

EXPLANATION OF EXERCISE VERSES MENTIONED IN AYURVEDA ACCORDING TO MODERN SCIENCE

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ABSTRACT

According to Ayurveda everything has positive and negative impact on our life. It is very essential to know the right way to do achieve its benefit to the maximum. Exercise is a very essential part of healthy lifestyle. It is a balance between nutrition and drainage. If exercise is done in a right way it is very beneficial in every aspect of health (physical, mental, psychological) and vice versa. The ill effects of exercise lead us to uneasiness, lethargy, muscle pain, various diseases and also death. So, it is very essential to know indication and contraindication of the exercise. In today's time we all believe that exercise is the only way to achieve great health but it is not right. Our health is made up by so many factors we can't focus on just one parameter but we have to balance all parameters that determines our health. In ayurveda all aspects are balanced in the concept of exercise. We found description about what is exercise, how to do? where to do? When to do? How much we have to do? When we have to stop? How it improves our health? These all aspects are broadly explained in ayurveda scripture. In this article we will know every aspect of exercise in detail.

KEYWORDS: Benefits of exercise according to ayurveda, Indication and contraindication of exercise, lifestyle.

INTRODUCTION

In today's world we face many health challenges due to our lifestyle and food causing Lifestyle disorders that increasing day by day. Today our food habits, altered food preparations like brownies, disturbed sleep patterns, chaotic daily routines, increased pesticides use in agriculture, quality of agriculture products are decreasing altered climate patterns etc... are the major factors that affects overall health of the population.

In today's world we can see the increased use of junk food, bakery items, brownies, milkshake, heavy food items that are unhealthy with the decline of the quality of food. We are also adopting sedentary lifestyle. We awake till late night and we sleep till late morning. Disturbance of the health starts with this bad habit. Late night we used to eat heavy food items. That's why we make disturbance in our gut health. In addition, we are adopting sedentary lifestyle. That hampers our immune system so badly.

All these factors collectively increasing graph of lifestyle

disorders as in India nearly 5.8 million people (who report, 2015) die from NCDs (heart and lung diseases, stroke, cancer and diabetes) every year, 1 in 4 Indians has a risk of dying from an NCDs before they reach the age of 70. That is why it is important to focus on a good lifestyle.^[1]

So, in today's time exercise can be confidently considered as panacea cure to maintain and promote good health and wellbeing for an individual and as well as society. This concept is explained in ayurveda. How lifestyle changes affect our body's anatomy and physiology.

AIMS AND OBJECTIVES

Aim of this article is to understand the ayurveda verses, to know that each word of the ayurveda verse is a summary of a broad concepts of modern science.

OBJECTIVES

1. To find out the ayurvedic verses about exercise.

2. To find out the modern physiology behind the exercise.
3. Co-relate the modern science theory with ayurveda science theory.

METHODOLOGY

for ayurveda explanation we referred the textbooks of ayurveda. *Charak Samhita, Sutra sthan, Chapter no. 7 and Bhavprakash, Purvakhand, Chapter no. 5*. For modern science we referred different type of articles.

EXERCISE ACC. TO AYURVEDA

The body movements or any other movements that enhances the physical strength and stability that called *Vyaayam* (exercises). That should be done according to body strength.^[2] By doing regular exercise out body becomes light and our ability to work increases day by day and body structure will be improved. In addition, our dosha will be decreased and metabolism rate will be increased. The person who does regular exercises, they become able to digest *Virruudha Aahar* (incompatible food), not properly cooked food or propre cooked food easily and digestion will be fast and they do not suffer from wrinkles and skin loosening.^[3] The person who does regular exercise they do not suffer from old ageing accidently. There is no such tool to diminish obesity as exercise.^[4] Exercise is always beneficial for whom who consumes *Snigdha* (*unctuous*) property food and have enough strength.^[5]

