INTRODUCTION

India is a vast country with a lot of scope in the field of sports. But we find that our players do not fare so well at the international level in spite of the fact that there is a lot of talent with them. Leaving about other factors like the facilities available, researcher feels that this is due to because of the lack of concentration, co-ordination, self confidence and psychological training for the players / sports persons. There is a need to understand the Psychology & Physiology of the players viz. the tension, stress and trauma that they feel before the game and to train them to overcome that. So, Researcher has decided to work in the field of Sports Psychology & Physiology.

Sport and exercise is a multidisciplinary field that draws upon knowledge from broader, "parent" disciplines and applies that knowledge to sports. Sports psychology has close ties to the other sub-areas of sport and exercise science. The most prominent sub-areas of sport and exercise sciences are:

A. Exercise physiology which draws upon the disciplines of anatomy and physiology.
B. Biomechanics, which applies principles and knowledge from physics to the mechanics of human movement.
C. Sports sociology, which explores the sociological dimensions of sport, and,
D. Sports psychology, which incorporates theory and research from the larger field of psychology.

All of the sub-areas of sport and exercise science draw upon the broader, associated disciplines for information, but they draw from these fields selectively. Not all information in psychology and anatomy is equally applicable to exercise. Similarly, not all issues and branches of psychology are equally applicable to sport and physical activity. Knowledge and techniques from biomechanics, sport sociology, and other areas of sport and exercise science may provide further insights into the psychological aspects of sport and exercise behaviour, Biomechanical measures and procedures may help us probe the psychological aspects of skilled movements with unique insights, and sport sociology construct's psychology research on social influence and group organics. Sports psychology studies the sport persons behavior in the field and off the field. The sports psychology has grown and changed dramatically over the past decade. It embraces such fundamental concerns and concepts as motivation, arousal levels, skills
acquisition, feedback reinforcement, anticipation, psychological preparation, attention, attitude, emotional health and the management of stress.

A precise date for the beginning of sports psychology cannot be easily pinpointed. Different aspects of the field emerged at different times.

Triplett's (1829) experiment on the motor performance of individual's acting alone and in pairs has been widely cited as the first laboratory experiment in social psychology. The experiment was promoted by Trippletts' observations of competitive cyclists. Triplett, a cycling enthusiast, noted that cyclists performed faster with pacing machine then when alone and that they performed even faster when competing against other cyclists. Triplett reasoned that the presence of others aroused a competitive drive in the cyclists that elicited better performance.

During the early 20th Century, a few far sighted individuals recognized the importance of psychological factors in sport and initiated sports psychology research. Column Griffith was highly respected psychologist at the University of Illinois in the early 1905 and the first person to pursue sport psychology issues in the United States. In 1923 Griffith taught a course entitled "Psychology and Athletics" and in 1925 he established the athletic research laboratory at University of Illinois. Griffith wrote two text books, "Psychology of coaching" (1926) and "Psychology of Athletics" (1928). While Griffith was initiating psychology research in the United States, sports psychology was also emerging in other countries. Column Griffith has been described as the "Father of Sports Psychology" in the United States.

After World War 1st Cratty specifically cited the groundbreaking work of schultz in Germany and Roudik in Russia. Dr. Yuri Hamin, a senior researcher in sports psychology at the Research Institute of physical culture in Laningrad reports that sports psychology emerged as a discipline of study in the Soviet Union during the year 1945-57. He suggested that Soviet Sports Psychology had two "fathers", Peter Roudik and A.C. Puni.

In the 1960 some individuals such as William Morgan at Wisconsin and Daniel Landers and Rainer Martins at Illinois began to identify sports psychology or the social psychology of physical activities as their primary interest. Simultaneously many individuals became active sports psychologists in other countries particularly in Europe and sports psychology became an established area of sports and exercise science and practice.
In 1965, the International Society of Sports Psychology was formed and held first International Congress of Sports Psychology in Rome. Organizational meetings were held in 1965 and 1966 and in 1967 and North American Society for the Psychology of Sport and Physical activity was officially incorporated.

In India, following the inclusions of "Physical Education" as co-curricular subject at the secondary educational level around 1950, importance of psychological studies for sports and coaching were recognized at the Training Colleges for Physical Education Teachers. Psychology for Sports and Sportsman became well recognized gradually by 1970 through the planned effort of Ministry of Education, and later Ministry of Sports, Government of India. For the development of Sports Sciences in our Country, Indian Professionals have formed distinguished National bodies viz., Indian Association of Sports Medicine, Sports Psychology Association of India (1985), National Association of Physical Education and Sports Sciences (1992), Sports Sciences Research Foundation (1993) etc.

Sports Psychology continues to expand to-day, with many Sport Psychologists building the knowledge base of the discipline by following the scientific approach. Biofeedback Society of America, right from the time of its establishment, has been functioning. In 1996 it undertakes one after the other aspect to widen the horizon of research and its application in various walks of sports.

In modern age, we have considered the role of sport psychology, within the overall field of sport and exercise science. We will consider sport psychology as a distinct discipline in more detail. It is true that sport psychology is a branch of sport and exercise science that focus on the psychological aspects of sports and exercise, but nowadays limits of sport psychology are not restricted, it has developed and is constructed broadly to include various recreational activities, competitive sports, and health oriented exercise program.

Sport psychology is not, however, restricted to personality and social psychology, and many other aspects of psychology are addressed. Within the last few years, many sports psychologists have developed an interest in applying their knowledge to actual sport situations, specifically by educating and training sport participants in psychological skills. Interest in applied sport psychology has introduced a number of counseling and clinical psychology theories and techniques
to sport psychology. Sports psychology also incorporates some work from developmental psychology, cognitive psychology, and physiological psychology.

The psychology of sport has become an institutionalized discipline within the sport sciences in the later half of this century. It is now possible to say that sport psychology has emerged as a distinctive sub discipline and as a recognized member of sport sciences. Membership has grown, we have journals devoted to sport psychology, national and international society, course work and text books, specific courses for training in sport psychology, increasing research efforts, and so on, it's true, sport psychology has became a profession in many countries.

In this modern age sports psychology has expanded tremendously at the International level. Concern for theoretical development and attention to experimental control advance sport psychology knowledge and encourage the recognition of Sport Psychology as a viable academic discipline. To-day's sport psychology involves anxiety management, biofeedback autogenic training, progressive relaxation training mental training, and various other psycho-somatic problems through various techniques. Biofeedback training involves G.S.R. (Galvanic Skin Resistance), E.M.G. (Electromyography), E.E.G. (Electro Encephalography), Temperature, Heart rate, Respiration, E.C.G. etc....

As part of sport and exercise science, sport psychology is a scientific discipline that builds its body of knowledge about human behavior and sport by following the scientific method. The scientific method involves the systematic acquisition and evaluation of information with the goal of understanding the behavior or phenomenon under investigation. Science is not a final answer but a continuing process. Furthermore, the communication of sport psychology information is not a one-way street. Sports Scientists must communicate their bindings to sport persons, and Sports persons also have much information to offer sport scientists. Sports persons can make sport scientists aware of issues that need attention and, because of their direct experience in sport activities, may provide special insights that an "Objective" scientist might overlook. There are some aspects by which concept of sports psychology can be understood in a systematic manner. Such aspects are as follows:

Sports psychology is the branch of sport and exercise defined as the scientific study of human behavior in sport. Like the other disciplines within sport and exercise science, sports psychology can be applied to varied skilled movements, physical activities, and exercise program such as corporate fitness,
exercise rehabilitation, and health-oriented exercise program as well as traditional physical education and competitive athletics. Sports psychology is the branch of sport and exercise science that seeks to provide answers to questions about human behaviour in sports. Coaches, athletes, teachers and recreational sport participants must have enough knowledge of sport psychology, so that they can flourish respectively. As a branch of sport and exercise science, sport psychology is part of the overall scientific study of human movement.

