1.1 Introduction:

Any individual taking part in a vigorous schedule of training and practice for a competitive activity such as power volleyball may expect improvement in several basic facts of physical fitness: Strength, endurance, speed balance and flexibility. Strength plays a major role in the vertical jumping ability, necessary in the basic spike and block for all players. Most conditioning programmes for power volleyball stress a need to improve leg strength in an effort to increase vertical jumping ability. Endurance gains are brought about by the necessity for an individual player to be constantly on the move in a well played game of power volleyball. It is true that a player is seldom required to run more than 15 or 20 feet but it is also true that a minimum amount of time is spent in simply standing still. Speed, in the sense of movement of body segments, is also improved in the participant in the modern game. “The ability to recognize the direction a ball is going to be spiked, a quick total body movement in that direction and a very rapid thrust of the hand
to intercept the ball, traveling at speeds of about 60 miles an hour, demand a high degree of speed of movement.”

A very important physical aspect of today’s game of volleyball is flexibility. Players preparing to participate in power volleyball must be certain that improved flexibility is a factor in any workout plan. Overall body co-ordination is developed as a result of the necessity for the participant in volleyball to become a master of many different skills. Players cannot hope to succeed in the game if only one specialty, such as serving or blocking is well developed at the expense of total skill development. While there is some degree of carry-over benefit from different games. “Volleyball skills are almost unique. It is obvious that a players with less jumping ability, but jumping ability will be an advantage only when proper arm action.”

A phase of motor development that is not generally recognized as part of the development resulting from volleyball is agility. Since the ball is constantly in motion and the court is occupied by five other players moving to different court positions as the team goes from offense to defense, the player must learn body control in response to the ever-changing situation. The high agility level of a skilled players is readily demonstrated as players takes a few quick steps, dives returns the ball
high into the air. There are several values of a psychological nature to be obtained from volleyball game. The player must learn self-discipline in order that the playing rights of others are not violated. It takes a high degree of self-discipline for a skilled player to stay at home and watch a player with less ability attempt a play that might be completed if player to be a "ball hog."³

At the same time, all players learn a high degree of personal responsibility towards their teammates. When making plays that come into their area. Personal integrity and regard for rules are traits that are strengthened as players learn to accept the judgment of the first and second referees and the linesmen assigned to officiate the contest without showing displeasure or disgust as ball handling violations or net touches are called on individual players.

A slightly different aspect of psychological benefit might to include when one considers the mental outlook of an individual before and after a vigorous workout. It is extremely difficult to carry the problems of everyday existence into an active session of vigorous activity such as volleyball.
1.2 Historical Background of Volleyball:

Volleyball is a new game which is pre-eminently fitted for the gymnasium or the exercise hall, but which may also be played out-of-doors. Any number of persons may play the game. The play consists of keeping a ball in motion over a high net, from one side to the other, thus partaking of the character of two games-tennis and handball.

Play is started by a player on one side serving the ball over the net into the opponents filed or court. “The opponents then, without allowing the ball to strike the floor, return it, and it is in this way kept going back and forth until one side fails to return it or it hits the floor. This counts a "score" for one side, or a "server out" for the other, depending on the side in point. The game consists of nine innings, each side serving a certain number of times, as per the rules, per innings.

Origin of Volleyball:

The game of volleyball was developed around 1895, a few years after the invention of the game of Basketball. In the year 1891, James Naisith invented the game of Basketball. This game was found to be too strenuous for middle aged business people and Mr. William G.
Morgan was made responsible for organizing a less strenuous game for these people. Thus, Volleyball, as a sport, was initiated in Holyoke, Massachusetts U.S.A. in 1895 by Mr. William G. Morgan. At its inception, the sport was called, "Minonette" and eventually changed to Volleyball by Dr. Halstead as the aim of game was to volley the ball back and forth over the net. The name Volleyball was chosen because the ball is "volleyed" back and forth: that is remains in the air till the rally ends (derivation is from the French word "vol" which means "flight"). Volleyball, as a game, basically designed as a recreation activity for businessmen, become highly popular at summer resorts and playgrounds throughout the United States. In 1900, Canada became the first foreign country to adopt the sport. “The international Y.M.C.A. movement was instrumental in spreading the popularity of Volleyball throughout the world.” It was played for the first time in Cuba in 1905, Uruguay in 1910, China and Japan in 1913. Europe was first exposed to Volleyball by American troops during the First World War.

Volleyball caught on very quickly, flourishing in the Midwest and along the Pacific coast. “Volleyball was spread to different centuries such as France, Czechoslovakia, Poland and the Soviet Union but for
some reasons Fort Wayne, Indiana became the centre of the game. By the mid 30's it had 200 organized teams and more than 8000 players.”

The style of playing and the rules were developed differently in each section and nation of the world. At first, the rules of volleyball were quite simple: when one team knocked the ball out of bounds, or failed to get the ball over the net, or allowed the ball to drop to the ground, the other team won the point. “In Asia, because of the short stature of the population, rules were developed and geared to these characteristics. For example, there were nine players per team rather than six and the game called for no side out, or rotation order, and two attempts permitted at a service with the court being a little wider.” The height of the net was also lowered approximately by six inches. These Asian rules are still being used in Japan. However, this game is losing its popularity. “Beach Volleyball has been developed on the beaches of Southern California, Capabana in Rio de-Junero and on the Mediterranean shores in France. Double Volleyball played in outdoors is very popular, not only as a recreation but as a highly competitive sport. Meanwhile the Eastern European countries developed the sport to such an extent that high athletic requirements were demanded by the players.” The relentless and successful advancement of Volleyball in
the world boosted after the second world war. “The first attempt to organize an international volleyball federation was made during the 1936 Berlin Olympics but due to lack of proper response from other countries, this attempt was endeavoured in Paris, France in 1946, which led to the establishment of the International Volleyball Federation. The initiative, mainly by France, the Soviet Union, Poland, Yugoslavia, and Czechoslovakia, founded the International Volleyball in which fourteen other national federations were represented. After that small start, other nations became affiliated with I.V.B.F. After the inception of LV.B.F., the development and popularity of Volleyball was again stimulated by the establishment of unified rules and organized international tournaments. The first world championships for Volleyball were held in 1949 in Prague, Czechoslovakia with ten nations competing. The first European championships were held in 1948 in Rome with six teams taking part.”

Volleyball has gained much popularity in the socialist countries where sports play a leading role in physical culture. “They consequently have, until recent times, dominated the world championships. Japan was one country that fell in love with this game. Since 1960, the Japanese Volleyball Association has made a major contribution to the
development of world Volleyball. Each year, the top Japanese teams tour the world competing against the other top countries as well as playing exhibition games for the development of volleyball throughout the world.”

“The Y.M.C.A. College of Physical Education, Madras (Chennai) had taken a initiative in popularizing the game in India and now today the game has spread throughout the country.” The standard of the game is increasing day by day all over the country. The number district level, state and national level tournament the increasing participation of team; and the coaching camps by the rural and urban coaching centers, Nehru Yuva Kendras, State Sports Council’s, Schools, Colleges and Hostels and the Netaji Subhash National Institute of Sports (N.S. N.I.S.) itself, throughout the year are the clear. Indications that it has taken a key root on the Indian soil in India number of competitions are held every year in different places they are inter school, mini national senior national and all India rural volleyball championships.

This competitions are held separately for men and women. Besides these there are several other local and open competitions conducted by sports clubs and other private agencies.
“In the initial stage before the birth of volleyball Federation of India, volleyball was controlled by Indian Olympic Association (I.O.A.) The first Inter-State Volleyball Championship was held in the year 1936 along with Indian Olympic Games. The first National Championship was held in the year 1952 at Madras (Chennai) and since then it is an annual feature. In 1956, India participated in the Third World Cup Championship and had secured the 21st place in 1958, India participated in the third Asian Games and won the bronze medal.”

“The volleyball Federation of India was set up in the year 1951 and it is the controlling body of the game in India. The first president and secretary of Volleyball Federation of India were Mr. T.C. Arora and Mr. M.V. Basu respectively.

The headquarters of Volleyball Federation of India is at Madras (Chennai).

India in 1951, the championships were organized by V.F.I. every year. During 1965-66 championship was not held due to Indo-Pak War. The women's championship started at Jabalpur from 1953.”
### Introduction

(National Record from 1936 to 1999)

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<thead>
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<td>1998-99</td>
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The following Volleyball players have been awarded with

**Arjuna Awards:**

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<td>1972</td>
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<td>1973</td>
<td>G. Malini Reddy</td>
<td>Andhra Pradesh</td>
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1974  |  Shyam S. Rao  |  Rajasthan  
1975  |  K.C. Elemma  |  Kerala  
1976  |  Jimmi George  |  Kerala  
1977  |  A. Ramna Rao  |  Tamil Nadu  
1978  |  Kutty Krishan  |  Gujrat  
1979  |  Suresh Mishra  |  Rajasthan  
1982  |  G.E. Sridhar  |  Tamil Nadu  
1983  |  R.K. Purohit  |  Rajasthan  
1984  |  Sally Joseph  |  Kerala  
1986  |  Cyril C. Vellore  |  Kerala  
1989  |  A Basith  |  Andhra Pradesh  
1990  |  Dalel Singh  |  Haryana  
1991  |  Udai Kumar  |  Kerala  

In Volleyball, dronacharya Award was honoured to Shri A. Ramna Rao of Tamil Nadu in 1990.

**In 1995, the Sport of Volleyball was 100 Year Old!**

“The sport originated in the United States, and is not just achieving the type of popularity in the U.S. that has received on a global basis, where it ranks behind only soccer among participation sports. Today there are more than 46 million Americans who play volleyball. There are 800 million players worldwide who play Volleyball at least once a week.”\(^{15}\)
“In 1985, William G. Morgan, an instructor at the Young Men's Christian Association (YMCA) in Holyoke, Mass, decided to blend elements of basketball, baseball, tennis and handball to create a game for his classes of businessmen, which would demand less physical contact than basketball. He created the game of Volleyball (at that time called mintonette). Morgan borrowed the net from tennis and raised it 6 feet 6 inches above the floor, just above the average man's head.

During a demonstration game, someone remarked to Morgan that the players seemed to be volleying the ball back and forth over the net, and perhaps "Volleyball" would be a more descriptive name for the sport.

On July 7, 1896 at Springfield College the first game of "Volleyball" was played."

“In 1900, a special ball was designed for the sport.

1900-YMCA spread volleyball to Canada, the Orient, and the Southern Hemisphere.

1905- YMCA spread Volleyball to Cuba.

1907- Volleyball was presented at the Playground of America convention as one of the most popular sports.
1909- YMCA spread volleyball to Puerto Rico.

1912- YMCA spread volleyball to Uruguay.

1913- Volleyball competition held in Far Eastern Games. 1917- YMCA spread volleyball to Brazil.

1916- In the Philippines, an offensive style of passing the ball in a high trajectory to be struck by another player (the set and spike) were introduced. The Filipinos developed the "bombs" or "Kill", and called the hitter a "bomberino."

1916- The NCAA was invited by the YMCA to aid in editing the rules and in promoting the sport. Volleyball was added to school and college physical education and intramural programs.

In 1917- The game was changed from 21 to 15 points.

1919- American Expeditionary Forces distributed 16,000 volleyballs to its troops and allies. This provided a stimulus for the growth of volleyball in foreign lands.

In 1920- Three hits per side and back row attack rules were instituted.

In 1922- The first YMCA national championship was held in Brooklyn, NY. 27 teams from 11 states were represented.
1928- It became clear that tournaments and rules were needed; the
United States Volleyball Association (USVBA, now USA Volleyball)
was formed. The first U.S. Open was staged, as the field was open to
non-YMCA Squads. 1930's- Recreational sports programs became an
important part of American life."

“In 1930- The first two man beach game was played.

In 1934- The approval and recognition of national volleyball referees.

In 1937- At the AAU convention in Boston, action was taken to
recognize the U.S. Volleyball Association as the official national
governing body in the U.S.

Late 1940's- Forearm pass introduced to the game (as a desperation
play), most balls played with overhand pass.

1946- A study of recreation in the United States showed that volleyball
ranked fifth among team sports being promoted and organized. In
1947- The Federation International Volleyball (FIVB) was founded in
Paris.

In 1948- The first two-man beach tournament was held.

In 1949- The first World Championships were held in Prague,
Czechoslovakia.
1949- USVBA added a collegiate division, for competitive college teams. For the first ten years collegiate competition was sparse. Teams formed only through the efforts of interested students and instructors. Many teams dissolved when the interested individuals left the college. Competitive teams were scattered, with no collegiate governing bodies providing leadership in the sport.

1951- Volleyball was played by over 60 million people each year over 60 countries.”

“1955- Pan American Games included Volleyball.

1957- The International Olympic Committee (IOC) designated volleyball as an Olympic team sport, to be included in the 1964 Olympic Games.

1959- International University Sports Federation (FISU) held the first University Games in Turin, Italy. Volleyball was one of the eight competitions held.

1960- Seven Midwestern Institutions formed the Midwest Intercollegiate Volleyball Association (MIVA).

1964- Southern California Intercollegiate Volleyball Association (SCVIA) was formed in California.
1960’s new techniques added to the game included-the soft spike (dink), forearm pass (bump), blocking across the net, and defensive diving and rolling.

In 1964- Volleyball was introduced to the Olympic Games in Tokyo. The Japanese volleyball used in the 1964 Olympics, consisted of a rubber carcass with leather paneling. A similarly constructed ball is used in most modern competition.

In 1965- The California Beach Volleyball Association (CBVA) was formed.  

“1968- National Association of Intercollegiate Athletics (NAIA) made volleyball their fifteenth competitive sport.

1969- The Executive Committee of the NCAA proposed addition of volleyball to its program.

In 1974- The World Championships in Mexico were telecast in Japan.

In 1977- The US National Men's team began a year round training regime in Dayton, Ohio (moved to San Diego, CA in 1981).

In 1983- The Association of Volleyball Professionals (AVP) was formed.  

“In 1984- The US won their first medals at the Olympics in Los Angeles. The men won the Gold and the women the Silver.

In 1986- The Women's Professional Volleyball Association (WPVA) was formed.

In 1987- The FIVB added a Beach Volleyball World Championship Series.

In 1988- The US men repeated the Gold in the Olympics in Korea.

In 1989- The FIVB Sports Aid Program was created.

In 1990- The World League was created.

