner</td>
<td>To my mind, a human intellectual competence must entail a set of skills of problem solving—enabling the individual to resolve genuine problems or difficulties that he or she encounters and, when appropriate, to create an effective product—and must also entail the potential for finding or creating problems---and thereby laying the groundwork for the acquisition of new knowledge.</td>
</tr>
<tr>
<td>Linda Gottfredson</td>
<td>The ability to deal with cognitive complexity</td>
</tr>
<tr>
<td>Sternberg &amp; Salter</td>
<td>Goal-directed adaptive behavior</td>
</tr>
</tbody>
</table>

A mathematical definition of “intelligence” (using notions from computer science) was put forward by Marcus Hutter in his book Universal Artificial Intelligence (Springer 2005). Essentially the same idea as Hutter’s, but coming at it from a different angle and with different terminology, was put forward independently by Warren D. Smith in 2006.
Theories of intelligence

The most widely accepted theory of intelligence is based on psychometrics testing or intelligence quotient (IQ) tests. However, dissatisfaction with traditional IQ tests has led to the development of a number of alternative theories, all of which suggest that intelligence is the result of a number of independent abilities that uniquely contribute to human performance.

General Intelligence Factor

The general intelligence factor (abbreviated g) is a controversial construct used in the field of psychology (see also psychometrics) to quantify what is common to the scores of all intelligence tests.

An illustration of Spearman’s two-factor intelligence theory. Each small oval is a hypothetical mental test. The blue areas show the variance attributed to s, and the purple areas the variance attributed to g.

Charles Spearman, an early psychometric an, found that school children’s grades across seemingly unrelated subjects were positively correlated, and proposed that these correlations reflected the influence of a dominant factor, which he termed g for ‘general’ intelligence. He developed a model where all variation in intelligence test scores can be explained by two factors. The first is the factor specific to an individual mental task: the individual abilities that would make a person more skilled at one cognitive task than another. The second is g, a general factor that governs performance on all cognitive tasks.
The accumulation of cognitive testing data and improvements in analytical techniques have preserved g’s central role and led to the modern conception of g. A hierarchy of factors with g at its apex and group factors at successively lower levels, is espoused to be the most widely accepted model of cognitive ability. Other models have also been proposed, and significant controversy attends g and its alternatives.

**Mental testing and g**

The abstraction of g stems from the observation that scores on all forms of cognitive tests correlate positively with one another. g can be derived as the principal factor from cognitive test scores using the method of principal components analysis or factor analysis.

The relationship of g to intelligence tests may be more readily understood with an analogy. Irregular objects, such as the human body, are said to vary in “size”. Yet no single measurement of a human body is obviously preferred to measure its “size”. Instead, many and various measurements, such as those taken by a tailor, may be made. All of these measurements will be positively correlated with each other, and if one were to “add up” or combine all of the measurements, the aggregate would give a better description of an individual’s size than any single measurement. The method of factor analysis allows this. The process is intuitively similar to taking the average of a sample of measurements of a single variable, but instead “size” is a summary measure of a sample of variables. g is like size, in that it is abstracted from various measures (of cognitive ability). Of course, variation in “size” does not fully account for all variation in the measurements of a human body.
Factor analysis techniques are not limited to producing single factors, and an analysis of human bodies might produce (for example) two major factors, such as height and girth. However, the scores of tests of cognitive ability do in fact produce a primary dominant factor, g.

Tests of cognitive ability derive most of their validity from the extent to which they measure g, if quantifiable measures of the performance of a task correlate highly with g, it is said to be g-loaded. Creators of IQ tests, whose goals are generally to create highly reliable and valid tests, have thus made their tests as g-loaded as possible. Historically, this has meant dampening the influence of group factors by testing as wide a range of mental tasks as possible. However, tests such as Raven’s Progressive Matrices are considered to be the most g–loaded in existence, even though Raven’s is quite homogeneous in the types of tasks comprising it.

Elementary cognitive tasks (ECTs) also correlate strongly with g. ECTs are, as the name suggests, simple tasks that apparently require very little intelligence, but still correlate strongly with more exhaustive intelligence tests. Determining whether a light is red or blue and determining whether there are four or five squares drawn on a computer screen are two examples of ECTs. The answers to such questions are usually provided by quickly pressing buttons. Often, in addition to buttons for the two options provided, a third button is held down from the start of the test. When the stimulus is given to the subject, he removes his hand from the starting button to the button of the correct answer. This allows the examiner to determine how much time was spent thinking about the answer to the question (reaction time, usually measured in small fractions of second), and how much time was spent on physical hand movement to the correct button (movement time).
Reaction time correlates strongly with g, while movement time correlates less strongly. ECT testing has allowed quantitative examination of hypotheses concerning test bias, subject motivation, and group differences. By virtue of their simplicity, ECTs provide a link between classical IQ testing and biological inquires such as MRI studies.

**Biological and genetic correlates of g**

g has a large number of biological correlates. Strong correlates include mass of the prefrontal lobe, overall brain mass, and glucose metabolization rate within the brain. g correlates less strongly, but significantly, with overall body size. There is conflicting evidence regarding the correlation between g and peripheral nerve conduction velocity, with some reports of significant positive correlations, and others of no or even negative correlations.

Current research suggests that the heritability of g is approximately 85 – even higher than that for IQ itself – so the heritability of most test performance is thus attributable to g. Brain size has long been known to be correlated with g. Recently, an MRI study on twins showed that frontal gray matter volume was highly significantly correlated with g and highly heritable. A related study has reported that the correlation between brain size (reported to have a heritability of 0.85) and g is 0.4, and that correlation is mediated entirely by genetic factors. g has been observed in mice as well as humans. Lehrl and Fischer (1990) have claimed that g is limited by the channel capacity of short-term memory. Mental power, or the capacity C of short-term memory (measured in bits of information), is the product of the individual mental speed CK of information processing (in bit/s) (see the external link below to the paper by Lehrl and Fischer) and the duration time D (in s) of information in short-term working memory, meaning the duration of memory span.
Hence:

\[ C \text{ (bit)} = CK \text{ (bit\(s\)) x D \text{ (s)}.} \]

This theory has been tested and found wanting by Roberts et al. (1992). There is much evidence that \( g \) is closely related to measures of the capacity of working memory but this capacity cannot be measured in bits of information.

However recent studies attempting to find regions in the genome relating to intelligence have had little success. A recent study used several hundred people in two groups, one with a very high IQ, average 160, and a control group with an average IQ of 102. The study used 1,842 DNA markers and put them through a five step inspection process to eliminate false positives. By the fifth step the study could not find a single gene that was related to intelligence. Critics of these studies say the failure to find a specific gene associated with intelligence is indicative of the complex nature of intelligence. They contend that intelligence is probably under the influence of several genes. Some estimate that as much as 40% of the genome may contribute to intelligence.

**Social correlates of \( g \)**

Most measures of \( g \) positively correlate with conventional measures of success (income, academic achievement, job performance, career prestige) and negatively correlate with what are generally seen as undesirable life outcomes (school dropout, unplanned childbearing, poverty). IQ tests that measure a wide range of abilities do not predict much better than \( g \). Scientific publishing of findings of differences in \( g \) between ethnic groups have sparked public controversy.
The Flynn effect and g

The Flynn effect describes a rise in IQ scores over time. There is no strong consensus as to whether rising IQ scores also reflect increases in g. In addition, there is recent evidence that the tendency for intelligence scores to rise has ended in some first world countries. Statistical analyses of IQ subtest scores suggest a g-independent input to the Flynn effect.

Challenges to g

In 1981, the late Stephen Jay Gould, a paleontologist, voiced his objections to the concept of g, as well as intelligence testing in general, in his controversial book The Mismeasure of Man. In 1985, the British philosopher Philip Kitcher wrote that “Many scientists are now convinced that there is no single measure of intellectual ability” and that “it is useful to continue to expose the myth of general intelligence”. Some researchers in artificial intelligence have argued that the science of mental ability can be thought of a “computationalism” and is “either silly or pointless”, noting. “Mental ability tests measures differences in tasks that will soon be performed for all of us by computational agents.” And intelligence theorist Howard Gardner also has written that he does not believe “that there is a single general talent, whether it be called intelligence, creativity or ‘g’. In 2005, Wendy Johnson and Thomas Bouchard investigated the structure of mental ability by administering 42 diverse tests of mental ability of 436 adults. The tests included “different uses” (generation of novel uses for specified objects), “object assembly” (reassembly of cut-up figures), “verbal—proverbs” (interpretation of proverbs) and “mechanical ability” (identification of mechanical principles and tools); factor analysis found a clear single higher order factor, g. In their report, published in the journal Intelligence, the study authors conclude:
In combination with our earlier findings regarding the consistency of general intelligence factors across test batteries, our results point unequivocally to the existence of a general intelligence factor contributing substantively to all aspects of intelligence.

