A Comprehensive review on the Preventive and Curative aspects of Vyayama

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ABSTRACT

Ayurveda advises to follow specific Acharas with a view to maintain the health and to attain longevity. Vyayama is the most important Achara explained in Ayurveda in relation to the modern scenario. It has got its relevance in preventive as well as curative aspects. The desirable comfortable physical activity which brings strength and stability to the body is named as physical exercise. It must be done considering the time, strength, age, etc. improves the endurance and complexion along with the happiness and longevity. Exercise aids in maintaining ideal body weight, metabolizes carbohydrates, increases oxygen supply to all tissues, etc. Avyayama or complete absence of physical activity leads to chronic disease conditions such as cardiovascular diseases and metabolic syndrome. Vyayama is one among the Shamanachikitsas (palliative therapy) which has a major role in managing diseases like Uru tambha, Prameha, etc. Asana is one among the Ashtangas (eight folds) of Yoga which also helps in stretch, strain and relaxation of muscles thereby act as both preventive and curative measure.

KEYWORDS

Vyayama, Exercise, Yogasana
INTRODUCTION

Preventive and curative aspects of Vyayama are well explained in Ayurveda Samhitas. Acharya Vagbhata in Ashtanga Hridaya refers Vyayama in the chapter “Dinacharya”, Charakacahrya in “Na vegandharaneeyamadhyaya” and Acharya Susruta in “Anagatabadha-pratishedhamadyaya”. Vyayama is performed as a regular practice in order to protect the health of the healthy and cure the illness of the diseased. The benefits, duration, contraindications, quantitative and qualitative aspects of Vyayama with reference to digestion, strength, age and time have been explained. Vyayama has an important role in maintaining the physiological activities. Exercise helps to have the perfect compatibility of the body. This promotes the flow of elements in a proper manner. Moreover, an increase in sweat and balancing the bowel movement, exercise can excrete the toxins from the body which cause damage to the same. Vyayama is one among the Dashavidha Langhana karmas. As the increase in Kapha and immobility of specific muscles are the basic causative factors of the diseases like Prameha, Sthoulya, Urustambha, etc. Vyayama is advised in the treatment along with other medications. This can be overcome by performing specific Vyayamas which can relax the specific muscles and reduce the increased Kapha and Medas. In the Nidana of many diseases, one of the reasons is mentioned as Avyayama (Lack of exercise). So if one performs the exercise, he can have resistance over these diseases. Deduction in metabolic fire is taken as the most important cause for many diseases. Vyayama increases the metabolic fire and decreases the Ama. Being a science developed during the earlier centuries, Ayurveda follows many theories from Shad Darsanas. While they accept the Nyaayavaisheshika and Sankhya to explain the human body and its constitutions they accept Yoga darsana for Physical and mental exercise and Poorva Mimamsa for Sadvrutta. Yogasanas were practiced by all divisions of the society along with other forms of exercise like hunting, martial arts, etc. This helped them to maintain their health and prevent many diseases. This paper is an attempt to understand the concept of Vyayama in terms of preventive and curative aspects.

MATERIALS AND METHODS

References dealing with “Vyayama” collected from the classical Ayurvedic texts and their commentaries such as Sushruta Samhita, Charaka Samhita,
AshtangaSangraha, AshtangaHridaya, Yogaratnakara, and PatanjaliYogasutra. “Google scholar search” and “Google search” were the electronic databases searched for relevant studies and reviews published until March 2019. The keywords used for the search were “Vyayama,” “Exercise,” “Exercise physiology,” “Urustambha,” “Shoulya,” “Avabahuka,” “Obesity,” “Prameha,” “Diabetes” “Frozen shoulder,” and “Yoga Sastra.” References from Abstracts and full-text articles which are freely downloadable were only included in the study.