**MEANING**

Biofeedback is combination of mind, body and machine or equipment. Mind in Psychology, body in Physiology, and machine in apparatus. Bio means life, and feedback means returning to a system part of its output as a guide for new action. Biofeedback is the folk art of an electronic culture. Biofeedback is electronic-age folk art. Artists, are people who express what's on their minds; Biofeedback artists are people who express what’s in their minds .... Beta, Alpha and Theta. Biofeedback is a measurement of Physiological Parameters. Biofeedback is the body's feeding of information about its functioning back to the consciousness centre of the brain. The major principle of biofeedback is that awareness of body function is the first and most important strip in changing any behaviors that causes a stress reaction, biofeedback is thus an educational tool that provides information about behavior or performance just as a congratulatory letter from superior gives information on job performance or a bathroom scale gives information about the success of weight reduction efforts. If we learn to listen, our bodies will tell us a lot about their functioning.

Biofeedback magnifies the body's subtle signals and makes them more noticeable; this magnification becomes a device that trains in another sense. Biofeedback is much events than a self-monitoring system. It can be used to self-control Measurements of Skin Temperature can indicate Blood-flow changes to a particular region of the body. After only a few training session person can learn to feel the changes without the instrument. Monitoring brainwaves can tell as much about status of consciousness and information processing, which can aid in the voluntary control of consciousness. The human body is a "System" with an exquisite degree of self-regulatory capacity. It relies upon numerous feedback mechanisms - most of them entirely automatic; body temperature, breathing, heart rate, eye co-ordination, and balance are examples. The term biofeedback is used when the body's natural feedback mechanisms are intentionally augmented with
mechanical instruments to guide or modify a part of the Physiology in a beneficial
direction.

It is difficult to pin down the precise roots of biofeedback. It could be
argued that in Greek Mythology Narcissus, who used the mirror like capacity of a
lake to reflect upon his own image was one of the first to practice biofeedback
(with fatal results in his case). Meditative techniques for relieving physical illness
are known to have been practiced in the Ancient Greek Temples of Asclepius.
More recently part of the foundation for biofeedback was laid by Medical
Physiologists who, over the past few centuries, developed the instrumentation to
record and define the body's Physiological process and by others who detailed how
these processes changed in the transition from health to disease. Work in the first
half of this Century documented the effects of thoughts and emotions upon
different realms of Physiology in human. It was not until the Mid-1960s, however,
that investigators at several United States Institutions began to explore the effects
of introducing instruments into the Mind-body Feedback System to see whether
patients could learn to exert greater volitional influence over it.

A major step forward occurred in 1968 when Scientist Neal E Miller in his
Physiological Psychology Laboratory at Rackefeller University in New York City
showed that he could train rats who were completely paralyzed by the drug curare
to vary their pulses, blood pressures, and intestinal contractions in order to obtain a
reward. This was important much theoretically, as it has previously been thought
that these functions were controlled by a part of the nervous system (the autonomic
nervous system) that could not be brought under voluntary control. Since its
original introduction, the popularity of Biofeedback has spread to the point that
there are now Biofeedback - Treatment Facilities in United States, and interest has
spread to most Western European Countries, Israel, Australia, Japan, India etc...
Today many different types of specialists employ Biofeedback Physicians, Clinical
Psychologists, Research Psychologists, Nurses, Physical Therapists, and the Social
Workers.

A good guideline for those considering Biofeedback Therapy is to find a
degreed professional specially trained in Biofeedback who is qualified to
understand and work with the specific condition being treated. In the United States
a National Agency - the Biofeedback Certification Institute of America, an
offshoot of the Biofeedback Society of America (a professional organization) has
been certifying therapists with written and practical examinations since 1980.
Age is not a barrier to the use of Biofeedback. Elderly people may take a little bit longer to learn the Self-regulations but they can. Children have been found to take to Biofeedback enthusiastically, to learn it as much as five times faster than adults, and to experience it as a form of a game. Learning Biofeedback does not require unusual intelligence. Motivation, on the other hand, is an important criterion because in most applications of Biofeedback the person must practice what he has learned out twice a day. If this is not done it is difficult for the new and better habits to take hold and to become a part of the persons way or reaching when he is confronted with stress. Biofeedback can help track the person to relax and can monitor his state of relaxation throughout the visualizations of the feared situations. The science of Feedback is called Cybernetics: it was developed as part of the engineering technology for guiding missiles into space. Like a system for guiding missiles, the human body can be considering as a system with self-regulatory capacity. Biofeedback instrument can be as small as transistor, and as large as cockpit of Airplane. Biofeedback is useful in Treatment of Phobia, Insomnia, Hyperactivity, Irritated Colon, Blood Pressure, all kinds of pain, Psychiatric Disorder, Neuromuscular Rehabilitation etc....

Motivation is the important criterion in Biofeedback. The types of Biofeedback are as under:

- **G.S.R.** : Galvanic Skin Resistance, i.e. Electro dermal Resistance / Conductance of Skin.
- **TEMPERATURE** : It is control upon your own skin temperature.
- **HEART RATE** : It is control upon your own body heart rate.
- **E.M.G.** : Electromyography, i.e. muscle tension / Relaxation control.
- **RESPIRATORY** : It is control upon your own breathing.
- **ALPHA E.E.G.** : It derives alpha waves from E.E.G. that is, Alpha electro encephalography.

G.S.R. Biofeedback helps as a motivational factor as well as the sports person can see their value in K-ohms increasing or decreasing. In Biofeedback therapy an electronic instrument is used to record information about a continuously changing Physiological process and to display this information to the person in an intensified form and through one of the major routes of sensory input: sight, hearing or touch. This enables the person to use trial - and error experimentation to discover how what he thinks, feels, or does influences a particular bodily function. Whether he / she is trying to learn to relax his / her jaw muscles or to
warm his / her hands, he / she finds that certain self-generated thoughts, associations, or behaviors move the feedback in the right direction, where as others either do nothing or move him in the wrong direction. In time he / she may learn to alter the feedback quickly and automatically. Biofeedback is not "Just Placebo": however, the mature and usefulness of the placebo effect have drawn the attention of many players in the field of Biofeedback because the relaxing qualities of the self-regulatory therapies in many ways intentionally recruit the same innate Biological Pathways that placebos activate automatically. The placebo effect is a complex phenomenon by which a drug or treatment induces Physiological factors. Any rapidly changing function in the body that is under the guidance of the Central Nervous System and that can be measured can theoretically be Feedback. Certain specific body functions, however, have been found most useful or practical to feedback for the purposes of improving both Physical and Mental Health. These include contraction of the voluntary muscles, which can be measured by Electromyography (EMG), Skin Temperature of Arms and Legs can be measured by Thermal Feedback, Brain-Wave Activity can be measured by Electroencephalograph (EEG), Electrical Conductivity of the Skin Electrodermal Response (EDR), as well as heart rate, Blood Pressure, and the Rhythmic Contractions of the intestines.

