REVIEW OF RELATED LITERATURE

There is a paucity of literature in this area as biofeedback machines have recently available for use in major hospitals / universities for research purpose. Very few researchers have used biofeedback training on sports person in India. So, this is an attempt to start a new training which has already shown its successful results in enhancing the performance of athletes in abroad. Recently, in United States, researchers and scientists of Biofeedback Society of America are working in the field of Biofeedback in a large scale.

Autogenic training was introduced by Schultz in Germany which was most widely popularized in Canada by his pupil Luthe, Jacobson developed methods of electrical measurements of the muscle status tension and was known as progressive relaxation training.

In this chapter researcher has collected references on sports psychology and sports sciences, biofeedback and sports, anxiety and sports, reaction time, concentration, co-ordination & attention, stress and sports, autogenic training & biofeedback and autogenic training which is as under.

Hollander, D.B., (1995) et al reviews Physical and Psychological Factors Associated with over training in Youth Sports and suggests corrective alternatives for coaches. Physiological and sympathetic process, Psychological Factors that affect over training include stress, susceptible personality characteristics, and impaired cognitive processes, over training may be avoided by providing a clear system of rewards and scheduling, Periodization training schedules, implementing Psychological preparation and monitoring dietary intake can reduce the potential for over training.

Chandler, C.K., et al (1994) utilized Biofeedback assisted relaxation with a 22 yr. old Caucasian HIV Positive female subject to determine the effectiveness of this treatment with this population. One 40 yr. old Caucasian HIV Positive male subject served as control. Muscle tension and finger temperature Biofeedback monitoring occurred while progressive relaxation and autogenic phrases interventions were applied. Treatment occurred twice weekly, in 1 hour sessions, over a 10 wk period. Intervention successes were demonstrated by decreased muscle tension as measured by an Electromyogram, decreased self reported stress symptoms, and increased immune system functioning as determined by pre and post laboratory testing of PHA (Phytohemaglutinin Blastogenesis Test for Lymphocyte Functioning).

experience for sports person. They also add participation in exercise and sport can result in increased benefits such as enhanced self-esteem, self-reliance, and willingness to take risks. Sports psychology makes a sport person more tough inside the field and outside the field.

Murphy, S.M., et al, (1990) argues that investigations of imagery effects in Sports Psychology. Literature have been unnecessarily restricted by conceptualizations of imagery in terms of just mental practice or of performance rehearsal. Imagery plays a great role in sports psychology for enhancement of performance in sports and for all round development of a player.

Gipson, M., et al, (1989) have concluded that, Sports Psychology Program is helpful in measuring coach and players’ behaviour introducing skill development activities, in providing planning and management consultation to a women's volleyball team. Psychological services designed were perfect to improve team performances.

Eliassen, M., et al, (1989) discusses the strengths and weaknesses of a recent perspectives concerning training of Coaches and athletes. J.J. Kisseljow's (1982) analysis of the psychological bases of physical conditioning in competitive sports was impressive and much effective. They noticed individual mental preparation as a part of sports training so that individual performance can be improved in game.

Rushall, B.S., et al., (1988) have reported that, performances on a standard test track under thought control conditions were compared with similar efforts under normal control thinking. They found that 16 subjects improved performance by more than 3% in all conditions, whereas 2 subjects improved in only 1 condition. Heart rate were marginally higher in each experimental condition. Psychological preparation can help a sports person in improving performance.

Dyer, K.F., et al, (1986) have examined changes in the average male - female performance difference for running, swimming and skating events between the years 1936 and 1984 using World records and verified best performances. Women's performances relative to men's have improved markedly and are continuing to improve, suggesting that equality of performances may be attained in the future. Sports Psychology plays a great role in various sports for maximum level of performance.

Butt, D.S., et al, (1985) have tested a theory of sport motivation against detailed data gathered from 15 international teams during a World Championship field hockey event. They have reported that the highest performing teams showed controlled affect and motivational levels, while some lower performing teams showed conflict and dysfunctionally high levels of psychological motivation. They concluded that sports psychology inspires a sport person towards higher performance.
Winget, C.M., et al., (1985) have suggested that athletic performances can be modulated by workload, psychological stressors, motivation, morningness / eveningness differences, social interaction, lighting, sleep disturbances, the post lunch dip phenomenon, attitude, dietary constituents, gender and age. Factors influencing the degree of impairment and duration of readaptation include direction of flight, rhythm, synchronizer intensity, dietary constituents and timing of meals, and individual factors such as morningness / eveningness, personality traits, and motivation.

Horne, T., et al, (1985) examined the variables discriminating between compatible & incompatible Coach - athlete dyads, the relationship between compatibility and athlete performance. They concluded that, discrepancies between the athlete's perceptions of and preferences for coach reward behaviour and between perception / preference were associated with incompatibility. Psychological understanding is very essential for each and every sports person in the field and off the field.

