

VYĀYĀMA AND MODERN CONCEPT OF EXERCISE: AN INTEGRATED APPROACH TOWARDS PERSONALISED HEALTH CARE

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ABSTRACT

Exercise induces a wide range of physiological adaptations that are essential for maintaining homeostasis and preventing lifestyle-related disorders. In Ayurveda, Vyāyāma is described as a regulated physical activity performed within one's capacity, contributing to strength, metabolic efficiency, and functional stability of the body. Modern exercise physiology explains these benefits through cardiovascular, respiratory, musculoskeletal, neuroendocrine, and metabolic adaptations. Both Ayurveda and modern science recognize that individual physiological capacity varies according to constitution, age, strength, and health status, thereby emphasizing the need for personalised exercise. This article aims to analyze Vyāyāma and modern exercise from a physiological viewpoint and highlight the relevance of personalised exercise in maintaining systemic balance and optimal physiological function.

KEYWORDS: Vyāyāma, Exercise Physiology, Personalised

Exercise, Metabolic Adaptation.

INTRODUCTION

Exercise, or vyayama, is a crucial preventative, therapeutic, and rehabilitative strategy.^[1] We have mostly looked through the oldest Ayurvedic texts: Samhita Charaka^[2], Gherand

Samhita^[3], Sushruta Samhita^[4], and Astanga Hrdyayam.^[5] Vyayama refers to the practice of exercising specific and targeted control over the body.^[6] Vyayama's primary definition is to pull, drag, or draw.^[7] Some key definitions of exercise, such as strength or struggle, make tremendous effort, exertion, and take exercise, have been cited by M.M. Williams.^[8] Other significant interpretations of Vyayama have been proposed by Apte Vaman, including conflict, struggle extending out, stretching out, gymnastic or athletic exercise, exhaustion, labour, effort exertion, and a distance measure.^[9]

CONCEPT VYAYAMA IN AYURVEDA

The term Vyayama comes from the roots vy (specific), aa (particular), yam (control), and ghamg (action), highlighting the disciplined regulation of bodily functions.^[1] The history of physical activity in ancient India spans multiple periods—from the Harappan to the Hindu era¹. While archaeological evidence offers limited insights, Ayurvedic texts, as major Upavedas, provide a comprehensive and systematic understanding of Vyayama.^[12] Ayurveda views the human being as a holistic entity of body, mind, and soul, emphasizing the importance of maintaining overall health.^[13]

DEFINITION OF VYAYAMA

According to Acharya Charaka, Vyayam is defined as the activity of the body which is sound for mind also and which confers Sthirta – equilibrium in body and increases strength – Bala. Here Acharya also insisted to perform this physical activity – Vyayam in desired degree of intensity – Matravat.^[14] Acharya Sushrut states the activity of body which causes Aayas – effort/causing exhaustion is termed as Vyayam.^[15] Acharya Vagbhata had mentioned it is a mild form of exercise which is performed up to half capacity of strength and in order to gain above stated benefits.^[16]

MATRA (SYMPTOM OF RIGHT VYAYAMA)

Maatra of Vyayama Persons who wants to attain long and healthy and wealthy life should do physical exercise daily up to half of their capacity in all the seasons, it would prove injurious.

Acarya caraka has explained *Matravat vyayama lakshana*

Signs of proper Vyayama

1. Sweating – *Swedaagamah*
2. Increased respiratory rate - *Shvaasavidhhi*
3. Increased heart rate - *Hridayoparodhachha*

