

**Yoga Applied To Competitive Sports Performance****Dr. Jagdish .P. Zadbuke:** S. B. Zadbuke College, Barshi, Dist. Solapur 413401**Preface**

Today performances of an athlete are not left to chance factors. Application of modern sports science, through the field and laboratory experiments, can almost predict the performance of an athlete. Every human movement in the field of sports today can be minutely analysed by the application of modern sports sciences. That is the reason why today the application of yoga in professional sports has become an interesting aspect to the sports scientists.

Yoga is an ancient holistic wisdom of India and a practical science which signifies a harmonious integration at all levels of human existence. The essence of yoga is available in Vedic scriptures and upnishadas. All traditional schools of yoga advocate a movement towards perfection of the body, perfection of the mind or both. Today yoga is popular not so much as a system of philosophy but a system of practical discipline. The application of yogic techniques is multidimensionals. It identified the following important techniques for the benefit of elite sports persons.

**Surya namaskar:**

Surya namaskara, or salutation to the sun, is an important yogic practice which has been handed down from the sages of vedic time. Surya namaskarais almost a complete sadhna in itself containing asana, pranayama and meditational techniques within the main structure of the practice.

**Kriyas:**

**Schools of Hatha yoga** begin with the practice of kriyas or cleaning processes, usually classified in to six divisions which consist of many subsections. These are Neti (nasal cleansing), Kapalbhathi (forceful rapid breathing to ventilate and cleanse air passages), Dhauti (stomach wash), Basti (colon flushing), Nauli (manipulation of abdominal muscles to increase peristalsis) and Trataka (cleansing of the eye through steady glazing). They bring in control over the automatic nervous system.

**Asnas:**

These are certain special pattern of postures that stabilize the mind and body. They aim at establishing proper rhythm in the neuromuscular tonic impulses and improving the general tone of the muscles.

**Pranayamas:**

pranayama is a voluntary control on the breathing which has three components :inhalation or puraka, exhalation or rechaka and breath holding or kumbhaka.

**Mudra and Bandha:**

The Sanskrit word mudra is translated as 'gesture 'or 'attitude'. Mudras can be described as psychic, emotional, devotional aesthetic gestures attitudes. Bandhas are a subgroup of Mudras and are very few in numbers. They are usually practiced as an essential part of the pranayama practice.

**Meditation:**

Dhyana or meditation is a systematic way to get control over the mind. This technique enables to create a complete equilibrium within the body, mind and soul which add extra calibers in the day today life.

**Procedure:**

A through online search has been done and collected information from the published material available Jstore, science daily, science Direct etc. Also collected information from authentic

books published from kaivalyadham lonawala, Lonawala yoga institutes, swami Vivekananda yoga prakashna, Benglore, Motilal Banarshidas publishers, Delhi, the Ramkrishna Mission Institute of culture, Kolkatta, India. Very few studies identified which directly focus on role of yoga in sports performance.

### **Findings:**

Not much literature about yogic practices and their effect in promoting human performance in the competitive sports arena is available. Thus application of yoga to sports performance can be well understood in the light of following relationship:

1. Yoga for physical balance
2. Yoga and overall body flexibility
3. Yoga and mental balance
4. Yoga and competitive stress and Anxiety
5. Yoga and recovery from fatigue
6. Yoga and delayed muscle soreness
7. Yoga and physiological potentialities
8. Yoga for prevention and the management of sports injuries
9. Yoga for the promotion of particular games

### **Discussion**

There are number of aspects of yoga application to competitive sports above, are discussed here.

#### **Yoga for physical balance:**

Balance is an important human ability used in our daily activities like standing and walking as well as in majority of the games and sports. Balance may be defined as one's ability to maintain the body's center of gravity over the base of support. One's ability to balance his or her body in static or dynamic positions depends upon the muscular fitness and effective functioning of the neuro- muscular system.

Earth's gravitational field influences every movement we make. Skeletal muscles are responsible to move the body; nervous system controls the operation of the skeletal muscles whereas connective tissue binds the whole body and coordinates movements. Muscular fitness is a general term that describes the strength, endurance and flexibility of one's muscles, which are important to athletic performance.

The practice of surya namaskara and hatha yogic asana improves:

1. Coordination within the structure of the muscle itself leading to greater overall core stability and strength of a particular group of muscles.
2. Stretch reflexes for a smooth coordinated balanced body movements.
3. Vestibular system mechanism, visual perception and kinesthetic sense of muscles, tendons and joints to provide balance during movements.
4. Muscular relaxation, stretching ability and absolute mobility of the joints.
5. Agonist and antagonist muscle properties during vigorous muscular movements in sports.
6. Concentric shortening and eccentric lengthening mechanism in hundreds of situation in sports.