In 1992- The Four Person Pro Beach League was started in the United States.

In 1994- Volleyball World Wide created.

In 1995- The Sport of Volleyball was 100 years old.

In 1996- Two person beach volleyball was added to the Olympics.”
Basic Skills of Volleyball and its Coaching:

“The six basic skills of volleyball, along with their basic movements and postures, are included in this segment of the text. Each of the skills chapters include the following elements:”

- Introduction to the skill
- Basic principles
- Description of the skill
- Teaching keys and coaching points
- Teaching progressions
- Tactical applications.

Where appropriate, examples of drills for each skill complete the chapter. When teaching skills, it is important not to over teach. Learners can assimilate only a small amount of information at one time. The detailed descriptions contained in these chapters are designed to help you understand each skill. When you present the skills to your players, focus on the keys, progressions, and drills.

For example, before outlining specific movement patterns for specific circumstances, allow the players the opportunity to react naturally to
those situations. A good teaching principle to follow is allowing your players to explore movements needed to attain a specific physical goal. As a player requires more information to execute efficient movements successfully. Provide a crisp cue word or phrase that triggers the appropriate response.

Too much “by the numbers” instruction can bring about very mechanical movements in your athletes, ultimately impairing the free-flowing, spontaneous reactions inherent in the game of volleyball. In addition, your players will become more fully vested in learning if you give them a more active role in their learning experiences.

“That teaching and learning skills should be fun for you and your players. The more confident you are in your knowledge of the skills, the easier it is to point out the keys and effectively guide the learning process.

The following key will assist you in interpreting the drill diagrams throughout the text:”

- **Ball**
  - Direction of player movement
  - Path of ball from toss or coach
  - Path of ball from player
Each volleyball skill has its own unique movement. It is important that both the player and the coach understand the related movement principles.

“Footwork is an integral part of each skill and is paramount to successful execution. Floor defense, attack, and occasionally blocking require dramatic and specific footwork patterns. Serving, forearm passing, and overhead passing require less active movement but still demand precise execution.

Basic footwork patterns specific to each skill are described as part of the individual skill chapters. Further, the subtleties of balance and the related body movement are detailed relative to each skill. In this chapter, general principles of movement and posture are considered.

It is important for you and your players to understand that volleyball differs from other team-ball sports. To control the rebound angle effectively, the player must arrive at the point of contact and be set up in good precontact posture before the ball arrives. In other team ball sports, the player and the ball can arrive simultaneously: the player can gain control of the ball by catching or dribbling it before sending it off to its next destination. In volleyball, only spiking provides the luxury of simultaneous arrival.”

"24
The posture principles represent what the player is attempting to achieve in the course of playing the ball. The nature of the game forces players into off-balance, uncontrolled postures. This underscores the critical importance of training athletes to make controlled movements and postures when playing the game.

**Coaching Points:**

1. “In volleyball, a player must arrive at the point of contact before the ball arrives in all skills except spiking.

2. The posture assumed prior to contact must be balanced, allowing the player to move through the ball to the target with control.

3. John Wooden, former UCLA basketball coach, said, "Be quick, but don't hurry." This concept applies to volleyball movements as well.

4. Be effective and efficient by designing warm-up drills that use volleyball specific movements. For example during the jogging phase of warm up have players practice footwork patterns for blocking, spiking and moving into position to contact the ball. During the stretching phase, use the floor movements required in floor defense such as collapses, sprawls, rolls and dives.
Effective learning theory tells us that movements and postures are best taught specific to the skill in which they are required. Therefore, there are no specific drills designed solely for movements or postures.

When designing a pre-match or practice warm-up routine, consider requiring movements specific to the skills of volleyball. For example, when players are jogging, have them go through a three-step accelerated spike approach, dive, or roll. When teaching movements and postures, though, use the skill the players are required to execute successfully.”

The serve initiates play, is the only skill completely within the control of an individual player, and is the only skill that can be replicated with no adjustments in technique on all occasions. Successful serves can force opponents into a difficult attack position, reducing their attack options and enabling the serving team to react more effectively in setting up the defense. In addition, a server can score a point by serving the ball in such a way that the opponent is unable to return it. This is known as an ace.

Serve variations include the underhand, overhead float, roundhouse float, standing spike, roundhouse spin, jump, sky ball and sidespin serves. Only the underhand and overhead float serves are covered in
this chapter. More advanced serves will be presented in future levels of Coaching Volleyball Successfully manuals.

**Sport and Psychology:**

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 psychologist 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.

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).”

“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.

Modern day sports are very demanding. It requires for the sportsmen 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 teams 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 athletes 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 notwithstanding 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 hard?

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 athlete 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 matched – 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.”

What do we mean by mental toughness? It is probably easiest to define in terms of how it affects behaviour and performance. “A mentally tough athlete is likely to:
• achieve relatively consistent performances regardless of situational factors;
• retain a confident, positive, optimistic outlook, even when things are not going well, and not ‘choke’ under pressure;
• deal with distractions without letting them interfere with optimal focus;
• tolerate pain and discomfort;
• remain persistent when the ‘going gets tough’;
• have the resilience to bounce back from disappointments.”"32

The influence of personality :- These characteristics are obviously related to success in most life situations. But it seems that some of us may be tougher than others because of personality traits and learned ways of coping.

Personality research has always stirred up controversy – usually because researchers have not been able to agree on the correct approach to studying it. Some have taken what is known as the ‘trait’ approach, which views personality as stable and enduring, based on individual characteristics. “However, others see personality as shaped by environmental influences, while ‘interactionists’ view individual traits
and the environment as codeterminants of behaviour. In recent times, this latter position has tended to predominate, based on the view that personality structure involves both a stable core of attitudes, values and beliefs about self, that remains relatively unchanged after early childhood, and more changeable, dynamic behaviours that are influenced by our environment."

Research on the relationship between stress and illness has revealed that some people have characteristics that act as buffers against stressors, making them less likely to succumb to ill health in difficult times. The “leading researcher Suzanne Kobasa showed in one study that a personality characteristic known as ‘hardiness’ was a key factor in whether or not highly-stressed executives succumbed to illness. The hardy executives, who avoided illness, tended to perceive stressors as ‘challenges’ rather than threats, so maintaining a sense of control over events.

Kobasa suggested that hardiness incorporates three key elements:

1. Control – the perceived ability of the individual to exert influence rather than experience helplessness;

2. Commitment – ie a refusal to give up easily;
3. Challenge – involving a person’s ability to grow and develop rather than remain static, and to view change rather than stability as the norm.\textsuperscript{34}

Until recently, few studies had attempted to transfer the concept of hardiness to sport and exercise settings, but it seems very similar to the idea of mental toughness outlined earlier in this article. One study on the relationship between hardiness and performance in basketball showed that seven out of eight season-long performance indicators were significantly correlated with a total hardiness score. This finding needs to be interpreted with caution, however, since correlations do not necessarily reflect causation.

“More recently, a team of researchers at Hull University have taken the idea of hardiness a step further by proposing a model of mental toughness in sport. A key development has been the development of a questionnaire to assess mental toughness that can be used to assess its influence in experimental studies.

The Hull researchers carried out two studies to show how mental toughness was related to performance and cognitive appraisal. In the first study, 23 volunteers performed 30-minute static cycling trials at three
different intensities of 30, 50 and 70% of their maximum oxygen uptake, rating the physical demands of the trials at five-minute intervals.\textsuperscript{35} Participants were classified as having either high or low mental toughness based on their responses to the above-mentioned questionnaire and, as predicted, those with higher levels of mental toughness reported significantly lower perceived exertion at 70% of maximum. No significant differences were noted at lower levels of exertion which, as the researchers acknowledged, is consistent with the cliché that ‘when the going gets tough, the tough get going’. The observed differences at higher levels of exertion could reflect a tendency of the more tough-minded to somehow act on the incoming stimuli before it reaches the level of perception, to reduce the perception of strain. Mentally tough exercisers might perceive themselves as having greater control during such conditions, or interpret the higher intensity as a challenge rather than a threat.

“The second study, on 79 participants, considered the influence of mental toughness on resilience in adverse situations. Participants were given either positive or negative feedback after completing a variety of motor tasks, and then asked to perform a planning task which was used as the objective performance measure. The key question for the researchers was
how participants would respond to feedback that could alter their confidence. As predicted, mentally tough participants performed better on the planning task, delivering relatively consistent performances whether their feedback had been negative or positive. However, those with lower levels of mental toughness performed significantly worse after negative feedback, confirming the greater resilience of those with high levels of mental toughness.\(^36\)

Building on the work of Kobasa, the Hull team proposed that confidence (as well as control, commitment and challenge) was a key element of mental toughness. This has given rise to the ‘4Cs’ model of mental toughness.

Research on mental toughness in sport and exercise has focused largely on individual differences, in which mental toughness is viewed as a relatively stable characteristic. ‘However, classic previous research on animals has suggested that ‘toughening up’ can be achieved through exposure to stressful conditions. Weiss and colleagues observed a toughening phenomenon after exposing animals to cold-water swimming, electric shock treatment or injections over a 14-day period. Specifically, the usual decrement in performance following aversive stimulation was not observed after the 14-day period. The intermittent exposure to
aversive stimuli had apparently led to the animals becoming more tolerant of – and resilient to – such stimuli.”

Although this finding does not necessarily transfer to human subjects, there are distinct parallels with various techniques commonly used as interventions in sport and exercise environments. For example, a technique known as ‘stress inoculation training’ gradually exposes the individual to more threatening situations while self-control is acquired as a means to combat learned helplessness. The stress response is gradually diminished as exposure renders the situation less threatening and the individual experiences a growing sense of control of particular importance here is the idea that exposure to stress in controlled situations is much more powerful than stress reduction or removal, which will not help an individual cope with future exposure to the same stressor.

“One researcher has proposed four major influences on toughening, as follows:

1. Early life experiences. Both human and animal studies have shown links between exposure to stressors in early life and reduced fear or emotionality when exposed to threats in adulthood;
2. Passive toughening. Intermittent exposure seems to protect against depletion of ‘stress hormones’ and is linked with their quicker returns to baseline levels. In other words, people become less sensitive and more tolerant of stress;

3. Active toughening. Physical fitness gained through aerobic conditioning is thought to be an important means of self-toughening. This could be related to the application of control;

4. Ageing. This has the opposite effects to the other three, tending to make people more sensitive to and less tolerant of stress.”

Clearly, active and passive toughening is the most relevant manipulations for athletes and can be applied in a number of practical ways. Stress inoculation training is an obvious application, but this is probably best approached with the aid of a sport psychologist. Since I am a sport psychologist, I will give some examples of how mental over-load may be applied to training sessions in order to achieve some degree of toughening.

“Rod Laver, the Australian tennis legend, has described how he used practice sessions to simulate ‘tough’ match conditions. Laver felt that fatigue placed great strain on the concentration which was crucial to
success in long matches. To simulate these conditions, Laver forced himself to concentrate and work even harder during the latter stages of training sessions, when he was tired, so that he became used to the mental strain of such conditions.”

He has cited this as one of the key factors in his long-lasting success.

Simulation training is a great way to prepare mentally for the challenges of competition, and this can include mental as well as physical stressors. For example, a tennis player could increase the mental pressures in a practice match by starting each service game 0-15 down, and thus getting used to ‘rebounding’ after losing the first point. Alternatively a player with an over-reliance on his first serve could be restricted to one serve only and be forced to become extremely focused and accurate with what is, in effect, a second serve.

To enhance the stress still further, players could practise by playing tiebreakers, or play practice matches in front of an audience. The coach might use bad line calls or spectator noise as a way of exposing players intermittently to distractions and giving them practice at dealing with them.

Tennis is a game with plenty of breaks between play that allow time for dwelling on past events or self-doubting. Using imagery and positive
self-talk during dead time in order to remain calm and in control can be an effective strategy. “Mentally tough competitors are likely to use strategies that reinforce their self-belief at times of crisis. And these strategies can be rehearsed in practice situations.”

With a little invention, simulation training can be used for most athletes, and the opportunity to deal with mental stressors in controlled situations can be an invaluable way to toughen up in preparation for the very real challenges of competition.

“What it is that drives some to embrace extreme risks, while the rest of us scurry for the safety of the sidelines?

Lester Keller, a longtime coach and sports-psychology coordinator for the U.S. Ski and Snowboard Association, says that not everyone has the mental makeup to excel in dangerous pursuits, but others have a much higher tolerance, if not craving, for risk. For example, Keller points to Daron Rahlves, a top U.S. downhill ski racer who spends the summer off-season racing in motocross competitions. “He enjoys the challenge and the risk,” Keller said.

“The high element of risk makes you feel alive, tests what you are made of and how far you can take yourself,”
Rahlves said in a previous interview with U.S. Ski Team staff.

“I’m not looking for danger. I’m in it for the challenge, my heart thumping as I finish, the feeling of being alive,” he said. “I definitely get scared on some of the courses. It just makes me fight more. … The hairier the course the better. That’s when I do best.”

The fear that drives many people away from the risks of extreme sports may be the same ingredient that keeps others coming back for more.

According to Chuck Berry - NOT the rock n’ roll singer - but a former aeronautical engineer from New Zealand who is well known for the risks he takes,

“There’s a voice on one shoulder going why are you doing this? You’re scared and the other voice is going yeah but I like being scared. And the other voice goes what if your parachute doesn’t open? And this one goes... it always does.”

Psychologists note that some people seem to have a strong craving for adrenaline rushes as a thrill-seeking behavior or personality trait.

According to scientists, adrenaline is closely linked with dopamine – the neurochemical that makes you feel euphoric - so what we think of as an
adrenaline rush is also a dopamine rush. High novelty seekers tend to have low levels of dopamine and what this implies is that people undertake risky or novel type experiences in order to bring up their levels of dopamine.

Forensic psychiatrist Dr. Erik Monasterio believes that,

“When you look at the data within the population of extreme sports people there’s a small sub-population who are very, very extreme and I think they’re more likely to have all sorts of psychiatric complications.”

Yet what really astonished Erik was not that a few had signs of madness (!!! - my explanation marks) - but that the rest had signs of surprisingly robust mental health (that’s more like it - me again).

He adds that:

“Almost all of them know at least one person who has died from their involvement in that activity. Despite all this adversity, they persist in their sport and that’s unusual. What that suggests is that extreme sports people are relatively immune to post traumatic stress disorder.”
Berry says,

“I’ve seen five people die indulging in these sports. And it’s always a sobering thing to see. But I just do my level best not to make those same kinds of mistakes.”

