



Is Walking a Miracle Cure for Active and Healthy Aging?

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ABSTRACT

Walking is the most basic and common means of locomotion. Walking requires integration and good level of different physical and mental components and processes. Several factors, including the inverse relationship with aging and the level of physical activity, may alter the level of functionality of these components. Walking has many benefits; It may help improve heart health, aid stroke recovery, reduce pain, and improve physical function. In addition, the presence of chronic conditions such as sarcopenia, cognitive disorders, and specific changes in frontal brain structures associated with the aging process may also affect the individual's walking pattern. Additionally, walking performance requires integration with the environment and requires reasonable levels of balance, agility, and cognitive skills. Deterioration in walking pattern causes an increase in the risk of falling along with a decrease in agility and balance levels. Incorporating walking into daily routines does not require expensive equipment or elaborate plans. With your comfortable shoes, go outside and embrace the joy of movement. Start with short walks and continue increasing the duration and intensity as you improve your fitness. The good news is that any walking activity is better than no walking activity, and walking is the easiest way to get started. Walking is so good for us that it is called a miraculous cure. To achieve these goals, the scientific literature has been reviewed and some information about the benefits of walking has been compiled to inform and motivate you.



1. INTRODUCTION

Worldwide, older adults are considered the fastest growing age group [1]. According to the United Nations, the number of people aged 60 and over is projected to more than double to 2.1 billion by 2050, and one in six people in the world will be older adults [2]. With this increase in the aging population, there is an increased focus on healthy aging, which includes maintaining physical and mental health as people age [3,4].

Due to the aging process, older adults often lead a sedentary life, which can increase the risk of various health complications such as excessive weight gain, cardiovascular diseases, different bone disorders, diabetes, frailty, deterioration in

cognitive functions, deterioration in the overall quality of health, survival and even mortality [5]. Additionally, older individuals are more prone to psychological health problems, especially depression [6], and they also experience feelings of loneliness and inadequate social support [7].

To face age-related health complications, walking is widely accepted as one of the vital approaches for older adults [8]. Additionally, the effect of any type of physical activity (walking) may vary not only by the type of physical activity but also by the way it is performed. One area of research that has attracted attention in recent years is examining the determinants of healthy aging in Blue Zones, where people live longer and are healthier than elsewhere in the world [5].

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Researchers have identified five Blue Zones around the world; these include Okinawa in Japan, Sardinia in Italy, Nicoya in Costa Rica, Icaria in Greece, and the Seventh-day Adventist community in Loma Linda, California.

These regions have the highest concentration of centenarians and people living more than 100 years, and the lifestyles of people living in these regions have been studied to determine the factors that contribute to their longevity and healthy aging [6].

One of the key lifestyle characteristics of individuals in these regions is their high level of physical activity, which includes regular walking as well as other low-intensity physical activities. Individuals in these regions engage in physical activities as part of their daily routine, such as walking to work or running errands, gardening, and performing other manual labor activities. Promoting physical activity has been an important strategy to reduce the prevalence and incidence of common cardiometabolic conditions, especially around the world. Physical components of activity include frequency, duration, and intensity, which together make up the volume. To obtain maximum benefit from physical activity, appropriate intensity, frequency and duration are necessary. Physical activity can also be classified by intensity level: light, moderate and vigorous.

Despite current physical activity guideline recommendations that adults should engage in at least 150-300 minutes of moderate-intensity physical activity or 75-150 minutes of vigorous-intensity physical activity Whether weekly activity or the equivalent combination of both types of physical activity per week [7, 9], there is a research gap regarding the dose-response relationship between the volume and intensity of physical activity and health outcomes [9].

Walking is the most frequently reported physical activity and is generally classified as light or brisk. Light walking is classified as low-intensity physical activity, and brisk walking is classified as moderate-intensity physical activity. Although the cardiovascular benefits of walking are widely accepted, there is uncertainty about the ideal “dose” required to benefit from cardioprotective benefits, as well as the effect of walking on non-vascular outcomes. Conflicting data also suggest that intensity of physical activity may be associated with greater benefits than quantity [10]. The purpose of this review is, is walking a miracle cure for active and healthy aging? is to seek the answer to the question. Therefore, the purpose of this study is to provide a summary of the extensive walking speed compares to the average for your age group and sex. [14].

literature on the benefits of walking for active and healthy aging.

2. MATERIALS AND METHODS

We conducted a comprehensive search for observational studies, including reviews and articles and non-randomized controlled studies, from Web of Science, Scopus, MEDLINE, and Google Scholar to May 2024. Our research: Is Walking a Miracle Cure for Active and Healthy Aging? It was planned to answer the question. In this review, the benefits of walking are emphasized, especially during the active and healthy aging process. Our search terms included a range of keywords such as "walking", "Miracle Cure", "Active Aging", "Healthy Aging", "Disease", "Physical Activity", "Health". We limited our review to studies conducted in human populations, reported in English, and studies in adults. An important aim of this review was to investigate the physical, physiological, and psychological mechanisms underlying these relationships in which walking promotes active and healthy aging.

