

REVIEW ARTICLE

Role of Ayurveda in Enhancement of Mobility and Muscle Strength of the Elderly – A Review

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ABSTRACT

Introduction: Aging is associated with several diseases, which are mainly due to the depletion of physiological reserves and the weakening of the immune mechanism. People's quality of life is reduced by many health problems such as pain, fatigue, and mobility impairments. Decreased mobility and decreased muscle strength end up with multiple medications without complete treatment, leading to the deterioration of a person's physical and mental health. Ayurveda primarily focuses on maintaining general health by preventing the entry of disease-causing substances to keep a person healthy. India is only the second country with the largest elderly population in the world after China. Ayurveda offers a wide range of preventive measures to combat the aging process. It has a focused branch called *Rasayana*, *Panchakarma therapy* which mostly treats geriatric problems. Various *Panchakarma* therapies, such as *Abhayanga*, *Shastika Shali Pinda Sweda*, *Janu Basti*, and *Kati Basti* aim to improve a person's mobility and muscle strength. In spite, of this regular Yoga and Pranayama, Lifestyle modifications can help improve muscle strength in old age.

Aim: The aim of the study is to find out Ayurvedic principles significant in the enhancement of mobility and muscle strength in old age peoples.

Material and Methods: Systematic data from various journals, text books, and published articles are collected.

Conclusion: Ayurvedic therapies, such as panchakarma and rasayana chikitsa, and lifestyle modifications, work synergistically to improve physical functions and vitality. Integrating Ayurveda with conventional geriatric care provides a comprehensive strategy to address the multifaceted challenges of aging.

1. INTRODUCTION

Muscle weakness or myopathy can be hereditary or acquired. Although the latter are more common in the geriatric population, several inherited myopathies can first appear in middle age or later and cause genetic problems in other family members as well. Clinical features of myopathies include muscle wasting, fatigue, muscle spasm, pain, tenderness, etc. Muscle strength is considered a prerequisite for mobility and muscle weakness is associated with mobility and functional impairment.^[1] Impaired mobility and range of motion can result in total disability and inability to perform activities of daily living such as brushing, toileting, combing, dressing, and bathing.

Mobility limitations have been linked to social participation and disability, hospitalization, and death from a nursing home.^[2] Ayurveda plays an important role in restoring the body's muscle strength in old age. *Rasayana chikitsa* and *Panchakarma therapies* in Ayurveda help improve muscle strength and increase range of motion. According to Acharya *Vagbhata*, *Abhayanga is Jarahar* (Prevent aging) if done daily on the spine, legs, and head), *Sharamhar* (removal of fatigue), *Vatahara* (remover of humor of wind), *Drishti Prasadakar* (increases vision and keeps away from blindness and eye disease), *Pushtikar* (strengthens body), *Ayushkar* (extends longevity), *Swapnakar* (induces sleep), *Twakdridhakar* (strengthens skin),^[3] *Kleshasahatwa* (resists diseases and disharmony).^[4] Rejuvenation and regeneration strategies include Ayurvedic "*Rasayana chikitsa*" (rejuvenation therapy). *Rasayana medicines* restore the nervous, endocrine and immune systems and are considered anti-aging, rejuvenating, revitalizing, brain-strengthening, and disease-preventive by increasing the body's resistance to all kinds

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of injuries.^[5] Hence, Ayurveda plays an important role in improving muscle strength.

1.1. Aims and Objectives

The study aimed to study the therapeutic significance of Ayurvedic principles in the enhancement of mobility and muscle strength in elders.

2. MATERIALS AND METHODS

Different Ayurvedic texts, modern medical books, websites, medical journals, recent research papers, and published articles are reviewed and appropriate data have been collected to update the knowledge about the Ayurvedic principles used in the enhancement of mobility and muscle strength of elder peoples.

2.1. Cause of Reduced Mobility and Range of Motion in Elders

Arthritis, osteoporosis, hip fracture, stroke, and Parkinson's disease are among the most common causes of immobility in old age.^[6]

2.2. Impact of Reduced Mobility in Old Age

Mobility limitations expose older adults to the risk of falls, reduced access to medical services, harm psychological health, impair functional abilities, and cause negative health effects. Movement limitations are often accompanied by localized pain, often in the knee or back. Lack of balance, muscle weakness, unsteady gait, pain, and certain medications are known risk factors for falls. About 30% of older adults fall each year and 10% fall with disabilities that require medical attention. The main causes of falls are accidents (31%), gait/weakness (17%), and dizziness/balance (13%).^[7] Limiting mobility can cause psychological stress, which in turn prevents encouraging health-promoting activities such as exercise and better nutrition.