Shane Murphy, a sports psychologist and professor at Western Connecticut State University said the perspective of extreme athletes is very different from our own:

“We look at a risky situation and know that if we were in [that situation] we would be out of control,” he said. “But from the [athletes’] perspective, they have a lot of control, and there are a lot of things that they do to minimize risk.”

As mountaineer Al Read, now president of the Exum Mountain guides, a pre-eminent guide service based in Wyoming, is quick to note, climbing and other “dangerous” activities are statistically not as risky as outsiders would assume.

Another key aspect of risk perception may be something referred to as “the flow” or “the zone.” It is a state in which many athletes describe
becoming absorbed in pursuits that focus the mind completely on the present.

“Something that makes you begin climbing, perhaps, is that your adrenaline flows and you become very concentrated on what you’re doing,” Read said.

“After it’s over there’s exhilaration. You wouldn’t have that same feeling if the risk hadn’t been there.”

People of different skill levels experience “flow” at different times. As a result, some may always be driven to adventures that others consider extreme.

Zorpette, who has written a book on the subject ‘Extreme Sports, Sensation Seeking and the Brain’ recounts on one of his own more extreme experiences and the euphoria he got from it:

“I glanced at my depth gauge, saw that it read 200 feet (61 meters) and grinned. Breathing a mixture of helium, oxygen and nitrogen from two of the four large tanks strapped to my body, I was beyond the depths that could be visited safely with ordinary
Personality psychology is a branch of psychology that studies personality and individual differences. One emphasis in this area is to construct a coherent picture of a person and his or her major psychological processes (Bradberry, 2007). Another emphasis views personality as the study of individual differences, in other words, how people differ from each other. A third area of emphasis examines human nature and how all people are similar to one other. These three viewpoints merge together in the study of personality.

“Personality can be defined as a dynamic and organized set of characteristics possessed by a person that uniquely influences his or her cognitions, motivations, and behaviors in various situations (Ryckman, 2004). The word "personality" originates from the Latin persona, which means mask. Significantly, in the theatre of the ancient Latin-speaking world, the mask was not used as a plot device to disguise the identity of a character, but rather was a convention employed to represent or typify that character.”

“The pioneering American psychologist, Gordon Allport (1937) described two major ways to study personality, the nomothetic and the
idiographic. Nomothetic psychology seeks general laws that can be applied to many different people, such as the principle of self-actualization, or the trait of extraversion. Idiographic psychology is an attempt to understand the unique aspects of a particular individual."

The study of personality has a rich and varied history in psychology, with an abundance of theoretical traditions. Some psychologists have taken a highly scientific approach, whereas others have focused their attention on theory development. There is also a substantial emphasis on the applied field of personality testing with people.

“Many of the ideas developed by historical and modern personality theorists stem from the basic philosophical assumptions they hold. A good textbook for understanding basic assumptions behind personality theories is Hjelle and Ziegler (1992). This book is now out of print, but similar views are articulated by Ryckman (2000). The study of personality is not a purely empirical discipline, as it brings in elements of art, science, and philosophy to draw general conclusions. The following five categories are some of the most fundamental philosophical assumptions on which theorists disagree.”
1. **Freedom versus Determinism:** “This is the debate over whether we have control over our own behavior and understand the motives behind it (Freedom), or if our behavior is causally determined by forces beyond our control (Determinism). Determinism has been considered to be unconscious, environmental, or biological by various theories.”

2. **Heredity versus Environment:** “Personality is thought to be determined largely by either genetics and heredity, or by environment and experiences, or by some combination of the two. There is evidence for all possibilities. Contemporary research suggests that most personality traits are based on the joint influence of genetics and environment.”

3. **Uniqueness versus Universality:** “The argument over whether we are all unique individuals (Uniqueness) or if humans are basically similar in their nature (Universality). Gordon Allport, Abraham Maslow, and Carl Rogers were all advocates of the uniqueness of individuals. Behaviorists and cognitive theorists, in contrast, emphasized the importance of universal principles such as reinforcement and self-efficacy.”

4. **Active versus Reactive:** “Do we primarily act through our own initiative (Active), or do we react to outside stimuli (Reactive)?
Behavioral theorists typically believe that humans are passively shaped by their environments, whereas humanistic and cognitive theorists believe that humans are more active.”

5. **Optimistic versus Pessimistic:** “Personality theories differ on whether people can change their personalities (Optimism), or if they are doomed to remain the same throughout their lives (Pessimism). Theories that place a great deal of emphasis on learning are often, but not always, more optimistic than theories that do not emphasize learning.”

**Personality theories:** “Critics of personality theory claim personality is "plastic" across time, places, moods, and situations. Changes in personality may indeed result from diet (or lack thereof), medical effects, significant events, or learning. However, most personality theories emphasize stability over fluctuation.”

**Trait theories:** According to the Diagnostic and Statistical Manual of the American Psychiatric Association, personality traits are,

"Enduring patterns of perceiving, relating to, and thinking about the environment and oneself that are exhibited in a wide range of social and personal contexts."
Theorists generally assume a) traits are relatively stable over time, b) traits differ among individuals (e.g. some people are outgoing while others are reserved), and c) traits influence behavior.

The most common models of traits incorporate three to five broad dimensions or factors. The least controversial dimension, observed as far back as the ancient Greeks, is simply extraversion vs. introversion (outgoing and physical-stimulation-oriented vs. quiet and physical-stimulation-averse).

- “Gordon Allport delineated different kinds of traits, which he also called dispositions. Central traits are basic to an individual's personality, while secondary traits are more peripheral. Common traits are those recognized within a culture and thus may vary from culture to culture. Cardinal traits are those by which an individual may be strongly recognized.”

- “Raymond Cattell's research propagated a two-tiered personality structure with sixteen "primary factors" (16 Personality Factors) and five "secondary factors."  

- Hans Eysenck, who believed just three traits - extraversion, neuroticism and psychoticism - were sufficient to describe human
personality. Differences between Cattell and Eysenck emerged due to preferences for different forms of factor analysis, with Cattell using oblique, Eysenck orthogonal, rotation to analyse the factors that emerged when personality questionnaires were subjected to statistical analysis. “Today, the Big Five factors have the weight of a considerable amount of empirical research behind them. Building on the work of Cattell and others.

- Lewis Goldberg proposed a five-dimension personality model, nicknamed the "Big Five":\textsuperscript{63}

1. “Extraversion - outgoing and stimulation-oriented vs. quiet and stimulation-avoiding

2. Neuroticism - emotionally reactive, prone to negative emotions vs. calm, imperturbable, optimistic

3. Agreeableness - affable, friendly, conciliatory vs. aggressive, dominant, disagreeable

4. Conscientiousness - dutiful, planful, and orderly vs. laidback, spontaneous, and unreliable
5. Openness to experience - open to new ideas and change vs. traditional and oriented toward routine for ease of remembrance, this can be written as either OCEAN or CANOE.”

- “John L. Holland's RIASEC vocational model, commonly referred to as the Holland Codes, stipulates there are six personality traits that lead people to choose their career paths. This model is widely used in vocational counseling and is a circumplex model where the six types are represented as a hexagon where adjacent types are more closely related than those more distant.”

Trait models have been criticized as being purely descriptive and offering little explanation of the underlying causes of personality. Eysenck's theory, however, does propose biological mechanisms as driving traits, and modern behavior genetics researchers have demonstrated a clear genetic substrate to them.[vague] Another potential weakness with trait theories is they lead people to accept oversimplified classifications, or worse offer advice, based on a superficial analysis of one's personality. Finally, trait models often underestimate the effect of specific situations on people's behavior. It is important to remember traits are statistical generalizations that do not always correspond to an individual's behavior.
Type theories:- Personality type refers to the psychological classification of different types of people. Personality types are distinguished from personality traits, which come in different levels or degrees. According to type theories, for example, there are two types of people, introverts and extraverts. “According to trait theories, introversion and extraversion are part of a continuous dimension, with many people in the middle. The idea of psychological types originated in the theoretical work of Carl Jung[citation needed] and William Marston, whose work is reviewed in Dr. Travis Bradberry's The Personality Code. Jung's seminal 1921 book on the subject is available in English as Psychological Types.”

“Building on the writings and observations of Carl Jung, during World War II Isabel Briggs Myers and her mother Katharine C. Briggs delineated personality types by constructing the Myers-Briggs Type Indicator. This model was later used by David Keirsey with a different understanding from Jung, Briggs and Myers. In the former Soviet Union, Lithuanian Aušra Augustinavičiūtė independently derived a model of personality type from Jung's called Socionics.”

“The model is an older and more theoretical approach to personality, accepting extraversion and introversion as basic psychological orientations in connection with two pairs of psychological functions:
Perceiving functions: intuition and sensing (trust in conceptual/abstract models of reality or concrete sensory-oriented facts) Judging functions: thinking and feeling (thinking as the prime-mover in decision-making or feelings as the prime-mover in decision-making). Briggs and Myers also added another personality dimension to their type indicator in order to indicate whether a person has a more dominant judging or perceiving function. Therefore they included questions designed to indicate whether someone desires to either perceive events or have things done so that judgements can be made.

This personality typology has some aspects of a trait theory: it explains people's behaviour in terms of opposite fixed characteristics. “In these more traditional models, the intuition factor is considered the most basic, dividing people into "N" or "S" personality types. An "N" is further assumed to be guided by the thinking or objectication habit, or feelings, and be divided into "NT" (scientist, engineer) or "NF" (author, human-oriented leader) personality. An "S", by contrast, is assumed to be more guided by the perception axis, and thus divided into "SP" (performer, craftsman, artisan) and "SJ" (guardian, accountant, bureaucrat) personality.” These four are considered basic, with the other two factors in each case (including always extraversion) less important. Critics of
this traditional view have observed that the types are quite strongly
dereotyped by professions, and thus may arise more from the need to
categorize people for purposes of guiding their career choice. This among
other objections led to the emergence of the five factor view, which is
less concerned with behavior under work stress and more concerned with
behavior in personal and emotional circumstances. Some critics have
argued for more or fewer dimensions while others have proposed entirely
different theories (often assuming different definitions of "personality").

Type A personality: “During the 1950s, Meyer Friedman and his co-
workers defined what they called Type A and Type B behavior patterns.
They theorized that intense, hard-driving Type A personalities had a
higher risk of coronary disease because they are "stress junkies." Type B
people, on the other hand, tended to be relaxed, less competitive, and
lower in risk. There was also a Type AB mixed profile. Dr. Redford
Williams, cardiologist at Duke University, refuted Friedman’s theory that
Type A personalities have a higher risk of coronary heart disease;
however, current research indicates that only the hostility component of
Type A may have health implications. Type A/B theory has been
extensively criticized by psychologists because it tends to oversimplify
the many dimensions of an individual's personality.”^68
Psychoanalytic theories explain human behaviour in terms of the interaction of various components of personality. Sigmund Freud was the founder of this school. Freud drew on the physics of his day (thermodynamics) to coin the term psychodynamics. Based on the idea of converting heat into mechanical energy, he proposed psychic energy could be converted into behavior. Freud's theory places central importance on dynamic, unconscious psychological conflicts.

Freud divides human personality into three significant components: the ego, superego, and i.d.. The i.d. acts according to the pleasure principle, demanding immediate gratification of its needs regardless of external environment; the ego then must emerge in order to realistically meet the wishes and demands of the i.d. in accordance with the outside world, adhering to the reality principle. Finally, the superego inculcates moral judgment and societal rules upon the ego, thus forcing the demands of the id to be met not only realistically but morally. “The superego is the last function of the personality to develop, and is the embodiment of parental/social ideals established during childhood. According to Freud, personality is based on the dynamic interactions of these three components.
The channeling and release of sexual (libidal) and aggressive energies, which ensues from the "Eros" (sex; instinctual self-preservation) and "Thanatos" (death; instinctual self-annihilation) drives respectively, are major components of his theory. It is important to note Freud's broad understanding of sexuality included all kinds of pleasurable feelings experienced by the human body.

Freud proposed five psychosexual stages of personality development. He believed adult personality is dependent upon early childhood experiences and largely determined by age five. Fixations that develop during the Infantile stage contribute to adult personality and behavior.

“One of Sigmund Freud's earlier associates, Alfred Adler, did agree with Freud early childhood experiences are important to development, and believed birth order may influence personality development. Adler believed the oldest was the one that set high goals to achieve to get the attention they lost back when the younger siblings were born.” He believed the middle children were competitive and ambitious possibly so they are able to surpass the first-born’s achievements, but were not as much concerned about the glory. Also he believed the last born would be more dependent and sociable but be the baby. He also believed only
children love being the center of attention and mature quickly, but in the end fail to become independent.

“Heinz Kohut thought similarly to Freud’s idea of transference. He used narcissism as a model of how we develop our sense of self. Narcissism is the exaggerated sense of one self in which is believed to exist in order to protect one's low self esteem and sense of worthlessness. Kohut had a significant impact on the field by extending Freud's theory of narcissism and introducing what he called the 'self-object transferences' of mirroring and idealization. In other words, children need to idealize and emotionally "sink into" and identify with the idealized competence of admired figures such as parents or older siblings. They also need to have their self-worth mirrored by these people. These experiences allow them to thereby learn the self-soothing and other skills that are necessary for the development of a healthy sense of self.”

Another important figure in the world of personality theory was Karen Horney. She is credited with the development of the "real self" and the "ideal self". She believes all people have these two views of their own self. The "real self" is how you really are with regards to personality, values, and morals; but the "ideal self" is a construct you apply to yourself to conform to social and personal norms and goals. Ideal self
would be "I can be successful, I am CEO material"; and real self would be "I just work in the mail room, with not much chance of high promotion".72

**Behaviorist Theories and Sports:**

“Behaviorists explain personality in terms of the effects external stimuli have on behavior. It was a radical shift away from Freudian philosophy. This school of thought was developed by B. F. Skinner who put forth a model which emphasized the mutual interaction of the person or "the organism" with its environment. Skinner believed children do bad things because the behavior obtains attention that serves as a reinforcer.”73 For example: a child cries because the child's crying in the past has led to attention. These are the response, and consequences. The response is the child crying, and the attention that child gets is the reinforcing consequence. According to this theory, people's behavior is formed by processes such as operant conditioning. Skinner put forward a "three term contingency model"74 which helped promote analysis of behavior based on the "Stimulus - Response - Consequence Model" in which the critical question is: "Under which circumstances or antecedent 'stimuli' does the organism engage in a particular behavior or 'response', which in turn produces a particular 'consequence'?"
“Richard Herrnstein extended this theory by accounting for attitudes and traits. An attitude develops as the response strength (the tendency to respond) in the presence of a group of stimuli become stable. Rather than describing conditionable traits in non-behavioral language, response strength in a given situation accounts for the environmental portion. Herrstein also saw traits as having a large genetic or biological component as do most modern behaviorists.”\textsuperscript{75}

Ivan Pavlov is another notable influence. He is well known for his classical conditions experiments involving a dog. These physiological studies on this dog led him to discover the foundation of behaviorism as well as classical conditioning.