The player's innate ability to perceive what is going on within his body is enhanced by the feedback in several ways. He can become aware of a process he was entirely unaware of before, such as the electrical conductivity of his Skin. A weak or vague sensation can be put into a more usable form (a scale of colored lights replacing a muddled sense of muscular tension) or a more intensity vivid form (such as a clear crescendo or decrescendo of sound). The original sensations can be paired with a varying numerical "Score" allowing the person to actual quantity a sensation. Biofeedback instruments range from small portable units for practice at home to devices of the size of a small pocket radio, which are most appropriate for general clinical use, to large, elaborate, and expensive mechanisms that resemble the cockpit of a airplane. The best instrument is the one sufficient to get the job done least obtrusively, as the machine, in essence, is merely a facilitator of a dialogue between a player's conscious mind and his Physiology.

In a typical therapeutic biofeedback session, the player will settle into a comfortable chair or bed in a room or lab free from distraction. Recording equipment is attached lightly to the area of interest and connected to the
Biofeedback instrument by thin wires. The faint electrical or other activity naturally generated by the body is measured. The player concentrates on attempting to influence the feedback in a desired direction (e.g. he/she may tense his fore head and then "let go") : he/she observes what works to trigger change in either a positive or a negative direction and selects those initiatives that achieve the desired change, refining as he goes along. She/he may confuse up images to move him forward a particular goal, such as memories of the sun warming his hands to raise the temperature of hands much cold by anxiety. In time he finds such intermediary images become redundant, and eventually the feedback equipment, becomes unnecessary as he learns to enter at well into the mental state that changes his Physiology. Biofeedback helps the individual recognize that he and only he has an ability to influence what happens in his body. He will become attuned to early cues of impending physical distress so that he can intervene before such individual manifestations of anxiety or suffering flower into full-blown symptoms.

The frequency of sessions is typically once or twice a week initially and often tapers to less frequent appointments after the basics have been mastered. The length of the training can vary significantly from player; however, most players can learn basic relaxation that can be maintained in 20 to 45 minutes sessions. Although it is common to find centre where either ultra brief training (that is less than 10 sessions) is attempted or a fixed number of sessions have been allotted for the learning of self-regulation, these are not usually responsible approaches to the serious training of players. Therapy should be terminated when the player has reliably learned to do what he has come to learn, has developed it as a habit strong enough to be incorporated into his view of himself and his capacities, and has been afforded the maximal possible relief from stress and anxiety. This usually means that the daily practice has continued for at least six months. Elite players will be helped in less time; however, it is helpful for the player to know he can return in the future for one or two "Booster" sessions if he has let his practice lapse and stressful events have again taken the driver's seat in his life.

Successful players generally continue practicing their Biofeedback Techniques at home on either a regular or an intermittent basis with an increased utilization of it during periods of stressful activity. In modern age, there are a number of non-medical uses for Biofeedback such a education, sports researches etc... its primary role is in the treatment of illness. The illness treated may be strictly medical or strictly Psycho, Physiological but, because the feedback bridges
the gap between mind and body with an active conduct of information, it is in the area of Psychosomatic Medicine that its unique advantages stand out most clearly. The term Psychosomatic does not refer to factitious disorders, nor does it refer to the concept of illnesses of the body being "Caused" by the mind. It refers instead to the constant, indeed inevitable, interplay between the effects of mental activities and feelings upon the nervous and endocrine systems and the effect of the state of the body upon feelings. This interplay is present in virtually all states of health and illness.

Biofeedback is not merely a form of "relaxation" treatment, although relaxation is often either a primary aim of treatment with Biofeedback or a side benefit of its use in treating something else. A variety of other self-regulatory therapies are better adopted if relaxation is the chief aim-techniques such as progressive relaxation, autogenic training, self-hypnosis, or the quieting response. Initially many players are taught a general relaxation therapy to allow them to enter into a calmed state. Sometimes this is sufficient to help the problem, and there is no need for more specific Biofeedback techniques. Although the means by which Biofeedback induces benefit are not merely psychological, many of the conditions treated with Biofeedback Frequently have Psychological contributions. This aspect can be given greater or lesser attention by practitioners using Biofeedback; however, results with certain players will be disappointing if these Psychological components are ignored. Because it is but a tool, Biofeedback in itself is almost never an entire treatment for any serious disease, rather it facilitates as an adjoined to a wide range of medical, Psychological, Physiological, Pharmacological and self-regulatory training.

Some characteristics in players make them especially well suited for Biofeedback in a Psychotherapeutic Context. The Player who tends to intellectualize and rationalize in order to resist any honest recognition of his feelings may find that this technique allows his verbal fortress to be bypassed. The action-oriented player who tends to experience emotions in the form of bodily sensations may be able to get some assistance in translating these sensations back into an emotional experience, and because of its immediacy and concreteness, biofeedback may prove a less frustrating way for him to do this than entirely verbal forms of Psychotherapy. The Player who does not believe his worries have any relationship to his Physical Symptoms can expect to receive a rapid education to the contrary with Biofeedback. Finally, some player's simply feel more
comfortable working with mechanical devices than they do with people. There are some clinical applications of biofeedback which are helpful in various disorders of the body.

Phobias are realistic, persistent fears of specific situations or things. A behavioral technique that has proved generally effective for isolated Phobias is one termed systematic desensitization. It involves the gradual confrontation in fantasy of the feared object while the player is maintained in a relaxed state. Biofeedback can help teach the player to relax for this procedure and can monitor his state of relaxation throughout the visualizations of the feared situations.

Example: A player participating in Olympics first time or a junior player playing against senior and seeded player.

Alcohol and Drug Abuse have many complex and interwoven causes, ranging from an attempt to escape reality to a misguided attempt to better cope with it. Biofeedback - assisted relaxation is harnessed as a way to teach the player a method by which he/she can calm himself and thereby partially replace the relief afforded by the addictive substance. Biofeedback training in this situation is hardly a panacea, however, as the immediate relief promised by the addiction is great; nevertheless, it has benefited players with the motivation to commit them to broad-based rehabilitation treatment.

Many insomniac players benefit from Biofeedback, players who are tense or depressed often have elevated muscle tension and thus are helped to regain normal sleep and normal order with the use of EMG feedback. Other so-called relaxed insomniacs do not benefit from this form. However, they may be helped by a specialized form of EEG Feedback. No one type of Feedback is helped in insomnia and some players do not benefit at all. Non Biofeedback general relaxation techniques also are often of benefit for these players.

As is the case with insomnia, Biofeedback research has shown that not all overactive players are anxious. Many players with Hyper kinesis produce insufficient high-frequency Beta Brain Waves along with an excess of slow waves while engaged in thoughtful activity it normally should be the opposite. The solution to this problem can be use EEG feedback to teach these players to produce high-frequency waves while doing the types of cognitively demanding activity that had caused difficulty, such as reading or putting together a puzzle. Success with this approach seems to be high and well documented, although further research is
needed. Overactive players who are anxious have a different problem and are treated with more traditional relaxation and Psychotherapeutic Techniques.