Olszewska, G., et al, (1982) have tested the assumption that there is a correlation between a team player's self-image, aspirations, and dominance on the one hand, and performance effectiveness on the other. They have concluded that, subjects who achieved a high level of performance effectiveness had a high self-image, were either sensible or reckless, and had a tendency to submit rather than dominate.

Scanlan, T.K., et al, (1979) identified interpersonal factors affecting 10 - 12 years old female player's program personal performances expectations. Results successfully replicated and extended previous findings with young male athletes. Psychological preparation influenced in their competitive performance.

Vernacchia, R.A., et al, (1977) suggests that the sport psychologist can employ the case profile research approach to stimulate intelligent, honest, in-depth interaction between Coaches and athletes and thus create a more humanistic athlete - entered atmosphere. Such an atmosphere, stimmimg from mutual personal respect and awareness between coach and athletes, should emphasize self - understanding as a prerequisite for attaining performance goals.

Savis, J., et al, (1994) summarizes research, about sleep and athletic performance. The physiology of sleep and the supposed functions of sleep are summarized and attention is directed to sleep and performance related variables that are most germane to the real-life circumstances of the athlete. Sleep and performance are highly individual specific with interdependent factors that are time of day, anxiety influencing the expression of both variables. For the competitive athletes, factors such as alterations in diet, age, gender, fitness status, travel across time zones, and anxiety may negatively impact sleep and thus
indirectly affect athletic performance. Autogenic training was very useful to stabilize sleep and to improve athletic performance.

Hardy, L., et al, (1994) have describes 2 models used for providing sport psychology support services to the British Amateur Gymnastics Association over the last 6 years. They evaluates that Sports Psychology support was better received by both gymnasts and coaches. Sports Psychology is an integral part of any team.

Collins, D., et al, (1993) presents the case of a male, grand prix motocross rider to demonstrate the advantages inherent in using integrated multidisciplinary approaches in the application of sport sciences to performance enhancement. They were advised from a hypnotherapist and a clinical Psychologist to improve what he perceived as a loss of concentration in the latter parts of his races. They have also used practical techniques to facilitate cognitive behavioral strategies focused on Psychological and nutritional factors.

Seiler, R. et al, (1992)  have discussed the usefulness of sport psychology in performance enhancement. They have reported that, psychological approach is very important for performance enhancement. There is a great need of psychological training schedules for enhancement of performance in Sports that results have also clearly indicated. Psychological performance enhancement training are suggested with respect to the need for evaluation and practical considerations.

Gleser, J., et al, (1990) reviews the literature dealing with the psychological effects of exercise on anxiety reduction, mood elation, and self-esteem, focusing on the research methodology employed and the explanations given for the positive effects observed. They suggested that, the use of exercise and sport in the prevention and treatment of state anxiety, moderate depression, and/or low self-esteem may often be recommended as a practical approach. Exercise is less costly than other therapeutic methods. Because of its intrinsic activeness, it may also bring additional physical, psychological, and social benefits. They put more pressure on exercise for better performance and mental health.

Bergandi, T.A., et al., (1984) have reported surveys of the availability of and attitudes towards counseling services for the athletes. The surveys were directed toward counseling center directors and athletic directors. They find a considerable number of athletes to use counseling services. They also find sports psychology a very useful medium for counseling.

Shelton, T.O., et al, (1978) have reported that specific psych-up or mental preparation strategies athletes use to enhance performance. They asked subjects to psych-up before performing a variety of motor tasks requiring strength, balance, and speed. Subjects were given 30 seconds to psych-up before performing and were told to psych-up in any manner that was best for them. After completing
their performance trials, subjects were asked an open ended question requiring them to describe what type of psych-up technique they used. The psyching-up strategies fall into five categories and were characterized by the statements: (a) attentional focus, "I just tried to concentrate on the task and eliminate all irrelevant information"; (b) self-efficacy statements, "I told myself I could do it"; (c) relaxation, "I just tried to relax all of my muscles and think about something else"; (d) imagery, "I pictured myself in perfect balance"; and (e) preparatory arousal, "I tried to get mad, aroused, and psyched-up". They concluded that mental preparation or psyching-up strategies have definitely enhanced the performance of such athletes.

Angele, Mc Grady, (1995) suggested that, Electro dermal feedback involves the use of a monitor of sweat gland activity usually in the hands as an indicator of generalized arousal. Sport person receive electro dermal feedback and are instructed to decrease the signal, i.e., decreasing the sweating response which is known to be mediated by the sympathetic division of the automatic nervous system.