**Cognitive Theories and Related to Sports:**

“In cognitivism, behavior is explained as guided by cognitions (e.g. expectations) about the world, especially those about other people. Cognitive theories are theories of personality that emphasize cognitive processes such as thinking and judging.

Albert Bandura, a social learning theorist suggested the forces of memory and emotions worked in conjunction with environmental influences. Bandura was known mostly for his "Bobo Doll experiment". During
these experiments, Bandura video taped a college student kicking and verbally abusing a bobo doll. He then showed this video to a class of kindergartners who were getting ready to go out to play. When they entered the play room, they saw bobo dolls, and some hammers. The people observing these children at play saw a group of children beating the doll. He called this study and his findings observational learning, or modeling."

“Early examples of approaches to cognitive style are listed by Baron (1982). These include Witkin's (1965) work on field dependency, Gardner's (1953) discovering people had consistent preference for the number of categories they used to categorise heterogeneous objects, and Block and Petersen's (1955) work on confidence in line discrimination judgments. Baron relates early development of cognitive approaches of personality to ego psychology. More central to this field have been:

- Self-efficacy work, dealing with confidence people have in abilities to do tasks (Bandura, 1997);
- Locus of control theory (Lefcourt, 1966; Rotter, 1966) dealing with different beliefs people have about whether their worlds are controlled by themselves or external factors;
• Attributional style theory (Abramson, Seligman and Teasdale, 1978) dealing with different ways in which people explain events in their lives. This approach builds upon locus of control, but extends it by stating we also need to consider whether people attribute to stable causes or variable causes, and to global causes or specific causes.”

“Various scales have been developed to assess both attributional style and locus of control. Locus of control scales include those used by Rotter and later by Duttweiler, the Nowicki and Strickland (1973) Locus of Control Scale for Children and various locus of control scales specifically in the health domain, most famously that of Kenneth Wallston and his colleagues, The Multidimensional Health Locus of Control Scale (Wallston et al., 1978). Attributional style has been assessed by the Attributional Style Questionnaire (Peterson et al., 1982), the Expanded Attributional Style Questionnaire (Peterson & Villanova, 1988), the Attributions Questionnaire (Gong-guy & Hammen, 1990), the Real Events Attributional Style Questionnaire (Norman & Antaki, 1988) and the Attributional Style Assessment Test (Anderson, 1988).

Walter Mischel (1999) has also defended a cognitive approach to personality. His work refers to "Cognitive Affective Units", and
considers factors such as encoding of stimuli, affect, goal-setting, and self-regulatory beliefs. The term "Cognitive Affective Units" shows how his approach considers affect as well as cognition.  

**Humanistic Theories and Sports:**

“In humanistic psychology it is emphasized people have free will and they play an active role in determining how they behave. Accordingly, humanistic psychology focuses on subjective experiences of persons as opposed to forced, definitive factors that determine behaviour. Abraham Maslow and Carl Rogers were proponents of this view, which is based on the "phenomenal field" theory of Combs and Snygg (1949).

Maslow spent much of his time studying what he called "self-actualizing persons", those who are "fulfilling themselves and doing the best they are capable of doing." Maslow believes all who are interested in growth move towards self-actualizing (growth, happiness, satisfaction) views. Many of these people demonstrate a trend in dimensions of their personalities. Characteristics of self-actualizers according to Maslow include the four key dimensions:

1. **Awareness** - maintaining constant enjoyment and awe of life. These individuals often experienced a "peak experience". He
defined a peak experience as an "intensification of any experience
to the degree there is a loss or transcendence of self". A peak
experience is one in which an individual perceives an expansion of
his or herself, and detects a unity and meaningfulness in life.
Intense concentration on an activity one is involved in, such as
running a marathon, may invoke a peak experience.

2. Reality and problem centered - they have tendency to be concerned
with "problems" in their surroundings.

3. Acceptance/Spontaneity - they accept their surroundings and what
cannot be changed.

4. Unhostile sense of humor/democratic - they do not like joking
about others, which can be viewed as offensive. They have friends
of all backgrounds and religions and hold very close friendships.

Maslow and Rogers emphasized a view of the person as an active,
creative, experiencing human being who lives in the present and
subjectively responds to current perceptions, relationships, and
encounters. They disagree with the dark, pessimistic outlook of those in
the Freudian psychoanalysis ranks, but rather view humanistic theories as
positive and optimistic proposals which stress the tendency of the human
personality toward growth and self-actualization. This progressing self will remain the center of its constantly changing world; a world that will help mold the self but not necessarily confine it. Rather, the self has opportunity for maturation based on its encounters with this world. This understanding attempts to reduce the acceptance of hopeless redundancy. Humanistic therapy typically relies on the client for information of the past and its effect on the present, therefore the client dictates the type of guidance the therapist may initiate. This allows for an individualized approach to therapy. Rogers found patients differ in how they respond to other people. Rogers tried to model a particular approach to therapy— he stressed the reflective or empathetic response. This response type takes the client's viewpoint and reflects back his or her feeling and the context for it. An example of a reflective response would be, "It seems you are feeling anxious about your upcoming marriage". This response type seeks to clarify the therapist's understanding while also encouraging the client to think more deeply and seek to fully understand the feelings they have expressed.

“Around the 1990s, neuroscience entered the domain of personality psychology. Whereas previous efforts for identifying personality differences relied upon simple, direct, human observation, neuroscience
introduced powerful brain analysis tools like Electroencephalography (EEG), Positron Emission Tomography (PET), and Functional Magnetic Resonance Imaging (fMRI) to this study. One of the founders of this area of brain research is Richard Davidson of the University of Wisconsin-Madison. Davidson's research lab has focused on the role of the prefrontal cortex (PFC) and amygdala in manifesting human personality. In particular, this research has looked at hemispheric asymmetry of activity in these regions. Neuropsychological studies have illustrated how hemispheric asymmetry can affect an individual's personality (particularly in social settings) for individuals who have NLD (non-verbal learning disorder) which is marked by the impairment of nonverbal information controlled by the right hemisphere of the brain. Progress will arise in the areas of gross motor skills, inability to organize visual-spatial relations, or adapt to novel social situations. Frequently, a person with NLD is unable to interpret non-verbal cues, and therefore experiences difficulty interacting with peers in socially normative ways. An integrative, biopsychosocial approach to personality and psychopathology, linking brain and environmental factors to specific types of activity is the hypostatic model of personality, created by Codrin Stefan Tapu (Tapu, 2001)."
The trait of Extraversion-Introversion is a central dimension of human personality. Extraverts (also spelled extroverts) are gregarious, assertive, and generally seek out excitement. Introverts, in contrast, are more reserved, less outgoing, and less sociable. They are not necessarily asocial, but they tend to have smaller circles of friends, and are less likely to thrive on making new social contacts.

“The terms introversion and extraversion were first popularized by Carl Jung. Virtually all comprehensive models of personality include these concepts. Examples include Jung's analytical psychology, Eysenck's three factor model, Cattell's 16 personality factors, the Big Five personality traits, the four temperaments, the Minnesota Multiphasic Personality Inventory, the Myers Briggs Type Indicator, and Socionics.”

Extraversion and introversion are typically understood as a single continuum. Thus, to be high on one is necessarily to be low on the other. That said, people fluctuate in their behavior all the time, and even extreme introverts and extraverts do not always act consistently.

**Extraversion:** Extraverts typically thrive in large groups.

Extraversion is "the act, state, or habit of being predominantly concerned with and obtaining gratification from what is outside the self".


Extraverts tend to enjoy human interactions and to be enthusiastic, talkative, assertive, and gregarious. They take pleasure in activities that involve large social gatherings, such as parties, community activities, public demonstrations, and business or political groups. Acting, teaching, directing, managing, brokering are fields that favor extraversion. An extraverted person is likely to enjoy time spent with people and find less reward in time spent alone. They enjoy risk-taking and often show leadership abilities.

An extravert is energized when around other people. Extraverts tend to "fade" when alone and can easily become bored without other people around. Extraverts tend to think as they speak. When given the chance, an extravert will talk with someone else rather than sit alone and think.

**Introversion:-** Introverts often enjoy solitary activities like reading.

“Introversion is "the state of or tendency toward being wholly or predominantly concerned with and interested in one's own mental life". Introverts tend to be low-key, deliberate, and relatively passive in social situations.[citation needed] They often take pleasure in solitary activities such as reading, writing, drawing, watching movies, and using computers. The archetypal artist, writer, sculptor, composer, and inventor are all highly introverted. An introvert is likely to enjoy time spent alone
and find less reward in time spent with large groups of people, though they tend to enjoy interactions with close friends. They prefer to concentrate on a single activity at a time and like to observe situations before they participate. Introverts are easily overwhelmed by too much stimulation from social gatherings and engagement. They are more analytical before speaking. \(^{84}\)

Introversion is not the same as shyness. Introverts choose solitary over social activities by preference, whereas shy people avoid social encounters out of fear.

**Ambiversion:** “Although many people view being introverted or extraverted as a question with only two possible answers, most contemporary trait theories (e.g. the Big Five) measure levels of extraversion as part of a single, continuous dimension of personality, with some scores near one end, and others near the half-way mark.

Ambiversion is a term used to describe people who fall more or less directly in the middle and exhibit tendencies of both groups. An ambivert is normally comfortable with groups and enjoys social interaction, but also relishes time alone and away from the crowd.” \(^{85}\)
Measurement: “Extraversion-introversion is normally measured by self-report. A questionnaire might ask if the test-taker agrees or disagrees with statements such as I am the life of the party or I think before I talk.

Imagine a questionnaire consisting of ten "agree or disagree" statements. For the first five questions, agreement indicates a tendency towards extraversion, while for the last five questions, agreement indicates introversion.”

Self-report questionnaires have obvious limitations in that people may misrepresent themselves either intentionally or through lack of self-knowledge. It is also common to use peer report or observation.

Another approach is to present test-takers with various sets of adjectives (for example: thoughtful, talkative, energetic, independent) and ask which describes them most and least. Psychological measures of this trait may break it down into subfactors including warmth, affiliation, positive affect, excitement seeking, and assertiveness/dominance seeking.

“According to Carl Jung, introversion and extraversion refer to the direction of psychic energy. If a person’s energy usually flows outwards, he or she is an extravert, while if this energy normally flows inwards, this person is an introvert. Extraverts feel an increase of perceived energy
when interacting with a large group of people, but a decrease of energy when left alone. Conversely, introverts feel an increase of energy when alone, but a decrease of energy when surrounded by a large group of people.”

Most modern psychologists consider theories of psychic energy to be obsolete. First, it is difficult to operationalize mental "energy" in a way that can be scientifically measured and tested. Second, more detailed explanations of extraversion and the brain have replaced Jung’s rather speculative theories. Nevertheless, the concept is still in popular usage in the general sense of "feeling energized" in particular situations. Jung’s primary legacy in this area may be the popularizing of the terms introvert and extravert to refer to a particular dimension of personality.

Eysenck’s theory:- “Hans Eysenck described extraversion-introversion as the degree to which a person is outgoing and interactive with other people. These behavioral differences are presumed to be the result of underlying differences in brain physiology. Extraverts seek excitement and social activity in an effort to heighten their arousal level, whereas introverts tend to avoid social situations in an effort to keep such arousal to a minimum (see Differences in brain function below). Eysenck
designated extraversion as one of three major traits in his P-E-N model of personality, which also includes psychoticism and neuroticism.”

Eysenck originally suggested that extraversion was a combination of two major tendencies, impulsiveness and sociability. He later added several other more specific traits, namely liveliness, activity level, and excitability. These traits are further linked in his personality hierarchy to even more specific habitual responses, such as partying on the weekend.

Eysenck compared this trait to the four temperaments of ancient medicine, with choleric and sanguine temperaments equating to extraversion, and melancholic and phlegmatic temperaments equating to introversion Twin studies find that extraversion/introversion has a genetic component.

“The relative importance of nature versus environment in determining the level of extraversion is controversial and the focus of many studies. Twin studies find a genetic component of 39% to 58%. In terms of the environmental component, the shared family environment appears to be far less important than individual environmental factors that are not shared between siblings.”
**Brain differences:** “Eysenck proposed that extraversion was caused by variability in cortical arousal. He hypothesized that introverts are characterized by higher levels of activity than extraverts and so are chronically more cortically aroused than extraverts. The fact that extraverts require more external stimulation than introverts has been interpreted as evidence for this hypothesis. Other evidence of the "stimulation" hypothesis is that introverts salivate more than extraverts in response to a drop of lemon juice. Extraversion has been linked to higher sensitivity of the mesolimbic dopamine system to potentially rewarding stimuli. This in part explains the high levels of positive affect found in extraverts, since they will more intensely feel the excitement of a potential reward. One consequence of this is that extraverts can more easily learn the contingencies for positive reinforcement, since the reward itself is experienced as greater.”

One study found that introverts have more blood flow in the frontal lobes of their brain and the anterior or frontal thalamus, which are areas dealing with internal processing, such as planning and problem solving. Extraverts have more blood flow in the anterior cingulate gyrus, temporal lobes, and posterior thalamus, which are involved in sensory and emotional experience. This study and other research indicates that
introversion-extraversion is related to individual differences in brain function.

**Implications:** “Acknowledging that introversion and extraversion are normal variants of behavior can help in self-acceptance and understanding of others. For example, an extravert can accept her introverted partner’s need for space, while an introvert can acknowledge his extraverted partner’s need for social interaction.”