The treatment of the tension headache which is also known as muscle contraction headache has been one of the more thoroughly studied, accepted, and applied use of EMG Biofeedback. On the surface the rationale for such a treatment is so simple that it appears elegant, specific muscles in the forehead, jaw and neck are causing pain because they are in protected spasm; the player will see how to relax them with the help of the Biofeedback and in this way can reverse the pathogenic process. The reason for the contraction of the muscles often involves prolonged Psychological states of tension and resentment, often with depression, Migraine headache is caused at least in part, by expansion and inflammation of the major blood vessels feeding the scalp. These swollen and tender vessels throb, generally causing one-sided and prostrating head pain. The roots of the pain may be partly genetic in origin. Psychological factors also play a role, though it is a subtle one. Thermal feedback is used to teach players first to warm their arms and legs; to do this they must discover how to quiet their sympathetic nervous systems, as this allows the blood vessels to the extremities to open up, bringing warm blood to the hands and feet. The ability of thermal feedback to change the rate of blood flow in the brain in players with migraine has been documented with sophisticated Radioactive Xenon Trader Studies. Such Thermal Feedback Training for migraine in players is especially successful. The Technique is indicated for players who have frequent headaches uncontrolled by medications, when simpler relaxation methods have failed, or when players have less frequent attacks that are, never the less, intensely disruptive of their occupational or family functioning.

In two disorders caused by excessive muscle contraction - torticollis (Wry neck), and low back pain treatment involves the use of EMG Biofeedback over the affected muscle groups. The technique has become a major approach to the thorny problem of torticollis and also in low back pain. The results with low back pain are more variable. In part because of the many factors in addition to over contract muscles that contribute to this condition.

Player's with essential hypertension have been able to learn to lower their blood pressures, both systolic and diastolic, by using a number of forms of Biofeedback of different levels of complexity and sophistication. Progressive relaxation, autogenic relaxation training also can be helpful in blood pressures.
Work with cardiac arrhythmias has shown that players could learn how to slow down or speed up their heart rate with the help of feedback to bring it into a range that blocked the onset of the palpitations or other arrhythmias. Although this initial work was promising, it has not been followed up on with larger studies to any great degree.

Thermal feedback has been employed quite successfully on a large number of players with the icy and discolored fingers and toes characteristics of Raynauds disease, a dangerously hypersensitive reaction to cold. Player, ice mountaineers while enjoying Ice Skiing, Ice Games, Ice Scatting etc... Suffers from such disease. There are so many examples of good player's suffering from asthma and suffering a lot while in playing due to asthma. Asthma in players has been treated with both nonspecific forms of Biofeedback assisted relaxation and sophisticated forms that feedback such specific measures as the resistance of the players airways to deep respirations. Both-forms have had encouraging results. Biofeedback is more effective in such cases.

Pain in sports is not a new thing. Biofeedback does not help chronic pain directly unless it is being used to treat the underlying condition causing that pain. However, it can be an effective method of indirect therapy. The player can be taught to attend to the pain in a relaxed state, or to become a more passive or dispassionate observer of pain sensations, thus redirecting his attention away from them. Self-hypnosis has long been recognized for its ability to help chronic pain sufferers cope; it may be that similar factors account for the relief afforded by Biofeedback.

In sports, there are chances of minor as well as major injuries. When a muscle becomes paralyzed, there may still be surviving nerve fibers to segments of the muscle that are not actually paralyzed, but the muscle often fails to transmit sufficient sensation for the brain to recognize their presences. Thus the person may be unable to activate the unaffected segments; even if he initiates the right movement, the resulting initial muscle contraction may not be strong enough to signal its presence to him and enable him to move the limb or other body part. EMG Feedback, and the use of needles placed near the still active muscle fibers, can be used to help a person recovering from Spinal Cord or Peripheral Nerve injuries, Cerebral Palsy, or Stroke to Re-establish these disrupted and functionally atrophied natural Neuromuscular Feedback Systems. Although it can not help the person to regenerate nerves that are died, it can enable him to make full use of any
nerves that are intact. Many persons have learned to produce controlled movements with their impaired extremity and to master such practically useful activities as feeding or dressing themselves.

Biofeedback can also serve as an alternative to minor tranquilizers, especially for person's who are unwilling or unable to take drugs. It can "Signal" the person's specific discomforting thoughts or memories that emerge during trial and error attempts to alter the Feedback.

A distinct advantage of Biofeedback is that it helps to legitimize the intervention, quite an important matter for a new therapy in the field of sports. Several specific characteristics of Biofeedback contribute to its legitimization, and usefulness, as in intervention in the field of sports. Measurement of Physiological parameters offers definite advantages. It is difficult to say without monitoring that a player is responding either during rest or under stressful stimulation or not. Without Biofeedback it is difficult to say whether the player’s response is mainly autonomic or mainly muscular. It is difficult to judge for a player and also for a therapist without biofeedback monitors. New strategies for dealing with learning difficulties are made available. Biofeedback helps pinpoint the source of training problems, but opens up new intervention tactics. It allows systematic use of shaping procedures, that is, the person begins with an easy response and then proceeds to progressively more difficult ones - technique we refer to as the shaping of low arousal. If there are problems with the dominant arm, the patient none the less may do well with the non-dominant arm. Biofeedback provides a dramatic demonstration of what is meant by passive volition, of "Letting Go", of shifting into a non-striving condition. Biofeedback conveys the idea immediately in a direct and forceful way.

Instrumentation and measurement techniques assist in the task of placing biofeedback and self-regulation therapies within a scientific explanatory framework, measurements are taken, and the therapist is stimulated to look for relationships among the measurements. During relaxation, for example, changes occur in heart rate, peripheral temperature, and EEG Patterns. Muscular relaxation reduces sympathetic activation, a phenomenon consistent with the broad "anti-stress effects of good relaxation training". An advantage of Biofeedback methodology is that the player can be allowed to remain in a low arousal state for some time. During this more extended period, the experimental correlates of relaxation are likely to become perceptible to him. The basic idea in Biofeedback
Training is to use sensitive detectors to tell you what is happening inside your own body, and to tell you right away. Ordinarily, this is a hard thing to do Right now, for example, is my heart rate going up or down? And what about my blood pressure or muscle tension? It is difficult to know, but with the Biofeedback equipments, we can tell immediately. Suppose, we want to pick up muscle tension. What we do is to place sensors / electrodes over the muscles we are interested in. These sensors pick up the tiny electrical signals that are generated by the muscles. What the Biofeedback instrument does is to convert your muscle activity into sound, which you hear through your head phones or by looking light bars. When the muscle is tense, you hear high frequency tones. As soon as you relax, the tone frequency goes down. The tone tells immediately whether you are going in the direction of relaxation or not. This is really the most important thing in any kind of learning to know quickly whether you are going in the right direction. The tone or light bars tells you instantaneously if your muscle in tensing or relaxing. We have used on a lot of players now, and it helps them to relax much faster.