Angele Mc Grady, et al, (1995) conclude that, Biofeedback is a technique by which persons learn to be aware of and control specific physiological processes. Biofeedback is usually coupled with relaxation training to reduce the arousal mediated by the nervous and endocrine systems. Since the effects of the stress on blood glucose are clear, treatment directed to the reduction of the arousal response or to improve Coping abilities can benefit individuals with diabetes. Biofeedback has the potential to be an effective adjunct to hypoglycemic agents in individuals with Insulin dependent diabetes (IDDM), & NONINSULIN dependent diabetes (NIDDM).

Bernard, S.B., et al, (1995) suggested that physical disabilities can result from many causes which damage the Central and Peripheral nervous system such as traumatic accidents, which cause spinal chord injuries, head injuries and peripheral nervous system damage etc. An estimated 35,000,000 people in the United States suffer from some form of physical impairment. Various Biofeedback are most useful to rehabilitate such physical disabilities, but regularity of Biofeedback treatment is very essential for better rehabilitation. A long term Biofeedback gives best results.

Boskin. S.M., et al, (1995) suggested that, relaxation and biofeedback treatments are effective for chronic headache. They also concluded that, a number of behavioural treatment approaches have been shown to be of significant value in treating the most common forms of headache, migraines and tension-type. Chief among these behavioural approaches are relaxation & biofeedback training. These treatments often lead to significant improvements in other areas and subsequent
reductions in costs of medical care. Sport persons have reported Biofeedback a very useful treatment for headache and to reduce tension.

K. Sedlacek., et al, (1995) suggested that, Biofeedback is helpful in secondary Raynaud's by reducing some of the symptoms of secondary Raynaud's through increasing peripheral blood flow. 15 to 35 sessions are usually required depending on the age of the person and the severity of symptoms. Biofeedback treatment is much more successful after providing for a prolonged duration of time.

Labbe E.E., et al, (1995) have suggested that, subjects in the treatment groups improved in headache frequency and duration but not intensity. Findings were consistent through follow up. In terms of clinical improvement, 80% of the Biofeedback Group, 50% of the Autogenic Group, were Symptom Free Skin Temperature Biofeedback and Autogenic Training is very useful in treatment of headache for sports person. Players feel free after combination of Biofeedback and Autogenic Training.

M. Barry Sterman, et al, (1995) investigated that, Epilepsy is one of the most common neurological disorders. Approximately 7 percent of the American population or more than 15 million people will experience at least one convulsion or epileptic seizure in their lifetime. Genetic factors are responsible for an increased risk in siblings and offspring of individuals with non traumatic epilepsy. A series of studies focusing on the physiology shows that EEG was indeed related to a reduction in motor excitability, both at the level of the brain and along the conduction pathways between muscles and the brain. They concluded that, outcomes vary as a function of seizure type and security, intelligence and social adjustment. Generalized motor, focal motor, and partial - complex seizures with more manifestations respond best. Effective EEG feedback training probably depends on a gradual, learned alteration of underlying neural regulation. Achieving successful outcomes with this treatment approach requires a serious and sustained effort by the individual. Successful sport persons are those who are best able to immerse themselves effectively in the task, and to achieve awareness and control of physiological process. They have noticed Biofeedback as a useful medium to control physiological variables for sports person.

Sonia, A., et al, (1995) have studied several types of biofeedback training treatments. Frontal Electromyogram (EMG) was used in insomniacs with muscular tension. EEG training was used to improve relaxation and promote sleep. The major conclusion that can be drawn from the different biofeedback studies is that different types of biofeedback are effective for different types of insomnia. Relaxation training (with EMG or temperature feedback) is most effective with Psycho physiological insomnias who are tense. GSR feedback is most effective with psycho physiological insomniacs who are anxious.
Biofeedback can be used as an adjunctive treatment with insomniacs, when the appropriate type of feedback is matched to the appropriate insomniac group.

Stuart D., et al, (1995) concluded that, Myofascial pain syndrome is one of the part of the more prevalent yet widely misunderstood pain syndromes. Myofascial pain syndromes which involve pain caused by the presence of trigger points in muscles. Myofascial pain syndrome actually means pain that is caused by the muscle for the fascia surrounding the muscle; EMG offers an effective way of documentary the presence of trigger points, and of reregulating the disregulated muscle. EMG techniques are also used to documented and objectify the results of related treatment trigger points allowing for exact treatment. EMG Biofeedback offers an exacting new way of documenting and healing muscle, allowing for efficacious treatment of muscular dysfunction.

Chandler, C.K., et al, (1994) utilized Biofeedback assisted relaxation with a 22 yr. old Caucasian HIV Positive female subject to determine the effectiveness of this treatment with this population. One 40 yr. old Caucasian HIV Positive male subject served as control. Muscle tension and finger temperature Biofeedback monitoring occurred while progressive relaxation and autogenic phrases interventions were applied. Treatment occurred twice weekly, in 1 hour sessions, over a 10 wk period. Intervention successes were demonstrated by decreased muscle tension as measured by an Electromyogram, decreased self reported stress symptoms, and increased immune system functioning as determined by pre and post laboratory testing of PHA (Phytohemaglutinin Blastogenesis Test for Lymphocyte Functioning).

