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CONCEPT OF ATIVYAYAM IN AYURVEDA

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ABSTRACT

Introduction: *Vyayam (*Exercise) in a proper way, enhances firmness, compactness, endurance in the body, and increases the ability to do work. It pacifies all three doshas and creates balance in them when conducted as per *Prakriti* (constitution), *Vaya* (age of the person), and *Ritu* (season). **Discussion** *Samyak Vyayam (*Exercise in a proper way) enhances digestion, helps in proper metabolism, and dissolves impurities in the tissues. It enhances immunity, eliminates fatigue, stops early aging, and retards weight gain and can thus improve one's quality of life. But when done in excess i.e., *Ativyayama*, it results in various afflictions like *Shram, klama, kshaya, etc*. **Conclusion**: The practice of *Samyak Vyayam* in regular is essential for the body. On the other hand, *Vyayam* in improper way and excess quantity results in harmful effects, so one should always stay away from the practice of *Ativyayama.*

Keywords: *Ativyayama, Ayurveda, Exercise, Samyak Vyayam, Tridosha,*

INTRODUCTION

As per Ayurveda *Vyayam* (Exercise) is an essential part of healthy routine. Where *Samyak Vyayam* helps in maintaining good health and to treat various ailments, *Ativyayama* result in various grave pathologies. Ayurveda mentioned that *Vyayam* according to the individual's *Prakriti* (constitution), *Vaya* (age of the person) and *Ritu* (season) is *Samyak Vyayam*. In the context of *Doshaja Prakriti*, *Vata* types need less exercise,

so lighter activities such as walking are best. *Pitta* types need moderate amount of *Vyayam* such as swimming and *Kapha* types need more intense exercise, such as jogging and aerobics, to stay in balance. Regarding *Kala (*season), if one wants to increase exercise capacity, winter and spring are the best times. In hot weather, one needs to decrease exertion and stay out of the hot sun. As for *Vaya* (age), children have more capacity for exercise and older people need less, although daily exercise is essential at any age. Exercise-induced benefits are being increasingly recognized in promoting health and preventing diseases. However, initial adaptation to exercise response can have different effects on cells, including an increase in the formation of oxidants and inflammatory mediators that ultimately leads to oxidative stress, but this scenario depends on the type of exercise and its intensity, and training status of the individual.[1]

Aims and objectives: The study aimed to understand the concept of *Ativyayama* in ayurveda which is responsible for various pathologies in the body so that it may help the Ayurvedic Physicians to guide their patients to do *Samyak Vyayam* and to take appropriate preventive measures against *Ativyayama* induced ailments.

Materials and Methods: In our current manuscript we have studied reviewed Texts books of Charaka, Sushruta, and Ashtang Hridya. Research articles available on the internet, Google Scholar, Pubmed, and Science direct were also used to support the Ayurvedic concept of *Ativyayama* viz-a-viz Strenuous Exercise, which is quite similar to ancient text.

Definition of *Vyayam* (Exercise)

The work involving the exertion of the body is known as *Vyayama* (physical exertion). After doing it, one should press the body gently all over [2]. Maharshi Charaka has defined exercise in the following way "a physical action which is desirable and is capable of bodily stability and strength is known as physical exercise. This has to be practiced in moderation" [3].

Advantages of *Vyayam* (Exercise)

As per Maharshi Charaka, the utilities of exercise are as follows; Physical exercise brings about lightness, ability to work, stability, resistance to discomfort, and alleviation of doshas (especially *kapha*) [4]. Acharya Sushruta said, *Samyak Vyayam* (Exercise in the proper way and amount) makes the body stout, substantial, and strong. It helps the symmetrical growth of the whole-body including limbs and muscles, improves the complexion and the digestive powers, prevents laziness, and makes the body light and glossy, firm, and compact. It provides the power of enduring fatigue and weariness and the variations in temperature, thirst, etc. It leads to an undiseased existence and is the best means of reducing corpulency. [5]

EFFECT OF *ATIVYAYAM* (STRENUOUS EXERCISE)

As per Maharshi Charaka, physical exercise in excess causes exertion, exhaustion, consumption, thirst, bleeding from different parts of the body (*Raktapitta*), *Pratamaka* (a type of dyspnoea), cough, fever, and vomiting [6].

