

Yogic Exercises and their Physiological Effects

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INTRODUCTION

Yogic exercises have been practiced since very long time in India and later were adopted by other countries. These exercises effect the physiological processes in affected organs in order to improve their functional efficiency. Here we are mainly concern with hath yoga which balance the physical, mental and minute energies of the body to make it healthy. Hath is made up of two words 'ha' means moon and 'th' means sun. These words are related to our breath. When a person is thoughtful the left nostril is breathing that is related to the moon. The other time right nostril breaths at the time of physical activities. Both the nostrils must breath 12 hours to maintain the balance of the brain and body energies. By performing Hath yoga one can maintain this breathing system. In all there are 84 asnas. Their practice can make the body parts active and stronger to bear any type of strain. Usually all 84 types of asnas cannot be practiced by a normal working person. Therefore some selected postures are performed for normal health.

KEYWORDS :- Physiological processes, hormones, protein, enzymes, stress, Biochemical functions.

NEED OF ASNAS :-

Human body organs works is co ordination according to the requirements. For Example :- during hard work or exercise muscles need more energy which is provided by the lungs and proper blood circulation. If muscles, lungs and heart works in coordination then only the muscular activities could be done easily and efficiently. Energy so utilized is provided by the degradation of sugar and fats in the muscle cell by performing chemical reaction. These reactions are completed by the protein enzyme. For extra energy protein are synthesized in more quantities. Different activities require again some new protein enzymes. This frequent change of physical activities require adaptation to make required protein. Here we have to keep in mind that the required protein or enzymes that are not present in the cells all the times but made us when needed. So make them in required amounts and at proper time one should work regularly at a fix time. This is important aspect of yogic exercises that they should be performed regularly and a defined time to get the maximum benefit wasting minimum energy. Different asanas

effects different body parts by supplying them with proper amount of blood, food components and to remove the toxic waste from the organ, this ultimately increases the efficiency of the organ and health in general. There are two types of the waste material produced in each body part. One is waste like carbon dioxide and ammonia produced by the degradation of food components to produce energy. The other is by death of our body called spontaneously. One percent of our body cells dies everyday. Some of their component can be utilized but many are removed. The removal of these wastes can be performed by an actively working organ. The cell death may increase by the use of chemicals, harmful radiations and air pollution. Therefore there is a need to increase the efficiency of each body part to be healthy. Hence there is a need to do asanas regularly which increases the cellular reactions to do above operations.

PHYSIOLOGICAL AFFECTS OF ASANAS :-

As discussed above every action of body parts involve occurrence of chemical reactions to produce energy to perform the action by muscles. There are different asanas which involve different part of human body. Some of the asanas and their effects are given below:-

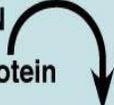
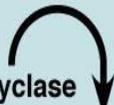
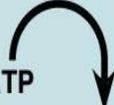
Ardh Atsayendra asana :- In this asana back bone is twisted as one of the leg, foot is kept near the knee of folded leg on opposite side, Arm of folded leg side is used to hold the toe by twisting the backbone. This posture stretches the back side muscles. Initially the practitioner feels more stress but practicing regularly it can be performed easily with efforts. Similarly other asanas stretches the muscles of other organs like arm, legs, knee stomach etc. When one starts doing exercise, muscles of that part consumes ATP to get energy. A very small amount of ATP is found in the cells. Working for longer time ATP has to be synthesized continuously. It needs nutrients that produces ATP by oxidation in presence of oxygen. So working organ need more oxygen or more supply of the blood to the body parts of the body. On return this blood carries CO₂ and ammonia like toxic materials to remove. The extra blood supply cannot be made abruptly. It need a regular practice. Although the pace of yogic exercise is slow even when a posture is held for some time it feels strained. Sufficient supply of oxygen does not allow aerobic respiration and do not become stiff due to accumulation of lactic acid in them. The proper blood flow and movements of body joints helps to function them smoothly. The arteries will be free of cholesterol deposition and joint from calcium accumulation. A regular practice need continuous supply of energy hence there may not be any danger of high blood sugar or fats. As these actions are also coordinated by the nervous system of brain. To increase the blood supply there one has to perform Shirashan, balancing your whole body on your head with the help of your arms.

BIOCHEMICAL EFFECTS :-

By performing asanas the muscles feels strain, it needs energy to sustain stress. Our body produces energy by using many enzymes. Stress produces a hormone called adrenaline from adrenal medulla situated on the kidney. This hormone induces a chain of chemical reaction to activate different enzymes which finally degrade muscle glycogen and produces energy by the following reactions:-



All this happens in seconds. The chain of reaction are given below.

| (a) Signaling pathway | (b) Number of molecules activated |
|---|--|
| RECEPTION Binding of epinephrine to G protein-linked receptor  | 1 molecule |
| TRANSDUCTION Inactive G protein  Active G protein Inactive adenylyl cyclase  Active adenylyl cyclase ATP  Cyclic AMP Inactive protein kinase A  Active protein kinase A Inactive phosphorylase kinase  Active phosphorylase kinase Inactive glycogen phosphorylase  Active glycogen phosphorylase | 10 ² molecules 10 ² molecules 10 ⁴ molecules 10 ⁴ molecules 10 ⁵ molecules 10 ⁶ molecules |
| RESPONSE Glycogen  Glucose-1-phosphate | 10 ⁸ molecules |

These exercises exert stress on liver, bones and thyroid glands. Which result in production of somatotrophine hormones respectively. The result is growth promotions and regulation of thyroid gland functions.

CONCLUSION :-

Practicing yogic exercises tune the body parts to work then properly and efficiently. Almost 98% of ailment can be made cured by our body itself but the use of medicine stops their production like ankaphilins are produced during pain their function can be blocked by taking pain killer medicines.

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