Elton., D., et al., (1993) investigated the usefulness of combining Biofeedback, Hypnosis, and behavioral approaches in the treatment of stress. Hypnosis subjects were trained in specific and general methods of pain control. Biofeedback - hypnosis subjects were given the same training with the addition of EMG Biofeedback Training. There was a significant improvement on all variables for both groups; however, hypnosis with Biofeedback and Hypnosis gave significant improvement and proved much more effective.

Rice, K.M., et al, (1993) has experimented and subjects with generalized anxiety disorder were treated on EMG Biofeedback, and EEG Alpha Biofeedback. All treated subjects showed significant reductions in self-reported anxiety and Psycho physiologic Symptoms. Alpha increase Biofeedback subjects showed significant a reduction in heart rate reactivity to stressors at a separate Psycho physiological Testing Biofeedback has helped a lot in treatment of generalized anxiety disorder.

Rice, K.M., et al, (1993) summarized that, Generalized Anxiety Disorder (GAD) refers to a pervasive tension or apprehension which often interferes with the quality of everyday life, Generalized Anxiety Disorder is often marked by
specific physiological dysregulation. Biofeedback is often considered one part of the multimodal behavioural treatment approach. Such an approach is generally brief, cost effective and avoids risk of dependency upon medication. It also requires willingness on the part of the sports person to participate in the treatment process, including compliance with human practice. Biofeedback is helpful in regulating anxiety in sports person.

Grazzi, L., et al, (1992) concluded that, Electromyography Biofeedback is most useful for tension headache pain total index was calculated from a headache diary on a monthly basis. The pain total index allowed quantification of clinical improvement during the course of treatment. The pain total index improved in most subjects by end of treatment and continued to improve up to the last follow up session. Clinical improvement was very effective and muscular tension level and anxiety state was decreased due to the Electromyographic Biofeedback Treatment.

Hurley, J.D., et al, (1992) investigated the effects of EMG Training on high and low state and trait anxiety scores. Subjects were treated with EMG Training using an established treatment criterion of 3 micro volts. There was a significant mean differences on both state and trait anxiety at the conclusion of the treatment. EMG Biofeedback proved most effective treatment. They concluded a long term electromyographic biofeedback training for best result.

Parpavesis, H., et al, (1992) have included training in muscle relaxation, thought stoppage, and Biofeedback training on 20 yrs. old male rifle shooter who suffered from high levels of competition - relaxed anxiety. They have prepared self-report, physiological and behavioural measures of baseline state anxiety during competition. They have implemented 6 wks. intervention program on subject. After research and training they have concluded that cognitive and somatic anxiety, gun vibration, heart rate, and urinary catecholamine decreased which self-confidence and performance increased from baseline to post intervention. They noticed Biofeedback as a self regulatory useful training.

Landers, D.M., et al., (1991) have reported that, Electromyogram Biofeedback have been investigated the most, their effects on performance have been very impressive. Biofeedback has shown performance, and slow potentials. They have noted EMG, EEG, HR, or respiration Biofeedback an important thing in enhancement of Sports Performance.

Taylor, D.N., et al, (1991) reported on the basis of an experiment performed on normal subjects comparing self-ratings of anxiety and frontalis muscle tension with frontalis electromyography (EMG) before and after a 15 min. relaxation period accompanied by frontalis EMG biofeedback, self ratings of anxiety and frontalis tension correlated significantly both before and after the relaxation period, but no relaxation was observed between self-related anxiety or frontalis tension
and frontalis EMG either before or after the relaxation period. They suggests that if subjects are unable to report accurately on their somatic status, physiological measures such as EMG would be preferable to self-rated assessments of relaxation training effects. They showed the importance of EMG to control anxiety.

Burns, P.A., et al, (1990) compared the effectiveness of Biofeedback therapy with a program of pelvic floor exercises introduced by A. Kegel (1956) for the treatment of stress of mixed incontinence. They suggested that, Biofeedback is very useful in treatment of stress. They concluded Biofeedback as a most effective training to reduce stress in the field of sport and exercises.

Clarks, M.E., et al, (1990) examined the effects of paced respiration on automatic and self-report indices of effect in alcohol - dependent male subjects scoring high in trait anxiety. Self ratings of tension level and state anxiety were collected. Subjects were able to breathe successfully when external cues were provided. Posed subjects evidenced greater reductions in self - rated tension, state anxiety, and skin conductance levels compared with controls. They concluded that Biofeedback is very useful to reduce anxiety and for good respiration.