THE PREVENTIVE ASPECTS

The aim of Ayurveda is to maintain the health of the healthy person and to cure the illness of the diseased. It is same in the case of Vyayama also. The concept of Vyayamais explained as the regimen that should be performed on a daily basis as it is an important preventive, curative as well as a rehabilitative measure. Here, Acharya has given a specific order for Viharasviz: Abhyangafollowed by Vyayama then Udwartana likewise. The Abhyanga, massaging the body with oils helps to relax the joints and muscles and make them ready to perform Vyayama and also can withstand the Klesa(strain) produced by Vyayama. ‘Agryoushadha’ says; among the activities for stabilizing the body, Vyayamais the best and is the desirable physical activity which brings strength and stability to the body. According to Charaka, the Viruddhahara will not be Ahita(unwholesome) for those who are habituated to Vyayama. The person who does daily Vyayama is able to digest even incompatible food (Viruddhahara); and his ill-digested or even undigested food gets completely digested. Susrutacharyadefines exercise as “the action which brings stretch and strain to the body”. According to him, exercise the movements associated with walking, running, jumping, and swimming, diving, or riding and sports such as archery, wrestling, and javelin throws. Vyayama is explained in other literary books also. In Dhanurveda, the definition of Vyayaman can be found as: “Rotating a mace or such heavy weapons, bending bows and engaging in a tug of war, etc. provide specific exertion for various parts of the body. This type of effort produced by various actions can be termed as exercise. According to Acharya Sushruta, Physical exercise results in bodily nourishment, gracefulness, symmetrical growth of the body parts, improved digestion, agility, firmness, lightness, cleanliness, capability for tolerating fatigue, thirst, heat,
cold, etc. and sound health. Also, the person who is habituated to regular physical exercise cannot be oppressed by enemies forcibly. A person who does Vyayama regularly is not susceptible to the premature onset to senility and his muscles become well developed. Acharya Charaka added some other benefits like—it makes the man capable for work, brings stability, resistance to discomfort and helps in alleviation of Doshas (especially Kapha). Vyayama is always beneficial for those healthy persons who consume emollient diet, especially in the winter and spring seasons. One should not do Vyayama in summer season. Acharya Vagbhata also agrees the above. Kalidasa, in Abhijnanasakunthalam, says: by adopting Vyayama, fatty one becomes light, energetic and dynamic by reducing fat. By a feeling of lightness, he can work hard. The benefits of Vyayama can be comparable with the beneficial physiological effects due to exercise. Agni-Vriddhi (enhancement of digestion) is explained as a prime benefit of Vyayama by all the three Acharyas. The food articles which are heavy to digest that suppresses the appetite, are very harmful when taken in excess unless there is a strong digestive power achieved by Vyayama. This clearly indicates improved digestive physiology due to exercise. Moreover reduction in obesity shows improvement in the metabolism of carbohydrates and fats, while proper growth of the body (Shariropachaya) is the results of good protein metabolism. It is also said that Vyayama reduces the chances of being ill which can be understood in terms of an improved immune system of the body. Some of the benefits indicated in above-mentioned quotations are suggestive of proper secretion of hormones and enzymes too. According to Acharya Charaka, the Samyak Vyayama Lakshana are; Perspiration, increased respiration, body lightness, inhibition of the heart and such other organs of the body. It results in certain changes in respiration, perspiration and cardiac rhythm. “Hridayoparodha” is a most important symptom explained here in the context of limitation of the duration of Vyayama which seeks more attention in the light of exercise physiology. According to modern sports physiology, while indulging in exercise, one particular moment comes when the oxygen debt is more than supply. At this moment the individual experiences cardiac discomfort and wants to cease exercise. This is exactly what the term “Hridayoparodha” indicates. The Principle of correct exercise method is also described in Ayurveda Samhitas. This reference also suggests the limitation of duration of Vyayama. After the presence...
of above-mentioned signs and symptoms, one has to stop further exercise. As per Chakrapani, the commentator of CharakaSamhita, Physical exercises are to be practiced only in moderation. If they are over-done, they cause over-exertion, giddiness, etc; which is not desirable. So they are to be practiced until they bring about lightness, etc; in the body According to Acharya Sushruta, Persons who belong for their welfare should do physical exercise daily up to half of their capacity in all the seasons; otherwise it may cause serious harm to the body.

That amount of Vyayama which makes the PranaVayu, situated in the heart, come out through the mouth (hard breathing) in human beings is indicative of “BalardhaVyayama” or the Vyayama up to half of one’s capacity. One should do physical exercise keeping in consideration his own Vaya (age), Bala(strength), Sarira (physique), Desha(country), Kala(season) and Ashana (diet); otherwise, he may fall ill. While explaining about the different parts of the country, the author of Sisupaalavadham compares it with Vyayama and says that if one performs the exercise according to his strength, the body with different parts will get the proper development. But if it is not being done according to the strength, then that itself becomes the cause for the destruction of health and wealth.

Chanakyanetitsasthra, the author while speaking about acquiring wealth, sacred benefits, education, etc. says that one should acquire the health slowly, one should walk distances slowly, and one should climb the mountain slowly and one should practice the exercise very slowly in such a way to develop health gradually. This instructs that the Vyayama should be performed with utmost care.