**Savant syndrome**

Howard Gardner contends that the rare condition of savant syndrome argues against a single generalized intelligence. People with savant syndrome may have general IQs in the mentally retarded range but may possess certain mental abilities that are remarkable compared to the average person. These abilities include superior memory, lightning-fast arithmetic calculation, advanced musical ability, rapid language learning and exceptional artistic ability. On the other hand, Gardner’s contention is rebutted by the fact that savants with low IQs tend to perform poorly in school and at work, despite their talents. This outcome is in line with the predictions made by modern IQ tests (see “Social Correlates of g”, above).

**Intelligence quotient**

An intelligence quotient, or IQ, is a score derived from one of several different standardized tests attempting to measure intelligence. The term “IQ” from the German Intelligenz-Quotient, was coined by the German psychologist William Stern in 1912 as a proposed method of scoring early modern children’s intelligence tests such as those developed by Alfred Binet and Theodore Simon in the early 20th Century. Although the term “IQ” is still in common use. The scoring of modern IQ tests such as the Wechsler Adult Intelligence Scale is now based on a projection of the subject’s measured rank on the Gaussian bell curve with a center value (average IQ) of 100, and a standard deviation of 15, although different tests may have different standard deviations.
IQ scores have been shown to be associated with such factors as morbidity and mortality, parental social status, and to a substantial degree, parental IQ, while its inheritance has been investigated for nearly a century, controversy remains as to how much is inheritable, and the mechanisms of inheritance are still a matter of some debate. IQ scores are used in many contexts: as predictors of educational achievement or special needs, by social scientists who study the distribution of IQ scores in populations and the relationships between IQ score and other variables, and as predictors of job performance and income. The average IQ scores for many populations have been rising at an average rate of three points per decade since the early 20th century with most of the increase in the lower half of the IQ range; a phenomenon called the Flynn effect. It is disputed whether these changes in scores reflect real changes in intellectual abilities, or merely methodological problems with past or present testing.

**History**

The modern IQ score is a mathematical transformation of a raw score on an IQ test, based on the rank of that score in a normalization sample. Modern scores are sometimes referred to as “deviance IQ”, while older method age-specific scores are referred to as “ratio IQ”.

The two methodologies yield similar results near the middle of the bell curve, but the older ratio IQs yielded far higher scores for the intellectually gifted--- for example, Marilyn vos Savant, who appeared in the Guinness Book of World Records, obtained a ratio IQ of 228. While this score could make sense using Binet’s formula (and even then, only for a child), on the Gaussian curve model it would be an exceptional 7.9 standard deviations above the mean and hence virtually impossible in a population with a normal IQ distribution.
In addition, IQ tests like the Wechsler were not intended to discriminate reliably much beyond IQ 145, as ceiling effects become a concern.

Since the publication of the Wechsler Adult Intelligence Scale (WAIS), almost all intelligence scales have adopted the normal distribution method of scoring. The use of the normal distribution scoring method makes the term “intelligence quotient” an inaccurate description, mathematically speaking, of the intelligence measurement, but “I.Q.” still enjoys colloquial usage, and is used to describe all of the intelligence scales currently in use.

**Heritability** The role of genes and environment (nature and nurture) in determining IQ is reviewed in Plomin et al. (2001, 2003). Until recently heritability was mostly studied in children. Various studies find the heritability of IQ between 0.4 and 0.8 in the United States; that is, depending on the study, a little less than half to substantially more than half of the variation in IQ among the children studied was due to variation in their genes. The remainder was thus due to environmental variation and measurement error. A heritability in the range of 0.4 to 0.8 implies that IQ is “substantially” heritable. The effect of restriction of range on IQ was examined by Matt McGue and colleagues, who wrote that “restriction in range in parent disinhibitory psychopathology and family SES had no effect on adoptive-sibling correlations … IQ”. On the other hand, a 2003 study by Eric Turkheimer, Andreana Haley, Mary Waldron, Brain D’Onofrio, Irving I. Gottesman demonstrated that the proportions of IQ variance attributable to genes and environment vary with socioeconomic status. They found that in impoverished families, 60% of the variance in IQ “in a sample of 7 – year old twins” is accounted for the shared environment, and the contribution of genes was close to zero.
It is reasonable to expect that genetic influences on traits like IQ should become less important as one gains experiences with age. Surprisingly, the opposite occurs. Heritability measures in infancy are as low as 20%, around 40% in middle childhood, and as high as 80% in adulthood. The American Psychological Association’s 1995 task force on “Intelligence: Known’s and Unknowns” concluded that within the white population the heritability of IQ is “around .75.” The Minnesota Study of Twins Reared Apart, a multiyear study of 100 sets of reared-apart twins which was started in 1979, concluded that about 70% of the variance in IQ was found to be associated with genetic variation. Some of the correlation of IQs of twins may be a result of the effect of the maternal environment before birth, shedding some light on why IQ correlation between twins reared apart is so robust. There are a number of points to consider when interpreting heritability:

- A high heritability does not mean that the environment has no effect on the development of a trait, or that learning is not involved. Vocabulary size, for example, is very substantially heritable (and highly correlated with general intelligence) although every word in an individual’s vocabulary is learned. In a society in which plenty of words are available in everyone’s environment, especially for individuals who are motivated to seek them out, the number of words that individuals actually learn depends to a considerable extent on their genetic predispositions.

- A common error is to assume that because something is heritable it is necessarily unchangeable. As previously noted, heritable traits can depend on learning, and they may be subject to other environmental effects as well. The value of heritability can change if the distribution of environments (or genes) in the population is substantially altered.
For example, an impoverished or suppressive environment could fail to support the development of a trait, and hence restrict individual variation. Differences in variation of heritability are found between developed and developing nations. This could affect estimates of heritability. Another example is phenylketonuria which previously caused mental retardation for everyone who had this genetic disorder. Today, this can be prevented by following a modified diet.

- On the other hand, there can be effective environmental changes that do not change heritability at all. If the environment relevant to a given trait improves in a way that affects all members of the population equally, the mean value of the trait will rise without any change in its heritability (because the differences among individuals in the population will stay the same). This has evidently happened for height: the heritability of stature is high, but average heights continue to increase.

- Even in developed nations, high heritability of a trait within a given group has no necessary implications for the source of a difference between groups.

**Environment**

Environment factors play a role in determining IQ. Proper childhood nutrition appears critical for cognitive development; malnutrition can lower IQ.

A recent study found that the FADS2 gene, along with breastfeeding, adds about seven IQ points to those with the “C” version of the gene. Those with the “G” version of the FADS2 gene see no advantage. Musical training in childhood also increases IQ. Recent studies have shown that training in using one’s working memory may increase IQ.
Family environment

In the developed world, personality traits in some studies show that, contrary to expectations, environmental effects actually can cause non-related children raised in the same family (“adoptive siblings”) to be as different as children raised in different families. There are some family effects on the IQ of children, accounting for up to a quarter of the variance, however, by adulthood this correlation approaches zero. For IQ, adoption studies show that, after adolescence, adoptive siblings are no more similar in IQ than strangers (IQ correlation near zero), while full siblings show an IQ correlation of 0.6. Twin studies reinforce this pattern: monozygotic (identical) twins raised separately are highly similar in IQ (0.86), more so than dizygotic (fraternal) twins raised together (0.6) and much more than adoptive siblings (~0.0).

Stoolmiller (1999) found that the range restriction of family environments that goes with adoption that adopting families tend to be more similar on for example socio-economic status than the general population, means that the role of the shared family environment has been underestimated in previous studies. Corrections for range correction applied to adoption studies indicate that socio-economic status could account for us much as 50% of the variance in IQ. However, the effect of restriction of range on IQ for adoption studies was examined by Matt McGue and colleagues, who wrote that “restriction in range in parent disinhibitory psychopathology and family socio-economic status had no effect on adoptive-sibling correlations [in] IQ”. Eric Turkheimer and colleagues (2003), not using an adoption study, included impoverished US families. Results demonstrated that the proportions of IQ variance attributable to genes and environment vary nonlinearly with socio-economic status.
The models suggest that in impoverished families, 60% of the variance in IQ is accounted for by the shared family environment, and the contribution of genes is close to zero; in affluent families, the result is almost exactly the reverse. They suggest that the role of shared environmental factors may have been underestimated in older studies which often only studied affluent middle class families.