GENERAL INSTRUCTION AND PRECAUTIONS FOR EXERCISE ACC. TO AYURVEDA

The best time to do exercise is *Vasant Rutu* (*spring*) and *Sheet* (*cold*) *kaal*. In another season do exercise in *Balardh* (half of total strength) or as per your strength.^[6] when you feel dryness in the mouth, perspiration at forehead, nose, between joints creases and arm pit that is the *Balaardh lakshan* (half of the total strength).^[7] When perspiration starts breathe rate increases, you feel lightness of the body and tightness or pressure at chest region. These are the symptoms of the *Matravat vyaayaam* (appropriate exercise).^[8] When you do exercise over the physical strength and stamina, physical exertion, fatigue, *Dhatu kshaya* (*body's constituents decrease*), bleeding disorders, *Pratamak shwas* (asthma), cough, fever, vomiting happens.^[9] The person who does the exercise above the limit they physically harm themselves like lion harms themselves while dragging the elephant.^[10] Person should not do exercise after having a meal, sexual activity, patients of cough, asthma, malnutrition, bleeding disorders, ulcers, emaciation.^[11]

HOW EXERCISE AFFECTS HEALTH AND METABOLISM FROM MODERN PERSPECTIVE

Vacuum analogy for lactate shuttle

The concept of a lactate "vacuum" is referenced, which is scientifically known as the intracellular lactate shuttle. The lactate shuttle is a widely-used theory in which transporter proteins move lactate, accumulated during anaerobic exercise, from muscle fibres without

mitochondria into fibres with a high density of mitochondria.

There are two ways to use the lactate that is produced during exercise as fuel.

oxidised in the mitochondria and recycled back into chemicals that aid in the synthesis of ATP, or transported to the liver and transformed back into glucose.

Assume that lactate is not eliminated and converted to energy. If so, it will keep building up as the intensity of the activity grows and alter blood pH, which impacts muscle function. Eventually, the intensity of the exercise must be reduced. Our attention is on the lactate shuttle since the liver's sluggish conversion of lactate to glucose cannot be depended upon to supply energy during exercise.

The lactate shuttle can be described in two ways using the "vacuum" concept.

1. Training at or above your lactate threshold or other high-intensity exercises can raise the transport rate, which is responsible for moving the lactate produced during severe exercise into muscle fibres with mitochondria.
2. To produce energy to continue exercising, your muscles' mitochondria take up lactate and oxidise it into molecules. As every competent Uphill Athlete pupil is aware, aerobic base training increases mitochondrial density.

Lactate is transferred from type IIA & IIX (rapid twitch) muscle fibres, which have far fewer and smaller mitochondria, to type I (slow twitch) muscle fibres, which have far more and larger mitochondria, by the intracellular lactate shuttle in our working muscles in nearly all situations.

Consequently, the size of your muscles increases when you increase the mitochondrial density in your type I fibres through aerobic base training.

We can also train the shuttling rate if there isn't a place to employ the lactate. Increasing the size of their "vacuum" should be the main objective for all endurance athletes.

Increasing the number of mitochondria in your muscle cells is fairly trainable, but other components of endurance physiology, such as VO_2max , the distribution of muscle fibre types, and biomechanics, are mostly determined by genetics. Low-intensity exercise (heart rate zones 1 and 2) is usually thought to be the best way to promote the body's mitochondrial biogenesis.^[12]

DISCUSSION

Sthairya, regular exercise improves the endurance of the respiratory and cardiovascular systems as well as the cellular metabolism of glucose, which in turn increases physical stamina, strength, and stability. Flexibility,

range of motion, joint mobility, proprioception, vestibular, visual, somatosensory, neuromuscular, and sensory motor function will all increase as a result of exercise, which will help with stability during intense exercise.

Balavardhan, increasing activity will boost metabolism via increasing glucose absorption, which in turn will improve muscle mass, which in turn will boost metabolism. A higher metabolism will enhance mood, mental wellness, and brain function.