Overindulgence in physical exercise leads to Shrama, Klama, Kshaya, Thrishna, Raktapitta, Kasa, Jwara, and Chardi. The quantity and duration of the exercise to be resorted is determined on the basis of the quantity of Doshas required to be eliminated and the degree up to which the power of digestion including metabolism is to be enhanced. Care is to be taken so that there is no overexertion or exhaustion during the act of exercise. Excessive indulgence of exercise may cause instantaneous death.

Also, while explaining Sadvrutta, Charakasaid:"Praksramadvyayamavarjees yat" - stop Vyayama before exertion. When a healthy individual performs the physical exercise for the purpose of fitness he should stop the exercise at ½of his own work capacity. If an individual can swim up to 20minutes, do only 10 minutes. Otherwise with over work-load he may get injured very soon. The capacity of an
individual corresponds to the total amount of energy accessible at a given time, beyond which people are completely tired and not able to do any further activity. Even though, Vyayama has many beneficial effects on health, there are the conditions in which exercise should not be performed. The one who is having Raktapitta (bleeding disorders), Shvasa (dyspnoea), Kasa (cough), and weak should not perform Vyayama. The individual indulges in excessive sexual activities, one who bears excess weight, elderly persons and individual with Vataprakruti are not supposed to do Vyayama. As the very name suggests, Vyayama, ‘Vi’ + ‘Aa’ + ‘Yam ghanjdhatu’, the prefix ‘Vi’ stands for Visesha, specific, ‘Aa’ for complete, wholesome and ‘Yamyaame’ stands for movement. So, Vyayama is the specific, complete, wholesome movements of the body. This is well explained in Yogasasthra of Patanjali, especially in the part of Asana among the eight-fold divisions. The term Yoga is explained in CharakaSamhita as "Restrict the mind from actions such as joy and sorrows. This definition is one and the same as the definition of Yoga in Yoga Sasthra. After giving the definition, Patanjali explains the eight-fold steps to achieve this Yoga. They are Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi. As Yogasasthra is one among the Shad Darsanas, we can accept the term here the Yogasasthra given by Patanjali. Moreover, in the verse – “Yogo moksha Pravartaka” Chakrapani also says “Moksha sadhanamyoga”. From these, certainly one must follow Yoga to get relieved from Roga. It includes ‘Asanas’ similar to that of Vyayama explained in Ayurveda. ‘Asana means the steady posture comfortable for the practice of meditation’. It can be compared to the definition of Vyayama by Charaka that it is the ‘desirable physical activity’. Asanas are not only a form of physical exercise but also the method of gaining the perfect mental and physical relaxation. It specifically influences various internal organs and makes them functionally more efficient just as in the case of Vyayama. Effortless activity and awareness of expansion are the two important characteristics of Yogasana. They have a direct influence on endocrine glands and metabolic activities. Through the regular practice of Yogasana, one will be able to develop proper awareness of individual muscles. Hence, by attaining voluntary control over the muscles, selective strengthening and relaxation become possible. Each Asana is helping to stretch and stimulate a specific group of muscles and finally make them relax deeply. Asanas are not just strengthening
muscles, but also train the muscles to loosen and relax. In the view of Chandakoushika, Exercise pleases a distressed, enriches mental tranquillity, makes the body flexible for movement and is just comparable with the benefits of Yoga. Suryanamakara (sun salutation) is relatively a modern concept which is a combination of Yogasanas, Pranayama, Mudra and Bandha. It includes twelve Asanas that can be practiced on a daily basis to get both preventive and curative effects.

CURATIVE ASPECTS OF VYAYAMA

Vyayama has been explained as a palliative therapy in Ayurveda. Urusthamba, Apabhahuka, Prahmeha, Shoulyaaare some of them. Sushrutacharyasaids that there is no other alternative of exercise for reducing obesity. Moreover, he opines that Vyayama is Tridoshahara (Balances all the three humors). On the basis of this, properly prescribed exercise can help in the treatment of any disease. Some direct references are also available where Acharyas used various kinds of exercise techniques as the treatment procedure of particular conditions. For example, swimming is the best treatment for Uruhsthambha.