**Maternal (fetal) environment**

A meta-analysis, by Devlin and colleagues in Nature (1997), of 212 previous studies evaluated an alternative model for environmental influence and found that it fits the data better than the family-environments’ model commonly used. The shared maternal (fetal) environment effects, often assumed to be negligible, account for 20% of covariance between twins and 5% between siblings, and the effects of genes are correspondingly reduced, with two measures of heritability being less than 50%.

Bouchard and McGue reviewed the literature in 2003, arguing that Devlin’s conclusion about the magnitude of heritability is not substantially different from previous reports and that their conclusions regarding prenatal effects stands in contradiction to many previous reports. They write that: Chipuer et al and Loehlin conclude that the postnatal rather than the prenatal environment is most important. The Devlin et al, conclusion that the prenatal environment contributes to twin IQ similarity is especially remarkable given the existence of an extensive empirical literature on prenatal effects. Price (1950), in a comprehensive review published over 50 years ago, argued that almost all MZ twin prenatal effects produced differences rather than similarities.
As of 1950 the literature on the topic was so large that the entire bibliography was not published. It was finally published in 1978 with an additional 260 references. At that time Price reiterated his earlier conclusion. Research subsequent to the 1978 review largely reinforces Price’s hypothesis.

**The Dickens and Flynn model**

Dickens and Flynn postulate that the arguments regarding the disappearance of the shared family environment should apply equally well to groups separated in time. This is contradicted by the Flynn effect. Changes here have happened too quickly to be explained by genetic heritable adaptation. This paradox can be explained by observing that the measure “heritability” includes both a direct effect of the genotype on IQ and also indirect effects where the genotype changes the environment, in turn affecting IQ. That is, those with a higher IQ tend to seek out stimulating environments that further increase IQ. The direct effect can initially have been very small but feedback loops can create large differences in IQ. In their model an environmental stimulus can have a very large effect on IQ, even in adults, but this effect also decays over time unless the stimulus continues (the model could be adapted to include possible factors, like nutrition in early childhood, that may cause permanent effects). The Flynn effect can be explained by a generally more stimulating environment for all people. The authors suggest that programs aiming to increase IQ would be most likely to produce long-term IQ gains if they taught children how to replicate outside the program the kinds of cognitively demanding experiences that produce IQ gains while they are in the program and motivate them to persist in that replication long after they have left the program.
IQ and the brain

In 2004, Richard Haier, professor of psychology in the Department of Pediatrics and colleagues at University of California, Irvine and the University of New Mexico used MRI to obtain structural images of the brain in 47 normal adults who also took standard IQ tests. The study demonstrated that general human intelligence appears to be based on the volume and location of gray matter tissue in the brain also demonstrated that, of the brain’s gray matter, only about 6 percent appeared to be related to IQ. Many different sources of information have converged on the view that the frontal lobes are critical for fluid intelligence. Patients with damage to the frontal lobe are impaired on fluid intelligence tests (Duncan et al. 1995). The volume of frontal grey (Thompson et al. 2001) and white matter (Schoenemann et al. 2005) have also been associated with general intelligence. In addition, recent neuroimaging studies have limited this association to the lateral prefrontal cortex. Duncan and colleagues (2000) showed using Positron Emission Tomography that problem-solving tasks that correlated more highly with IQ also activate the lateral prefrontal cortex. More recently, Gray and colleagues (2003) used functional magnetic resonance imaging (fMRI) to show that those individuals that were more adept at resisting distraction on a demanding working memory task had both a higher IQ and increased prefrontal activity. For an extensive review of this topic, see Gray and Thompson (2004). A study involving 307 children (age between six to nineteen) measuring the size of brain structures using magnetic resonance imaging (MRI) and measuring verbal and non-verbal abilities has been conducted (Shaw et al. 2006). The study has indicated that there is a relationship between IQ and the structure of the cortex—the characteristic change being the group with the superior IQ scores starts with thinner cortex in the early age then becomes thicker than average by the late teens.
There is “a highly significant association” between the CHRM2 gene and intelligence according to a 2006 Dutch family study. The study concluded that there was an association between the CHRM2 gene on chromosome 7 and Performance IQ, as measured by the Wechsler Adult Intelligence Scale-Revised. The Dutch family study used a sample of 667 individuals from 304 families. A similar association was found independently in the Minnesota Twin and Family Study (Comings et al. 2003) and by the Department of Psychiatry at the Washington University. Significant injuries isolated to one side of the brain, especially those occurring at a young age may not significantly affect IQ. Studies reach conflicting conclusions regarding the controversial idea that brain size correlates positively with IQ. Jensen and Reed claim no direct correlation exists in non pathological subjects. A more recent meta-analysis suggests otherwise. An alternative approach has sought to link differences in neural plasticity with intelligence, and this view has recently received some empirical support.

**Trends in IQ**

Since the twentieth century, IQ scores have increased at an average rate of around three IQ points per decade in most parts of the world. This phenomenon has been named the Flynn effect named after Richard Lynn and James R. Flynn. Attempted explanations have included improved nutrition, a trend towards smaller families, better education, greater environmental complexity, and heterosis. Some factions believe that modern education has become more geared toward IQ tests, thus rendering higher scores, but not necessarily higher intelligence. Tests are therefore renormalized occasionally to obtain mean scores of 100, for example WISC-R (1974), WISC-III (1991) and WISC-IV (2003).
This adjustment specifically addresses the variation over time, allowing us to compare scores from different times. Some researchers argue that the Flynn effect may have ended in some developed nations starting in the mid 1990s, namely in Denmark and in Norway.

**Mutability**

Though generally believed to be immutable, recent research suggests that certain mental activities can change the brain’s raw ability to process information, leading to the conclusion that intelligence can be altered or changed over time. Studies into the neuroscience of animals indicate that challenging activities can produce changes in gene expression patterns of the brain. (Training Degus to Use Rakes and Iriki’s earlier research with macaque monkeys’ indication brain changes). A study on young adults published in April 2008 by a team from the Universities of Michigan and Bern supports the possibility of the transfer of fluid intelligence from specifically designed working memory training. Further research will be needed to determine nature, extent and duration of the proposed transfer: Among other questions, it remains to be seen whether the results extend to other kinds of fluid intelligence tests than the matrix test used in the study, and if so, whether, after training, fluid intelligence measures retain their correlation with educational and occupational achievement or if the value of fluid intelligence for prediction performance on other tasks changes. It is also unclear whether the training is durable of extended periods of time.

**Group differences**

Among the most controversial issues related to the study of intelligence is the observation that intelligence measures such as IQ scores vary between populations.
While there is little scholarly debate about the existence of some of these differences, the reasons remain highly controversial both within academia and in the public sphere.

**Health**

A study of 11,282 individuals in Scotland who took intelligence tests at ages 7, 9 and 11 in the 1950s and 1960s, found an “inverse linear association” between childhood IQ scores and hospital admissions for injuries in adulthood. The association between childhood IQ and the risk of later injury remained even after accounting for factors such as the child’s socioeconomic background. Research in Scotland has also shown that a 15-point lower IQ meant people had a fifth less chance of living to 76, while those with a 30-point disadvantage were 37% less likely than those with a higher IQ to live that long.

A decrease in IQ has also been shown as an early predictor of late-onset Alzheimer’s disease and other forms of dementia. In a 2004 study, Carville and colleagues showed that tests of cognitive ability provide useful predictive information up to a decade before the onset of dementia. However, when diagnosing individuals with a higher level of cognitive ability, in this study those with IQ’s of 120 or more, patients should not be diagnosed from the standard norm but from an adjusted high-IQ norm that measured changes against the individual’s higher ability level. In 2000, Whaley and colleagues published a paper in the journal Neurology, which examined links between childhood mental ability and late-onset dementia. The study showed that mental ability scores were significantly lower in children who eventually developed late-onset dementia when compared with other children tested.
Several factors can lead to significant cognitive impairment, particularly if they occur during pregnancy and childhood when the brain is growing and the blood-brain barrier is less effective. Such impairment may sometimes be permanent, or may sometimes be partially or wholly compensated for by later growth. Several harmful factors may also combine, possibly causing greater impairment. Developed nations have implemented several health policies regarding nutrients and toxins known to influence cognitive function. These include laws requiring fortification of certain food products and laws establishing safe levels of pollutants. Comprehensives policy recommendations targeting reduction of cognitive impairment in children have been proposed. In terms of the effect of one’s intelligence on health, high childhood IQ correlates with one’s chance of becoming a vegetarian in adulthood and inversely correlates with the chances of smoking, becoming obese, and having serious traumatic accidents.