Laghavam Karmasamarthyam, training at the lactate threshold will promote sustainability in the face of increased exercise intensity, as will increased aerobic base and lactate shuttle. Mxs training enhances intramuscular and intermuscular synchronisation and maximises central nervous system activation, which includes elements like motivation and focus. Sufficient inhibition of the antagonist muscles is another consequence of high CNS adaptation (e.g., enhanced neuromuscular coordination). This indicates that these muscles are synchronised so that the antagonists do not contract to oppose the movement when the maximal force is delivered. The vestibular, ocular, and somatosensory systems must provide constant and quick feedback in order for the body to maintain its centre of gravity in dynamic or postural settings. In addition to improving flexibility, static stretching of tired muscles done just after the activity or exercises that caused the exhaustion also promotes muscle growth and development, which will actually lessen the degree of soreness experienced after an exercise session.

Vibhakta ghangaatrataa, exercising will help you gain muscle and reduce fat, giving the appearance of a slimmer body with attractively defined, well-structured body physics.

Aerobic base, cardiorespiratory endurance, and mitochondrial biogenesis will all be enhanced by *Doshakshyaya*, (decreased dosha) *Agnivridhhi* (increased metabolic fire), *Viruddham*, and *Avipakvam-Pakvam shighram vipachyate* (able to fast digestion of incompatible, uncooked, cooked food) endurance exercises, which will strengthen metabolism. The Agni will rise as a result of higher mitochondrial density. Exercise will cause the *Viruddha aahar Stravit dosha* (dosha due to incompatible food) to burn because of elevated Agni. Increased Agni will aid in the digestion of *Avipakava* and *Aaharjanya aama doshas*. (doshas due to uncooked and undigested food). The food will digest more quickly and readily because of the increased metabolism rate.

Sthaulyamapkarshati. Rasa dhatu is in charge of the physical attributes of the body. Foods that raise the kapha dosha, eating before the previous meal is fully digested, not exercising regularly, and sleeping during the day are all examples of this. Because Aam rasa is so

unctuous, their bad behaviours would cause their undigested food, *Madhur Ras Yukta Aam*, (undigested food) to circulate throughout their body and eventually convert into fat tissues.^[13]

Na sahasa jara adhirohati, Na vali shithiltaadaya, the rate of metabolism will rise as a result of exercise. There will be an increase in *Jatharaagni* and *Sapta Dhatvaagni*. (metabolic fire) Therefore, people who regularly exercise will have a considerable increase in the correct nutrition of all the dhatu. Therefore, exercise will prevent the body from becoming weak with age. The body won't store excess fat. Because Aam rasa causes excess fat to be deposited, this might result in "*Srotorodh*, (obstruction in body channel)" which can lead to poor nutrition owing to a drop in Agni.

Exercise prevents "*Srotorodh*" because mitochondrial biogenesis uses both anaerobic and aerobic pathways to burn excess glucose and free fatty acids. As a result, *Agni* will rise and *rasa dhatu* will flow through the channel unhindered. As a result, wrinkles and other signs of ageing will appear gradually.

CONCLUSION

The structure of our bodies is extremely intricate. Regular exercise can help us increase our metabolism. According to Ayurveda, "*Rogah savre api jayate mandagnau*" (all the disease occurs due to weak digestive fire) All disease pathology begins as a result of the accumulation of indigestible material brought on by a weak metabolism, which also compromises immunity. Health is a result of a healthy metabolism. The best way to speed up your metabolism is to exercise. Strength, flexibility, balance, aerobic base, visual, somatosensory, and central nervous system adaption are all enhanced. Humans can live long and healthy lives because food is vital for brain function, mental energy, and body construction. If we use food wisely, we can reap the benefits of better physical ability to do a variety of tasks.

Because "exercise is a balance between nutrition and drainage," we should all engage in regular exercise. We benefit from it. It will enhance general health and lower the risk of NCDs.

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