Practice of Pranayama and Meditation improves internal body awareness which positively influence the stability and balance related with sports movements.

#### **Yoga and overall Body Flexibility:**

In general, flexibility means the range of movements around the skeletal joints of the body, the flexibility is not a general body character but it is specific to each body region. If a person has highly flexible shoulder joint, it does not necessarily mean that he/she will have good knee flexibility or hip flexibility. The flexibility

component of physical fitness enables the person to have free body movements, better coordinated movements requiring less or work and to handle greater stress with lesser chances of injury.

Research has shown enough evidence how yogasana can best be utilized to promote overall body flexibility. Yogic asanas in multiple planes and positions provide an absolute option to the joints, muscles, ligaments and tendons for a better overall body flexibility. Over training limiting flexibility of the joints and thus decreases range of movements. By stretching, squeezing, massaging and relaxing through yogic posture we can reduce the extensibility of muscles and have a better level of body flexibility

### **Yoga and Mental Balance:**

The mind and the body are not separate entity in yoga. The gross form of the mind is the body and the subtle form of the body is the mind. The practice of asana, pranayama and meditation integrates and harmonizes the two. All these techniques of yoga positively influence the following:

1. Increased memory, power of concentration, awareness, mental focus, emotional stability, perception, self esteem, self – confidence, positive mental attitude and overall personality.
2. Decreased mental tension, anxiety, depression, and fear of lost.
3. Balanced sympathetic and parasympathetic function of autonomic nervous system, central and peripheral arousal.
4. Higher level of calmness, quietness, psycho-physiological relaxation and cultivate right thoughts.

All these benefits of yoga promote athletes in the competitive sports arena.

### **Yoga and Competitive Stress, Anxiety:**

In the present day sports we are faced with many emotionally demanding situation which give rise to mental stress, anxiety and tension that negatively influences the performance of an athlete. Emotion is defined as mental and physiological state associated with a wide variety of feeling, thoughts and behaviors and plays a central role in sports performance. Competition can cause athletes to react both physically (somatic) and mentally (cognitive) in a manner which can negatively affect their performance abilities. Stress arousal, anxiety, tension and negative state of mood are terms used to describe this condition. According to the optimum arousal theory each athlete will perform at his/her level of arousal or competitive stress and anxiety falls within their optimum functioning zone. Now the challenge to coach and athlete is to determine the athlete's zone and identify the techniques that will place the athlete in this zone prior to competition.

Practice of relaxative asana, pranayama and meditation before competition can be utilized to fight with the aroused stress, anxiety and psycho-physiological relaxation and help the athlete to achieve his/her goal successfully.

### **Yoga and recovery from fatigue:**

Recovery is the process by which athlete return to a state of normal psycho-physiological function after exercise.

Researches in yoga have produced enough evidence that critically analysed delayed onset of fatigue during exercise and increase the pace of recovery after a prolonged exercise session.

Specific relaxative postures, regulated breathing and guided meditation positively influence the parasympathetic dominance that may increase the rate of advance posture at the different body alignment provide a stretching effect associated with the delayed onset of fatigue.

### **Yoga and Delayed Muscle Soreness:**

Muscle soreness describes a phenomenon of muscle pain, muscle stiffness, increase the concentration of lactic acid that occurs in the muscle after exercise. This muscle soreness

Is most frequently felt when athlete begins a new exercise program, changes exercise routine, or suddenly increase, the duration or intensity of exercise load. Proper stretching through yogasana during warm-up session can prevent or delay muscle soreness. Yogic relaxation and guided meditation can be used after high intensity vigorous exercise to get relief from muscle soreness.

### **Yoga and Physiological Potentialities:**

Daily practice of yoga would help a person to maintain a perfect homeostasis of the body and mind throughout his life . Here we mention a few of them with a view to apply these techniques to train the athletes.

### **Hyperventilation and Hypoventilation:**

Hyperventilation, which is described as prolonged deep and rapid breathing (120 breaths per minutes compared to normal rate of about 15 per minutes) has two effects, washing away CO<sub>2</sub> from the lungs and increasing oxygen concentration in the lungs. Hypoventilation techniques are described as slow rate breathing. Due to the slowing down breath, the concentration of co<sub>2</sub> increases in the blood. The untrained cells certainly get dull with increased co<sub>2</sub> content, but when they train by consciously handling the respiratory center in the brain, the cells work effectively with lesser o<sub>2</sub> demands.