In today's competitive sports, relaxation plays a great role and relaxation techniques can be helpful to reduce stress and tension. The techniques that focuses on the somatic aspects or those that are considered "Muscle to Mind” We can call it neuromuscular relaxation or progressive relaxation technique to any level of tension. Person can learn this by generating as much tension as possible, letting go, and studying the difference in the muscle. The second category of relaxation techniques includes all those that approach relaxation from the cognitive or mental perspective. These work from “Mind to Muscle”. Progressive relaxation techniques are also known as scientific neuromuscular relaxation technique. It is called progressive because person progress from one muscle group to another as person learns the skill. The skill is learned by including as much tension as possible into one muscle group, learning to identify what released. Person progress through one muscle group after another; arms, legs, shoulders, thighs, back, facial, and so on, whole body can be relaxed by progressive relaxation technique. This technique has given good results in relaxation for players. Autogenic Training is one of them which are as under. Autogenic training was developed in Germany. There are six standard exercises. These enable the individual to shift voluntarily a relaxed, low-arousal condition and consist of the limb heaviness exercise, the limb warmth exercise, the cardiac exercise, the
respiration exercise, the solar plexus warmth exercise, and the "Forehead Cool" exercise. The scientists in various fields regularly use such technique for problem solution.

In Heaviness exercise, a person has to follow the instructions "My right / left arm is heavy", or "My right / left leg is heavy". A person has to concentrate on verbal cues which are repeated silently or aloud. The statements of instructions are repeated and then "Held Mantling" for 30 to 60 seconds for first exercise and 60 to 90 seconds for the later exercises. After mastering the Heaviness Exercise a person can move to the warmth stage. The warmth exercise follows exactly the same procedures as the heaviness exercise, starting with the right / left arm. Regulation of Heart Beat is the third stage after mastering the Heaviness and Warmth Exercise. Take a minute or two for the instruction of saying, "My Heart Beat is calm and regular", with a break from the focus of concentration between four repeats of the exercise. Regulation of breathing is the fourth stage. A subject has to focus his attention on his respiration rate in a passive manner using the instruction, "It breath Me", repeat as necessary. The fifth stage of exercise is designed to induce a sensation of warmth to the abdominal region which produces a calming effect on the central nervous system and enhances overall muscular relaxation. A subject may place hand upon the upper abdominal region while silently saying "My solar plexus is warm". The scientists in different fields now regularly use the autogenic exercise in combination with Biofeedback and find a sequences of four exercises especially useful. These are the Heaviness, the Warmth, the Respiration and the "Solar Plexus Warm" exercises.

The addition of autogenic training to the Biofeedback program permits the therapist to cast a wider net over the various components of the stress response. Autogenic Technique can be benefited to relaxation program. The regular use of training phrases such as "arms and legs heavy and warm" offers a major strategy in coping with the critical cognitive aspects of relaxation. These phrases help keep the subject's attention on the task at hand and are especially useful in dialing with the inevitable "Stray Thoughts". The phrases are a means of channeling and eventually quitting mental activity. Generally, subject's like the effect of the training phrases. The autogenic exercises faster a type of self-reliance. Subject can use the procedure individually. Moreover, the exercises faster a sensitively towards one's bodily sensations - a skill integral to successful use of the training. The autogenic relaxation exercises provide strategies for dampening excessive
autogenic activity. One of these is the good standard exercise. Respiratory exercise is also helpful for questing autonomic symptoms in which the emphasis is on moderate, regular, and effortless breathing. Subject like exercise too. It is often useful in breaking up an excessive stress response, since in threatening situations, many subjects show breathing irregularities breath-holding, hyperventilation, irregular breathing - which contribute to autonomic disturbances.

Autogenic exercise forms a useful bridge to other stress management techniques such as the self-statements methods. Autogenic exercises help prepare the ground for imagery techniques. Many imagery techniques involve an initial phase of relaxations systematic desensitization, hypnotic imagery, and autogenic abreaction are examples. Autogenic training lends itself to the development of a brief exercise that subject find extremely valuable. This exercise can be practical frequently, beginning each time with the phrase "My right arm is heavy" so that, and the reaction becomes highly over learned and virtually automatic. The training phrase has become a conditioned stimulus (CS) for good relaxation. The brief exercise can be worked into all sorts of situation off the play field.

After viewing the merits of Biofeedback and autogenic training we can achieve much better results after combination of both things. The combination of Biofeedback and autogenic training means fulfillment of each other. In Biofeedback there are some limitations which can be minimized by autogenic training and the limitations of autogenic relaxation training can be minimized by Biofeedback therapy. For the performance enhancement in sports, the combination of Biofeedback and autogenic training is very helpful. In every sport, a player has to concentrate and he/she must have fine eye-hand co-ordination. Reaction time also plays a major role in best performance. A player has to concentrate on each and every walk of game. Each situation is new for player. There might be no fear in any situation of game.

In this research, subjects are tested before Autogenic Training and Biofeedback Training. The integrated use of Biofeedback and Autogenic Training gives us good results that the player can be much more relaxed with the help of Autogenic Training and by Biofeedback Monitors we can know the difference between 2 stages that are, before training stage and second is the change after training. Some players who are strong autonomic responders under stress, hand be kept low as the player practices with hand temperature feedback. If necessary of
feedback from arm or head is provided before temperature feedback is begun in each session of training. Biofeedback aids especially in the acquisition of good physical relaxation, the autogenic exercises in the mastery of "Mental Quitting". When the player has mastered the skills necessary to attains the complementary goals of physical and mental relaxation, he/she will have made significant progress toward moderating a stress reaction that has become excessive or of too long a duration. The combination of Biofeedback and autogenic training is helpful in tension, depression, stress, anxiety in player actively participating in sports.

In sports, a player needs both physical and mental fitness. Biofeedback measures physiological parameters and autogenic training to relax the mind and player becomes free from tension, stress, anxiety, so that he/she can give higher level of performance. The combination of Biofeedback and autogenic training relax the mind and player becomes free from tension, stress, anxiety, so that he/she can give higher level of performance. The addition to autogenic training to the Biofeedback program permits the therapist to cast a wider net over the various components of the stress response. Autogenic technique can be benefited to a relaxation program. The regular use of training phrases such as "arms and legs heavy and warm" offers a major strategy in coping with the critical cognitive aspects of relaxation. These phrases help keep the subject's attention on the task at hand and are especially useful in dealing with the inevitable "Stray thoughts". The phrases are a means of channeling and eventually quitting mental activity. Generally subjects like the effect of the training phrases.

The autogenic exercises speed up a type of self-reliance. Subject can use the procedure individually. This investigation has combined the Biofeedback with Autogenic Training which will help the sport person to reduce their anxiety, stress, tension and any other psychosomatic problems. In present research heaviness and warmth exercises are basically involved in Autogenic Training and Researcher will give various sets of heaviness and warmth exercises to sport persons along with the G.S.R. (Galvanic Skin Response), heart rate feedback respectively. A higher level of performance can be obtained with the help of the combination of Biofeedback and Autogenic Training.

**Problem and Its Relevance**

In modern competitive age, physical training is not only important but mental training is also necessary for the enhancement of performance in sports.
Mental training involves techniques for the management of anxiety and stress, management of relaxation, improvement of reaction-time, eye-hand co-ordination, stabilization of heart rate, steadiness, management of temperature, G.S.R., biofeedback, E.M.G. Alpha E.E.G., etc... Mental training is also useful in arousal regulation, imagery, goal setting and thought stopping to help the athletes optimize their performance.

Imagery involves recalling from memory places of information stores there from all types of experiences and reshaping them into a meaningful service viz. a thought process. Visualizing in mind eye is a powerful tool that one can use to improve anything and everything that one does. One can gain greater control over body, emotions, and concentration, and integrate them all in a fine tuned fashion to maximize potential in whatever one pursues.