Vyayama in Urustrambha

Urustrambha is a grave condition characterized by the spasticity of thighs. The major signs of the condition are aching pain, lassitude, heaviness, sensation of coldness, numbness, heaviness, and unsteadiness of thighs. It is also known as Kapha Medoavrutavata. Various exercises are mentioned in the management of Urustrambha. To alleviate Kapha and Medas in Vastathana the Urustrambhapatient should be engaged in vigorous physical exercise and he is made to walk over the ground covered with gravel and sand in the morning. The patient should swim against tides of water currents in a river or pond. Swimming should be done frequently in a pond which is having dirtless and constant water and also free from dangerous aquatic animals. All these exercises should be performed considering the patient’s physical strength and stamina. When Yoga therapy is considered, Uttanapadasana can be suggested in the case of Urustrambha, as it strengthens the digestive system, as well as the muscles of the lower limb.

The similarity between Urustrambha and Aortoiliac Occlusion (AIO) with Metabolic Syndrome (MS) has been explained. There is no direct or exact correlation of Urustrambha with any modern disease or condition available but it was found that there are so many similarities in various aspects like aetiology, pathology, symptomatology, course and prognosis and management in between the two conditions,
“Urstambha” and “AIO with MS”. Physical activity is an effective management for patients with claudication. Exercise training enhances the customary walking distance to the onset of pain and also an improvement in the average distance to the maximum tolerated pain. The greatest improvement by exercise training occurred when patients trained to maximum tolerated pain for at least a period of 6-month duration by keeping walking as the primary mode of exercise. Exercise training is found superior to peripheral angioplasty in claudication and also it improves the walking distance better than the widely used medicines\textsuperscript{20}.

**Vyayama in Avabhukam**

Avabahuka is a disease condition marked by the Stambha of shoulder joint (Amsasandhi). The symptoms are Shoola (pain) during movement, restricted movement, etc. Here, over exercise is explained as a Nidana (cause). Plavana (swimming) and Bharavahana (Carrying heavy loads over the shoulders) cause VataPrakopa and deformity in the joint capsule. This leads to disease formation. BalawatVigrahah(Wrestling with a person who is more powerful) will cause Agahata (trauma) to the Amsapradeshabh which VataPrakopa takes place and manifests the disease\textsuperscript{21}. Acharya Yogaratnakarahas explained the rotation of arms (Bahuparivartanam) as a therapeutic measure in Apabahuka\textsuperscript{22}. The Yogasanas that can be advised for Apabahuka are Garudasana and Namaskarasan. The benefits of Garudasana are – it stretches the shoulders and upper back and loosens the shoulders and releases any tension in them. PaschimaNamaskarasanacan be advised in Apabahuka as it helps in stretching of shoulder joints and upper back also the pectoral muscles.

**Skandhachakra** (shoulder socket rotation) is a kind of SukshmaVyayama developed by Bihar School of Yoga in the title Pvanamuktasana series\textsuperscript{23} is advised in the condition of the Frozen shoulder. It helps to relieve pain and maintain the shape of the shoulders. The symptoms of the Frozen shoulder may be correlated to Frozen shoulder (Adhesive capsulitis). By manual therapy, movement of the joints and other structures takes place with the help of a health care professional (e.g. physiotherapist). Exercise includes any deliberate movement of a joint, prescribed activity or muscle contraction. Relief from pain and increase in joint range and improvement of function are the aims of both treatments.

**Vyayama in SantarpanajanyaVyadhi**
Susruta considered obesity is a disease which is caused by an increase in the VataDosha because of an elevation in lymph chyle. Obesity is attributed to a sedentary lifestyle which includes “pampering his belly”, day sleep, aversion in taking “any sort of physical exercise\textsuperscript{24}. Treatment consists of removing the fat that was obstructing the channels of the body and by preventing the growth of abnormal fat, which is accomplished by providing assorted medications and by prescribing “physical exercise” because Vyayama is one among the LanghanaChikitsas. Continuous administration of Vyayama, Upavasa, etc. in a suitable dose and in the appropriate time is helpful in curing Brimhanottha Vyadh\textsuperscript{25}. There is no substitute for physical exercise to reduce obesity. Individuals desirous of reducing Sthoulya should take recourse to habitual exercise. Group of exercises that loosens all the joints, repeated practice of Suryanamakara, jogging, running, and jumping is very effective techniques in the management of Sthoulya. Dynamic movements like waist twist, imitating Chakki (hand mill) rotation, swinging in Paschimotthanasana, Halasana, and Pvanamuktasana are some of the dynamic exercises that can burn excessive fat\textsuperscript{23}. As per Susruta, Prameha is the disease of the urinary tract and is incurable in nature.