“Social psychologist David Myers found a correlation between extraversion and happiness; that is, more extraverted people reported higher levels of personal happiness. The causality is not clear, however. Extraversion may lead to greater happiness, happier people may become more extraverted, or there may be some other factor such as genetics that affects both. It is also possible that the results reflect biases in the survey itself. Another factor is that introversion is generally regarded as less healthy in Western culture. Also, according to Carl Jung, introverts acknowledge more readily their psychological needs and problems, whereas extraverts tend to be oblivious of them because they focus more on the outer world. On average, extraverts also have a somewhat higher self-esteem than introverts. As in the case of happiness, this may be due to inherent differences in the brain, or differential social treatment.”
Extraversion is perceived as socially desirable in Western culture, but it is not always an advantage. For example, extraverted youths are more likely to engage in delinquent behavior. Conversely, while introversion is perceived as less socially desirable, introversion is strongly associated with positive traits such as intelligence and "giftedness. For many years, researchers have found that introverts tend to be more successful in academic environments, which extraverts may find boring.

“Career counselors often use personality traits, along with other factors such as skill and interest, to advise their clients. Some careers such as computer programming may be more satisfying for an introverted temperament, while other areas such as sales may be more agreeable to the extraverted type.”

Although neither introversion nor extraversion is pathological, psychotherapists can take temperament into account when treating clients. Clients may respond better to different types of treatment depending on where they fall on the introversion/extraversion spectrum. Teachers can also consider temperament when dealing with their pupils, for example acknowledging that introverted children need more encouragement to speak in class while extraverted children may grow restless during long periods of quiet study.
“Although these are real personality differences, one should avoid pigeonholing or stereotyping. People are complex and unique, and because extraversion varies along a continuum, they may have a mixture of both orientations. A person who acts introverted in one scenario may act extraverted in another, and people can learn to act “against type” in certain situations. Jung's theory states that when someone's primary function is extraverted, his secondary function is always introverted (and vice versa).”

“Neuroticism is a fundamental personality trait in the study of psychology. It can be defined as an enduring tendency to experience negative emotional states. Individuals who score high on neuroticism are more likely than the average to experience such feelings as anxiety, anger, guilt, and clinical depression. They respond more poorly to environmental stress, and are more likely to interpret ordinary situations as threatening, and minor frustrations as hopelessly difficult. They are often self-conscious and shy, and they may have trouble controlling urges and delaying gratification. Neuroticism is related to emotional intelligence, which involves emotional regulation, motivation, and interpersonal skills. It is also considered to be a predisposition for traditional neuroses, such as phobias and other anxiety disorders.”
**Emotional stability:** “On the opposite end of the spectrum, individuals who score low in neuroticism are more emotionally stable and less reactive to stress. They tend to be calm, even tempered, and less likely to feel tense or rattled. Although they are low in negative emotion, they are not necessarily high on positive emotion. That is an element of the independent trait of extraversion. Neurotic extraverts, for example, would experience high levels of both positive and negative emotional states, a kind of "emotional roller coaster." Individuals who score low on neuroticism (particularly those who are also high on extraversion) generally report more happiness and satisfaction with their lives.”

**Measurement:** “Neuroticism is typically viewed as a continuous trait, rather than a distinct type of person. People vary in their level of neuroticism, with a small minority of individuals scoring extremely high or extremely low on the dimension. Because most people cluster around the average, neuroticism test scores approximate a normal distribution, given a large enough sample of people. Neuroticism is one of the most studied personality traits in psychology, and this has resulted in a wealth of data and statistical analysis. It is measured on the EPQ, the NEO PI-R, and other personality inventories.”
Sports Physiology :- “Neuroticism appears to be related to physiological differences in the brain. Hans Eysenck theorized that neuroticism is a function of activity in the limbic system, and research suggests that people who score highly on measures of neuroticism have a more reactive sympathetic nervous system, and are more sensitive to environmental stimulation. Behavioral genetics researchers have found that a substantial portion of the variability on measures of neuroticism can be attributed to genetic factors.”

“A study with positron emission tomography has found that healthy subjects that score high on the NEO PI-R neuroticism dimension tend to have high altanserin binding in the frontolimbic region of the brain -- an indication that these subjects tend to have more of the 5-HT2A receptor in that location. Another study has found that healthy subjects with a high neuroticism score tend to have higher DASB binding in the thalamus, -- with DASB being a ligand that binds to the serotonin transporter protein.

Another neuroimaging study using magnetic resonance imaging to measure brain volume found that the brain volume was negatively correlated to NEO PI-R neuroticism when correcting for possible effects of intracranial volume, sex, and age.”
Origins: “In 1936 Gordon Allport and H.S. Odbert hypothesized that: Those individual differences that are most salient and socially relevant in people’s lives will eventually become encoded into their language; the more important such a difference, the more likely is it to become expressed as a single word.”

This statement has become known as the Lexical Hypothesis.

“Allport and Odbert had worked through two of the most comprehensive dictionaries of the English language available at the time, and extracted 18,000 personality-describing words. From this gigantic list they extracted 4500 personality-describing adjectives which they considered to describe observable and relatively permanent traits.

In 1946 Raymond Cattell used the emerging technology of computers to analyse the Allport-Odbert list. He organized the list into 181 clusters and asked subjects to rate people whom they knew by the adjectives on the list. Using factor analysis Cattell generated twelve factors, and then included four factors which he thought ought to appear. The result was the hypothesis that individuals describe themselves and each other according to sixteen different, independent factors.”
“With these sixteen factors as a basis, Cattell went on to construct the 16PF Personality Questionnaire, which remains in use by universities and businesses for research, personnel selection and the like. Although subsequent research has failed to replicate his results, and it has been shown that he retained too many factors, the current 16PF takes these findings into account and is considered to be a very good test. In 1963, W.T. Norman replicated Cattell’s work and suggested that five factors would be sufficient.”^102

“In psychology, the "Big Five" personality traits are five broad factors or dimensions of personality developed through lexical analysis. This is the rational and statistical analysis of words related to personality as found in natural-language dictionaries. The traits are also referred to as the "Five Factor Model" (FFM).”^103

“The model is considered to be the most comprehensive empirical or data-driven enquiry into personality. The first public mention of the model was in 1933, by L. L. Thurstone in his presidential address to the American Psychological Association. Thurstone’s comments were published in Psychological Review the next year.”^104

The five factors are Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN, or CANOE if rearranged).
Some disagreement remains about how to interpret the Openness factor, which is sometimes called "Intellect." Each factor consists of a cluster of more specific traits that correlate together. For example, extraversion includes such related qualities as sociability, excitement seeking, impulsiveness, and positive emotions.

The Five Factor Model is a purely descriptive model of personality, but psychologists have developed a number of theories to account for the Big Five.

"The Big Five factors and their constituent traits can be summarized as follows:

- **Openness** - appreciation for art, emotion, adventure, unusual ideas, imagination, curiosity, and variety of experience.

- **Conscientiousness** - a tendency to show self-discipline, act dutifully, and aim for achievement; planned rather than spontaneous behavior.

- **Extraversion** - energy, positive emotions, surgency, and the tendency to seek stimulation and the company of others.

- **Agreeableness** - a tendency to be compassionate and cooperative rather than suspicious and antagonistic towards others.
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- Neuroticism - a tendency to experience unpleasant emotions easily, such as anger, anxiety, depression, or vulnerability; sometimes called emotional instability.”

When scored for individual feedback, these traits are frequently presented as percentile scores. “For example, a Conscientiousness rating in the 80th percentile indicates a relatively strong sense of responsibility and orderliness, whereas an Extraversion rating in the 5th percentile indicates an exceptional need for solitude and quiet.”

Although these trait clusters are statistical aggregates, exceptions may exist on individual personality profiles. On average, people who register high in Openness are intellectually curious, open to emotion, interested in art, and willing to try new things. A particular individual, however, may have a high overall Openness score and be interested in learning and exploring new cultures. Yet he or she might have no great interest in art or poetry. Situational influences also exist, as even extraverts may occasionally need time away from people.

“In psychology, Trait theory is a major approach to the study of human personality. Trait theorists are primarily interested in the measurement of traits, which can be defined as habitual patterns of behavior, thought, and emotion. According to this perspective, traits are relatively stable over
time, differ among individuals (e.g. some people are outgoing whereas others are shy), and influence behavior."\(^{107}\)

“Gordon Allport was an early pioneer in the study of traits, which he sometimes referred to as dispositions. In his approach, central traits are basic to an individual's personality, whereas secondary traits are more peripheral. Common traits are those recognized within a culture and may vary between cultures. Cardinal traits are those by which an individual may be strongly recognized. Since Allport’s time, trait theorists have focused more on group statistics than on single individuals. Allport called these two emphases "nomothetic" and "idiographic," respectively."\(^{108}\)

There is a nearly unlimited number of potential traits that could be used to describe personality. “The statistical technique of factor analysis, however, has demonstrated that particular clusters of traits reliably correlate together. Hans Eysenck has suggested that personality is reducible to three major traits. Other researchers argue that more factors are needed to adequately describe human personality. Many psychologists currently believe that five factors are sufficient.

Virtually all trait models, and even ancient Greek philosophy, include extraversion vs. introversion as a central dimension of human
personality. Another prominent trait that is found in nearly all models is Neuroticism, or emotional instability."

“Eysenck's three factor model contains the traits of extraversion, neuroticism, and psychoticism. The five factor model contains openness, extraversion, neuroticism, agreeableness, and conscientiousness. These traits are the highest-level factors of a hierarchical taxonomy based on the statistical technique of factor analysis. This method produces factors that are continuous, bipolar, can be distinguished from temporary states, and can describe individual differences. Both approaches extensively use self-report questionnaires.” The factors are intended to be orthogonal (uncorrelated), though there are often small positive correlations between factors. The five factor model in particular has been criticized for losing the orthogonal structure between factors. Hans Eysenck has argued that fewer factors are superior to a larger number of partly related ones. Although these two approaches are comparable because of the use of factor analysis to construct hierarchical taxonomies, they differ in the organization and number of factors.

“Whatever the causes, however, psychoticism marks the two approaches apart as the five factor model contains no such trait. Moreover, apart from simply being different high-level factor psychoticism, unlike any of
the other factors in either approach, does not fit a normal distribution curve. Indeed, scores are rarely high thus skewing a normal distribution. However, when they are high there is considerable overlap with psychiatric conditions such as antisocial and schizoid personality disorders. Similarly, high scorers on neuroticism are more susceptible to sleep and psychosomatic disorders. Five factor approaches can also predict future mental disorders.”

**Lower order factors:** “Similarities between lower order factors for psychoticism and the factors of openness, agreeableness, and conscientiousness (from Matthews, Deary & Whiteman, 2003).”

There are two higher order factors that both taxonomies clearly share, extraversion and neuroticism. Both approaches broadly accept that extraversion is associated with sociability and positive affect, whereas neuroticism is associated with emotional instability and negative affect. Many lower order factors are similar between the two taxonomies. “For instance, both approaches contain factors for sociability/gregariousness, for activity levels, and for assertiveness within the higher order factor, extraversion. However, there are differences too. First, the three-factor approach contains nine lower order factors and the five-factor approach has six. Eysenck’s psychoticism factor incorporates some of the polar
opposites of the lower order factors of openness, agreeableness and conscientiousness. A high scorer on tough-mindedness in psychoticism would score low on tender-mindedness in agreeableness. Most of the differences between the taxonomies stem from the three factor model's emphasis on fewer high-order factors.”

“Although both major trait models are descriptive, only the three factor model offers a detailed causal explanation. Eysenck suggests that different personality traits are caused by the properties of the brain, which themselves are the result of genetic factors. In particular, the three factor model identifies the reticular system and the limbic system in the brain as key components, with the specific functions of mediating cortical arousal and emotional responses respectively.” Eysenck advocates that extraverts have low levels of cortical arousal and introverts have high levels, leading extraverts to seek out more stimulation from socialising and being venturesome. Moreover, Eysenck surmised that there would be an optimal level of arousal after which inhibition would occur and that this would be different for each person. In a similar vein, the three factor approach theorizes that neuroticism is mediated by levels of arousal in the limbic system with individual differences arising because of variable activation thresholds between
people. Therefore, highly neurotic people when presented with minor stressors will exceed this threshold, whereas people low in neuroticism will not exceed normal activation levels, even when presented with large stressors. By contrast, proponents of the five factor approach assume a role of genetics and environment but offer no explicit causal explanation.

Given this emphasis on biology in the three factor approach it would be expected that the third trait, psychoticism, would have a similar explanation. However, the causal properties of this state are not well defined. “Eysenck has suggested that psychoticism is related to testosterone levels and is an inverse function of the serotonergic system, but he later revised this, linking it instead to the dopaminergic system. Eysenck’s theory is based primarily on physiology and genetics. Although he is a behaviorist who considers learned habits of great importance, he considers personality differences as growing out of our genetic inheritance. He is, therefore, primarily interested in what is usually called temperament.”

“Eysenck is also primarily a research psychologist. His methods involve a statistical technique called factor analysis. This technique extracts a number of “dimensions” from large masses of data. For example, if you
give long lists of adjectives to a large number of people for them to rate themselves on, you have prime raw material for factor analysis.\textsuperscript{116} Imagine, for example, a test that included words like “shy,” “introverted,” “outgoing,” “wild,” and so on. Obviously, shy people are likely to rate themselves high on the first two words, and low on the second two. Outgoing people are likely to do the reverse. Factor analysis extracts dimensions -- factors -- such as shy-outgoing from the mass of information. The researcher then examines the data and gives the factor a name such as “introversion-extroversion.” There are other techniques that will find the “best fit” of the data to various possible dimensions, and others still that will find “higher level” dimensions -- factors that organize the factors, like big headings organize little headings.

Eysenck's original research found two main dimensions of temperament: neuroticism and extraversion-introversion. Let’s look at each one...

Neuroticism is the name Eysenck gave to a dimension that ranges from normal, fairly calm and collected people to one’s that tend to be quite “nervous.” His research showed that these nervous people tended to suffer more frequently from a variety of “nervous disorders” we call neuroses, hence the name of the dimension. But understand that he was not saying that people who score high on the neuroticism scale are
necessarily neurotics -- only that they are more susceptible to neurotic problems.

“Eysenck was convinced that, since everyone in his data-pool fit somewhere on this dimension of normality-to-neuroticism, this was a true temperament, i.e. that this was a genetically-based, physiologically-supported dimension of personality. He therefore went to the physiological research to find possible explanations.”