Sex

Men and women have statistically significant differences in average scores on tests of particular abilities. Studies also illustrate consistently greater variance in the performance of men compared to that of women. IQ tests are weighted on these sex differences so there is no bias on average in favor of one sex, however the consistent difference in variance is not removed. Because the tests are defined so there is no average difference it is difficult to put any meaning on a statement that one sex has a higher intelligence than the other. However some people have made claims like this even using unbiased IQ tests. It claims that men tend to outperform women on average by 3-4 IQ points based on tests of medical students where the greater variance of men’s IQ can be expected to contribute to the result, or where a ‘correction’ is made for different maturation ages.
Race

The 1996 Task Force investigation on Intelligence sponsored by the American Psychological Association concluded that there are significant variations in IQ across races. The problem of determining the causes underlying this variation relates to the question of the contributions of “nature and nurture” to IQ. Most scientists believe there is insufficient data to resolve the contributions of heredity and environment. One of the most notable researchers arguing for a strong hereditary basis is Arthur Jensen. In contrast, Richard Nesbit, the long-time director of the Culture and Cognition program at the University of Michigan, argues that intelligence is a matter of environment and biased standards that praise a certain type of “intelligence” (success on standardized tests) over another.

In a recent editorial in the New York Times entitled, “All Brains Are the Same Color”, Dr. Nesbit argues against the hypothesis that IQ differences between blacks and whites are genetic. He notes that decades of research have not supported the assertion that one of the races in the United States is biologically inferior in terms of innate intelligence. Rather, he argues, “Whites showed better comprehension of sayings, better ability to recognize similarities and better facility with analogies – when solutions required knowledge of words and concepts that were more likely to be known to whites than to blacks. But when these kinds of reasoning were tested with words and concepts known equally well to blacks and whites, there were no differences. Within each race, prior knowledge predicted learning and reasoning, but between the races it was prior knowledge only that differed.”

81
Positive correlations with IQ

While IQ is sometimes treated as an end unto itself, scholarly work on IQ focuses to a large extent on IQ’s validity, that is the degree to which IQ correlates with outcomes such as job performance, social pathologies, or academic achievement. Different IQ tests differ in their validity for various outcomes. Traditionally, correlation for IQ and outcomes is viewed as a means also to predict performance; however readers should distinguish between prediction in the hard sciences and the social sciences.

Job performance

According to Schmidt and Hunter, “for hiring employees without previous experience in the job the most valid predictor of future performance is general mental ability.” The validity depends on the type of job and varies across different studies, ranging from 0.2 to 0.6. However IQ mostly correlates with cognitive ability only is IQ scores are below average, making it less useful for predicting performance of higher scorers. Also, IQ is related to the “academic tasks” (auditory and linguistic measures, memory tasks, academic achievement levels) and much less related to tasks where precise hand work (“motor functions”) is required. For highly qualified activities (research, management) high IQ scores are very relevant, whereas for less qualified activities, physically ability (body speed, hand-eye coordination) is more important. According to Marley Watkins and colleagues, IQ is a causal influence on future academic achievement, whereas academic achievement does not substantially influence future IQ scores.
Trina Eileen Rohde and Lee Anne Thompson write that general cognitive ability but not specific ability scores predict academic achievement, with the exception that processing speed and spatial ability predict performance on the SAT math beyond the effect of general cognitive ability.

The American Psychological Association’s report Intelligence: Known’s and Unknowns states that other individual characteristics such as interpersonal skills, aspects of personality, etcetera, are probably of equal or greater importance, but at this point we do not have equally reliable instruments to measure them although, more recently, others argue that since most of professional tasks are now standardized or automated, and ranked IQ is a stable measurement overtime with high correlation with many positive personal traits from the general population, it is the best tool to help determining the best hiring and job placement at any stage in a career, independently of experience, personality bias or formal training one may acquire.

The increased stress of competitions can cause athletes to react both physically and mentally in a manner that can negatively affect their performance abilities. They may become tense, their heart rates race, they break into a cold sweat, they worry about the outcome of the competition, they find it hard to concentrate on the task in hand. This has led coaches to take an increasing interest in the field of sport psychology and in particular in the area of competitive anxiety. That interest has focused on techniques that athletes can use in the competitive situation to maintain control and optimize their performance. Once learned, these techniques allow the athlete to relax and to focus his/her attention in a positive manner on the task of preparing for and participating in competition. Psychology is another weapon in the athlete's armory in gaining the winning edge.

Self Confidence is the belief that you can successfully perform a desired task/behavior.
Confident athletes believe in themselves and their ability to acquire the necessary skills and competencies (both physical and mental) to reach their potential. Self-belief motivates all performance.

The 4C's

Concentration, confidence, control and commitment (the 4C's) are generally considered the main mental qualities that are important for successful performance in most sports.

- Concentration - ability to maintain focus
- Confidence - believe in one's abilities
- Control - ability to maintain emotional control regardless of distraction
- Commitment - ability to continue working to agreed goals

The techniques of relaxation, centering and mental imagery can assist an athlete to achieve the 4C's.

Concentration

This is the mental quality to focus on the task in hand. If the athlete lacks concentration then their athletic abilities will not be effectively or efficiently applied to the task. Research has identified the following types of attention focus:

- Broad Narrow continuum - the athlete focuses on a large or small number of stimuli
- Internal External continuum - the athlete focuses on internal stimuli or external stimuli.
The demand for concentration varies with the sport:

- Sustained concentration - distance running, cycling, tennis, squash
- Short bursts of concentration - cricket, golf, shooting, athletic field events
- Intense concentration - sprinting events, bobsleigh, skiing

Common distractions are: anxiety, mistakes, fatigue, weather, public announcements, coach, manager, opponent, negative thoughts etc.

Strategies to improve concentration are very personal. One way to maintain focus is to set process goals for each session or competition. The athlete will have an overall goal for which the athlete will identify a number of process goals that help focus on specific aspects of the task. For each of these goals the athlete can use a trigger word (a word which instantly refocuses the athlete's concentration to the goal) e.g. sprinting technique requires the athlete to focus on being tall, relaxed, smooth and to drive with the elbows - trigger word could be "technique". Athletes will develop a routine for competition that may include the night before, the morning, pre competition, competition and post competition routines. If these routines are appropriately structured then they can prove a useful aid to concentration.

**Confidence**

Confidence results from the comparison an athlete makes between the goal and their ability. The athlete will have self-confidence if they believe they can achieve their goal. (Comes back to a quote of mine - "You only achieve what you believe").
When an athlete has self confidence they will tend to: persevere even when things are not going to plan, show enthusiasm, be positive in their approach and take their share of the responsibility in success and fail.

To improve their self confidence, an athlete can use mental imagery to:

- visualize previous good performance to remind them of the look and feel
- imagine various scenarios and how they will cope with them

Good goal setting (challenging yet realistic) can bring feelings of success. If athletes can see that they are achieving their short term goals and moving towards their long term goals then confidence grows.

Confidence is a player’s belief in their ability to perform well in any situation, practice or game. Confidence is derived from a baseline assessment of past performances, training, and preparation. As competency or skill mastery grows, your confidence becomes proportionately stronger. In order for players to develop high levels of confidence, they must have a clear understanding of the factors that boost and undermine their confidence, such as high expectations.

Confidence is a core mental game skill because of its importance and relationship to other mental skills. Harvey Dorfman (2005) describes confidence as a mindset based on tangible sources such as one’s past success in sports. Athletes derive confidence from one or more of the following three sources:
1. From practice
2. From what other people say or do
3. From immediate past performance

It is important to mention these sources because in order to enhance confidence athletes have to a clear understanding of their source of confidence. Many athletes believe that confidence comes from past success, playing well or positive experiences in their sport. Confidence also varies depending on the task you are performing. For example, baseball players may be very confident in their hitting, but less confident with their defensive play. Doubt, indecision and negative thoughts are the opposite of confidence.