"Shram ***klama kshaya sa trushna raktapittam pratamak*| *Ativyayamata kasa jwarash chardii jayate*.**"** Ch.su.07/33

***Shrama*: In** a healthy practice *Madyam Vyayam* (exercise in moderate quantity) is beneficial for the body while *Ativyayama* (Strenuous exercise) for long-duration results in exhaustion and production of free radicals. After any strenuous exercise, the activity of cytosolic enzymes is increased in blood plasma. This is indicative of muscular damage. The degree of oxidative stress and muscle damage depends on the degree of exhaustion of the person who performs exercise. Training partially prevents free radical formation in exhaustive exercise. Treatment with antioxidants such as vitamins C or E protects in part against free radical-mediated damage in exercise. Xanthine oxidase is involved in free-radical formation in exercise in humans and inhibition of this enzyme with allopurinol decreases oxidative stress and muscle damage associated with exhaustive exercise. Knowledge of the mechanism of free-radical formation in exercise is important because it will be useful to prevent oxidative stress and damage associated with exhaustive physical activity.[7]

***Klama*: It** has been seen that people in a state of fatigue make wrong decisions. On prompting a series of laboratory experiments of which two are described.

Subjects pedaled a bicycle ergometer for varying periods and were tested for mental performance after different amounts of physical exertion. The results showed that a sub-maximal amount of physical exertion improved mental performance on the Brown and Poulton test of attention which relies heavily on short-term memory. When the exertion was increased over longer periods the graph showing the relationship of mental performance to physical exertion followed the form of an inverted U. The evidence suggests that physical exertion affects mental performance by raising the level of arousal [8]

Increased physical activity is an optimal way to maintain good health. During exercise, triacylglycerols, an energy reservoir in adipose tissue, are hydrolyzed to free fatty acids (FFAs) which are then released into the circulation, providing fuel for working muscles. Thus, regular physical activity leads to a reduction of adipose tissue mass and improves metabolism. However, the reduction of lipid reservoirs is also associated with many other interesting changes in adipose tissue FA metabolism. For example, prolonged exercise contributes to a decrease in lipoprotein lipase activity and the resultant reduction of FA uptake. This results in the improvement of mitochondrial function and upregulation of enzymes involved in the metabolism of polyunsaturated fatty acids. [9]

***Kshaya*:** Excessive exercise results in tissue depletion of the body. Out of seven *Dhatu* mentioned in ayurveda, *Rasa dhatu* is responsible for the *Sthaulya* and *Karshya* of the body. *Ativyayama* may result in *Rasa dhatu kshaya* and ultimately results in *Saptadhatukshay* as *Rasa dhatu* is the one who provides nourishment to the next *Dhatus*. Excessive training or improper training technique may result in muscle-tendon overload and ultimately results in tissue injury [10]

***Trishna*:** When we exercise, the body sweats as it tries to return to its optimal temperature. As sweat evaporates from the skin, it removes heat from the body, but you also lose body fluid. So, you need to drink fluid during exercise to replace the fluids you lose when you sweat.

Sweating during exercise, especially during exercise in the heat, leads to sodium and water losses, and the quantity of these losses depends upon the intensity and duration of the activity, genetic predisposition and conditioning of the individual, and environmental factors. The increase in plasma osmolality occurs concomitant with plasma volume loss, stimulating thirst. Because more water than sodium is lost through sweating, dehydration during exercise usually results in hyperosmotic hypovolemia. [11] Dehydration impairs the body's ability to regulate heat, which causes your body temperature and heart rate to rise. This causes you to feel more tired during exercise.[12]

***Raktapitta*:** Short-term exercise activates blood coagulation and enhances blood fibrinolysis and the delicate balance between clot formation and clot dissolution is maintained in normal populations. While Strenuous exercises may cause disturbances of the hemostatic balance may result in bleeding tendencies. [13]

***Pratamak*:** Exercise-induced asthma is a narrowing of the airways in the lungs triggered by strenuous exercise. It causes shortness of breath, wheezing, coughing, and other symptoms during or after exercise. The preferred term for this condition is exercise-induced bronchoconstriction [14]

***Kasa*:** Exercise-induced cough may result from a mechanism related to hyperpnea. Forced manoeuvres may cause cough, by deformation of airway receptors. Lung distortion or stretching may also release prostaglandins which have been shown to provoke cough by the discharge of airway C-fibres [15]