The most obvious place to look was at the sympathetic nervous system. This is a part of the autonomic nervous system that functions separately from the central nervous system and controls much of our emotional responsiveness to emergency situations. For example, when signals from the brain tell it to do so, the sympathetic nervous systems instructs the liver to release sugar for energy, causes the digestive system to slow down, opens up the pupils, raises the hairs on your body (goosebumps), and tells the adrenal glands to release more adrenalin (epinephrine). The adrenalin in turn alters many of the body’s functions and prepares the muscles for action. The traditional way of describing the function of the sympathetic nervous system is to say that it prepares us for “fight or flight.”
“Eysenck hypothesized that some people have a more responsive sympathetic nervous system than others. Some people remain very calm during emergencies; some people feel considerable fear or other emotions; and some are terrified by even very minor incidents. He suggested that this latter group had a problem of sympathetic hyperactivity, which made them prime candidates for the various neurotic disorders.”

Perhaps the most “archetypal” neurotic symptom is the panic attack. Eysenck explained panic attacks as something like the positive feedback you get when you place a microphone too close to a speaker: The small sounds entering the mike get amplified and come out of the speaker, and go into the mike, get amplified again, and come out of the speaker again, and so on, round and round, until you get the famous squeal that we all loved to produce when we were kids. (Lead guitarists like to do this too to make some of their long, wailing sounds).

Well, the panic attack follows the same pattern: You are mildly frightened by something -- crossing a bridge, for example. This gets your sympathetic nervous system going. That makes you more nervous, and so more susceptible to stimulation, which gets your system even more in an uproar, which makes you more nervous and more susceptible.... You
could say that the neuroticistic person is responding more to his or her own panic than to the original object of fear! As someone who has had panic attacks, I can vouch for Eysenck’s description -- although his explanation remains only a hypothesis.

**Extraversion-introversion**: “His second dimension is extraversion-introversion. By this he means something very similar to what Jung meant by the same terms, and something very similar to our common-sense understanding of them: Shy, quiet people “versus” out-going, even loud people. This dimension, too, is found in everyone, but the physiological explanation is a bit more complex.

Eysenck hypothesized that extraversion-introversion is a matter of the balance of “inhibition” and “excitation” in the brain itself. These are ideas that Pavlov came up with to explain some of the differences he found in the reactions of his various dogs to stress. Excitation is the brain waking itself up, getting into an alert, learning state. Inhibition is the brain calming itself down, either in the usual sense of relaxing and going to sleep, or in the sense of protecting itself in the case of overwhelming stimulation.”

Someone who is extraverted, he hypothesized, has good, strong inhibition: When confronted by traumatic stimulation -- such as a car
crash -- the extravert’s brain inhibits itself, which means that it becomes “numb,” you might say, to the trauma, and therefore will remember very little of what happened. After the car crash, the extravert might feel as if he had “blanked out” during the event, and may ask others to fill them in on what happened. Because they don’t feel the full mental impact of the crash, they may be ready to go back to driving the very next day.

“The introvert, on the other hand, has poor or weak inhibition: When trauma, such as the car crash, hits them, their brains don’t protect them fast enough, don’t in any way shut down. Instead, they are highly alert and learn well, and so remember everything that happened. They might even report that they saw the whole crash “in slow motion!” They are very unlikely to want to drive anytime soon after the crash, and may even stop driving altogether.”

Now, how does this lead to shyness or a love of parties? Well, imagine the extravert and the introvert both getting drunk, taking off their clothes, and dancing buck naked on a restaurant table. The next morning, the extravert will ask you what happened (and where are his clothes). When you tell him, he’ll laugh and start making arrangements to have another party. The introvert, on the other hand, will remember every mortifying moment of his humiliation, and may never come out of his room again.
(I’m very introverted, and again I can vouch to a lot of this experientially! Perhaps some of you extraverts can tell me if he describes your experiences well, too -- assuming, of course, that you can remember you experiences!)

“One of the things that Eysenck discovered was that violent criminals tend to be non-neuroticistic extraverts. This makes common sense, if you think about it: It is hard to imagine somebody who is painfully shy and who remembers their experiences and learns from them holding up a Seven-Eleven! It is even harder to imagine someone given to panic attacks doing so. But please understand that there are many kinds of crime besides the violent kind that introverts and neurotics might engage in.”

**Neuroticism and extraversion-introversion:** Another thing Eysenck looked into was the interaction of the two dimensions and what that might mean in regard to various psychological problems. He found, for example, that people with phobias and obsessive-compulsive disorder tended to be quite introverted, whereas people with conversion disorders (e.g. hysterical paralysis) or dissociative disorders (e.g. amnesia) tended to be more extraverted.
Here’s his explanation: “Highly neuroticistic people over-respond to fearful stimuli; if they are introverts, they will learn to avoid the situations that cause panic very quickly and very thoroughly, even to the point of becoming panicky at small symbols of those situations -- they will develop phobias. Other introverts will learn (quickly and thoroughly) particular behaviors that hold off their panic -- such as checking things many times over or washing their hands again and again.”

Highly neuroticistic extraverts, on the other hand, are good at ignoring and forgetting the things that overwhelm them. They engage in the classic defense mechanisms, such as denial and repression. They can conveniently forget a painful weekend, for example, or even “forget” their ability to feel and use their legs.

Psychoticism: “Eysenck came to recognize that, although he was using large populations for his research, there were some populations he was not tapping. He began to take his studies into the mental institutions of England. When these masses of data were factor analyzed, a third significant factor began to emerge, which he labeled psychoticism.”

Like neuroticism, high psychoticism does not mean you are psychotic or doomed to become so -- only that you exhibit some qualities commonly
found among psychotics, and that you may be more susceptible, given certain environments, to becoming psychotic.

As you might imagine, the kinds of qualities found in high psychoticistic people include a certain recklessness, a disregard for common sense or conventions, and a degree of inappropriate emotional expression. It is the dimension that separates those people who end up institutions from the rest of humanity.

**Anxiety:**

Anxiety is a physiological and psychological state characterized by cognitive, somatic, emotional, and behavioral components. These components combine to create an unpleasant feeling that is typically associated with uneasiness, fear, or worry.

“Anxiety is a generalized mood state that occurs without an identifiable triggering stimulus. As such, it is distinguished from fear, which occurs in the presence of an external threat. Additionally, fear is related to the specific behaviors of escape and avoidance, whereas anxiety is the result of threats that are perceived to be uncontrollable or unavoidable.

Anxiety is a normal reaction to stress. It may help a person to deal with a difficult situation, for example at work or at school, by prompting one to
cope with it. When anxiety becomes excessive, it may fall under the classification of an anxiety disorder.”¹²⁴

**Symptoms:** “Anxiety can be accompanied by physical effects such as heart palpitations, nausea, chest pain, shortness of breath, stomach aches or headaches. Physically, the body prepares the organism to deal with a threat. Blood pressure and heart rate are increased, sweating is increased, bloodstream to the major muscle groups is increased, and immune and digestive system functions are inhibited (the fight or flight response). External signs of anxiety may include pale skin, sweating, trembling, and pupillary dilation. Someone suffering from anxiety might also experience it as a sense of dread or panic.”¹²⁵

**Palpitation:** A palpitation is awareness of the abnormal beating of the heart, whether it is too slow, too fast, irregular, or at its normal frequency. It should not be confused with ectopic beat.

“The difference between an abnormal awareness and a normal awareness is that the latter is almost always caused by a concentration on the beating of one's heart and the former interrupts other thoughts. Palpitations may be brought on by overexertion, adrenaline, alcohol, caffeine, cocaine, amphetamines, and other drugs, disease (such as hyperthyroidism and Pheochromocytoma) or as a symptom of panic
disorder. More colloquially, it can also refer to a shaking motion. It can also happen in mitral stenosis.”  

Nearly everyone experiences an occasional awareness of their heart beating, but when it occurs frequently, it can indicate a problem. Palpitations may be associated with heart problems, but also with anemias and thyroid malfunction.

“Attacks can last for a few seconds or hours, and may occur very infrequently, or more than daily. Palpitations alongside other symptoms, including sweating, faintness, chest pain or dizziness, indicate irregular or poor heart function and should be investigated.

Palpitations may also be associated with anxiety and panic attacks, in which case psychological assessment is recommended. This is a common disorder associated with a lot of common medications such as anti-depressants.”

**Causes of palpitation**:- Palpitations can be attributed to one of three main causes:

1. Hyperdynamic circulation “(Valvular Incompetence, Thyrotoxicosis, Hypercapnia, Pyrexia, Anemia, Pregnancy)”
2. Sympathetic overdrive “(Panic disorders, Hypoglycemia, Hypoxia, Levocetirizine antihistamines, Anemia, Heart Failure, Mitral valve prolapse).”

3. Arrhythmias “(Atrial fibrillation, Supraventricular tachycardia, Ventricular tachycardia, Ventricular fibrillation, Heart block)”

Types of palpitation: People describe their palpitations in many different ways, but there are some common patterns:

The heart "stops" “Those who experience palpitations may have the feeling that their heart stops beating for a moment, and then starts again with a "thump" or a "bang". Usually this feeling is actually caused by an extra beat (premature beat or extrasystole) that happens earlier than the next normal beat, and results in a pause (called a compensatory pause) until the next normal beat comes through. People are not usually aware of the early, extra beat, but may be aware of the pause, which follows it (the heart seems to stop). The beat after the pause is more forceful than normal (due to filling with more blood than usual during the compensatory pause), giving the "thumping" sensation.”

The heart is "fluttering" in the chest: “Any rapid heartbeat (or tachycardia) can give rise to this feeling. “A rapid, regular fluttering in
the chest may be associated with sensation of pounding in the neck as well, due to simultaneous contraction of the upper, priming chambers of the heart (the atria) and the lower, main pumping chambers (the ventricles). If the fluttering in the chest feels very irregular, then it is likely that the underlying rhythm is atrial fibrillation. During this type of rhythm abnormality, the atria beat so rapidly and irregularly that they seem to be quivering, rather than contracting. The ventricles are activated more rapidly than normal (tachycardia) and in a very irregular pattern.**132

Minor:- “Some people may experience what is known as a minor palpitation, where the heart feels like it skips a beat. These are generally easy to ignore, but cause the person to worry more if their symptoms have not been diagnosed by a doctor.”**133

Types:- “Palpitations may be associated with feelings of anxiety or panic. It is normal to feel the heart thumping when feeling terrified or scared, but it may be difficult to know whether the palpitations or the panicked feeling came first. Unfortunately, since it can take some time before a clear diagnosis is made in a patient complaining of palpitations, people are sometimes told initially that the problem is anxiety.”**134

Stressful situations cause an increase in the level of stress hormones, such as adrenaline, circulating in the blood, and there are some types of
abnormal heart rhythm that can be stimulated by adrenaline excess, or by exercise. It may be possible to diagnose these sorts of palpitations by performing simple tests, such as an exercise test, while monitoring the ECG.

“Some types of abnormal heart rhythm seem to be affected by posture. For many people, standing up straight after bending over can provoke a rapid heart rate. Often these attacks can be abolished again by lying down. Many people, if not all, are more aware of the heartbeat when lying quietly in bed at night. This is partly because at that time, the attention is not focused on other things, but also because the slower heart beat at rest can allow more premature beats to occur.”

Symptoms: “Many times, the person experiencing palpitations may not be aware of anything apart from the abnormal heart rhythm itself. But palpitations can be associated with other things such as tightness in the chest, shortness of breath, dizziness or light-headedness. Depending on the type of rhythm problem, these symptoms may be just momentary or more prolonged. Actual blackouts or near blackouts, associated with palpitations, should be taken seriously because they often indicate the presence of important underlying heart disease.”
Diagnosis: “The most important initial clue to the diagnosis is one's description of the palpitations. The approximate age of the person when first noticed and the circumstances under which they occur are important, as is information about caffeine intake (tea or coffee drinking). It is also very helpful to know how they start and stop (abruptly or not), whether or not they are regular, and approximately how fast the pulse rate is during an attack. If the person has discovered a way of stopping the palpitations, that is also helpful information.”

“The diagnosis is usually not made by a routine medical examination and electrical tracing of the heart's activity (ECG), because most people cannot arrange to have their symptoms while visiting the doctor. Nevertheless, findings such as a heart murmur or an abnormality of the ECG, which could point to the probable diagnosis, may be discovered. In particular, ECG changes that can be associated with specific disturbances of the heart rhythm may be picked up; so routine physical examination and ECG remain important in the assessment of palpitations.

Blood tests, particularly tests of thyroid gland function are also important baseline investigations (an overactive thyroid gland is a potential cause for palpitations; the treatment in that case is to treat the thyroid gland over-activity).”
The next level of diagnostic testing is usually 24 hour (or longer) ECG monitoring, using a form of tape recorder (a bit like a Walkman) called a Holter monitor, which can record the ECG continuously during a 24-hour period. If symptoms occur during monitoring it is a simple matter to examine the ECG recording and see what the cardiac rhythm was at the time. For this type of monitoring to be helpful, the symptoms must be occurring at least once a day. If they are less frequent then the chances of detecting anything with continuous 24, or even 48-hour monitoring, are quite remote.

Other forms of monitoring are available, and these can be useful when symptoms are infrequent. “A continuous-loop event recorder monitors the ECG continuously, but only saves the data when the wearer activates it. Once activated, it will save the ECG data for a period of time before the activation and for a period of time afterwards - the cardiologist who is investigating the palpitations can program the length of these periods.” A new type of continuous-loop recorder has been developed recently that may be helpful in people with very infrequent, but disabling symptoms. This recorder is implanted under the skin on the front of the chest, like a pacemaker. It can be programmed and the data examined using an external device that communicates with it by means of a radio signal.
“Investigation of heart structure can also be important. The heart in most people with palpitations is completely normal in its physical structure, but occasionally abnormalities such as valve problems may be present. Usually, but not always, the cardiologist will be able to detect a murmur in such cases, and an echo scan of the heart (echocardiogram) will often be performed to document the heart’s structure. This is a painless test performed using sound waves and is virtually identical to the scanning done in pregnancy to look at the fetus.”