Clark, M.E., et al, (1990) recommend that, Biofeedback training is a part of the behavioural treatment plan because it offers a non-pharmacological approach to direct symptom reduction and can be used in a manner specific to the individual sports persons psycho physiologic profiles. They also suggests that, those sports persons experiencing symptoms of muscle tension would be treated with EMG (Electromyographic) biofeedback to reduce their muscle tension, they concluded that, those individuals whose symptoms are automatic would most often receive thermal (peripheral temperatures) or heart rate training. They added that, an EEG or a skin conductance (EDR or Galvanic Skin Resistance) compound may be added, if assessment documents dysregulation in these areas. Biofeedback training is generally preceded by a variety of relaxation training exercises.

Reilly, T., et al, (1985) examined the effects of varying blood alcohol concentration (BAC) on selected determinants of archery performance. Subjects were given 45 minutes to reach peak BAC. Tests included extended arm steadiness, reaction time (RT), muscular endurance, and muscular strength measure by cable tensiometry and muscular relaxation time at the point of loose using electromyography (EMG). Results indicate that alcohol ingestion appears to have differential effects on tasks related to archery, depending on the concentration used, the individual subjects and the criteria selected. Progressive relaxation technique was also used successfully.

Brucker, B.S. et al, (1984) pointed out that, biofeedback, a behavioural technique for establishing learned control of specific physiological responses has been shown to be effective in obtaining more specific control over neuromuscular
responses that would otherwise be obtained by exercise or general learning techniques alone.

Angele Mc Grady, et al, (1983) suggested that, Biofeedback and relaxation can be very effective in assisting individuals with diabetes to maintain better control over their blood glucose and to decrease the requirement for hypoglycemic agents. The treatment, however, cannot be used as a substitute for hypoglycemic agents and must be carried out in conjunction with regular self monitoring of blood glucose in sport persons.

Basmajian, J.V., et al (1981) suggested that biofeedback techniques were successfully applied in rehabilitation to restore function to a person who had paralysis resulting from stroke. Since that time, biofeedback techniques have been applied to individuals with paralysis resulting from head and spinal cord injuries, strokes, cerebral palsy, and torticollis, among others. Through the use of visual or auditory feedback, that instantaneously reflects the electrical activity of targeted muscles, persons can be trained to inhibit unwanted spastic motor activity of targeted muscles, and facilitate improved strength, range of motion, and control of paretic muscle.

Freedman, R.R., et al, (1981) concluded that, Biofeedback treatment can train the arteries and arterioles to open up, thus warming the fingers and toes. Clinical and double blind control studies published by Freedman showed a 92% reduction in symptoms with 20 treatment sessions. They also treated primary Raynaud's successfully in 80 to 90% of cases with 10 to 30 biofeedback treatments. Regular Biofeedback treatment has proved more effect.

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Hammermeister, J., et al, (1995) explored whether anxiety has a major debilitating effect on the performance of endurance athletes, and whether age or sport-type differences were evident in the pre-competitive state anxiety patterns of triathletes and 2 of their single sport counter parts. A significant negative correlation was found between negative thoughts during the race and performance.

Lane, A., et al, (1995) explored the situational antecedents of multidimensional state anxiety among competitors in the sport of duathlon
(run/cycle/run). The finding supports the proposal that these anxiety subcomponents share common antecedents but challenges the notion that cognitive and somatic anxiety also has unique antecedents.

Paula Bran A., et al, (1995) state that, anxiety is understood to mean a Chronic persistent sense of uneasiness or dead, accompanied by distinct changes in physiology, and frequently accompanied by avoidance behaviour. Some anxiety is situation based or focused on particular events or objects (phobia); other anxieties may focus on a particular set of thoughts or actions (obessions), or to be rooted in a past event with or without fear of public places (agrophobia). They included most common of the anxiety disorders is Generalized anxiety disorder, which can be stabilized by Biofeedback and autogenic training.

Sugiyama, Y., et al, (1994) have concluded that, subjects' rated preference for playing location was significantly related to their scores on trait anxiety. In sports practice, as in classrooms, preference for location may be associated with measures of personality and visibility. Psychological preparation plays a great role in sports person.

PONS. D., et al, (1993) have reviewed the nature of anxiety experienced by athletes in competitive sports. They have tested the effects of anxiety on athletic performance and the correlative between anxiety level and gender, skill level, situational factors and attentional style is considered and concludes positive results. They have also reviewed other psychological methods of dealing with athletic anxiety. They gave much more stress on Psychological preparation to deal anxiety.

Wong, E.H., et al, (1993) examined the relations among athletic context, i.e. team sport, competitive trait anxiety, perceived ability, and self-presentation confidence for male and female athletes. The analysis showed that, the athletic context is associated with variations in competitive trait anxiety and self presentation confidence, however, no main effect or interaction was noted for perceived ability. Results support the notion that aspects of the sports context are significantly related to various pre-competitive cognitions.