If athletes maintain doubts prior to or during their performance, this indicates low self-confidence. One intervention is by refuting doubts and instilling a positive/confident belief system. Another intervention to enhance confidence is helping athletes developing a confidence resume of all the reasons an athlete as to feel confident. This entails athletes taking control of their confidence level and being proactive with their confidence. Confidence is a positive state of mind and a belief that you can meet the challenge ahead - a feeling of being in control. It is not the situation that directly affects confidence; thoughts, assumptions and expectations can build or destroy confidence.

High self confidence

- Thoughts - positive thoughts of success
- Feelings - excited, anticipation, calm, elation, prepared
- Focus - on self, on the task
- Behavior - give maximum effort and commitment, willing to take chances, positive reaction to set backs, open to learning, take responsibility for outcomes

Low self confidence

- Thoughts - negative, defeat or failure, doubt
- Feelings - tense, dread, fear, not wanting to take part
- Focus - on others, on less relevant factors (coach, umpire, conditions)
- Behavior - lack of effort, likely to give up, unwilling to take risks (rather play safe), blame others or conditions for outcome

Control

Identifying when an athlete feels a particular emotion and understanding the reason for the feelings is an important stage of helping an athlete gain emotional control. An athlete's ability to maintain control of their emotions in the face of adversity and remain positive is essential to successful performance. Two emotions that are often associated with poor performance are anxiety and anger. Anxiety comes in two forms - Physical (butterflies, sweating, nausea, needing the toilet) and Mental (worry, negative thoughts, confusion, lack of concentration). Relaxation is a technique that can be used to reduce anxiety. When an athlete becomes angry, the cause of the anger often becomes the focus of attention. This then leads to a lack of concentration on the task, performance deteriorates and confidence in ability is lost which fuels the anger - a slippery slope to failure.
Commitment

Sports performance depends on the athlete being fully committed to numerous goals over many years. In competition with these goals the athlete will have many aspects of daily life to manage. The many competing interests and commitments include work, studies, family/partner, friends, social life and other hobbies/sports.

Within the athlete's sport, commitment can be undermined by:

- a perceived lack of progress or improvement
- not being sufficiently involved in developing the training program
- not understanding the objectives of the training program
- injury
- lack of enjoyment
- anxiety about performance - competition
- becoming bored
- coach athlete not working as a team
- lack of commitment by other athletes

Setting goals with the athlete will raise their feelings of value, give them joint ownership of the goals and therefore become more committed to achieving them. All goals should be Smarter. Many people (coach, medical support team, manager, friends, etc) can contribute to an athlete's levels of commitment with appropriate levels of support and positive feedback, especially during times of injury, illness and poor performance.
Successful emotional states

The following are emotional states experienced with successful performance:

- Happy - felt that this was my opportunity to demonstrate an excellent performance. Felt I could beat anybody.
- Calm and nervous - Felt nervous but really at ease with these feelings. I accepted and expected to be nervous but felt ready to start.
- Anxious but excited - Felt so ready to compete but a little nervous. Nerves and excitement come together
- Confident - I remembered all the successful training sessions and previous best performances.

Psychology Skills Training

Psychology skills training for the athlete should aim to improve their mental skills, such as self-confidence, motivation, the ability to relax under great pressure, and the ability to concentrate and usually has three phases:

- Education phase, during which athletes learn about the importance of psychological skills and how they affect performance
- Acquisition phase, during which athletes learn about the strategies and techniques to improve the specific psychological skills that they require
• Practice phase, during which athletes develop their psychological skills through repeated practice, simulations, and actual competition.

Mental process or mental function are terms often used interchangeably for all the things that we can do with our mind for instance perception, introspection, memory, creativity, imagination, idea, belief, reasoning, volition and emotion. Sometimes the term cognitive process is used instead of mental process, however the term cognitive tends to have specific implications.

A specific instance of engaging in a cognitive process is a mental event. The event of perceiving something is, of course, different from the entire process, or capacity of perception—one's ability to perceive things. In other words, an instance of perceiving is different from the ability that makes those instances possible.

Mental process - (psychology) the performance of some composite cognitive activity; an operation that affects mental contents; "the process of thinking"; "the cognitive operation of remembering “Psychology is a science dedicated to the study of behavior and mental processes. In this chapter you are introduced to the history of this science, a variety of contemporary perspectives in psychology, the positive psychology movement, and an overview of psychology-related careers.

There are three concepts important to the definition of psychology: science, behavior, and mental processes. Psychologists use scientific methods to observe, describe, predict and explain behaviors and mental processes. Behaviors are actions that can be directly observed, while mental processes are experiences that cannot be observed directly, such as thoughts and feelings.
Modern day psychology can perhaps be defined as the scientific study of behaviour and mental processes. This simple definition incorporates a number of features. First, psychology is a science, and uses the same scientific method as other scientific disciplines such as chemistry, physics and biology. In other words, psychologists carry out experiments, formulate hypotheses and test theories. Psychological experiments can be carried out in a variety of settings. Some take place under controlled laboratory conditions, others are carried out 'in the field' in everyday settings.

In its relatively short history as an academic discipline psychology has, however, changed direction, focus and approach several times. During the 1930s, for example, mainstream psychology excluded the ‘the mind’ from consideration and focused only on behavior.

More generally a number of different perspectives have developed that place their emphasis on specific sets of concerns and we now recognize perspectives such as social psychology, cognitive psychology, abnormal psychology and developmental psychology to name just a few.

Together these approaches explore a multitude of issues such as relationships, persuasion, psychobiological processes, sensation and perception, consciousness, learning, memory, thinking and language, intelligence, motivation, emotion, development, personality, psychological disorders, therapy, psychology and health, social cognition and social influence.

This course will use these different perspectives as a framework within which to examine some of the main topic areas within psychology. As the focus of psychology is so diverse ranging from highly biological to highly sociological this course is designed to assume little or no prior knowledge whatsoever.
CHESS

Chess is a two-player strategy board game played on a chessboard, a checkered game board with 64 squares arranged in an eight-by-eight grid. It is one of the world's most popular games, played by millions of people worldwide at home, in clubs, online, by correspondence, and in tournaments. Each player begins the game with 16 pieces: one king, one queen, two rooks, two knights, two bishops, and eight pawns. Each of the six piece types moves differently. Pieces are used to attack and capture the opponent's pieces, with the objective to 'checkmate' the opponent's king by placing it under an inescapable threat of capture. In addition to checkmate, the game can be won by the voluntary resignation of the opponent, which typically occurs when too much material is lost, or if checkmate appears unavoidable. A game may also result in a draw in several ways, where neither player wins. The course of the game is divided into three phases: opening, middle game, and endgame. The first official World Chess Champion, Wilhelm Steinitz, claimed his title in 1886; the current World Champion is Indian chess Grandmaster Viswanathan Anand. In addition to the World Championship, there are the Women's World Championship, the Junior World Championship, the World Senior Championship, the Correspondence Chess World Championship, the World Computer Chess Championship, and Blitz and Rapid World Championships. The Chess Olympiad is a popular competition among teams from different nations. Online chess has opened amateur and professional competition to a wide and varied group of players. Chess is a recognized sport of the International Olympic Committee and international chess competition is sanctioned by the World Chess Federation (FIDE), which adopted the now-standard Staunton chess set in 1924 for use in all official games.
Since the second half of the 20th century, computers have been programmed to play chess with increasing success, to the point where home computers can play chess at a very high level. In the past two decades computer analysis has contributed significantly to chess theory, particularly in the endgame. The computer Deep Blue was the first machine to overcome a reigning World Chess Champion in a match, when it defeated Garry Kasparov in 1997.

Chess is played on a square board of eight rows (called \textit{ranks} and denoted with numbers \textit{1} to \textit{8}) and eight columns (called \textit{files} and denoted with letters \textit{a} to \textit{h}) of squares. The colors of the 64 squares alternate and are referred to as "light" and "dark" squares. The chessboard is placed with a light square at the right-hand end of the rank nearest to each player, and the pieces are set out as shown in the diagram and photo, with each queen on a square of its own color. The pieces are divided, by convention, into white and black sets. The players are referred to as "White" and "Black", and each begins the game with 16 pieces of the specified color. These consist of one king, one queen, two rooks, two bishops, two knights, and eight pawns.