The causative factors may be either congenital or the result of an injudicious diet, with obesity being a major characteristic. The therapeutic measures include dietary changes and exercise techniques that included long walks, wrestling, and riding on a horse or an elephant. In SampraptiofPrameha, it is explained that, for those who have given up physical and mental exercise\textsuperscript{26}, there is an excessive increase in Kapha, Pitta, and Medas. Inorder to balance these Doshas, the Yogasanas advised are; Ardhakaticakrasana, Ardhachakrasana, Padahastasana, Vakrasana, Bhujangasana, Ushtrasana, Mayurasana, Sarvangasana, etc. These Asanas will regulate the metabolic function and give proper stretch and relaxation to the muscles of the body. The Asanas that stretch, compress or twist the abdominal area to bring awareness to the pancreatic area are beneficial\textsuperscript{23}.

SantarpanajanyaVyadhi explained in Ayurveda may be correlated to the metabolic syndrome in modern perspective. It is a multi-factorial disease, frequently associated with a cluster of pathologies and the main features are obesity, dyslipidemia, and diabetes\textsuperscript{27}. The strategies to be adopted to prevent the condition are; increased physical activity (such as walking 30 minutes every day). As
per researches unhealthy weight gain and obesity, diabetes and other metabolic disorders can be overcome by regular physical activity whereas sedentary habits such as watching television, working at the computer for long time or playing video games are the promoting factors.

DISCUSSION

When we go through the classical references of Vyayama, it is evident that the Acharyashave explained the same in the chapters which are meant for prevention of diseases. That is Swasthavrutta. The habitual practice of physical exercise is very much important in maintenance of health and attaining longevity. It is very clearly mentioned that regular physical exercise has beneficial effects on metabolism, musculoskeletal system and on immune system also. Later we get the curative aspects of Vyayama in various contexts like Urushthambhachikitsa where all the five purificatory procedures are contraindicated and other Santarpanoththavyadhis where Kapha and Medas have major involvement. In these conditions, Vyayama can be considered as a prophylaxis. The limitation of Duration of Vyayamais clearly mentioned as excess Vyayama as well as Avyayama(complete absence of Vyayama) are the major causative factors for diseases.

Both Yogasanas and Vyayamas give stretch, strain and thereby health benefits to the body. Practice of Surya namaskara has got maximum relevance in the present era for its multitudinous effects on prevention of diseases as it is a combination of Yogasanas, Pranayama, Mudras and Bandhas. The specific exercises mentioned for the particular disease conditions and the possible Yogasanas that are to be followed are discussed based on the Doshas involved, the symptomatology and pathology. In Urustambha, where spasticity of thighs is the main symptom, the apt Yogasanas Uttanapadasana, as it strengthens the digestive system, as well as the muscles of the lower limb. In Avabahuka, Garudasana is a useful Yogasana which give stretch to upper and middle back; the pose also increases mobility of the shoulders and releases tension from certain parts of the shoulder joint. It moves the shoulder blades on the rib cage into upward rotation, encouraging an important, functional movement for healthy shoulders and arms. It may also build strength in the pectoralis as well as some of the other chest muscles. Paschimanamaskarasana is also beneficial as it stretches the pectoral muscles, shoulder...
joint capsules, and deltoids, as well as numerous upper back muscles. In Prameha, Ardhakatichakrasana, Ardhachakrasana, Padahastasana, Vakrasana, Bhujangasana, Ushtrasana, Mayurasana, Sarvangasana, etc. all these Asanas will regulate the metabolic function and give proper stretch and relaxation to the muscles of the body. The Asanas that stretch, compress or twist the abdominal area to bring awareness to the pancreatic area are beneficial. Paschimothanasana, and Pvanamuktasana is beneficial in Sthoulya as both of them reduce the fat in the abdominal region and makes the person lean.

CONCLUSION

In the present scenario, while looking the gadgets within and around us, The Gyms, Zumba, Aerobics with most modern technologies are just fingertip away and the endless tips and channels of social media which shares what to eat, when to eat what all the exercises you need to do, the pack-wise workouts to get a perfect shape, etc. So, the new era is all about to eat and experiment what is new and to burn what we installed to our tummy. Ayurveda, the science of life and Yogastrastrain the form of Asanas already found the nutshell and core of Vyayama in authentic verses which can be displayed at the corridors of the so-called gyms and luxurious destinations. Following the scientific way of doing Vyayama will bestow perfect health and fitness with no doubt. Hence, one has to practice Samyak Yoga of Vyayama by avoiding the Atyoga and Ayoga of the same as it is said that the qualities that are built up gradually are indestructible.
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