***Jwara*:** Functional changes in the immune system with exercise include diminished neutrophil chemotaxis and phagocytosis with high-intensity endurance training. Natural killer cell activity increases with exercise and returns to baseline during recovery. These changes in the immune system, resulting in a brief period of immunosuppression after intense exercise, are referred to as the immunological 'open window' [16,17]. This period of reduced immune function raises concerns regarding an athlete's ability to fight off infection during recovery following intense exercise. Research shows that the relationship between the amount of exercise

and the incidence of infection forms a 'J' curve. [16,17]. It is believed that people who exercise at a moderate level have enhanced immune function and may experience fewer illnesses and shorter duration of illness, such as upper respiratory tract infections, compared with those who do not exercise at all. However, there is evidence to suggest that elite athletes training at high levels may be at greater risk of these infections. Research indicates that marathon runners have more upper respiratory tract infections during periods when mileage is increased and in the two weeks following a marathon run. [18].

***Chardi*:** One of the potentially serious causes of nausea and vomiting during or after sports activity is exercise-induced hyponatraemia, first described by Noakes et al. in 1985. This electrolyte imbalance is caused by massive sodium losses during sweating followed by excessive, low-sodium fluid intake [19]

DISCUSSION

In a healthy practice, *Madhyam Vyayam* (exercise in moderate quantity) is beneficial for the body while *Ativyayama* (Strenuous exercise) for a long duration result in depletion of the body. *Samyak Vyayam* enhances compactness and firmness in the body and increases the ability to do work. It pacifies all three doshas and creates balance in them when conducted as per Prakriti (constitution), age of the person, and season. Individuals having *Vata Prakriti* need *Vyayam* in *Heena Matra* (light Exercise), while individuals having Pitta Prakriti need *Vyayam* in *Madhyam Matra* (moderate amount of Exercise). Individuals having *Kapha Prakriti* need *Pravara matra* of *Vyayam* (Intense Exercise). One should avoid *Vyayam* in *Greeshma Ritu* (Summer season), while a Moderate amount of *Vyayam* should be done in *Shishir*, *Hemanta*, and *Vasant Ritu* (i.e Winters and spring). *Heena Matra* of *Vyayam* (light Exercise) is advisable for old age individuals, while *Madyam matra* is advisable for Children and Adults. *Samyak Vyayam* is very essential for the proper nourishment of all the *Saptadhatus* of the body. It helps in the regulation of *Agni* and elimination of various waste products from the body e.g., Sweat. On the other hand, *Ativyayama* causes an imbalance of *doshas* which results in different ailments like *Shrama* (easy fatiguability) due to Oxidative stress and the formation of free radicals. It decreases the mental capacity of the individual. When followed continuously it results in *Saptadhatus kshaya* (tissue and cellular depletion), *trushna(*thirst), *raktapitta (*bleeding from different parts of the body) Pratamaka (a type of dyspnoea), *kasa* (cough), *jwara* (fever) and *chardi* (vomiting).

CONCLUSION

The practice of *Samyak Vyayam* is very beneficial for maintaining a balance between *Dosha Dhatu* and *Mala.* While Ativyayama in regular practices results in vitiation of *Tridosha* predominantly *Vata Dosha*. It results in *Rasadi dhatu kshaya and i*s responsible for the emaciation of the body. One should take appropriate measures to avoid *Ativyayama* and follow *Samyak Vyayam* in day-to-day life according to *Prakrita*, *vaya*, and *ritu*.

REFERENCES

1. Tirupati A, Wang M, Lin JK, Fekete G, István B, Baker JS, Gu Y. Effect of Different Exercise Modalities on Oxidative Stress: A Systematic Review. Biomed Res Int. 2021 Feb 11; 2021:1947928. doi: 10.1155/2021/1947928. PMID: 33628774; PMCID: PMC7892233.
2. Susruta Samhita Chikitsasthan 24/38, Nibandhasangraha, edited by Vaidya Jadavaji Trikamji Acharya *[Shareer aayas jananam karma vyayam sangyitam, tatt krutva tu sukham deham vimrudagiyat samantata] su.su.24/3.*
3. Charak Samhita Sutrasthan 7/31, edited by Vaidya JadavajiTrikamji Acharya *[Shareer cheshta ya cheshta sthaeryartha balavardhani, deha-vyayam sankyata matrya taam samachret.] ch.su.07/31*
4. Charak Samhita Sutrasthan 7/32, edited by Vaidya JadavajiTrikamji Acharya *[Laghavam karmasamarthyam sthaeryam dukhasahisunata, Doshakshaya Agnivridhishacha Vyayamad upjayate.] Ch.su.07*
5. Susruta Samhita Chikitsasthan 24/38, Nibandhasangraha, edited by Vaidya JadavajiTrikamji Acharya. Sharer *uoachaya kaanti gatranam suvibhaktata, deeptagnitwam analsya sthirtwam laghavam mruja. Shram klam pipasa ushna sheetaadinam sahisushnta,*