\textbf{Movement}

White always moves first. After the initial move, the players alternately move one piece at a time (with the exception of castling, when two pieces are moved). Pieces are moved to either an unoccupied square or one occupied by an opponent's piece, which is captured and removed from play. With the sole exception of \textit{en passant}, all pieces capture opponent's pieces by moving to the square that the opponent's piece occupies. A player may not make any move that would put or leave his king under attack. If the player to move has no legal moves, the game is over; it is either a checkmate (a loss for the player with no legal moves) if the king is under attack, or a stalemate (a draw) if the king is not.
Each chess piece has its own style of moving. In the diagrams, the dots mark the squares where the piece can move if no other pieces (including one's own piece) are on the squares between the piece's initial position and its destination.

- The king moves one square in any direction. The king has also a special move which is called *castling* and involves also moving a rook.
- The rook can move any number of squares along any rank or file, but may not leap over other pieces. Along with the king, the rook is involved during the king's castling move.
- The bishop can move any number of squares diagonally, but may not leap over other pieces.
- The queen combines the power of the rook and bishop and can move any number of squares along rank, file, or diagonal, but it may not leap over other pieces.
- The knight moves to any of the closest squares that are not on the same rank, file, or diagonal, thus the move forms an "L"-shape: two squares vertically and one square horizontally, or two squares horizontally and one square vertically. The knight is the only piece that can leap over other pieces.
- The pawn may move forward to the unoccupied square immediately in front of it on the same file, or on its first move it may advance two squares along the same file provided both squares are unoccupied (black "●"s in the diagram); or the pawn may capture an opponent's piece on a square diagonally in front of it on an adjacent file, by moving to that square (black "x"s). The pawn has two special moves: the *en passant* capture and pawn promotion.
Castling

Once in every game, each king is allowed to make a special move, known as *castling*. Castling consists of moving the king two squares along the first rank toward a rook (which is on the player's first rank) and then placing the rook on the last square the king has just crossed. Castling is permissible only if all of the following conditions hold:

- Neither of the pieces involved in castling may have been previously moved during the game.
- There must be no pieces between the king and the rook.
- The king may not be in check, nor may the king pass through squares that are under attack by enemy pieces, nor move to a square where it is in check.

En passant

Examples of Pawn moves promotion (left) and en passant (right)
When a pawn advances two squares from its starting position and there is an opponent's pawn on an adjacent file next to its destination square, then the opponent's pawn can capture it *en passant* (in passing), and move to the square the pawn passed over. However, this can only be done on the very next move, otherwise the right to do so is forfeit. For example, if the black pawn has just advanced two squares from g7 (initial starting position) to g5, then the white pawn on f5 may take it via *en passant* on g6 (but only on white's next move).

**Promotion**

When a pawn advances to the eighth rank, as a part of the move it is *promoted* and must be exchanged for the player's choice of queen, rook, bishop, or knight of the same color. Usually, the pawn is chosen to be promoted to a queen, but in some cases another piece is chosen; this is called under promotion. In the diagram on the right, the pawn on c7 can be advanced to the eighth rank and be promoted to an allowed piece. There is no restriction placed on the piece that is chosen on promotion, so it is possible to have more pieces of the same type than at the start of the game (for example, two queens).

**Check**

When a king is under immediate attack by one or two of the opponent's pieces, it is said to be in *check*. A response to a check is a legal move if it results in a position where the king is no longer under direct attack (that is, not in check). This can involve capturing the checking piece; interposing a piece between the checking piece and the king or moving the king to a square where it is not under attack.
Castling is not a permissible response to a check. The object of the game is to checkmate the opponent; this occurs when the opponent's king is in check, and there is no legal way to remove it from attack. It is illegal for a player to make a move that would put or leave his own king in check.

**End of the game**

Although the objective of the game is to checkmate the opponent, chess games do not have to end in checkmate—either player may resign which is a win for the other player. It is considered bad etiquette to continue playing when in a truly hopeless position. If it is a game with time control, a player may run out of time and lose, even with a much superior position. Games also may end in a draw (tie). A draw can occur in several situations, including draw by agreement, stalemate, threefold repetition of a position, the fifty-move rule, or a draw by impossibility of checkmate (usually because of insufficient material to checkmate). As checkmate from some positions cannot be forced in fewer than 50 moves (such as in the pawn less chess endgame and two knights endgame), the fifty-move rule is not applied everywhere, particularly in correspondence chess.

**Chess is gymnasium of mind.** The most common theory regarding the origins of chess is that it derives from a game played in India around 600 AD called Chaturanga. An alternative theory suggests that the earliest version of the game was Xiangqi, a game played in China from the second century BC. Whatever the true origin; the game made its way into Persia, where it was named Chat rang. The Persian word "shah", meaning king, is thought to be the origin of the English name "Chess" and the phrase "shah mat", the king is dead, the origin for the word checkmate.
The Arabian conquest of Persia introduced the game into the Islamic world. There it flourished under the name of Shatran and it is at this point that the first works of Chess literature appear. From Persia Chess continued to spread into Russia and Scandinavia via various trade routes, into the Balkans via the Byzantine Empire and by means of further Arabic conquests into Western Europe.

The end of the 10th century sees the earliest reference to Chess in European literature. The game soon became popular with the nobility, a fact which contributed to its spread through the continent. New chess literature, written and published mostly in the Italian and Iberian peninsulas by the greatest talents of the period, contributed to the development of skill in those regions and to an early understanding of Chess theory. Chess is an ancient game in universe.

When the Persians came to India they had learned the game, and carried into the other countries like, Russia, Germany, France, Spain, China, etc. Chess became famous not only in European countries but also in Russia. At present, the Russians are dominating in the world. It was a noteworthy point that it was introduced in schools as compulsorily one of the subjects in curriculum by Russian President, Mr. Lenin, in early 18th century. This was possible for him because he was a chess player by himself. Chess game contains a mat and pieces. Pieces means pawns, rooks, bishops, knights, queens and kings. The pieces are in two colors’ i.e., black and white. Mat contains 64 squares, and further it is divided into two different colors and each contains 32 numbers. The game is played by two opponent players. One player plays with white pieces and the other one with black. Each player plays with 16 pieces. These pieces are placed in two rows, the first row contains -1 king, 1 queen, 2 bishops, 2 knights and 2 rooks, the second row has and 8 pawns.
The moves of the chess pieces are mentioned hereunder:

<table>
<thead>
<tr>
<th>Piece</th>
<th>Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>King</td>
<td>One step to any side from his place</td>
</tr>
<tr>
<td>Queen (Minister)</td>
<td>All movements except knight</td>
</tr>
<tr>
<td>Bishop (Camel)</td>
<td>Cross cut movement diagonally</td>
</tr>
<tr>
<td>Knight (Horse)</td>
<td>Moves in V shape</td>
</tr>
<tr>
<td>Rooks (Elephant)</td>
<td>Moves vertical and horizontal</td>
</tr>
<tr>
<td>Pawns (Soldiers)</td>
<td>Move forward one step in the beginning one step while killing one step cross</td>
</tr>
</tbody>
</table>

Chess is also a time factor game played between two teams and also individually. It is played in three different timings and same rules. Those are: (i) Blitz (each player plays 5 minutes), (ii) Rapid (each player plays half-an-hour), (iii) Classic (each player plays two hours). In classic, the rules are same except each step will get 30 seconds bonus time to the two players. In chess, getting an Elo rating is important to a player. This rating system was introduced by Greek Professor Elo. Basing on that Mr. Vishwanathan Anand has became world No. 1 champion with a rating of 2806 after winning the world championship title-2007.
Chess players are called as rated players, FIDE masters (2300 and above), international masters, grand masters and super grand masters. A player learns chess game from the other end but not from beginning like other games. The following table presents some of the important world famous chess players.