2.3. Ayurvedic Procedures used in enhancing Mobility and Range of Motion

2.3.1. Role of panchakarma [Table 1]

1. Abhyanga: *Abhyanga* is defined as a method of applying *Sneha dravya* to the body and making back-and-forth movements to the hair follicles. According to Acharya Charaka, regular massage removes *Srama* (fatigue), and *Suptishcha Pada* (impaired sensation in the feet).^[8]
2. Swedana: *Swedana* is a procedure that induces sweat using steam from a medicinal decoction. It reduces joint stiffness and improves joint mobility.
3. Janu Basti: "*Janu*" means knee and "*Basti*" means to retain. *Janu basti* means a treatment where medicated oils are poured and combined for a specific period of time in a chamber or a cabin around the knee joint/joints using moist black gram flour. The medicinal oil used in the treatment effectively relieves pain, stiffness, and inflammation in the joints.
4. Shirodhara: In *Shirodhara* treatment, oil, milk, buttermilk, or water is poured on the forehead which has a relaxing, soothing, and calming effect on the mind and body. Depression is the most common mental health disorder. An anxious emotional state cannot survive the normal stress of life and cannot function productively and fruitfully.^[9] It relaxes the mind and thus helps in improving the range of motion that occurs due to psychological factors.
5. Matra Basti: *Matra basti* has a lubricating, balancing, nourishing, strengthening, and soothing effect which relieves spasticity in the

limbs and enables the development, maintenance, and restoration of maximum movement and function in old age. Without lubricating the muscles and joints of limbs with *Matra basti*, they will not get relaxed.

2.3.2. Role of rasayana drugs [Table 2]

Rasayana is a therapy that enhances youth, promotes longevity, intellect, and physical strength, and enables a person to fight his illness. *Rasayana* signifies not a single drug or medication but rather refers to a rejuvenate regimen. The primary levels/modes of *Rasayana* effect are:^[10]

- At the level of *Rasa* (Promoting directly the nutrient value of plasma)
- At the level of *Agni* (Promoting BioFire system responsible for digestion and metabolism)
- At the level of *Srotas* (Promoting microcirculation and tissue perfusion).

2.3.3. Role of lifestyle modification (Dincharya and Sadvritta)

Dincharya means establishing a daily routine, that is routine that includes regular exercise, adequate sleep, and stress management techniques. *Sadvritta* (Ethical Precept) refers to following ethical precepts that promote mental peace and reduce stress, which indirectly supports physical health.

2.3.4. Role of yoga and pranayama [Table 3]

Yogic practices enhance muscular strength and body flexibility by improving muscle tone and increasing blood circulation to the affected area. It also influences hormonal balance, including regulation of cortisol, serotonin, and endorphins which in turn enhances mood and reduces stress.

3. DISCUSSION

Old age is faced with social and psychological as well as physical issues. It is projected that the proportion of Indians aged 60 and older will rise from 7.5% in 2010 to 11.1% in 2025.^[12] Ayurveda comprises a specialized branch that deals with aging and has a rich source of drugs, formulations, and various principles for anti-aging. *Panchakarma* and *Rasayana* therapy plays an important part in reducing musculoskeletal disorders. Special oleation and sudation procedures, such as *Katibasti*, *Janubasti*, *Grivava basti*, *Valuka pottali sweda*, *Nadi sweda*, and *Patrapinda pottali sweda*, are very effective in the management of degenerative musculoskeletal disorders, such as osteoarthritis, osteoporosis, fractures, microcrystal disorders, vertebral column, and spinal cord related disorders, such as prolapsed intervertebral disc and sciatica.

Acharya Charaka described that *Vayu* dominates in the *Sparshanendriya*, that is, tactile sensory organ, and this sensory organ is lodged in the skin. The *Abhyanga* is exceedingly beneficial to the skin, so one should practice it regularly.^[13] The drugs used in *Abhyanga* have the *Sneha* property. They act as their properties, which are opposite to the properties of *Vata*. *Abhyanga* increases circulation, especially to nerve endings and tones up the muscles. Therapeutic massage with oils, such as *Mahanarayana Taila*, *Mahamasha Taila*, *Nirgundi Taila*, and *Panchaguna Taila* followed by sudation, has a dual effect on the musculoskeletal system. The oils act as effective analgesics as well as improve local blood circulation to nourish the degenerating tissues of joints. *Rasayana Tantra* literally means the science that deals with anti-aging, the longevity of life span, improving physical strength, cognition, and memory, that is, improving the functions of the brain and body as well as treating various diseases in old age. *Rasayana* drugs, such as *Ashwagandha*, *Shatavari*, and *Guduchi*, play an important role in improving muscle strength in old age. *Sweda karma* rectifies the function of *Medadhatwagni* and *Bhutagni* and fastens the *Pakakarma*, which causes *Srotomukhashodhana* and