arogyam cha api param vyayamad upjayte. Na cha asti sadrsham tena kainchta staulya apkarshanam.[5] Su.Chi.24/39-40

6. Charak Samhita Sutrasthan 7/33, edited by Vaidya JadavajiTrikamji Acharya. *Shram klama kshaya sa trushna raktapittam pratamak Ativyayamata kasa jwa-rash chardii jayate*. Ch.su.07/33
7. Viña J, Gomez-Cabrera MC, Lloret A, Marquez R, Miñana JB, Pallardó FV, Sastre J. Free radicals in exhaustive physical exercise: mechanism of production, and protection by antioxidants. IUBMB Life. 2000 Oct-Nov;50(4-5):271-7. doi: 10.1080/713803729. PMID: 11327321.
8. Davey CP. Physical exertion and mental performance. Ergonomics. 1973 Sep;16(5):595-9. doi: 10.1080/00140137308924550. PMID: 4772985.
9. Mika Adriana, Macaluso Filippo, Barone Rosario, Di Felice Valentina, Sledzinski Tomasz, Effect of Exercise on Fatty Acid Metabolism and Adipokine Secretion in Adipose Tissue, Frontiers in Physiology, VOLUME=10, YEAR=2019, PAGES=26 URL=https://www.frontiersin.org/article/10.3389/fphys.2019.00026 DOI=10.3389/fphys.2019.00026 ISSN=1664-042X
10. Hart LE. Exercise and soft tissue injury. Baillieres Clin Rheumatol. 1994 Feb;8(1):137-48. doi: 10.1016/s0950-3579(05)80228-6. PMID: 8149440.
11. Stachenfeld NS. Acute effects of sodium ingestion on thirst and cardiovascular function. Curr Sports Med Rep. 2008 Jul-Aug;7(4 Suppl): S7-13. doi: 10.1249/JSR.0b013e31817f23fc. PMID: 18843231; PMCID: PMC2871322.
12. Exercise - the low-down on hydration - Better Health Channel https://www.betterhealth.vic.gov.au ›health› healthy Ivin
13. el-Sayed MS. Effects of exercise on blood coagulation, fibrinolysis, and platelet aggregation. Sports Med. 1996 Nov;22(5):282-98. doi: 10.2165/00007256-199622050-00002. PMID: 8923646.
14. Piper PJ, Vane JR: The release of prostaglandins from lung and other tissues. Ann NY Acad Sci. 1971, 180: 363-365. 10.1111/j.1749-6632. 1971.tb53205. x.
15. Coleridge HM, Coleridge JCG, Ginzel KN, Baker DG, Banzett RB, Morrison MA: Stimulation of irritant receptors and afferent C-fibers in the lungs by prostaglandins. Nature. 1976, 264: 451-452. 10.1038/264451a0.
16. Nieman DC. Is infection risk linked to exercise workload? Med Sci Sports Exerc. 2000 Jul;32(7 Suppl): S406-11. doi: 10.1097/00005768-200007001-00005. PMID: 10910297.
17. Metz JP. Upper respiratory tract infections: who plays, who sits? Curr Sports Med Rep. 2003 Apr;2(2):84-90. doi: 10.1249/00149619-200304000-00007. PMID: 12831664.
18. Exercise and febrile illnesses. Paediatr Child Health. 2007 Dec;12(10):885-92. doi: 10.1093/pch/12.10.885. PMID: 19043508; PMCID: PMC2532567.
19. Samborski P, Chmielarz-Czarnocińska A, Grzymisławski M. Exercise-induced vomiting. Prz Gastroenterol. 2013;8(6):396-400. doi: 10.5114/pg.2013.39924. Epub 2013 Dec 30. PMID: 24868290; PMCID: PMC4027831.

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