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mr. Karpov</td>
<td>Russia</td>
</tr>
<tr>
<td>2</td>
<td>Mr. Kasprov</td>
<td>Russia</td>
</tr>
<tr>
<td>3</td>
<td>Mr. Kramnik</td>
<td>Russia</td>
</tr>
<tr>
<td>4</td>
<td>Mr. Bobyfisher</td>
<td>U.S.A.</td>
</tr>
<tr>
<td>5</td>
<td>Mr. Vishwanathan Anand</td>
<td>India</td>
</tr>
<tr>
<td>6</td>
<td>Mr. Botwinrck</td>
<td>Russia</td>
</tr>
<tr>
<td>7</td>
<td>Mr. Petrosian</td>
<td>Russia</td>
</tr>
<tr>
<td>8</td>
<td>Mr. Capablahca</td>
<td>Cuba</td>
</tr>
<tr>
<td>9</td>
<td>Mr. Boris Spassky</td>
<td>Russia</td>
</tr>
</tbody>
</table>

The game is an important and challenging game. It is learnt that from the records that Mr. Bobyfisher challenged while going to a competition that "I will win the world champion and the US President should receive me". After winning the game the President Nickson received him with grand welcome.
Three international official tournaments in this game are: (i) World Chess Championship (Chess Olympiad), (ii) Commonwealth Chess Championship, and (iii) Asian Chess Championship.

There are five world champions in different age group from Andhra Pradesh, India. They are: Mr. Pentala Harikrishna, Junior World Champion, Ms.Koneru Hampi, Junior World Champion, Ms.Dronavalli Harika, Under – 18 World Champion, Kumari Ch.Sahajasri, Under-10 World Champion, Master Mohinish, Under-8 World Champion.

**VOLLEY BALL**

**Volleyball** is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules. It has been a part of the official program of the Summer Olympic Games since 1964.

The complete rules are extensive. But simply, play proceeds as follows: a player on one of the teams begins a 'rally' by serving the ball (tossing or releasing it and then hitting it with a hand or arm), from behind the back boundary line of the court, over the net, and into the receiving team's court. The receiving team must not let the ball be grounded within their court. The team may touch the ball up to 3 times but individual players may not touch the ball twice consecutively. Typically, the first two touches are used to set up for an attack, an attempt to direct the ball back over the net in such a way that the serving team is unable to prevent it from being grounded in their court. The rally continues, with each team allowed as many as three consecutive touches, until either (1): a team makes a *kill*, grounding the ball on the opponent's court and winning the rally; or (2): a team commits a *fault* and loses the rally. The team that wins the rally is awarded a point, and serves the ball to start the next rally. A few of the most common faults include:
• causing the ball to touch the ground or floor outside the opponents' court or without first passing over the net;

• *catching and throwing* the ball;

• *double hit*: two consecutive contacts with the ball made by the same player;

• four consecutive contacts with the ball made by the same team;

• *net foul*: touching the net during play;

• *foot fault*: the foot crosses over the boundary line when serving.

The ball is usually played with the hands or arms, but players can legally strike or push (short contact) the ball with any part of the body.

A number of consistent techniques have evolved in volleyball, including *spiking* and *blocking* (because these plays are made above the top of the net, the vertical jump is an athletic skill emphasized in the sport) as well as *passing*, *setting*, and specialized player positions and offensive and defensive structures.

On February 9, 1895, in Holyoke, Massachusetts (USA), William G. Morgan, a YMCA physical education director, created a new game called *Mintonette* as a pastime to be played (preferably) indoors and by any number of players. The game took some of its characteristics from tennis and handball. Another indoor sport, basketball, was catching on in the area, having been invented just ten miles (sixteen kilometers) away in the city of Springfield, Massachusetts, only four years before. Mintonette was designed to be an indoor sport, less rough than basketball, for older members of the YMCA, while still requiring a bit of athletic effort.
The first rules, written down by William G Morgan, called for a net 6 ft 6 in (1.98 m) high, a 25×50 ft (7.6×15.2 m) court, and any number of players. A match was composed of nine innings with three serves for each team in each inning, and no limit to the number of ball contacts for each team before sending the ball to the opponents’ court. In case of a serving error, a second try was allowed. Hitting the ball into the net was considered a foul (with loss of the point or a side-out)—except in the case of the first-try serve.

After an observer, Alfred Halstead, noticed the volleying nature of the game at its first exhibition match in 1896, played at the International YMCA Training School (now called Springfield College), the game quickly became known as volleyball (it was originally spelled as two words: "volley ball"). Volleyball rules were slightly modified by the International YMCA Training School and the game spread around the country to various YMCAs.

The first official ball used in volleyball is disputed; some sources say that Spalding created the first official ball in 1896, while others claim it was created in 1900. The rules evolved over time: in the Philippines by 1916, the skill and power of the set and spike had been introduced, and four years later a "three hits" rule and a rule against hitting from the back row were established. In 1917, the game was changed from 21 to 15 points. In 1919, about 16,000 volleyballs were distributed by the American Expeditionary Forces to their troops and allies, which sparked the growth of volleyball in new countries.

The first country outside the United States to adopt volleyball was Canada in 1900. An international federation, the Federation Internationale de Volleyball (FIVB), was founded in 1947, and the first World Championships were held in 1949 for men and 1952 for women.
The sport is now popular in Brazil, in Europe (where especially Italy, the Netherlands, and countries from Eastern Europe have been major forces since the late 1980s), in Russia, and in other countries including China and the rest of Asia, as well as in the United States. Beach volleyball, a variation of the game played on sand and with only two players per team, became a FIVB-endorsed variation in 1987 and was added to the Olympic program at the 1996 Summer Olympics. Volleyball is also a sport at the Paralympics managed by the World Organization Volleyball for Disabled.

Nudists were early adopters of the game with regular organized play in clubs as early as the late 1920s. By the 1960s, a volleyball court had become standard in almost all nudist/naturist clubs.

The history of Olympic volleyball traces back to the 1924 Summer Olympics in Paris, where volleyball was played as part of an American sports demonstration event. After the foundation of FIVB and some continental confederations, it began to be considered for official inclusion. In 1957, a special tournament was held at the 53rd IOC session in Sofia, Bulgaria to support such request. The competition was a success, and the sport was officially included in the program for the 1964 Summer Olympics.

The Olympic volleyball tournament was originally a simple competition: all teams played against each other team and then were ranked by wins, set average, and point average. One disadvantage of this round-robin system is that medal winners could be determined before the end of the games, making the audience lose interest in the outcome of the remaining matches. To cope with this situation, the competition was split into two phases with the addition of a "final round" elimination tournament consisting of quarterfinals, semifinals, and finals matches in 1972.
The number of teams involved in the Olympic tournament has grown steadily since 1964. Since 1996, both men's and women's events count twelve participant nations. Each of the five continental volleyball confederations has at least one affiliated national federation involved in the Olympic Games.

The U.S.S.R. won men's gold in both 1964 and 1968. After taking bronze in 1964 and silver in 1968, Japan finally won the gold for men's volleyball in 1972. Women's gold went to Japan in 1964 and again in 1976. That year, the introduction of a new offensive skill, the back row attack, allowed Poland to win the men's competition over the Soviets in a very tight five-set match.

Since the strongest teams in men's volleyball at the time belonged to the Eastern Bloc, the American-led boycott of the 1980 Summer Olympics did not have as great an effect on these events as it had on the women's. The U.S.S.R. collected their third Olympic Gold Medal in men's volleyball with a 3–1 victory over Bulgaria (the Soviet women won that year as well, their third gold as well). With the U.S.S.R. boycotting the 1984 Olympic Games in Los Angeles, the U.S. was able to sweep Brazil in the finals to win the men's gold medal. Italy won its first medal (bronze in the men's competition) in 1984, foreshadowing a rise in prominence for their volleyball teams. The 1984 women's tournament was also won by a rising force, China.

At the 1988 Games, Karch Kiraly and Steve Timmons led the U.S. men's team to a second straight gold medal, and the Soviets won the fourth gold in the women's tournament. In 1992, underrated Brazil upset favourites C.I.S., Netherlands, and Italy in the men's competition for the country's first volleyball Olympic gold medal. Runner-up Netherlands, men's silver medalist in 1992, came back under team leaders Ron Zwerver and Olof van der Meulen in the 1996 Games for a five-set win over Italy.
A men's bronze medalist in 1996, Serbia and Montenegro (playing in 1996 and 2000 as the Federal Republic of Yugoslavia) beat Russia in the gold medal match in 2000, winning their first gold medal ever. In all three games the strong Cuban female team lead by Regla Torres and Mireya Luis won the Gold medal. In 2004, Brazil won its second men's volleyball gold medal beating Italy in the finals, while China beat Russia for its second women's title. In the 2008 Games, the USA beat Brazil in the men's volleyball final. Brazil was runner-up again at the 2012 Summer Olympics, this time losing to Russia after losing two match points in the third set. In both games Brazil's women team beat the United States for the gold medal.