4. Feeling of lightness in body- *Gaatranam laghavam*,
5. Dryness of mouth - *Mukhasosha*
6. Exertion- *Ayaasa*^[17]

Balardha laksana of Vyayama acc to different Acharya's

<i>Sushruta</i>	<i>Charaka</i>	<i>Vagbhata</i>	<i>Yogaradhnakra</i>
<i>Gatranamlaghvam</i>	<i>Swedaagamah</i>	<i>Balavaan</i>	<i>Svedopagamana in lalaata</i>
<i>Hridayoparodha</i>	<i>Shvaasavidhhi</i>	<i>Snigdha bhojana</i>	<i>Sevedopagamana in Naasa</i>
<i>Swedaagamah</i>	<i>Hridayoparodhachha</i>	<i>In Hemantha, Sisira and Vasanta rutu</i> ^[21]	<i>Svedopagamana in Gaatra sandhishu</i>
<i>Shvaasavidhhi</i>	<i>Gaatranam laghavam</i>		<i>Svedopagamana in Kaksha</i> ^[22]
<i>Vaya, Bala</i>	<i>Mukhasosha</i>		
<i>Sharira prakriti</i>	<i>Ayaasa</i> ^[20]		
<i>Desha, Kala, Ashan</i> ^[19]			

Maatra of Vyayama based on Rutu's

The person who is healthy and strong, taking Snigdha ahara should perform the regular exercise of the following grade as per the Rutu.^[23]

1. Alpavyayama– in Grishma, Varsha.
2. Balardha– in Sharat, Hemantha, Shishira and Vasanta season.
3. Ativyayama- excess exercises should not adopt in any seasons.

Different grade of Vyayama is advised in different seasons because the Sharira bala does not remain same all through the year, it differs with the seasons. Sharira bala is Sreshtha in Hemantha, Shishira, Madhyama in Sharath, Vasanta and Alpa in Grishma, Varsha season.^[24]

Vyayama Kala^[25]

Suitable time for Vyayama

- Pratyusa– Hemanta-4-6 am
- Purvanna – Vasanta–6-9 am
- Aparanna – Pravith-5-7 pm

Ultimately these can be considered as appropriate time for Vyayama and these are the kaala where the person will be in empty stomach or food consumed will be digested. So Vyayama should perform in empty stomach.

Contraindicated Time

- Madhyanha – Afternoon- 12:00 Pm
- Madyaratri –Mid Night-12:00 Am

Are not suitable time for exercise and even Vyayama is contraindicated soon after food intake.

TYPES OF VYAYAMA^[26]

Nature of Vyayama	Includes strength-oriented and endurance-based physical activities described in Samhita texts	Strength training and endurance/aerobic exercises
<i>Niyudha & Bahuyudha</i>	Controlled and open forms of wrestling or combat exercises	Martial arts, wrestling, boxing, combat sports
<i>Adhva & Chankramana</i>	Long-distance walking and routine moderate ambulation	Brisk walking, jogging, treadmill walking
<i>Shilanirghat</i>	Throwing or lifting stones indicating resistance-based activity	Weight lifting, resistance and strength training
<i>Padaghat</i>	Massage or stimulation of the body using feet; therapeutic and strengthening	Sports massage, myofascial release, recovery therapies
<i>Vyayama for Sleshma Prakruti & Kaphaja Rogas</i>	Padaghat, swimming, riding animals, chariot riding, weapon training, rope pulling, archery	Swimming, cycling, rowing, resistance training, functional fitness

MODERN EXERCISE

Exercise physiology explains how physical activity acts as a controlled physiological stressor producing acute responses and chronic adaptations that enhance functional capacity and maintain homeostasis. During exercise, cardiovascular responses include increased heart rate, stroke volume, and cardiac output with redistribution of blood flow to working muscles, while regular training improves myocardial efficiency, capillary density, and reduces resting heart rate. Respiratory adaptations involve increased respiratory rate and tidal volume, improved alveolar ventilation, and enhanced oxygen diffusion, leading to greater ventilatory efficiency. Musculoskeletal adaptations include muscle fiber hypertrophy, increased mitochondrial density, improved neuromuscular coordination, and increased bone mineral density with resistance training. Metabolically, exercise enhances insulin sensitivity, glucose uptake, and lipid oxidation, accompanied by beneficial endocrine responses such as increased growth hormone, endorphins, and catecholamines. Neurophysiological effects include improved autonomic balance, enhanced neurotransmitter release, better cognitive function,

and stress tolerance.^[27-28]

DISCUSSION AND CONCLUSION

Parameters for Personalisation of Vyayama

Ayurveda offers a scientific, personalised framework for Vyayāma based on Prakriti, Bala, Vaya, Agni, Ritu, and Sara. This approach closely parallels modern personalised exercise prescriptions and highlights Ayurveda's advanced understanding of preventive and lifestyle medicine.