Rainey, D.W., et al, (1992) experimented and the Sensation seeking scale and the Sport Competition Anxiety Test were administered to university rodeo athletes, Hand Gliders Pilots, College Baseball Players, and College Wrestlers. They concluded that, follow up on the sensation seeking scale revealed rodeo athletes scored higher than baseball players, but lower than hang gliders, and similar to the norm for male college athletes. Rodeo athletes mean score on the sport competition anxiety test was also similar to college athlete’s norms, not supporting depictions of college rodeo athletes as high in sensation seeking. Autogenic training was much impressive for sport competition anxiety.
Caruso, C.M., et al, (1990) examined changes in the components of state anxiety across conditions of competitive success, competitive failure, and non competition during a bicycling task with male undergraduates. The frontalis integrated electromyograms performance relationship was explained by a linear trend; Competitive state anxiety is multimensional construct with related components that are influenced differently by competitive conditions and task demands. They concluded electromyogram biofeedback as a success of performance enhancement.

Jones, J.G., et al, (1990) examined situational antecedents of multimensional competitive state anxiety and self confidence in elite intercollegiate middle distance runners. Cognitive anxiety, somatic anxiety, and self-confidence were measured prior to performance. They suggested that, cognitive anxiety and self confidence share common antecedents but that there are also factors unique to each.

Kleine (1990) conducted meta - analysis of the effects of anxiety on sport performance. An overall meta analysis for the total sample yielded a weighted mean of all correlations between anxiety and sport performance indicating a negative effect of anxiety on sport performance. They noticed that anxiety effects on sport performance and it must be controlled with the help of any relaxation techniques.

Lewthwaite, R., et al, (1990) examined relationships between goal related threat appraisal and competitive trait anxiety in a study with male soccer players. Correlation analysis indicated significant relationships between a summary appraisal of threat to important goals and frequency of somatic and cognitive competitive trait anxiety symptoms, and a stronger relationship between summary threat and competitive trait anxiety intensity.

Smith, R.E, et al, (1990) describes the development and validation of a sport specific measure of cognitive and somatic trait anxiety, using high school and college athletes. The Sport Anxiety Scale measures individual differences in somatic anxiety and in 2 classes of cognitive anxiety, Worry and concentration disruption. The Sport Anxiety Scale may be useful in defining sport related anxiety more sharply and assessing how the cognitive and somatic anxiety components relate to performance. They noticed autogenic training as a most useful weapon to reduce anxiety and enhance the performance.

Vealey, R.S., et al., (1990) reviews the competitive anxiety research that has utilized the Sport Competition Anxiety Test and the Competitive State Anxiety Inventory - 2 as measures of Competitive Trait anxiety (A-trait) and multidimensional competitive state anxiety (A-state). An expanded model of competitive anxiety was presented. The Competitive State Anxiety Inventory - 2 research includes the relationship of Competitive A - state to other interpersonal
factors, interrelationships between CSAI - 2 components and the anxiety-performance relationship. They concluded that autogenic training has much more effect to reduce anxiety in sport person.

Abadie, B.R., et al. (1989) reported the effect of competitive outcome on acute anxiety. Subjects completed the State Trait Anxiety Inventory pre and post game. There was a significant reduction in state anxiety from pre- to post test. Outcome of competition played a significant role in determining the effect of the activity on state anxiety.

Porat, Y., et al, (1989) studied psychological variables i.e., Self-concept focus of control and anxiety, for 1 year. Subjects were administered the Tennessee Self-Concept Scale, a locus of Control scale for children and the State Trait Anxiety Scale. After a year of practice, subjects participated in gymnastics competitions showed 49% improvement in performance. The best predictor of successful performance in competition was personal self-concept, followed by locus of control, identify self-concept and trait anxiety. Relaxation techniques were much successful to reduce anxiety after a long term of training.

Krohne, H.W., et al, (1988) analyzed the relations between general and sport specific trait anxiety, coping dispositions, self regulatory techniques, emotional and cognitive anxiety reactions in situations of varying stress, and success in athletic competition for table tennis players. Significant associations between the preferred use of vigilant coping strategies and the amount of cognitive anxiety reactions were observed. Successful subjects were characterized by few interfering anxiety reactions, little vigilant coping, and an extended use of cognitively avoidant self-regulatory techniques.

Maynard, I.W., et al, (1987) assessed the ability of the sport competition anxiety test (SCAT) and the competitive state anxiety Inventory - 2 (CSAI - 2) to predict game performance. They reported a significant relationship between the SCAT and CSat - 2 somatic anxiety subscales. They also noted significant correlation between somatic anxiety and performance for subjects who performed below their normal ability. Autogenic training along with Biofeedback reported more successful in game performance.

Blanchard, E.B., et al, (1986) agreed that, Generalized Anxiety Disorder may occur in adults of any age, children or adolescents but it is most common in adults. They concluded that, treatment for generalized Anxiety disorder most frequently combines modalities and may include anti-anxiety medication. Autogenic training can be useful to treat anxiety disorders.