Panic attacks “are very sudden, discrete periods of intense anxiety, mounting physiological arousal, fear, stomach problems and discomfort that are associated with a variety of somatic and cognitive symptoms. The onset of these episodes is typically abrupt, and may have no obvious triggers. Although these episodes may appear random, they are a subset of an evolutionary response commonly referred to as fight or flight that occur out of context. This response floods the body with hormones, particularly epinephrine (adrenaline), that aid it in defending against harm. Experiencing a panic attack is said to be one of the most intensely frightening, upsetting and uncomfortable experiences of a person's life. According to the American Psychological Association the symptoms of a panic attack commonly last approximately thirty minutes. However,
panic attacks can be as short as 15 seconds, while sometimes panic attacks may form a cyclic series of episodes, lasting for an extended period, sometimes hours. Often those afflicted will experience significant anticipatory anxiety and limited symptom attacks in between attacks, in situations where attacks have previously occurred.”

Panic attacks are commonly linked to agoraphobia and the fear of not being able to escape a bad situation. Many who experience panic attacks feel trapped and unable to free themselves.

“Panic attacks also affect people differently. Experienced sufferers may be able to completely "ride out" a panic attack with little to no obvious symptoms or external manifestations. Others, notably first-time sufferers, may even call for emergency services; many who experience a panic attack for the first time fear they are having a heart attack or a nervous breakdown.”

**Descriptions:** Sufferers of panic attacks often report a fear or sense of dying, "going crazy", or experiencing a heart attack or "flashing vision", feeling faint or nauseated, heavy breathing, or losing control of themselves. These feelings may provoke a strong urge to escape or flee the place where the attack began (a consequence of the sympathetic "fight or flight" response).
“A panic attack is a response of the sympathetic nervous system (SNS). The most common symptoms may include trembling, dyspnea (shortness of breath), heart palpitations, chest pain (or chest tightness), hot flashes, cold flashes, burning sensations (particularly in the facial or neck area), sweating, nausea, dizziness (or slight vertigo), light-headedness, hyperventilation, paresthesias (tingling sensations), sensations of choking or smothering, and derealization. These physical symptoms are interpreted with alarm in people prone to panic attacks. This results in increased anxiety, and forms a positive feedback loop.”

Often the onset of shortness of breath and chest pain are the predominant symptoms, the sufferer incorrectly appraises this as a sign or symptom of a heart attack. This can result in the person experiencing a panic attack seeking treatment in an emergency room.

“Panic attacks are distinguished from other forms of anxiety by their intensity and their sudden, episodic nature. They are often experienced in conjunction with anxiety disorders and other psychological conditions, although panic attacks are not always indicative of a mental disorder.”
Triggers and causes:

- **Long-Term, Predisposing Causes** — “Heredity. Panic disorder has been found to run in families, and this may mean that inheritance genes plays a strong role in determining who will get it. However, many people who have no family history of the disorder develop it. Various twin studies where one identical twin has an anxiety disorder have reported an incidence ranging from 31 to 88 percent of the other twin also having an anxiety disorder diagnosis. Environmental factors such as an overly cautious view of the world expressed by parents and cumulative stress over time have been found to be causes.”

- **Biological Causes** - “obsessive compulsive disorder, post traumatic stress disorder, hypoglycemia, hyperthyroidism, Wilson's disease, mitral valve prolapse, pheochromocytoma and inner ear disturbances (labyrinthitis). Vitamin B deficiency from inadequate diet or caused by periodic depletion due to parasitic infection from tapeworm can be a trigger of anxiety attacks.”

- **Phobias** – “People will often experience panic attacks as a direct result of exposure to a phobic object or situation.”
**Introduction**

- **Short-Term Triggering Causes** – “Significant personal loss, including an emotional attachment to a romantic partner, life transitions, significant life change, stimulants such as caffeine or nicotine, or the drugs marijuana or psilocybin, can act as triggers.”

- **Maintaining Causes** – “Avoidance of panic provoking situations or environments, anxious/negative self-talk ("what-if" thinking), mistaken beliefs ("these symptoms are harmful and/or dangerous"), withheld feelings, lack of assertiveness.”

- **Lack of Assertiveness** – “A growing body of evidence supports the idea that those that suffer from panic attacks engage in a passive style of communication or interactions with others. This communication style, while polite and respectful, is also characteristically un-assertive. This un-assertive way of communicating seems to contribute to panic attacks while being consistently present in those that are afflicted with panic attacks.”

- **Medications** – “Sometimes panic attacks may be a listed side effect of medications such as Ritalin (methylphenidate) or even fluoroquinolone type antibiotics. These may be a temporary side
effect, only occurring when a patient first starts a medication, or could continue occurring even after the patient is accustomed to the drug, which likely would warrant a medication change in either dosage, or type of drug. Nearly the entire SSRI class of antidepressants can cause increased anxiety in the beginning of use. It is not uncommon for inexperienced users to have panic attacks while weaning on or off the medication, especially ones prone to anxiety.”

- **Alcohol, medication or drug withdrawal** – “Various substances both prescribed and unprescribed can cause panic attacks to develop as part of their withdrawal syndrome or rebound effect. Alcohol withdrawal and benzodiazepine withdrawal are the most well known to cause these effects as a rebound withdrawal symptom of their tranquillising properties.”

- **Hyperventilation Syndrome** – “Breathing from the chest may cause overbreathing, exhaling excess carbon dioxide in relation to the amount of oxygen in one's bloodstream. Hyperventilation Syndrome can cause respiratory alkalosis and hypocapnia. This syndrome often involves prominent mouth breathing as well. This
causes a cluster of symptoms including rapid heart beat, dizziness, and lightheadedness which can trigger panic attacks.”

• **Situationally Bound Panic Attacks** – “Associating certain situations with panic attacks, due to experiencing one in that particular situation, can create a cognitive or behaviorally predisposition to having panic attacks in certain situations (situationally bound panic attacks). It is a form of classical conditioning. See PTSD.”

• **Pharmacological Triggers** – “Certain chemical substances, mainly stimulants but also certain depressants, can either contribute pharmacologically to a constellation of provocations, and thus trigger a panic attack or even a panic disorder, or directly induce one. This includes caffeine, amphetamine, alcohol and many more. Some sufferers of panic attacks also report phobias of specific drugs or chemicals, that thus have a merely psychosomatic effect, thereby functioning as drug-triggers by non-pharmacological means.”

**Physiological considerations:** “While the various symptoms of a panic attack may feel that the body is failing, it is in fact protecting itself from harm. The various symptoms of a panic attack can be understood as follows. First, there is frequently (but not always) the sudden onset of
fear with little provoking stimulus. This leads to a release of adrenaline (epinephrine) which brings about the so-called fight-or-flight response wherein the person's body prepares for strenuous physical activity. This leads to an increased heart rate (tachycardia), rapid breathing (hyperventilation) which may be perceived as shortness of breath (dyspnea), and sweating (which increases grip and aids heat loss). Because strenuous activity rarely ensues, the hyperventilation leads to a drop in carbon dioxide levels in the lungs and then in the blood. This leads to shifts in blood pH (respiratory alkalosis or hypocapnia), which in turn can lead to many other symptoms, such as tingling or numbness, dizziness, burning and lightheadedness. Moreover, the release of adrenaline during a panic attack causes vasoconstriction resulting in slightly less blood flow to the head which causes dizziness and lightheadedness. A panic attack can cause blood sugar to be drawn away from the brain and towards the major muscles. It is also possible for the person experiencing such an attack to feel as though they are unable to catch their breath, and they begin to take deeper breaths, which also acts to decrease carbon dioxide levels in the blood.”
Symptoms:

Agoraphobia: “Agoraphobia is an anxiety disorder which primarily consists of the fear of experiencing a difficult or embarrassing situation from which the sufferer cannot escape. As a result, severe sufferers of agoraphobia may become confined to their homes, experiencing difficulty traveling from this "safe place". The word "agoraphobia" is an English adoption of the Greek words agora and phobos, literally translated as "a fear of the marketplace" usually applies to any or all public places; however the essence of agoraphobia is a fear of panic attacks especially if they occur in public as the victim may feel like he or she has no escape and be very embarrassed of having one publicly in the first place. This translation is the reason for the common misconception that agoraphobia is a fear of open spaces, and is not clinically accurate.

People who have had a panic attack in certain situations may develop irrational fears, called phobias, of these situations and begin to avoid them. Eventually, the pattern of avoidance and level of anxiety about another attack may reach the point where individuals with panic disorder are unable to drive or even step out of the house. At this stage, the person is said to have panic disorder with agoraphobia. This can be one of the
most harmful side-effects of panic disorder as it can prevent sufferers from seeking treatment in the first place. It should be noted that upwards of 90% of agoraphobics achieve a full recovery. Agoraphobia is actually not a fear of certain places but a fear of having panic attacks in certain places.”

It is important to note that agoraphobia is by no means a hopeless situation. Sufferers often do not realize that they have experienced these same situations before and nothing terrible occurred. Successful treatment is possible with the right combination of therapy and medication.

**Panic disorder:** “People who have repeated, persistent attacks or feel severe anxiety about having another attack are said to have Panic Disorder. Panic Disorder is strikingly different from other types of anxiety disorders in that panic attacks are often sudden and unprovoked.”

“In 1993 Jacob Markusson developed a technique he coined the POEM system, or Point of Exit Methodology, whereby a patient focuses a pattern of thinking during the exit of the panic attack. The theory being that the sufferer can break the cycle of panic attacks and resume a panic-
free life. The POEM system has been used effectively to give patients relief without the use of medication such as Paxil."\textsuperscript{159}

**Interoceptive desensitization/symptom inductions:**

“Another form of treatment is 'Interoceptive Desensitization which intends to desensitize the afflicted from the symptoms of panic attacks. In a study by Barlow & Craske (1989), 87% of the individuals that participated in the two of four treatments that involved Interoceptive Desensitization were free of panic at the end of treatment and these results were maintained at a 2-year follow up. In controlled studies of Interoceptive Desensitization treatments compared to other treatments, those treatments that included Interoceptive Desensitization were found to be significantly superior to other treatments such as muscle relaxation alone, or education or insight-oriented treatments. Interoceptive Desensitization often leads to a dramatic reduction in the frequency and intensity of panic attacks and as such should be implemented immediately under the guidance of a mental health professional. It is important the patient is given medical clearance and permission from a medical doctor before attempting these exercises. The key to the induction is that the exercises should mimic the most frightening symptoms of a panic attack. Symptom Inductions should be repeated 3-5
times per day until the patient has little to no anxiety in relation to the symptoms that were induced. Often it will take a period of weeks for the afflicted to feel no anxiety in relation to the induced symptoms. With repeated trials, a person learns through experience that these internal sensations do not need to be feared – the individual becomes less sensitized or desensitized to the internal sensation. After repeated trials, when nothing catastrophic happens, the brain learns (hippocampus & amygdala) to not fear the sensations, and the sympathetic nervous system activation fades. Many people overcome Panic Disorder and sudden Panic Attacks on their own. It takes time, but in a sense, they ride out the panic attacks and eventually learn that nothing is going to happen during one. Often, they 'taper off' until they are not noticeable any longer. It is for this reason that some psychologists helping people with panic disorders induce them into an attack, so they can see for themselves that indeed, nothing will happen.”

Increased risk of heart attack and stroke:- “A recent study suggests that menopausal women with panic disorder and many occurrences of panic attacks have a threefold higher risk of suffering heart attack or stroke over the next five years. The researchers believe that panic attacks or more accurately their associated symptoms (chest pain, dyspnea) can be
manifestations of undiagnosed cardiovascular disease, or result in heart damage due to cardiovascular stress in patients with panic disorder and many panic attacks over periods of years. The study did not find that isolated cases of panic attacks in patients without panic disorder or agoraphobia lead to immediate heart damage, nor did it prove that the correlation between panic disorder and strokes was causal, or that it couldn't be attributed to the cardiovascular effects of medication that many panic disorder patients receive, such as SSRIs and benzodiazepines. For example one study albeit in the elderly found that the consumption of benzodiazepines combined with analgesics in elderly men is correlated with an increased risk of dying of ischaemic heart disease in a small study. The study doesn't say if this is to be blamed on the benzodiazepine drug in this case nitrazepam, the analgetics or their combination.”

Limited symptom attack:- Many people being treated for panic attacks begin to experience limited symptom attacks. These panic attacks are less comprehensive with fewer than 4 bodily symptoms being experienced.

Myocardial infarction:- Myocardial infarction (MI or AMI for acute myocardial infarction), commonly known as a heart attack, occurs when the blood supply to part of the heart is interrupted. “This is most
commonly due to occlusion (blockage) of a coronary artery following the 
rupture of a vulnerable atherosclerotic plaque, which is an unstable 
collection of lipids (like cholesterol) and white blood cells (especially 
macrophages) in the wall of an artery. The resulting ischemia (restriction 
in blood supply) and oxygen shortage, if left untreated for a sufficient 
period, can cause damage and/or death (infarction) of heart muscle tissue 
(myocardium).”

Classical symptoms of acute myocardial infarction include sudden chest 
pain (typically radiating to the left arm or left side of the neck), shortness 
of breath, nausea, vomiting, palpitations, sweating, and anxiety (often 
described as a sense of impending doom). Women may experience fewer 
typical symptoms than men, most commonly shortness of breath, 
weakness, a feeling of indigestion, and fatigue. Approximately one 
quarter of all myocardial infarctions are silent, without chest pain or other 
symptoms. A heart attack is a medical emergency, and people 
experiencing chest pain are advised to alert their emergency medical 
services, because prompt treatment is beneficial.

“Heart attacks are the leading cause of death for both men and women all 
over the world. Important risk factors are previous cardiovascular disease 
(such as angina, a previous heart attack or stroke), older age (especially
men over 40 and women over 50), tobacco smoking, high blood levels of certain lipids (triglycerides, low-density lipoprotein or "bad cholesterol") and low high density lipoprotein (HDL, "good cholesterol"), diabetes, high blood pressure, obesity, chronic kidney disease, heart failure, excessive alcohol consumption, the abuse of certain drugs (such as cocaine), and chronic high stress levels.”

“Immediate treatment for suspected acute myocardial infarction includes oxygen, aspirin, and sublingual glyceryl trinitrate (colloquially referred to as nitroglycerin and abbreviated as NTG or GTN). Pain relief is also often given, classically morphine sulfate.