1. Prakriti (Body Constitution)

- Individuals with **Vata dominance** benefit from slow, controlled, and stabilizing exercises that avoid excessive strain.
- Those with **Pitta dominance** should practice moderate-intensity activities while avoiding overheating and overexertion.

Kapha-predominant individuals are advised to perform more vigorous and dynamic exercises to counteract heaviness and lethargy.

	Modern Exercise Indication	Modern Physiological Correlation
<i>Vāta Prakṛiti</i> ^[29]	Low-impact aerobic exercise, mobility and flexibility training, controlled resistance training, longer recovery periods	Low muscle mass, dominant sympathetic nervous activity, lower glycogen stores, reduced endurance
<i>Pitta Prakṛiti</i> ^[30]	Moderate-intensity aerobic exercise, swimming, cycling, interval training with adequate cooling and hydration	High basal metabolic rate, efficient cardiovascular system, greater anaerobic capacity, heat sensitivity
<i>Kapha Prakṛiti</i> ^[31]	Vigorous aerobic exercise, resistance training, high-intensity interval training (HIIT)	Higher fat mass, slower metabolic rate, good aerobic endurance, strong musculoskeletal structure ^[32]

2. Bala (Physical Strength)

Exercise intensity should be limited to **Ardha Shakti**^[33], meaning half of one's total capacity. Proper signs include mild perspiration and increased respiration without exhaustion.

3. Age (Vaya)

Children and elderly individuals require gentle forms of physical activity, whereas adults with adequate strength can tolerate moderate to strenuous Vyayama.

4. Agni and Nutritional Status^[34]

Persons with weak digestion or inadequate nourishment should avoid intense exercise.

Vyayama is ideally practiced after digestion of the previous meal.

Agni Type	Vyayāma Recommendation	Modern Physiological Correlation
Sama agni	Moderate–vigorous aerobic training, resistance training, mixed programs	Optimal basal metabolic rate (BMR), efficient glucose & lipid oxidation
Manda Agni	Low-intensity aerobic exercise (walking), gradual progression; avoid HIIT initially	Low BMR, reduced insulin sensitivity, higher fat storage
Tikṣṇa Agni	Moderate-intensity training, swimming/cycling; careful hydration and cooling	High metabolic rate, increased thermogenesis, heat sensitivity
Viṣama Agni	Low–moderate steady exercise, consistent timing; avoid erratic high intensity	Variabl energy availability, autonomic imbalance

5. Seasonal Consideration (Ritu)^[35]

Maximum tolerance for exercise is observed during **Hemanta and Shishira**, while minimal exertion is advised during **Grishma**. Moderate exercise is recommended in other seasons.

Season Vyayāma	Recommendation	Modern Physiological Explanation
Hemanta & Śīśira	Vigorous exercise	Cold exposure increases basal metabolic rate, appetite, and fat oxidation; improved tolerance to high intensity due to reduced thermal stress
Vasanta	Strong exercise to reduce Kapha	Mobilization of stored fat; higher aerobic activity improves insulin sensitivity and counters post-winter weight gain
Grīṣma	Minimal exercise	High ambient temperature elevates core body temperature, causes vasodilation, dehydration, and cardiovascular strain
Varṣā	Mild exercise	High humidity reduces evaporative cooling, increases fatigue; risk of GI disturbances and infections
Śarad	Moderate exercise	Improved thermoregulation compared to summer, but excessive intensity may increase oxidative stress and heat load

SARA AND EXERCISE CAPACITY^[36]

Sara Type	Exercise Capacity	Vyayāma Recommendation
Twak Sara	Mild–Moderate	Walking, yoga
Rakta Sara	Moderate	Aerobic exercise
Māmsa Sara	High	Strength training
Meda Sara	Low–Moderate	Fat-reducing exercise
Asthi Sara	High	Weight-bearing exercise
Majjā Sara	Very High	Endurance training
Śukra Sara	High	Balanced vigorous exercise
Sattva Sara	Variable	Mind–body practices

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