



Review Article

ENHANCEMENT OF MOBILITY AND MUSCLE STRENGTH IN ELDERLY THROUGH AYURVEDA

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ABSTRACT

Geriatrics is a branch of medicine that offers with valuable insights and practices for enhancing mobility and muscle strength in the elderly population. Aging is a natural process of life characterized by the gradual decline of various physiological functions over time. It encompasses biological, psychological, and social changes that occur as individuals with advance of age. Ayurveda has given unique importance to geriatric care since antiquity. Ayurveda has vividly described the measures and interventions that promote mobility and muscle strength among the elderly. Ayurveda recognizes that aging is influenced by the imbalance of *Doshas (Vata, Pitta, and Kapha)* and advocates restoring equilibrium through herbal medicines, dietary adjustments, lifestyle modifications, and rejuvenation therapies (*Rasayanas*). Ayurveda emphasizes the importance of diet in promoting musculoskeletal health, advocating for nutritious foods that pacify *Vata dosha* and support tissue nourishment and repair. Improving the prevention and management of health issues among the elderly can empower them to maintain a high quality of life and preserve their independence in performing daily activities to the fullest extent possible.

INTRODUCTION

The World Health Organization (WHO) defines aging as "the process of growing older, a process that is genetically determined and environmentally modulated. It emphasizes that aging is a lifelong process that begins at conception and continues the entire lifespan of an individual. According to projections by the United Nations, by 2050, approximately 20% of the global population is expected to be elderly. Two-thirds of these elderly individuals are anticipated to reside in India or China. The reality, according to the United Nations Population Fund's India Ageing Report 2023, is that the population above 60 years will double from 10.5% or 14.9 crore (as on July 1, 2022) to 20.8% or 34.7 crore by 2050^[1,2]. The term "geriatrics" comes from Greek, where "geri" means old age and "iatic" relates to

healing. Aging is characterized by gradual changes in biological, psychological, and social functions over time^[3]. Millenia age old Ayurveda has also given priority to the geriatric care. According to Ayurveda, the body consists of three *Doshas*, seven *Dhatus* (tissues), and three *Malas* (waste products)^[4]. Prolonged strain on the body can lead to the degeneration of *Dhatus*. Therefore, in old age, it's important to focus on to maintain the bio-status of body and mind by incorporating the measures to balance bio-humors, to rejuvenate the seven-tissue elements and to properly evacuate the accumulated morbid factors to maintain of health and well-being of the patient. Ayurveda highlights the prime role of diet in maintaining musculoskeletal health, recommending nutritious foods that balance *Vata dosha* and aid in the nourishment and repair of tissues. Ayurveda is the ancient holistic health system from India which is pro-nature in its approach, holistic in nature and has personalized approach of care and cure of ailment. It provides effective strategies for preventing and managing health issues associated with aging. It emphasizes promoting overall well-being and offers various methods to handle age-related conditions. By utilizing these preventive measures, Ayurveda aims to

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improve the quality of life for older adults, enabling them to stay self-sufficient and active for as long as possible.

Relevance to Mobility and Muscle Strength

Ayurveda offers a holistic approach to maintaining and enhancing mobility and muscle strength, which is particularly relevant for the elderly as they face age-related physiological changes. As individuals age, they often experience a decline in muscle mass and strength, a condition known as sarcopenia, alongside increased joint stiffness and reduced flexibility. This can lead to impaired mobility, decreased balance, and a higher risk of falls. Ayurveda addresses these issues by focusing on restoring balance to the body's *Doshas* and supporting overall vitality through personalized dietary recommendations, lifestyle modifications, and therapeutic treatments. Ayurveda aims to improve muscle function, reduce inflammation, and enhance joint health^[5]. Ayurvedic herbs and supplements are believed to nourish and strengthen the tissues, while practices such as *Yogic* practices and *Abhyanga* (oil massage) promote flexibility, circulation, and muscle relaxation. By integrating these Ayurvedic principles into their daily routines, elderly individuals can potentially mitigate the adverse effects of aging, improve their physical function, and enjoy a higher quality of life.

Common problems in old age^[6]

1. Nervous systems- Dementia, delirium, depression, Parkinson's disease, falls, sleep apnea etc.
2. Musculo-skeletal- Muscle atrophy and dystrophy, dermatitis, osteoarthritis, osteomalacia and fracture etc.
3. Genitourinary- Bacteriuria, UTI, cystitis, BPH, malignancy of prostate, urinary incontinence and impotency etc.
4. Renal- Nocturia, chronic renal failure etc.
5. Gastrointestinal- Cirrhosis of liver, osteoporosis, B12 deficiency, fecal impaction, fecal incontinence, ulcerative colitis, anemia etc.
6. Cardiovascular- Heart failure, heart block, IHD, CVA and varicose veins.
7. Respiratory- Dyspnea, hypoxia, COPD, tuberculosis and lung cancer etc.
8. Endocrine- Diabetes mellitus, thyroid dysfunction, hypothermia and hyperthermia, impotency etc.
9. Immune system- Autoimmune diseases, anemia etc
10. Eye/cars - Blindness and deafness.