### **Basal Metabolic Rate:**

The basal metabolic rate is the rate at which we spend energy for carrying out basic body functions. The breathing rate is directly proportional to BMR. The amount of reduction in BMR is a measure of the rest of internal body system. By practicing the relaxative asana with breath awareness, tranquilizing pranayama and meditation showing down the breath, therefore provide very deep rest to the body mind complex.

### **Catabolic and Metabolic Process:**

It is well known in modern physiology that in our human system large number of cells get formed continuously and an equal number of cells get destroyed. Our entire life is governed by these processes of catabolism( destruction) and anabolism(creation). Athlete sometime faces this challenge to maintain the proper ratio of catabolism and anabolism. Yogic practices may help by keeping the body clean, flexible and well lubricated can significantly reduce the catabolic processes of cell deterioration. Yogic practices improve anti oxidant status in the body and help to curtail the dangerous build up of free radicals.

### **Neurophysiology:**

Combined practice of asnas, pranayamas, meditation and trataks lead to significant improvement in fine coordinated movements enhance cognitive abilities like perception, memory attention, concentration and planning and balance the sympathetic and parasympathetic activities.

### **Endocrino-immunology:**

Integrated approach of yoga (asana, krea, pranayama and meditation) may enhance endocrine immunological properties in the human body. As the previous research is concerned, the researchers did not find any observation which directly focused on yoga and general immunological health in a healthy population. Whereas research has shown that, during moderate exercise, several positive changes occur in the immune system. Although the immune system returns to pre-exercise levels very quickly after the exercise sessions are over, each session represents a boost that appears to reduce the risk of infection over the long term. In this study the yogic training protocol included suryanamaskara and asnas which have a similarity with moderate exercise and the pranayama, meditation etc. have a stress reducing effect. In the time of practicing this whole training schedule the subjects might have changed knowingly or unknowingly their daily life style which may attribute to the increase of general immunological properties found higher mean hGH level from pre to post test that can be beneficial for middle aged group and it may promote healthy aging, also observed in the previous researches.

### **Yoga for Prevention and Management of Sports Injuries:**

Every sports involve vigorous movements which shorten muscles and make them more susceptible to pulls and strains. Athletes cannot avoid injury during vigorous exercise because the muscles become shorter and tighter and flexibility decreases. It is generally accepted by trainers that warming up are necessary not only to avoid injuries but also to improve performance in sports. The steady stretching in yoga asnas provides exactly this opportunity because they are progressive in nature.

### **Yoga for Promotion of Particular Games:**

Athletes in all sports are finding that yogic conditioning increases their power of concentration, mental calmness and quietness, internal body awareness and self confidence to maintain a sustainable level of performance in the competition.

### **Conclusion:**

Science of yoga is based on the principle of integrating the body as whole. This new holistic approach may be incorporated with the sports training to foster the athletic performance in the competitive arena. Hope that this scientific analysis will unfold some fundamental concept regarding the role of yoga to competitive sports performance.

### **References:**

- Sanotra, Gaurav., Tomar, Renu., Tomar, Rajni. (2006, December). Effect of transcendental meditation on sport competition trait anxiety. Paper presented at the International conference of Kaivalyadhama, Lonavla.
- Salachandran, K. U. (1989). Effects of plyometric training on the performance of vertical jumping ability among the High school volleyball players.(Unpublished master's thesis). Alagappa University, Karaikudi.
- Rao, V.V.B.N. (2006, December). Excellence in sports – intervention through yogic practices. Paper presented at the International conference of Kaivalyadhama, Lonavla.
- Rakesh, D., Nagarathna, R., & Nagendra, H. R. (2006, December). A comparative study of *surya namaskär* and physical exercises on flexibility,

*Variorum Multi-Disciplinary e-Research Journal*  
*Vol.,-05, Issue-I August 2014*

attention and concentration in adolescents. Paper presented at the International conference of Kaivalyadhama, Lonavla.

- Meireles, S. M. & Cestari, I. A.(2006, December). *Effects of yoga practice in heart rate, heart rate variability and respiratory rate*. Paper presented at the International conference of Kaivalyadhama, Lonavla.
- Kamalakannan, K. (2006, December). The importance and influence of yoga in winning competition. Paper presented at the International conference of Kaivalyadhama, Lonavla.
- Bhavani, Hiteshkumar J. (2006, December). Effect of yogasana on cardiovascular and respiratory efficiency. Paper presented at the International conference of Kaivalyadhama, Lonavla.