Mc Auley, E., et al, (1985) have examined the relationships among the subscales of a revision of the competitive state anxiety inventory - 2 developed by R. Martins et al (1980) and the effects of the pre-competitive state anxiety and self-confidence on gold performance as well as the effects of performance on post
competitive state anxiety and self-confidence. They concluded that, gold performance was a significant predictor of post round cognitive state anxiety and self-confidence.

Weinberg, R.S., et al, (1980) administered the Sport Competition Anxiety Test (SCAT) to 63 intercollegiate golfers. They have reported that the competition main effect was significant with post tests indicating higher levels of state anxiety. The direction of state anxiety and performance CTA main effects support J.B. Oxendine’s (1970) contentions that sports requiring fine muscle co-ordination and precision are performed best at low levels of anxiety. They strongly gave emphasis on Biofeedback training to reduce anxiety.

Scanlan, T.K., et al, (1978), have reported that high levels of anxiety can be experienced at all age and competitive levels, from youth leagues to the professional ranks. They collected pre-game state anxiety measures from youth soccer players and found that approximately 20% of the youngsters reported very high levels of tension and anxiety. They also indicate that such anxiety can have at least subjective performance consequences. They found that 31% of a sample of Youth Sport participants and 50% of sport dropouts reported that various worries prevented them from playing up to their capabilities. There survey also conclude that athletes have reported experiencing high levels of anxiety before and after competition that they felt interfered with their performance.

Van, R.J., et al, (1995) have suggested that, positive self-talk subjects performed significantly better than negative self-talk so on the dart throwing task. Negative self-talk subjects reported that they expected to improve significantly more on a future dart throwing task than did positive self-talk and control condition subjects.

Molander, B., et al, (1994) have examined highly skilled adolescent, young, middle aged and older miniature gold players in training and competitive conditions, focusing on number of shots, heart rate, ratings of anxiety, and concentration time. Parallel increases of heart rate and rated anxiety in competition were found for all age groups along with improvements of motor performance in competition for adolescent and young adult subjects and deterioration of motor performance in competition for middle aged and older subjects. Increased concentration time for the 2 younger samples, and decreased concentration time for the 2 older samples were found in competition.

Backman, L., et al, (1991) hypothesized that highly skilled miniatures golf players would demonstrate deterioration of motor performance when directed instructions to consider general aspects of the game were provided. They suggested that, requirements to attend to a variety of technical aspects of the game during preparation impaired motor performance, where as providing players with
those aspects of the game. They supported thinking did not affect motor performance. Data on concentration time and perceived difficulty indicate that increasing cognitive demands were associated with a decline in motor precision. Results were consistent with the view that conscious cognitive activity may support motor behaviour even at late stages of skill development.

Dagrou, E., et al, (1991) concluded the research. Subjects were normal Ivory Cost adults athletes. They studied several aspects of Psychological of successful athletes. Subjects completed a questionnaires developed for this study. They suggested about concentration and relaxation with the help of such study. Mental preparation was very effective in such study.

MC Leod, P., et al., (1991) examined 2 basic perceptual abilities, visual reaction time (RT) and visually based timing. Studies of elite cricketers batting show that they are unable to react to unpredictable movement of the ball. They concluded that, normal people can time an action to coincide with the arrival of an approaching object with occupancy of at least + - 10 m sec. However, the best cricketers can achieve a timing accuracy of + - 2 m sec. This is the maximum possible accuracy given in the structure of the human retina.

Abreau, F., et al, (1990) assessed the attention and concentration of soccer players, who deliberately use the head to propel the ball and tennis players. Subjects were administered the Ravin Progressive Metrics, Symbol Digit Modalities Test, Perceptual Speed Test and Paced Auditory Serial Addition Test (PASAT). There was a significance negative correlation between number of games played and performance of PASAT. Also, a significantly headaches, dizziness and passing out after a game.

Whelam, J.P., et al, (1990) examined the role of arousal changes in the use of psych-up strategies on a physical strength task and a reaction time (RT) - decision task for undergraduates varying in competitive experience. They support the utility of different mental preparation strategies for increasing strength performance, but not (RT) decision performance, for subject’s moderate and high levels of previous competitive experience. Self generated arousal strategies enhanced performance of moderately experienced subjects.

Mc Leod, P., et al, (1987) analyzed a high-speed film of International Cricketers batting on a specially prepared pitch that produced unpredictable movement of the ball and found that, when batting, highly skilled professional cricketers should reaction times of around 200 m sec. times similar to those found in laboratory studies. They suggested that the dramatic contrast between the ability of skilled and unskilled sportsmen to act on the basis of visual information does not lie in differences in speed of operations of the perceptual system but in the organizations of the motor system that uses the output of the perceptual system. Visual reaction time plays a great role in good performance.
Gracz, J., et al, (1985) reported after using the electronic measuring device "Multi biometer" to study selected Physiological (pulse rate, body temperature & blood pressure) and motor (tapping) reactions in students with high and low reactivity levels. The results suggest the absence of a link between reactivity level and the dynamics of the studied reactions.