Imagination can recreate the past in great detail or transform, if to fit the emotional status desired. It can project into the future, solve problems, gain relief, from mental pressures, and assist in learning and maximizing performance. Using imagery in sport is of particular importance because you literally think with your muscles. As you learn to control your imagery in your mind's eye, your muscles gain greater control as well. Imagery has been distinguished from mental practice or rehearsal in that imagery involves the ability to passively develop an image without going beyond that point. These of imagery, however, are not new. Sport persons have engaged in mental practice for as long as they have been involved in sports. The sport persons, when they mentally rehearse certain sport skills which are associated with the passage of time, seem to rehearse much more closely to "real time". By real time, I mean that the length of time it takes to rehearse the activity is the same as the time it actually takes to carry out the activity.

RELAXATION - Relaxation is a neuromuscular accomplishment which results in a reduction of tension in the skeletal musculature. Relaxation means no muscular activity at all or getting as near to zero activity as possible. Relaxation means letting go and doing absolutely nothing with your muscles. Although the muscles cannot be switched off completely, they can be brought down nicely to an idling speed. It is the opposite of movement. It is marked by a reduction or complete absence of muscular activity in the voluntary muscle is accompanied by adduction in the involuntary muscles.

Relaxation will facilitate recovery when you have only a short time to rest, you can do this immediately following a workout, between events, during breaks
or anywhere and at anytime you wish to catch your breath and recharge your batteries a bit. Relaxation also promotes sleep. Relaxation teaches us how to regulate over arousal so that we do not over-charge the system. Relaxation helps to remove localized tension such as that occurring with tension headaches or lower back pain.

Most sport psychologists and elite athletes, however, learn how to take a giant step toward optimal enjoyment and performance. One need to be aroused enough to become excited and motivated about performance. The athletes need to have the ability to regulate their arousal to their own optimal point. Relaxation training can benefit in sport person's performance. Relaxation training assists in developing heightened sensitivity to one's body. Some sport persons have difficulty in distinguishing what actions are under voluntary control. Relaxation training allows them to become more aware of body as well as regain a sense of control over basic psychological acts such as breathing. Relaxation allows for the reduction of arousal. When one is overly aroused, relaxation can assist in achieving optimal level or arousal. Relaxation also facilitates recovery from injury by reducing pain associated with tension. It assists in clearing the mind and assisting in concentration for physical or mental practice. Biofeedback can be considered as process by which a "System" controls and corrects itself by reviewing results of performance. The feedback and the corrections are immediate ' the system takes some action, adds more rouge, turns up the furnace or angles the plane one degree to the North. Then the eye, the thermostat, or the on-board computer instantly check to see if this action moves things in the desired direction and responds to, or modifies, the situation in an appropriate fashion.

The area of present study is Sport Sciences, i.e., Sport Psychology and Sport Physiology. Biofeedback, a latest technique and autogenic training are combined in this present study and applied in the field of Sports.

In this present study researcher tried to find out the effect of the combination of biofeedback and autogenic training for performance enhancement of sports persons. The players from three various discipline i.e. Hockey, Handball and Football has been selected for said purpose.
Statement of the Problem

In this investigation researcher has tested the effect of combination of biofeedback and autogenic training for performance enhancement of sport persons. The biofeedback involves the combination of body, mind and apparatus or machine. At the other hand autogenic training is a technique of self hypnosis which would help in developing a day’s state of relaxation. It is researcher's humble endeavor to study how the combination of these two latest things can be helpful to improve the performance of the sport persons at National / International level. Three various sports disciplines ie., Archery, Handball, and Football were selected for the present study. So, researcher has selected above mentioned title for present research work.

The Title of the present study is as under
"The combination of biofeedback and autogenic training on performance enhancement of Indian sport persons"

Delimitation

- This study was delimit to 120 male subjects only.
- The subjects were belong to different centers of Sports Authority of India.
- The study also delimited to national level players of Hockey, Handball and Football games only
- The subjects were only male and there age was ranging from 17 to 22 years. The subjects were must be in the Junior/Senior team of their respective game in Gujarat.
- This study was delimit to Biofeedback and Autogenic training only.
- This study was further delimit to dependent variables reaction ability(simple visual reaction time, choice visual reaction time, simple audio reaction time, choice audio reaction time), co – ordination (eye- hand co ordination time, eye – hand co ordination error), concentration (Hand steadiness), Stress (GSR basal Value, GSR relax Value) and heart rate variables only.


Limitations

1. There are some limitations of this study.
2. Biofeedback Apparatus are electronic devices so there are chances of breakdown of machines.
3. Combination of Biofeedback and Autogenic training is not a one way traffic. It is two way process, subject must co-operate researcher and obey the instructions given by researcher.

Objectives of the Study

For the present study the Investigator has decided the following objectives. This objectives are classified according to nature of sport Investigator has decided objectives for Archery, Handball and Football Sports Discipline given as under.

Objectives for Hockey players:

01.01 To study the effect of combination of biofeedback and autogenic training on reaction time of experimental Hockey group with compared to controlled Hockey group.

01.02 To study the effect of combination of biofeedback and autogenic training on coordination of experimental Hockey group with compared to controlled Hockey group.

01.03 To study the effect of combination of biofeedback and autogenic training on concentration of experimental Hockey group with compared to controlled Hockey group.

01.04 To study the effect of combination of biofeedback and autogenic training on anxiety / stress of experimental Hockey group with compared to controlled Hockey group.

01.05 To study the effect of combination of biofeedback and autogenic training on heart rate of experimental Hockey group with compared to controlled Hockey group.
Objectives for Handball players:

02.01 To study the effect of combination of biofeedback and autogenic training on reaction time of experimental Handball group with compared to controlled Handball group.

02.02 To study the effect of combination of biofeedback and autogenic training on coordination of experimental Handball group with compared to controlled Handball group.

02.03 To study the effect of combination of biofeedback and autogenic training on concentration of experimental Handball group with compared to controlled Handball group.

02.04 To study the effect of combination of biofeedback and autogenic training on anxiety / stress of experimental Handball group with compared to controlled Handball group.

02.05 To study the effect of combination of biofeedback and autogenic training on heart rate of experimental Handball group with compared to controlled Handball group.

Objectives for Football players:

03.01 To study the effect of combination of biofeedback and autogenic training on reaction time of experimental Football group with compared to controlled Football group.

03.02 To study the effect of combination of biofeedback and autogenic training on coordination of experimental Football group with compared to controlled Football group.

03.03 To study the effect of combination of biofeedback and autogenic training on concentration of experimental Football group with compared to controlled Football group.

03.04 To study the effect of combination of biofeedback and autogenic training on anxiety / stress of experimental Football group with compared to controlled Football group.

03.05 To study the effect of combination of biofeedback and autogenic training on heart rate of experimental Football group with compared to controlled Football group.
**Hypotheses**

It is very important to frame some hypothesis before starting investigation. If a person wants to make a study scientific, he should frame some hypothesis so that his work can be minimized and limited.