Preventive measures^[7]

1. Balanced diet (organic food, green vegetables, low fat fruits and fibers) and timely meal.
2. Regular physical activity (walking)

3. Regularly follow the daily, nocturnal, and seasonal activities.
4. Remove bad habit (avoid alcohol, addiction and smoking).
5. No use of OTC drugs
6. Good sleep
7. Stress management
8. Socialization

Ayurvedic Approaches to Enhancing Mobility and Muscle Strength

1. Diet and Nutrition

Nutrients are vital substances that the body cannot manufacture in sufficient quantities and thus must be obtained from dietary sources. To ensure proper health, it's important to consume energy-providing nutrients like proteins, fats, and carbohydrates, along with essential vitamins, minerals, and water. Additionally, the diet should include several inorganic elements and trace minerals, which, despite being required in very small amounts, are crucial for maintaining overall health and proper bodily functions. In old age, the predominance of *Vata dosha*, characterized by its inherent variability, can lead to a range of physiological changes in the body's systems.^[8]

Diet Recommendations

- **Opt for Liquid and Semisolid Foods:** Due to potential issues with dental health, it is advisable to offer diets that are primarily liquid or semisolid. *Rasayana* remedies such as *Dudhdha*, *Amalaki*, *Ashwagandha*, *Shilajatu*, and *Haridra* should be included daily for their rejuvenating benefits.^[9]
- **Factors determining the utility of food/diet:** Nature of food article, method of their processing, combination, quantity, habitat acclimate, time in relation to disease and divide, rules governing the intake of food, wholesomeness of individual who takes it.^[10]
- **Focus on light and nutritious Foods:** Provide a diet that is light and rich in *Madhura rasa* (sweet taste), incorporating items like *Draksha* (raisins), *Mishri* (rock sugar), and *Dugdha* (milk). Avoid hard and solid foods that may be difficult to chew.
- **Prioritize fruits and vegetables:** Include a variety of fruits and vegetables in the diet for their health benefits.
- **Meal timing:** Avoid heavy meals in the evening; instead, the main meal should be consumed around mid-day.
- **Emotional support:** Offering love and affection to elderly individuals can positively impact their mental and cognitive well-being.

- **Avoid certain foods:** Steer clear of stored, old, precooked, artificial, overly oily, and heavy foods. Also, avoid spicy, salty, and astringent items.^[11]
- **Avoid Incompatible food combinations:** Ensure that the diet does not include incompatible food combinations to support optimal digestion and health.

2. Lifestyle modification

Dinacharya (daily routine), can help elderly people to maintain muscle strength and flexibility through simple practices:

- **Early wake-Up:** Rising early in the morning and doing gentle stretches or yoga can improve flexibility and get the body moving.
- **Oil massage:** Regularly massaging the body with warm oils like sesame or *Ashwagandha* helps keep muscles and joints nourished and flexible.
- **Gentle exercise:** Engaging in light exercises or yoga daily helps strengthen muscles and maintain flexibility. Simple movements like leg lifts or chair poses can be effective.
- **Healthy diet:** Eating a balanced diet with plenty of proteins, healthy fats, and vegetables supports muscle health. Foods like lentils, nuts, and soups are beneficial.
- **Stay hydrated:** Drinking enough water throughout the day helps keep muscles hydrated and functioning well.
- **Rest and sleep:** Getting enough rest and sleep each night helps muscles recover and stay strong.
- **Stress reduction:** Practicing mindfulness or relaxation techniques can reduce stress, which supports overall muscle health.
- **Seasonal adjustments:** Adjusting daily habits to match the seasons helps keep the body comfortable and healthy throughout the year.^[12]

3. Exercise and Physical Activity

Yoga and gentle exercises play a crucial role in supporting mobility and muscle strength in the elderly.

Physical Benefits

- **Improves muscle strength:** Builds and maintains muscle mass.
- **Enhances flexibility:** Increases range of motion and reduces stiffness.
- **Boosts balance and coordination:** Reduces fall risk and improves stability.
- **Supports cardiovascular health:** Strengthens the heart and improves circulation.

- **Promotes joint health:** Maintains joint mobility and reduces pain.
- **Aids Weight Management:** Helps control weight and boosts metabolism.
- **Improves Posture:** Strengthens the core and reduces back pain.

Mental and Emotional Benefits

- **Reduces stress and anxiety:** Calms the mind by adopting the mindfulness and relaxation techniques, such as *Pranayama*, *Yogamudra*, *Bhramari* etc.
- **Enhances cognitive function:** Improves memory, focus, and overall mental clarity.
- **Improves sleep quality:** Regulates sleep patterns and reduces insomnia.
- **Boosts mood:** Increases endorphins and promotes a positive outlook.

Examples for *Yoga* in elderly are- *Tadasana*, *Utkatasana*, *Virabhadrasana*, *Vrikshasana*, *Adhomukha shvanasana*.