Boutcher, S., et al, (1995) examined the relation between trained and inherent Brady cardiac and Heart rate and T-wave amplitude response to Psychological stressors in 10 trained male runners with low resting Heart rate, 10 untrained men with inherently low resting Heart rate. Subjects completed a maximal Oxygen Consumption Treadmill Test, easy and mental arithmetic tasks, and the strop color and word test. No significant between group differences were observed in relative heart rate response. In contrast, absolute Heart rates during and after mental arithmetic and during the strop color and word test were significantly lower for the trained and the inherently low heart rate groups than for the control group. Lower absolute heart rate response during and after stressors may be influenced by both aerobic training and genetic inheritance.

Maynard, I.W., et al, (1993) reported that, reducing anxiety with a method directed at the performer's dominant anxiety type is more efficacious. They also investigate the anxiety - performance relationship using an intra individual performance measure and found somatic anxiety 22% of the variance in field hockey performance. They concluded importance of Autogenic training in the field of stress management.

Taylor, A.H., et al, (1990) investigated the role of burnout as a mediating affective response between perceived stress and dropout intentions among soccer officials over the course of a soccer season. Age was negatively related to burnout. Total perceived stress and burnout had only indirect effects on turnover intentions. Stress had a direct negative effect on burnout, while burnout appeared to have a direct positive effect on perceived stress over time. Autogenic training was noticed more successful in stress situation.

Buceta, J.M., et al, (1985) draws on his experience as a coach of national basket ball teams in order to offer guidelines for the prevention of excessive stress in athletes. They suggested that, there is a great need of permanent place of sports psychologist in team for stress prevention in athletes.

Coleman, J.A., et al, (1980) administered Eysenck Personality Inventory to various shooting sports and determined that subjects success / failure greatly depended on their mental make-up. Results were very significant and helpful in the field of various shooting sports. They noticed psychological preparation as a useful medium for good results.
Magill, R.A., et al, (1993) discusses the relative contributions of information from visual observation (vo) of an expert model VS Verbal Feedback (VF) in the acquisition of motor skills requiring body co-ordination and control. Results suggests that VO and VF provide both unique and redundant information.

Taylor, J., et al, (1993) have examined the value of hypnosis in applied psychology. They have involved the nature of hypnosis, factors influencing the effectiveness of hypnosis and hypnotizability and reported hypnosis, one of the integral part of applied sports psychology.

Jacobson, E., et al, (1938) proposed that muscular tension and relaxation are incompatible physiological states and that in order to relax, one must learn to distinguish between tension and relaxation. His technique teaches subjects to progressively tense and relax all major muscle groups in the body, thereby sensitizing them to proprioceptive feedback from these muscles.

Jacobson(1930) has indicated that when an individual imagines a movement, actual muscular activity is produced. He found that the muscular activity resulting from imagining a movement was of a greater intensity for individuals with movement experience, then mutual imagery gets the musculature into action and can prepare an athlete for the actual physical competition. These mental preparations can be helpful to a wide range of sport activities, especially for elite athletes who seem to engage in a great dental of mental imagery fifer competition.

Denney, M.R., et al, (1992) studied the relationship between subjective symptom reduction and sobriety for male alcoholics, who had completed an impatient alcoholic rehabilitation unit program that included 6 more Biofeedback, relaxation sessions. The Biofeedback therapy consisted of thermal and EMG Feedback along with autogenic and progressive muscle relaxation, meditation, breathing, and systematic desensitization training, Anxiety was subjectively measured before and after the therapy. They concluded that, Biofeedback Training gave advantage in reducing alcohol consumption in patients who have been using alcohol to deal with the daily stressors of life. The combination of Biofeedback and autogenic training gave successful results in alcoholic rehabilitation.

Chang, J., et al, (1989) reviews 72 studies utilizing Biofeedback (Thermal and EMG) and non machine medicated relaxation training with public school students, methods included meditation, autogenic training, and quieting response training. Consistent positive effects were observed for reducing general anxiety and hyperactivity and increasing academic performance. Biofeedback combined with autogenic training has improved better relaxation and concentration in school students.
Eppley, K.R., et al, (1989) conducted a meta analysis of studies on the effects of relaxation techniques on trait anxiety. Effect sizes for the different treatments (e.g. progressive relaxation, biofeedback, meditation) were calculated. Transcendental meditation (TM) produced a significantly larger effects size than other forms of meditation and relaxation. Meditation that involved concentration had a significantly smaller effect than progressive relaxation. Biofeedback along with autogenic training had a significantly larger effect sizes for relaxation.