**Hockey:**

\[ H_1: \] There will be significant difference with reference to simple visual reaction time between Hockey experimental group and Hockey controlled group.

\[ H_2: \] There will be significant difference with reference to choice visual reaction time between Hockey experimental group and Hockey controlled group.

\[ H_3: \] There will be significant difference with reference to simple audio reaction time between Hockey experimental group and Hockey controlled group.

\[ H_4: \] There will be significant difference with reference to choice audio reaction time between Hockey experimental group and Hockey controlled group.

\[ H_5: \] There will be significant difference with reference to eye hand coordination time between Hockey experimental group and Hockey controlled group.

\[ H_6: \] There will be significant difference with reference to eye hand coordination error between Hockey experimental group and Hockey controlled group.

\[ H_7: \] There will be significant difference with reference to hand steadiness time between Hockey experimental group and Hockey controlled group.

\[ H_8: \] There will be significant difference with reference to galvanic skin resistance basal value between Hockey experimental group and Hockey controlled group.

\[ H_9: \] There will be significant difference with reference to galvanic skin resistance relax value between Hockey experimental group and Hockey controlled group.
$H_{10}$: There will be significant difference with reference to heart rate between Hockey experimental group and Hockey controlled group.

**Handball:**

$H_1$: There will be significant difference with reference to simple visual reaction time between Handball experimental group and Handball controlled group.

$H_2$: There will be significant difference with reference to choice visual reaction time between Handball experimental group and Handball controlled group.

$H_3$: There will be significant difference with reference to simple audio reaction time between Handball experimental group and Handball controlled group.

$H_4$: There will be significant difference with reference to choice audio reaction time between Handball experimental group and Handball controlled group.

$H_5$: There will be significant difference with reference to eye hand coordination time between Handball experimental group and Handball controlled group.

$H_6$: There will be significant difference with reference to eye hand coordination error between Handball experimental group and Handball controlled group.

$H_7$: There will be significant difference with reference to hand steadiness time between Handball experimental group and Handball controlled group.

$H_8$: There will be significant difference with reference to galvanic skin resistance basal value between Handball experimental group and Handball controlled group.

$H_9$: There will be significant difference with reference to galvanic skin resistance relax value between Handball experimental group and Handball controlled group.

$H_{10}$: There will be significant difference with reference to heart rate between Handball experimental group and Handball controlled group.
Football:

H1: There will be significant difference with reference to simple visual reaction time between Football experimental group and Football controlled group.

H2: There will be significant difference with reference to choice visual reaction time between Football experimental group and Football controlled group.

H3: There will be significant difference with reference to simple audio reaction time between Football experimental group and Football controlled group.

H4: There will be significant difference with reference to choice audio reaction time between Football experimental group and Football controlled group.

H5: There will be significant difference with reference to eye hand coordination time between Football experimental group and Football controlled group.

H6: There will be significant difference with reference to eye hand coordination error between Football experimental group and Football controlled group.

H7: There will be significant difference with reference to hand steadiness time between Football experimental group and Football controlled group.

H8: There will be significant difference with reference to galvanic skin resistance basal value between Football experimental group and Football controlled group.

H9: There will be significant difference with reference to galvanic skin resistance relax value between Football experimental group and Football controlled group.

H10: There will be significant difference with reference to heart rate between Football experimental group and Football controlled group.
VARIABLES INVOLVED IN THE STUDY

For the present research work, two types of variables were involved which are given as under:

INDEPENDENT VARIABLE

For the present investigation types of training was the independent variable there were two levels of this independent variable.

1. Biofeedback combined with Autogenic Training
2. No training

DEPENDENT VARIABLE

For the present study, following five are dependent variables which are the parameters of the performance:

1. Reaction ability
2. Co-ordination
3. Concentration
4. Anxiety / Stress
5. Heart rate

Definition and Explanation of the Terms

It is necessary for the investigator to clarify the terms used in the investigation report this is generally done by giving operational definition of the terms because then only one can go in deep study, one must define the term so that one can be sure and solid in his study. In this present study investigator has defined the term as shown below:

Biofeedback

Biofeedback may be defined as the technique of using equipment (usually electronic) to reveal to human beings some of their internal Physiological events, normal and abnormal, in the form of visual and auditory signals in order to teach them to manipulate these otherwise involuntary or unfelt events by manipulating the displayed signals. This technique inserts a person's volition into the gap of an open feedback loop hence the artificial name Biofeedback, a name that scientists for linguistic and other reasons. Biofeedback may be defined as an technique which increases of the ability of a person to control voluntarily physiological activities by providing information about those activities. Feedback is information
and Biofeedback is information about the state of Biological processes. Biofeedback is combination of mind, body and machine or equipment. Mind in psychology, body in physiology and machine in apparatus. In this study biofeedback teaches a player to develop voluntary control over some biological process.

**Autogenic training**

Autogenic training produces relaxation by having the person concentration on verbal cues which are repeated silently or aloud, it includes six basic exercises (group of statements) and a series of advanced ones. The exercises start with attempts to induce muscular relaxation and then focus on increases in peripheral blood flow, lowering of heart rate, lowering of respiration rate, relaxation of the upper abdominal cavity, and general sedation and drowsiness. Subjects move sequentially from one exercise to the next as they learn to produce the desired physiological changes in each exercise. Each of the statements in the six exercises are repeated silently or aloud by subject. In present research heaviness and warmness exercises are basically involved in autogenic training and Researcher will give various sets of heaviness and warmness exercises to sport persons along with Galvanic Skin Resistance feedback.

**Combination of Biofeedback and Autogenic training**

The combination of Biofeedback and autogenic training can help a player to reduce stress. By autogenic relaxation technique a player can quiet his mind and can be relaxed and by Biofeedback a player can mark the difference between before relaxation training and after training. Physiological parameters can be measured by Biofeedback. When the muscle is tense, you hear high frequency tones. As soon as you relax, the tone frequency goes down. The tone tells you immediately whether you are going in the right direction. The tone of light bars tells you instantaneously if your muscle is tensing or relaxing. Researcher has implemented on many players, and it has helped them to relax much faster. Researcher has combined both biofeedback for the physiological parameters and autogenic training for psychological parameters in preparing the program for the present study.

**Reaction time**

The reaction time is the time between the end of stimulus presentation and onset of the response. The most fundamental situation is one in which a single visual stimulus results in a single response and time taken to response is known as
simple visual reaction time. The situation where one has to produce a particular response in relation to given set of visual stimuli or sequences of visual stimuli gives rise to what is known as the choice visual reaction time. A single audio stimulus results in a single response and time taken to response is called simple audio reaction time. In some situation where one has to produce a particular response in relation to given set of audio stimuli or sequences of audio stimuli gives rise to what is called choice audio reaction time. If a player has poor reaction time he/she cannot achieve higher level of performance. Reaction time plays a great role in each and every game. Reaction time is something individual in nature. As a player differs, reaction time differs. Today's competitive and professional sports cannot neglect reaction time. Reaction time is good, if player's attention and concentration is good. If a player participate in any game whole heartedly and concentrates completely he/she can perform well.

**Attention**

The success of any game lies on attention & concentration of a player. Attention has several dimensions. One aspect is how concentrated one's attention is. Attention can be spread over many stimuli or it can be concentrated on one particular point. Another aspect of attention concerns the degree of alertness. The environmental focus includes the immediate processing of information being picked up by the eyes and ears. The self focus included such things as the responding of the heart, increased breathing rate, muscular tremor and other manifestations of worry or anxiety about performance. The components of sports increase the demand for environmental focus. Attention is the means by which one picks up and exchanges information from sports environment. When this process is under control, one can feel, he can direct the flow or reciprocal information that units one with the environment and what is going on within the game. A player can choose to interact with system of continuous stimuli which can modify and from which one can get meaningful feedback. The ability to focus attention helps to reduce anxiety about performance.