profuse *Sweda* production. That causes the displacement of exudates hence, relieves pain and relaxes muscular spasms. By *Swedana*, due to arterial dilatation, the part gets more circulation. Hence, it acts as *Stambhaghna*, *Gourabaghna*, *Sitaghna* and also *Prabha varnakara*. Thus, *Swedana Karma* helps in the enhancement of mobility and muscle strength in the elderly. High *Pitta dosha* can cause inflammation in the joint and high *kapha dosha* can cause stiffness and loss of movement in the joint. *Janu basti* nourishes the knee joint, pacifies the *dosha* causes pain or discomfort, soothes the nerve, relieves degeneration, stiffness and inflammation, and cures Pain. *Shirodhara* relaxes the mind and enhances the mobility and strength of muscles lost due to psychological issues. *Matra Basti*, the ultimate treatment of *Vata*, since its qualities of *Ushna*, *Tikshna*, *Suksma*, *Snigdha*, and others alleviate vitiated *Kapha*, *Vata*, and *Ama*.^[14] According to Acharya Charaka, *Matra Basti* is always applicable to those emaciated due to overwork, physical exercise, weight lifting, journey of vehicles, and indulgence in women, in debilitated persons, and in those afflicted with *Vata* disorders.^[15] *Matra basti* can be given at any time and any age without causing much complications. Since all pain are due to *Vata dosha*, *Matra basti* relives *Vata dosha* and by its *guna*, it also provides strength to the muscles in turn helps in the enhancement of mobility and muscle strength in old age. Yoga and Pranayama improve muscle strength and flexibility thus, helping combat against immobility in old age.

4. CONCLUSION

Old age is presented with many challenges, especially with immobility and lack of muscle strength. Ayurveda, the ancient Indian system of medicine, offers several approaches to enhance muscle strength in old age. The holistic nature of Ayurveda addresses not only the physical aspects but also the mental and emotional well-being of individuals. Regular use of *Panchakarma* procedures such as *Abhayanga*, *Matra basti* etc., *Rasayana therapy*, Lifestyle modification, *Yoga*, and *Pranayama* plays an important role in the enhancement of muscle strength in old age.

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8. CONFLICTS OF INTEREST

Nil.

9. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

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Table 1: Ayurvedic procedures used in enhancing mobility and range of motion

S. No.	Musculoskeletal disorders in old age	Treatment procedures
1.	<i>Vatarakta</i>	In Ama Awastha:- <i>Langhana, Alepa, Parisheka, Abhayanga, Upnaha, Raktamokshana</i> In Nirama Awastha:- <i>Snehapana, Virechana, Basti</i>
2.	<i>Amavata</i> (Rheumatoid arthritis)	<i>Langhana, Swedana (Baluka Sweda, Patra Pinda Sweda), Virechana, Vaitarana Basti, Kshara Basti, Mridu Virechana, Mridu Vamana</i>
3.	<i>Manyasthamba</i> (Torticollis)	<i>Vamana after Snehapana, Nasya</i>
4.	Spondylolisthesis	<i>Nadi Sweda, Kati Basti</i>
5.	<i>Gridhrasi</i> (Sciatica)	<i>Antarkandaragulpha Agnikarma, Lepa, Baluka Sweda, Raktamokshana, Erandmuladi Niruha Basti</i>
6.	Cervical spondylosis	<i>Nasya, Greeva Basti, Nadi Sweda</i>
7.	Fibromyalgia (<i>Mamsagata Vata</i>)	<i>Virechana, Takradhara, Mustadi Raja Yapana Basti</i>
8.	Muscle cramps	<i>Upanaha with hot Payasa, Krushra</i>
9.	Muscle strain	<i>Virechana, Niruha Basti</i>
10.	Osteoarthritis (<i>Sandhigata Vata</i>)	<i>Abhayanga, Nadi Sweda, Janu Basti, Sandhi Pichu, Sandhi lepa, Patra Pinda Sweda, Shastika Shali Pinda Sweda, Mridu Virechana, Matra Basti</i>

Table 3: The use of Yoga and Pranayama in different conditions causing immobility in old age

S. No.	Disease	Yoga and Pranayama
1.	Osteoarthritis	Tadasana, Utthita Trikonasana, Dandasana, Supta Tadasana, Ardha Uttanasana, Baddha Konasana, Virasana, Swastikasana, Savasana
2.	Rheumatoid arthritis	ArdhaKati Chakrasana, Ardha Chakrasana, Pada Hastasana, Bhujangasana, Shalabhasana, Vakrasana, Ushtasana, Breathing Practices such as Kapala Bharti Kriya and Surya Anuloma Viloma
3.	Cervical spondylosis	Bhujangasana, Ardha Matseyendrasana, Dhanurasana, Matsyasana, Marjariasana
4.	Lumbar spondylosis	Tadasana, Virbhadrasana, Uttanasana, Balasana, Ardha Matseyendrasana, Bhujangasana, Salabhasana

Table 2: Role of Rasayana Aushadhis in different conditions causing immobility in old age

S. No.	Disease	Rasayana Aushadhis
1.	Amavata (In Amavastha)	Bhallataka Rasayana
2.	Fractures, curved, painful bones and joints	Lasuna Rasayana ^[11]
3.	Degenerative disease such as osteoarthritis	Amalaki, Ashwagandha, Shilajeeta
4.	Wasting disease	Pippali Rasayana
5.	To increase muscle strength	Bala, Nagabala, Ashwagandha, Salaparni
6.	To increase bone strength	Laksha, Vansalochana, Shukti, Sankha