Exercise in elderly, such as Body weight squats, resistance band exercise, stretch for major muscle group (hamstring stretch, quadriceps stretch, shoulder stretch) heel to toe walking^[13], standing on leg etc. are the important one to improve muscle strength. Thus, it improves the movement and flexibility of joints, which are the key beerier of the muscles.

4. Panchakarma therapy

Panchakarma therapy, a traditional Ayurvedic treatment method, is designed to detoxify and rejuvenate the body. It involves a series of therapeutic procedures aimed at balancing the body's *Doshas* (vital energies). While *Panchakarma* is typically used for overall health and detoxification, certain components of it can be particularly beneficial for elderly individuals seeking to improve muscle strength and flexibility.

Abhyanga (Oil massage)

Benefits: Nourishes muscles, improves blood circulation, enhances flexibility, and reduces stiffness.

Swedana (Sweating therapy)

Benefits: Helps in loosening and removing toxins from the body, reduces muscle stiffness, and improves joint flexibility.

Shirodhara (Oil flow therapy)

Benefits: Reduces stress and anxiety, which can contribute to muscle relaxation and overall flexibility.

Pizhichil (oil bath)

Benefits: Strengthens muscles, improves flexibility, and provides deep nourishment to tissues.

Kati Basti (Lower back treatment)

Benefits: Specifically targets lower back pain and stiffness, enhances flexibility in the lumbar region.

Nasya (Nasal administration of oils)

Benefits: Clears nasal passages, can help reduce headaches, and supports overall brain health.

Basti (Enema therapy)

Benefits: Detoxifies the colon, which can indirectly support muscle and joint health by removing toxins from the digestive system.^[9]

Herbal Medicament

Herbal supplements and formulations in Ayurveda have been used for centuries to enhance muscle strength, joint health and mental health.

Ashwagandha (*Withania somnifera*)

Benefits: Known for its adaptogenic properties, *Ashwagandha* helps reduce stress, enhance muscle strength, and improve endurance

Turmeric (*Curcuma longa*)

Benefits: Contains curcumin, which has powerful anti-inflammatory and antioxidant properties that can support joint health and reduce pain and stiffness.

Ginger (*Zingiber officinale*)

Benefits: Has anti-inflammatory properties that can help reduce joint pain and improve flexibility.

Shallaki (*Boswellia serrata*)

Benefits: *Shallaki* is used to manage inflammatory conditions and support joint health.

Triphala

Benefits: A blend of three fruits- *Amalaki* (*Emblica officinalis*), *Bibhitaki* (*Terminalia bellerica*), and *Haritaki* (*Terminalia chebula*) that helps in detoxification and supports overall health.

Gokshura (*Tribulus terrestris*)

Benefits: Enhances muscle strength and endurance and supports overall vitality.

Moringa (*Moringa oleifera*)

Benefits: Rich in nutrients and antioxidants, Moringa supports overall joint and muscle health and reduces inflammation.^[13,3]

Rasayana

In the realm of geriatric care, *Rasayana* therapy is a key strength of Ayurveda. It offers a solution for preventing early aging and addressing age-related issues, promoting overall health and longevity. This therapy supports mental well-being and enhances resistance to various age-related diseases. Adhering to proper diet, hygiene, and lifestyle guidelines is crucial for the effectiveness of *Rasayana* treatment, ensuring a long and rejuvenated life.

Certain Ayurvedic herbs have specific benefits for managing aging and stress. *Ashwagandha* and *Shilajit* help counteract stress, while *Gambhari* supports a healthy nitrogen balance and promotes tissue repair. *Guggulu* helps clear bodily channels and improves nutrient delivery to tissues and cells. *Amalaki* and *Bala* are rich in antioxidants that help neutralize free radicals. *Achara Rasayana* acts as a psychoimmune modulator, reducing stress and preventing the production of free radicals.^[14,15]

DISCUSSION

Ayurveda offers a comprehensive approach to improving mobility and muscle strength in the elderly. The combination of dietary recommendations, herbal supplements, and therapeutic practices provides a multifaceted approach to managing age-related decline in physical function. The reviewed herbs, such as *Ashwagandha*, turmeric, *Boswellia*, and ginger, have shown promise in clinical studies, supporting their use in enhancing muscle strength and joint health.

However, while Ayurveda presents a holistic and natural approach, it is essential to integrate these practices with conventional medical treatments and lifestyle modifications. Further, it is needed to validate the efficacy and safety of Ayurvedic interventions for elderly populations by acquiring conventional tool and technologies.

CONCLUSION

Ayurvedic systems offer various tools for improving mobility and muscle strength in the elderly. By focusing on *Dosha* balance, *Dhatu* nourishment, and targeted herbal remedies, Ayurveda provides a holistic and personalized approach to enhance physical function and quality of life. Continued research and integration with conventional medical diagnostics and practices can further establish Ayurveda as a medicine for contemporary use today to the management of age-related physical decline.

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