The patient will receive a number of diagnostic tests, such as an electrocardiogram (ECG, EKG), a chest X-ray and blood tests to detect elevations in cardiac markers (blood tests to detect heart muscle damage). The most often used markers are the creatine kinase-MB (CK-MB) fraction and the troponin I (TnI) or troponin T (TnT) levels. On the basis of the ECG, a distinction is made between ST elevation MI (STEMI) or non-ST elevation MI (NSTEMI). Most cases of STEMI are treated with thrombolysis or if possible with percutaneous coronary intervention (PCI, angioplasty and stent insertion), provided the hospital has facilities for coronary angiography. NSTEMI is managed with medication, although
PCI is often performed during hospital admission. In patients who have multiple blockages and who are relatively stable, or in a few extraordinary emergency cases, bypass surgery of the blocked coronary artery is an option.  

The phrase "heart attack" is sometimes used incorrectly to describe sudden cardiac death, which may or may not be the result of acute myocardial infarction. A heart attack is different from, but can be the cause of cardiac arrest, which is the stopping of the heartbeat, and cardiac arrhythmia, an abnormal heartbeat. It is also distinct from heart failure, in which the pumping action of the heart is impaired; severe myocardial infarction may lead to heart failure, but not necessarily.

**Epidemiology:** “Myocardial infarction is a common presentation of ischemic heart disease. The WHO estimated that in 2002, 12.6 percent of deaths worldwide were from ischemic heart disease; Ischemic heart disease is the leading cause of death in developed countries, but third to AIDS and lower respiratory infections in developing countries.”

In the United States, diseases of the heart are the leading cause of death, causing a higher mortality than cancer (malignant neoplasms). Coronary heart disease is responsible for 1 in 5 deaths in the U.S.. Some 7,200,000 men and 6,000,000 women are living with some form of coronary heart
disease. 1,200,000 people suffer a (new or recurrent) coronary attack every year, and about 40% of them die as a result of the attack. This means that roughly every 65 seconds, an American dies of a coronary event.

Risk factors: “Risk factors for atherosclerosis are generally risk factors for myocardial infarction:

- Older age
- Male sex
- Tobacco smoking
- Hypercholesterolemia (more accurately hyperlipoproteinemia, especially high low density lipoprotein and low high density lipoprotein)
- Hyperhomocysteinemia (high homocysteine, a toxic blood amino acid that is elevated when intakes of vitamins B\textsubscript{2}, B\textsubscript{6}, B\textsubscript{12} and folic acid are insufficient)
- Diabetes (with or without insulin resistance)
- High blood pressure
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- Obesity (defined by a body mass index of more than 30 kg/m², or alternatively by waist circumference or waist-hip ratio).

- Stress Occupations with high stress index are known to have susceptibility for atherosclerosis.¹⁶⁶

Many of these risk factors are modifiable, so many heart attacks can be prevented by maintaining a healthier lifestyle. Physical activity, for example, is associated with a lower risk profile. Non-modifiable risk factors include age, sex, and family history of an early heart attack (before the age of 60), which is thought of as reflecting a genetic predisposition.

“Socioeconomic factors such as a shorter education and lower income (particularly in women), and unmarried cohabitation may also contribute to the risk of MI. To understand epidemiological study results, it's important to note that many factors associated with MI mediate their risk via other factors. For example, the effect of education is partially based on its effect on income and marital status.”¹⁶⁷

“Women who use combined oral contraceptive pills have a modestly increased risk of myocardial infarction, especially in the presence of other risk factors, such as smoking.”¹⁶⁸
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Inflammation is known to be an important step in the process of atherosclerotic plaque formation. C-reactive protein (CRP) is a sensitive but non-specific marker for inflammation. Elevated CRP blood levels, especially measured with high sensitivity assays, can predict the risk of MI, as well as stroke and development of diabetes. Moreover, some drugs for MI might also reduce CRP levels. The use of high sensitivity CRP assays as a means of screening the general population is advised against, but it may be used optionally at the physician's discretion, in patients who already present with other risk factors or known coronary artery disease. Whether CRP plays a direct role in atherosclerosis remains uncertain.

Inflammation in periodontal disease may be linked coronary heart disease, and since periodontitis is very common, this could have great consequences for public health. Serological studies measuring antibody levels against typical periodontitis-causing bacteria found that such antibodies were more present in subjects with coronary heart disease. Periodontitis tends to increase blood levels of CRP, fibrinogen and cytokines; thus, periodontitis may mediate its effect on MI risk via other risk factors. Preclinical research suggests that periodontal bacteria can promote aggregation of platelets and promote the formation of foam
cells. A role for specific periodontal bacteria has been suggested but remains to be established.

“Baldness, hair greying, a diagonal earlobe crease and possibly other skin features are independent risk factors for MI. Their role remains controversial; a common denominator of these signs and the risk of MI is supposed, possibly genetic. Calcium deposition is another part of atherosclerotic plaque formation. Calcium deposits in the coronary arteries can be detected with CT scans. Several studies have shown that coronary calcium can provide predictive information beyond that of classical risk factors.”

Pathophysiology: A myocardial infarction occurs when an atherosclerotic plaque slowly builds up in the inner lining of a coronary artery and then suddenly ruptures, totally occluding the artery and preventing blood flow downstream.

“Acute myocardial infarction refers to two subtypes of acute coronary syndrome, namely non-ST-elevated myocardial infarction and ST-elevated myocardial infarction, which are most frequently (but not always) a manifestation of coronary artery disease. The most common triggering event is the disruption of an atherosclerotic plaque in an epicardial coronary artery, which leads to a clotting cascade, sometimes
resulting in total occlusion of the artery. Atherosclerosis is the gradual buildup of cholesterol and fibrous tissue in plaques in the wall of arteries (in this case, the coronary arteries), typically over decades. Blood stream column irregularities visible on angiography reflect artery lumen narrowing as a result of decades of advancing atherosclerosis. Plaques can become unstable, rupture, and additionally promote a thrombus (blood clot) that occludes the artery; this can occur in minutes. When a severe enough plaque rupture occurs in the coronary vasculature, it leads to myocardial infarction (necrosis of downstream myocardium).”

If impaired blood flow to the heart lasts long enough, it triggers a process called the ischemic cascade; the heart cells die (chiefly through necrosis) and do not grow back. A collagen scar forms in its place. Recent studies indicate that another form of cell death called apoptosis also plays a role in the process of tissue damage subsequent to myocardial infarction. As a result, the patient's heart will be permanently damaged. This scar tissue also puts the patient at risk for potentially life threatening arrhythmias, and may result in the formation of a ventricular aneurysm that can rupture with catastrophic consequences.

“Injured heart tissue conducts electrical impulses more slowly than normal heart tissue. The difference in conduction velocity between
injured and uninjured tissue can trigger re-entry or a feedback loop that is believed to be the cause of many lethal arrhythmias. The most serious of these arrhythmias is ventricular fibrillation (V-Fib/VF), an extremely fast and chaotic heart rhythm that is the leading cause of sudden cardiac death. Another life threatening arrhythmia is ventricular tachycardia (V-Tach/VT), which may or may not cause sudden cardiac death. However, ventricular tachycardia usually results in rapid heart rates that prevent the heart from pumping blood effectively. Cardiac output and blood pressure may fall to dangerous levels, which can lead to further coronary ischemia and extension of the infarct.”

The cardiac defibrillator is a device that was specifically designed to terminate these potentially fatal arrhythmias. The device works by delivering an electrical shock to the patient in order to depolarize a critical mass of the heart muscle, in effect "rebooting" the heart. This therapy is time dependent, and the odds of successful defibrillation decline rapidly after the onset of cardiopulmonary arrest.

**Triggers:** “Heart attack rates are higher in association with intense exertion, be it psychological stress or physical exertion, especially if the exertion is more intense than the individual usually performs. Quantitatively, the period of intense exercise and subsequent recovery is
associated with about a 6-fold higher myocardial infarction rate (compared with other more relaxed time frames) for people who are physically very fit. For those in poor physical condition, the rate differential is over 35-fold higher. One observed mechanism for this phenomenon is the increased arterial pulse pressure stretching and relaxation of arteries with each heart beat which, as has been observed with intravascular ultrasound, increases mechanical "shear stress" on atheromas and the likelihood of plaque rupture. Acute severe infection, such as pneumonia, can trigger myocardial infarction. A more controversial link is that between Chlamydophila pneumoniae infection and atherosclerosis. While this intracellular organism has been demonstrated in atherosclerotic plaques, evidence is inconclusive as to whether it can be considered a causative factor.\(^1\) Treatment with antibiotics in patients with proven atherosclerosis has not demonstrated a decreased risk of heart attacks or other coronary vascular diseases. There is an association of an increased incidence of a heart attack in the morning hours, more specifically around 9 a.m.. Some investigators have noticed that the ability of platelets to aggregate varies according to a circadian rhythm, although they have not proven causation. Some investigators theorize that this increased incidence may be related to the
circadian variation in cortisol production affecting the concentrations of various cytokines and other mediators of inflammation.”

Classification:

**Classification of acute coronary syndromes**

“Acute myocardial infarction is a type of acute coronary syndrome, which is most frequently (but not always) a manifestation of coronary artery disease. The acute coronary syndromes include ST segment elevation myocardial infarction (STEMI), non-ST segment elevation myocardial infarction (NSTEMI), and unstable angina (UA).”

Social anxiety is a term used to describe an experience of “anxiety (emotional discomfort, fear, apprehension or worry) regarding social situations and being evaluated by other people. It occurs early in
childhood as a normal part of the development of social functioning. People vary in how often they experience social anxiety or in which kinds of situations. It can be related to shyness or other emotional or temperamental factors, but its exact nature is still the subject of research and theory.”

A psychopathological form of social anxiety is called "social anxiety disorder" or social phobia.

**Nature of social anxiety:** “The experience is commonly described as having physiological components (e.g., sweating, blushing), cognitive/perceptual components (e.g. belief that one may be judged negatively; looking for signs of disapproval) and behavioral components (e.g. avoiding a situation).

The essence of social anxiety has been said to be an expectation of negative evaluation by others. One theory is that social anxiety occurs when there is motivation to make a desired impression along with doubt about having the ability to do so.”

**Child development:** “Social anxiety first occurs in infancy and is said to be a normal and necessary emotion for effective social functioning and developmental growth. Cognitive advances and increased pressures in
late childhood and early adolescence result in social anxiety being experienced repeatedly. Adolescents have identified their most common anxieties as focused on relationships with peers of the opposite sex (or same, if homosexual), peer rejection, public speaking, blushing, self-consciousness, and past behaviour. Most adolescents progress through their fears and meet the developmental demands placed on them.”

**Forms and degrees:** “Forms of social anxiety include shyness, performance anxiety, public speaking anxiety, stage fright, timidness, etc., all of them may assume clinical forms, i.e., become anxiety disorders.”

The term is also commonly used in reference to experiences such as embarrassment and shame. However some psychologists draw a line among various types of social discomfort, with the criterion for anxiety being an anticipation. For example, the anticipation of an embarrassment is a form of social anxiety, while embarrassment itself is not.

Criteria that distinguish clinical versus nonclinical forms of social anxiety include intensity and levels of behavioral and psychosomatic disruption.
“Social anxieties may also be classified according to the broadness of triggering social situations. For example, fear of eating in public has a very narrow situational scope (eating in public), while shyness may have a wide scope (a person may be shy of doing many things in various circumstances). Accordingly, the clinical forms may be distinguished into the general social phobia and specific social phobias.”

Trait anxiety:- “Anxiety can be either a short term "state" or a long term "trait." Trait anxiety reflects a stable tendency to respond with state anxiety in the anticipation of threatening situations. It is closely related to the personality trait of neuroticism.”

1.3 Aim of Study:

The Present study aim at to search the Personality factors and anxiety among Male and Female (18-21 and 22-25) Interuniversity Volleyball players.

1.4 Statement of the Problem:

“Personality and Anxiety Level of Volleyball Players.”
1.5 Need of the Study:

1. Personality factors are influence on the sports performance. However the anxiety level which creat the hindrance in the progress of university volleyball male and female players.

2. The researcher intended to evaluate the anxiety level and its impact on the sports performance.

1.6 Objective of the study:

1. To examine Personality factors of Male and Female (18-21 and 22-25) Interuniversity Volleyball players.

2. To examine anxiety of Male and Female (18-21 and 22-25) Interuniversity Volleyball players.

1.7 Significance of the Study:

1. The study may reveal the personality and anxiety level of the university volleyball players (Male and Female)

2. The study may also perfound Eysenck Personality test of volleyball players. (Male and Female)

3. Results may prove helpful to establish the personality and anxiety level and its impact on the sports performance.
1.8 Hypothesis:

H1 - Inter University male Volleyball players are significantly more Anxiety than the Inter University Female Volleyball players.

H2 - 18-21 year Inter University Volleyball players are significantly more Anxiety than the 22-25 year Inter University Volleyball players.

H3 - Inter University Female Volleyball players are significantly more Introvert than the Inter University Male Volleyball players.

H4 - Inter University Male Volleyball players are significantly more Extrovert than the Inter University Female Volleyball players.

H5 - 18-21 year Inter University Volleyball players are significantly more Extrovert than the 22-25 year Inter University Volleyball players.

H6 - 22-25 year Inter University Volleyball players are significantly more Introvert than the 18-21 year Inter University Volleyball players.

H7 - Male and Female Inter University Volleyball players will not differ significantly in term of their scores on Neuroticism Dimension of Personality.
H8 - 18-21 year Inter University Volleyball players are significantly more Neuroticism than the 22-25 year Inter University Volleyball players.

1.9 Delimitation:
1. The study delimited to both male and female university volleyball players.
2. The study is further delimited to the age group between 18-21 and 21-25 male and female volleyball players.

1.10 Limitation:
1. Diet and rest of the players was a limitation.
2. Involvement of university volleyball players Esysenck personality test was a limitation.
3. Involvement of university volleyball players scat anxiety test was a limitation.

1.11 Definition of Term:

Personality:
1. “Personality is the organization of person’s habits, attitudes and traits and arises from the inter-play of biological, social and cultural factors.”\textsuperscript{180} Biesanj and Biesanj.
2. “Personality may be defined in a broad sense as the traits that make up the person and that condition is in the group.”\textsuperscript{181} Martin H. Neuoneyer.

\textbf{Anxiety:}

“We can think of anxiety as being situation specific or general in nature. A situation – specific anxiety response to a treatening stimulus is referred to as state anxiety, state anxiety is an immediate emotional state that is characterized by apprehension, fear, tension and an increase in physiological arousal, Trait anxiety, on the other hand is a personality predisposition. It is a predisposition to perceive certain environmental situations as threatening, and to respond to these situations with increased state anxiety.” \textsuperscript{182}
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