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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 *Urustambha*, *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



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INTRODUCTION

Preventive and curative aspects of *Vyayama* are well explained in *Ayurveda Samhitas*. *Acharya Vagbhata* in *Ashtanga Hridaya* refers *Vyayama* in the chapter “*Dinacharya*”, *Charakacharya* in “*Navegandharaneeyamadhyaya*” and *Acharya Susruta* in “*Anagatabadhapratishtedhamadyaya*”. *Vyayama* is performed as a regular practice in order to protect the health of the healthy and cure the illness of the diseased¹. 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*². 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*³. 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 exercise⁴ 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*, *Yogaratanakara*, 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*,” “*Sthoulya*,” “*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 diseased⁵. It is same in the case of *Vyayama* also. The concept of *Vyayama* is 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*: *Abhyanga* followed by *Vyayama* then *Udwartana*¹ 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*⁵. *Charakacharya* in the context of

‘*Agryoushadha*’ says; among the activities for stabilizing the body, *Vyayama* is the best⁶ and is the desirable physical activity which brings strength and stability to the body⁷. 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 digested⁸. *Susrutacharya* defines 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 throws⁹. *Vyayama* is explained in other literary books also. In *Dhanurveda*, the definition of *Vyayama* 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 exercise¹⁰. 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 developed⁹. *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 hard¹⁰. The benefits of *Vyayama* can be comparable with the beneficial physiological effects due to exercise. *Agni-Vridhhi* (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 exercise¹¹. 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 *SamyakVyayamaLakshana* are; Perspiration, increased respiration, body lightness, inhibition of the heart and such other organs of the body¹². 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 body⁹. 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. In

Chanakyaneetisasthra, 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 gradually¹⁰. 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*¹². 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 death¹³. Also, while explaining *Sadvrutta*, *Charakasaid* “*Praksramadvayamavarjees yat*”- stop *Vyayama* before exertion¹⁴. When a healthy individual performs the physical exercise for the purpose of fitness he should stop the exercise at ½ of his own work capacity. If an individual can swim up to 20 minutes, do only 10 minutes¹⁵. 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*¹⁵. The individual indulges in excessive sexual activities, one who bears excess weight, elderly persons and individual with *Vataprakruti* are not supposed to do *Vyayama*¹³.

As the very name suggests, *Vyayama*, 'Vi'+ 'Aa' + 'Yam ghanjdhatu', the prefix 'Vi' stands for *Visesha*, specific, 'Aa' for complete, wholesome and 'Yamyame' stands for movement¹⁶. 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 *Yogasastra* given by *Patanjali*. Moreover, in the verse – "*Yogo moksha Pravartaka*¹⁷:"*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*¹⁰. *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*. *Urustambha*, *Apabahuka*, *Prameha*, *Sthoulya* are some of them. *Sushrutacharya* said that there is no other alternative of exercise for reducing obesity. Moreover, he opines that *Vyayama* is *Tridosahara* (Balances all the three humors)⁹. 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 *Uruhstambha*¹⁸.

Vyayama in Urustambha

Urustambha 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 *KaphaMedoavrutavata*. Various exercises are mentioned in the management of *Urustambha*. To alleviate *Kapha* and *Medas* in *Vatasthana* the *Urustambha* patient 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 animals¹⁹. 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 *Urustambha*, as it strengthens the digestive system, as well as the muscles of the lower limb.

The similarity between *Urustambha* and Aortoiliac Occlusion (AIO) with Metabolic Syndrome (MS) has been explained. There is no direct or exact correlation of *Urustambha* 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,



“*Urustambha*” 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 medicines²⁰.

Vyayama in Avabahukam

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. *BalawatVigraha*(Wrestling with a person who is more powerful) will cause *Agahata*(trauma) to the *Amsapradesh*by which *VataPrakopa* takes place and manifests the disease²¹. *Acharya*

Yogaratanakarahas explained the rotation of arms (*Bahuparivartanam*) as a therapeutic measure in *Apabahuka*²². The *Yogasanas* that can be advised for *Apabahuka* are *Garudasana* and *Namaskarasana*. The benefits of *Garudasana* are – it stretches the shoulders and upper back and loosens the shoulders and releases any tension in them. *PaschimaNamaskarasana* can 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* series²³ 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 *VataDosh*a 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”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 Vyadhis*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 fat²³. 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 exercise²⁶, there is an excessive increase in *Kapha*, *Pitta*, and *Medas*. In order to balance these *Doshas*, the *Yogasanas* advised are; *Ardhakatichakrasana*, *Ardhachakrasana*, *Padahastanasana*, *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 beneficial²³.