**Handball** (also known as team handball, Olympic handball, European team handball, European handball, or Borden ball) is a team sport in which two teams of seven players each (six outfield players and a goalkeeper on each team) pass a ball to throw it into the goal of the other team. A standard match consists of two periods of 30 minutes, and the team that scores more goals wins. Modern handball is usually played indoors, but outdoor variants exist in the forms of field handball and Czech handball (which were more common in the past) and beach handball (also called sandball). The game is quite fast and includes body contact, as the defenders try to stop the attackers from approaching the goal. Contact is allowed only when the defensive player is completely in front of the offensive player; i.e., between the offensive player and the goal. Any contact from the side or especially from behind is considered dangerous and is usually met with penalties. When a defender successfully stops an attacking player (who loses the ball over a line), the play is stopped and restarted by the attacking team from the spot of the infraction or on the 9-metre line.
Unlike in basketball, where players are allowed to commit only 5 or 6 fouls in a game, handball players are allowed an unlimited number of faults, which are considered good defense and disruptive to the attacking team's rhythm. Certain elements of the game are reminiscent of rugby: for instance, the degree of force that defense may use to stop the attacker with the ball, together with the lack of protections and helmets.

Goals are scored quite frequently; usually both teams score at least 20 goals each, and it is not uncommon for both teams to score more than 30 goals. This was not true in the earliest history of the game, when the scores were lower. But, as offensive play has improved since the late 1980s, particularly the use of counter-attacks (fast breaks) after a failed attack from the other team, goal-scoring has increased. There are records of handball-like games in medieval France, and among the Inuit in Greenland, in the Middle Ages. By the 19th century, there existed similar games of håndbold from Denmark, házená in the Czech Republic, hádzaná in Slovakia, gandbol in Ukraine, and torball in Germany. The team handball game of today was codified at the end of the 19th century in northern Europe - primarily in Denmark, Germany, Norway and Sweden. The first written set of team handball rules was published in 1906 by the Danish gym teacher, lieutenant and Olympic medalist Holger Nielsen from Ordrup grammar school north of Copenhagen. The modern set of rules was published on 29 October 1917 by Max Heiser, Karl Schelenz, and Erich Konigh from Germany. After 1919 these rules were improved by Karl Schelenz. The first international games were played under these rules, between Germany and Belgium for men in 1925 and between Germany and Austria for women in 1930.
In 1926, the Congress of the International Amateur Athletics Federation nominated a committee to draw up international rules for field handball. The International Amateur Handball Federation was formed in 1928, and the International Handball Federation was formed in 1946.

Men's field handball was played at the 1936 Summer Olympics in Berlin. During the next several decades, indoor handball flourished and evolved in the Scandinavian countries. The sport re-emerged onto the world stage as team handball for the 1972 Summer Olympics in Munich. Women's team handball was added at the 1976 Summer Olympics. Due to its popularity in the region, the Eastern European countries that refined the event became the dominant force in the sport when it was reintroduced.

The International Handball Federation organised the men's world championship in 1938 and every 4 (sometimes 3) years from World War II to 1995. Since the 1995 world championship in Iceland, the competition has been every two years. The women's world championship has been played since 1957. The IHF also organises women's and men's junior world championships. By July 2009, the IHF listed 166 member federations - approximately 795,000 teams and 19 million players.

1.7 Significance Of The Study:

The study signifies:

i) The improvement of mental abilities of children.

ii) Problem solving and decision making abilities.

iii) Raises intelligence quotient (IQ)

iv) Fosters critical, creative and original thinking.
1.8 Objectives of the study:

1) To find out the effect of type of players on general mental ability of College students.
2) To investigate the effect of gender on general mental ability test of College students.
3) To search the general mental ability among chess players and non-chess players.
4) To search the general mental ability among male players and female players.
5) To find out the effect of type of players on self confidence of College students.
6) To investigate the effect of gender on self confidence of College students.
7) To search the self confidence among chess players and non-chess players.
8) To search the self confidence ability among male players and female players.

1.9 Statement Of The Problem:

The purpose of the study was to explore the level of confidence and mental process (general mental ability) of chess players and non-chess players.

1.10 Hypotheses:

1) There might be significant difference between chess players and non-chess players dimension on general mental ability.
2) There might be significant difference between male chess players and female chess players dimension on general mental ability.
3) Further there might be significant difference between chess players and non-chess players dimension on self confidence.

4) There be significant difference between male players and female players dimension on self confidence.

1.11 De Limitations:

1. The Study is limited to 200 players Out of which 100 Chess and 100 Non Chess Players. The 100 Non Chess Players are Volley Ball and Hand Ball Players.

2. The Study is delimited to 50 Male Chess Player, 50 Female Chess Players, 25 Volley Ball Male Players, 25 Hand Ball Male Players, 25 Volley Ball Female Players and 25 Hand Ball Female Players.

3. The Study is delimited to find the general mental ability and self confidence of the Chess Players and Non Chess Players.

4. The Chess Players and Non Chess Players are between the age group of 18 to 25 Years.

1.12 Limitations:

1. The Study is only for Chess Men and Women Player, Hand Ball and Volley Ball Men and Women Players.
2. The Subjects generally hails from different socio-economic status, different dietary habits, mode of living et cetera. Certain factors like daily routine, life Style and food habits, which would have an effect on the Performance could not be controlled.

3. The subjects are sports persons studying in different degree colleges of Osmania University in Hyderabad

1.13 Definition Of Terms:

Anxiety

Anxiety is an unpleasant state of inner turmoil, often accompanied by nervous behavior, such as pacing back and forth, somatic complaints and rumination. It is the subjectively unpleasant feelings of dread over something unlikely to happen, such as the feeling of imminent death. Anxiety is not the same as fear, which is felt about something realistically intimidating or dangerous and is an appropriate response to a perceived threat; anxiety is a feeling of fear, worry, and uneasiness, usually generalized and unfocused as an overreaction to a situation that is only subjectively seen as menacing.

Self Confidence:

Self-confidence is the knowledge that you can do something and do it well. Self-confidence comes from firsthand knowledge of the task at hand, knowing your strengths and weaknesses, applying your skills to any situation and adapting quickly as the situation unfolds. People who exude self-confidence know they have what it takes to master difficult situations, and they are not afraid of failure.
**Mental process** or **mental function** are terms often used interchangeably for all the things that individuals can do with their minds. These include perception, introspection, memory, creativity, imagination, idea, belief, reasoning, volition, and emotion. Sometimes the term cognitive process is used instead of mental process.

**Cohesion:**

Group cohesion refers to the extent to which a team or group shares a sense of shared task or social bond.

**Imagery:**

Refers to ‘imagined’ sensations, for example visual imagery is known as ‘visualization’

**Attention Focus:**

Being able to block everything out, e.g., a crowd.

**Motivation:**

Recent research implies that sports-related achievement motivation is composed of several traits that together form a general orientation of a person towards achievement in sports. This research refers to The Achievement Motivation Inventory (AMI) (Schuler, Thornton, Frintrup & Mueller-Hanson, 2003) which is a broad-spectrum assessment of achievement-motivation in business, and has been used to develop the Sports Performance Indicator.
Internal Monologue: Maintaining positive thoughts during competition by keeping a running conversation going in one’s mind.

Criticism: A tenet of motivational theory that is necessary to improve performance. The proper delivery of that criticism is imperative, as criticism can either better performance or drastically worsen it. There are three types of criticism: Destructive, Self and Constructive. The best method of delivering constructive criticism is the “sandwich” approach; here, one first offers a compliment, then offers and critical feedback and useful directions to improve in that particular area, and then end with another compliment.

Sport

A sport is an organized, competitive, and skillful physical activity requiring commitment and fair play, in which a winner can be defined by objective means. It is governed by a set of rules or customs. In a sport the key factors are the physical capabilities and skills of the competitor when determining the outcome (winning or losing).

Concentration:

This is the mental quality to focus on the task in hand. If the athlete lacks concentration then their athletic abilities will not be effectively or efficiently applied to the task.

Control

Identifying when an athlete feels a particular emotion and understanding the reason for the feelings is an important stage of helping an athlete gain emotional control. An athlete’s ability to maintain control of their emotions in the face of adversity and remain positive is essential to successful performance.
Commitment:

Sports performance depends on the athlete being fully committed to numerous goals over many years. In competition with these goals the athlete will have many aspects of daily life to manage. The many competing interests and commitments include work, studies, family/partner, friends, social life and other hobbies/sports.