There are generally two types of attention focus. Which are useful for various games and sports. They are narrow focus and broad focus. A narrow focus of attention that is looking at one thing or a relative small area is required in target groups, in shooting, archery etc... A broad focus is needed in team games like Football, Handball, and Cricket etc... In relation to attention and sport, we are generally concerned with selectivity and alertness, selectivity relates to how a
player limits attention to selected objects or ideas, and alertness relates to the keenness of cognitive attention. Narrow attention is focusing on a limited range of cues, whereas, a broad focus takes in wide range of cues. Direction shifts on a continuously from an internal focus on one's own thoughts and feelings to an external focus on objects and events outside the body, use of the appropriate attention focus can enhance performances. A broad - internal focus is an analytical style that is useful for planning strategy and analyzing previous performances. A broad external focus involves taking in a good deal of information. A narrow internal focus is appropriate for mentally rehearsing a task or performing strength and endurance activities. Although all the attention focus are useful, problems arise when an individual relies too heavily on one style or uses an attention style in appropriately. Both types of attention are necessary according to the particular situation of the particular game.

Concentration

Concentration is a part of attention. Concentration involves being able to attend to what is going on, the degree to which one can attend, and how long one can continue to attend to what is going on around. Concentration is being able to choose to attend to specific things going on and to ignore others, or the ability to put the mind on one thing at a time or on all the things that relate to what is going on at that time. The more a player has the ability to attend to what a player want to, the better the response and the performances. In each and every game, in each and every situation or movement, concentration is useful to feel and see exactly what is happening and to know what is going to happen next. One of the biggest problems in sports, whether it be competitive or recreational, is a lack of concentration. A wondering mind can create mental lapses and cause mental errors during any performance. A player needs to practice concentration skills both on and off the field. Like physical skill, concentration is a mental skill that must be practiced in order to gain improvement. For concentration, a player needs two types of training. One is in-practice training and another is off-practice training.

In in-practice training specific exercises assist the player by training them not to attend to or concentrate on irrelevant external factors. In this more two types of concentration training can be used. One is stimulation training and another is concentration cues. In off-practical training some exercise assist the player in decreasing lapses in concentration brought on by internal factors, primarily stress, off-practice training involves mental imagery, and relaxation
training. For better concentration, self-induced relaxation (SIR) in combination with positive self talk or self coaching can be employed both before and during competition. Hand steadiness test (HST) is very much popular to measure concentration.

**Co-ordination**

In today's professional sports, good concentration is a key to success for each player of each game. If a player can concentrate properly he/she can improve eye-hand co-ordination. Co-ordination of body part in game is very important. A Football player is good in ground technique, but not good in throw cannot achieve best performances that player must have good eye-hand co-ordination and also hand-legs co-ordination for good technical throw. Eye-hand co-ordination is very useful in Handball. A boxer must be ready for punch. He has to watch the movement of opponent hands by eye keenly and also same time he has to blow on opponents face by hands otherwise; due to the lack of eye hand co-ordination he cannot achieve good performance. Co-ordination also play a major role in each and every game. The combination of best reaction time and best concentration leads a player to fine co-ordination. Without co-ordination play cannot be rhythmic. Better result can be only possible through co-ordination. For fine co-ordination, a player has to involve whole heartedly in particular situation, particular skill and combined speed. A player has to utilize his sixth sense for fine co-ordination.

In sports, reaction time, attention, concentration and co-ordination plays a major role to achieve peak performance. All are interwoven into each other. If any one factor is less or poor, performance is no more in sports. There must be co-ordination of all these factors according to particular situation for particular game. Eye hand co-ordination (EHC) is the tool to measure co ordination in the field of sports.

**Anxiety / Stress**

Anxiety can be considered as an subjective feeling of apprehension accompanied by a heightened level of Physiological arousal. Physiological arousal is an autonomic response that results in the excitation of various organs of the body. Examples of this phenomenon seen in sport persons are sweaty hands, frequent urge to urinate, increased respiration rate, increased muscle tension and elevated heart rate. Anxiety is an integral part of an individual's personality. It refers to the individuals tendency to classify environmental events as either is an
emotional response to a specific situation that results in feelings of fear, tension or apprehension. Biofeedback helps a sports person to come out from such situations and also motivates a player for peak performance. Galvanic skin resistance biofeedback (GSR) is latest technique and popular to measure anxiety / stress.

Stress is a personal experience. What is a stressor for your neighbor may be a stress reducer for you. Same as, to play Olympics is a stressor for a new, Junior or immature player, but may be a stress reducer for other player. Similarly, the way your neighbor responds during a stress response may not be the way you respond. Stress management, therefore, must be an individual, personalized experience, because what helps you manage stress in your life might not help your neighbor. One can reduce stress by actively controlling his emotional response by using any of several mind-directed techniques, and also by relaxation training.

**Experimental group**

In this group twenty subjects will be consider for Hockey, twenty subject for Handball, and twenty subjects for Football sports discipline. Dependent variables ie., Reaction ability ( simple visual reaction time, choice visual reaction time, simple audio reaction time,& choice audio reaction time), Coordination (eye hand coordination time,& eye hand coordination error ), Concentration (hand steadiness), Anxiety / Stress ( Galvanic skin resistance basal value, & Galvanic skin resistance relax value), Heart rate will be tested on this group in pre-test. Biofeedback and autogenic training program will be implemented on this group as per the schedule. After completion of the program, again all the above mentioned dependent variables will be tested on this group in post-test. The pre-testing of dependent variables, implementation of the program and the post-testing of dependent variables will be conducted on the twenty subjects of experimental group in Hockey, Handball, and Football all the three sports disciplines respectively.

**Control group**

In this group twenty subjects will be consider for Hockey, twenty subjects for Handball, and twenty subjects for Football sports discipline. Dependent variables ie., Reaction ability ( simple visual reaction time, choice visual reaction time, simple audio reaction time,& choice audio reaction time), Coordination (eye hand coordination time,& eye-hand coordination error ), Concentration (hand steadiness), Anxiety / Stress ( Galvanic skin resistance basal value, & Galvanic skin resistance relax value), Heart rate will be tested on this group in pre-test. There will be no program implemented on this group. Post-test of the
The abovementioned dependent variables will be tested on this group. So, only pre-testing and post-testing of all the dependent variables will be conducted on the twenty subjects of control group in Hockey, Handball, and Football sports disciplines respectively.

**Significance of the Study**

This present research work is important for checking effectiveness of Biofeedback and Autogenic training for improving performance on Indian Sports person like Hockey, Handball and Football players, whether combination of Biofeedback and Autogenic training is useful in enhancement of performance or not. Positive results of this research work will definitely lead Indian Sports persons to new level of achievement. This investigation is also useful in other players of various games because concentration, co-ordination, anxiety, stress management, self-confidence are the main factors of success of any game.

Each and every player of every game needs concentration, Eye-hand co-ordination, self-confidence etc…. to achieve optimum level of performance. Results of present research will be useful for other various games and sports persons from other games will be benefited and will be able to improve level of performance. In the field of sports psychology, results of present research will contribute to the latest development and due to such modern research work, present study will achieve new horizons in the field of sports psychology and sports medicine. In modern age, Biofeedback and Autogenic training has entered in the field of Sports Psychology and present research will give new dimension in the field of Sports Psychology and sports medicine.