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 diabetes²⁷. The strategies to be adopted to prevent the condition are; increased physical activity (such as walking 30 minutes every day). As



per reserches 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 *Acharyas* have 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 *Urustambhachikitsa* where all the five purificatory procedures are contraindicated and other *Santarpanothavyadhis* where *Kapha* and *Medas* have major involvement. In these conditions, *Vyayama* can be considered as a prophylaxis. The limitation of Duration of *Vyayama* is 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 *Yogasanasis Uttanapadasana*, as it strengthens the digestive system, as well as the muscles of the lower limb. In *Avabahuka*, *Garudasanais* 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. *Paschimotthanasana*, and *Pvanamuktasanais* 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 *Yogasastra* in 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 *Atiyoga* and *Ayoga* of the same as it is said that the qualities that are built up gradually are indestructible²⁹.



REFERENCES

1. Acharya Vagbhata: Ashtanga Hridaya: Sarvangasundara Commentary by Arunadatta: Edited by P,V, Sarma: Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutrasthana; Chapter 2, Verse 11, Page no: 27
2. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutrasthana; Chapter 22, Verse 18, Page no: 121
3. Acharya Vagbhata: Ashtanga Hridaya: Sarvangasundara Commentary by Arunadatta: Edited by P,V, Sarma: Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutrasthana; Chapter 3, Verse 19, Page no: 42
4. <https://www.pdfdrive.com/patanjali-yoga-sutras-e14984737.html> Retrieved 2019-03.10
5. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutrasthana; Chapter 5, Verse 86, Page no: 42
6. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutrasthana; Chapter 25, Verse 40, Page no: 131
7. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutrasthana; Chapter 7, Verse 31, Page no: 50
8. Acharya Susruta: Susruta Samhita: Nibandha Sangraha Commentary by Dalhana: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Chikitsa sthana; Chapter 24, Verse 44, Page no: 489
9. Acharya Susruta: Susruta Samhita: Nibandha Sangraha Commentary by Dalhana: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Chikitsa sthana; Chapter 11, Verse 11, Page no: 453
10. T, K, Baddhalakshmy.(2004) Ayurvedeeyasubhashihami. Karthik Books. Trivandrum. Kerala
11. Acharya Susruta: Susruta Samhita: Nibandha Sangraha Commentary by



Dalhana: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Chikitsa sthana; Chapter 24, Verse 39-42, Page no: 489

12. Acharya Susruta: Susruta Samhita: Nibandha Sangraha Commentary by Dalhana: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Chikitsa sthana; Chapter 24, Verse 49-50, Page no: 489

13. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Suthrasthana; Chapter 7, Verse 35, Page no: 51

14. Acharya Vagbhata: Ashtanha Hridaya: Sarvangasundara Commentary by Arunadatta: Edited by P,V, Sarma: Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Suthrasthana; Chapter 2, Verse 13, Page no: 27

15. <https://en.wikipedia.org/wiki/Exercise> Retrieved 2019/03/20

16. Raja RadhaKantha Deva. (1967). Sabdakalpadruma. Part 5. Chaukhambha Sanskrit series. Varanasi

17. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta:

Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sarira sthana; Chapter 1, Verse 137, Page no: 300

18. Valiathan, M, S. (2003). The Legacy of Charaka. Numb and Immobile Thighs (*Urustambha*). 1st ed. Chennai: Orient Longman Private Limited; p. 478-81

19. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Suthrasthana; Chapter 27, Verse 58-59, Page no: 615

20. Prasad Mamidi., Kshama Gupta. (2017). "Urustambha" - Aortoiliac occlusion with metabolic syndrome?. International Journal of Green Pharmacy. <https://www.researchgate.net/publication/316164813>

21. Banamali Das., Ravi, M, Ganesh., P, K, Mishra., Gurucharan Bhuyan. (2010). A study on *Apabahuka* (frozen shoulder) and its management by *Laghumashatailanasya*. An International quarterly journal of Research in Ayurveda. 31(4): 488-494. PMID: 22048545

22. Sastrilakshmi pati. (2002). edited by Yogaratnakara. Chaukhambha Sanskrit sansthan. Varanasi. (Y.R.25/132-135)



23. Dr.K,V, Dilip Kumar. (2015). Clinical yoga and Ayurveda. Chaukhambhaayurvedijnanstudies.Chaukhambha Sanskrit Pratishtan. Delhi

24. Acharya Susruta: Susruta Samhita: Nibandha Sangraha Commentary by Dalhana: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012.Sutra sthana; Chapter 25, Verse 32

25. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Sutra sthana; Chapter 23,Verse 8, Page no: 122

26. Acharya Susruta: Susruta Samhita: Nibandha Sangraha Commentary by Dalhana: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Nidana sthana; Chapter 6, Verse 3, Page no: 289

27. Sharma, H., Chandola. (2010).Ayurvedic concept of obesity, metabolic syndrome, and diabetes mellitus. HMJ Altern Complement Med. 2011 Jun;17(6):549-52. doi: 10.1089/acm.2010.PMID:21649521

28. AcharyaVagbhata: Ashtanha Hridaya: Sarvangasundara Commentary by Arunadatta: Edited by P,V, Sarma:

Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2012. Suthrasthana; Chapter 7,Verse 50, Page no: 140