3. ACTIVE AND HEALTHY AGING

3.1. The importance of Movement for Active and Healthy Aging

Physical inactivity, as a result of sedentary lifestyles, is a leading cause of death worldwide (equivalent to smoking) and is linked to more than 20 chronic conditions and diseases. If a person is sedentary, walking is a good way to start getting active. Walking for transportation or recreation is not only healthy, but also accessible, social, free, non-polluting and easily integrated into daily life. Worldwide, older adults are considered the fastest growing age group [1]. According to the United Nations, the number of people aged 60 and over is projected to more than double to 2.1 billion by 2050, and one in six people in the world will be older adults [2]. With this increase in the aging population, there is an increased focus on healthy aging, which includes maintaining physical and mental health as people age [3,4]. The average adult worldwide spends approximately nine hours sitting per day [11]. More than a third of adults (36.8%) and almost half of children in England (rising from 46.8% to 49% of primary school age children) did not meet physical activity guidelines in 2019 [12]. Physical activity levels Activity among adults and children varies according to age, gender, socio-economic status and ethnicity (Table 1) [13]. Use this table to determine how your

Table 1. Average walking speeds by age and sex

Sex	Age group	Average self-selected walking speed (metres/second)	Range within which the average value might fall (metres/second)
Women	40-49	1.39	(1.22-1.41)
	50-59	1.31	(1.18-1.30)
	60-69	1.24	(1.07-1.19)
	70-79	1.13	(0.85-1.03)
	80-89	0.94	(1.34-1.41)
Men	40-49	1.43	(1.38-1.49)
	50-59	1.43	(1.26-1.41)
	60-69	1.34	(1.21-1.32)
	70-79	0.97	(0.83-1.10)
	80-89	1.39	(1.22-1.41)

Jadczyk et al., [15] ; de Vries et al., [16].

Table 2. Therapeutic exercises for strength and flexibility (standing leg exercises)

Do all of these exercises 3 times a day.

Do each exercise 20 times.

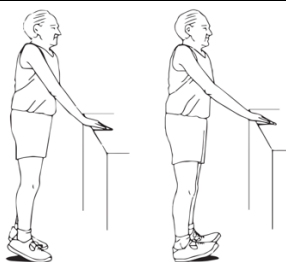
Hold onto a solid rail or kitchen counter at home when doing these exercises.

Look straight ahead when doing these exercises.

1. Toe ups

Gently rise up on toes, and hold for 3 seconds.

Then rock back on heels, and hold for 3 seconds



2. Leg-kickback

Stand straight holding onto a support.

Bring your leg backward, keeping knee straight and hold for 3 seconds.

Do not lean forward.

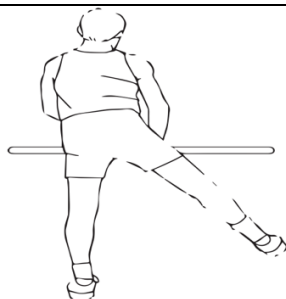


3. Leg-sideways lift

Stand straight holding onto a support.

Lift your leg sideways, hold for 3 seconds and bring it back.

Keep your trunk straight during this exercise.

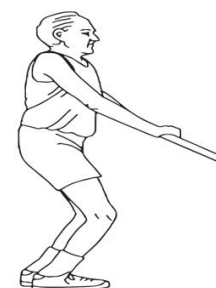


4. Knee bends

Hold onto support for balance.

Slowly bend knees and hold for 3 seconds.

Keep both feet on the floor.



5. Marching

Hold onto support.

Lift knee.

March on the spot.



VanSwearingen, et al., [17]; Brown, et al., [18].

3.2. Walking for Active Aging

Worldwide, older adults are considered the fastest growing age group [1]. Globally, the

estimated number of people aged 65 and over in 2020 was 727 million, and by 2050 this number is predicted to more than double, with one in six people in the world expected to be older adults. However, the real challenge is that life expectancy is increasing much faster than healthy life expectancy (the number of 'healthy life years' lived). Life expectancy for women is 83 years and for men is 79 years; However, the number of years of healthy life lived is estimated to be only 63 years. Some of us can expect to live twenty years without good health. We all change as we get older, but what matters is how well we age. Loss of muscle mass due to inactivity affects strength and balance [19].

One third of the population aged 65 and over and half of the population over the age of 80 experience tripping problems at least once a year, and this costs the healthcare system billions of dollars. Health institutions around the world have signed the consensus on healthy aging. One of its key goals is to provide good homes and communities and narrow inequalities. Accessible and inclusive pedestrian environments, accessible transport links, quality green spaces, services and facilities close to people's homes, and community-centred approaches have a vital role to play in ensuring older adults stay connected as they age. By staying physically active, we can help 'reduce the risk of disease both in the short and long term, protect memory and cognitive abilities, and reduce the risk of falls', all of which leads to a healthier old age, better well-being and a better life and quality of life [20].

3.2.1. How does our walking speed change with age?

Our walk as we get older:

Slow, We are less stable when we walk, less efficient. The steps we take are less coordinated and bad timing. Our posture may not be upright and flexible [21], and this, together with decreased vision and hearing, makes it difficult for us to react to our environment while walking. But these changes don't have to limit you.

3.2.2. How can you improve your walking speed? Strengthen the body structures!

If we notice that we are slowing down while walking, here are some strategies we can use to maintain an effective walking pace. There are TWO approaches to increasing your walking speed. The first approach addresses the structural changes we experience in our bodies as we age. It is important to find ways to ameliorate these structural changes; These body parts are the 'machines' that we need to walk. These structural changes include changes in the muscle strength in our legs and trunk that we need to stabilize ourselves while walking [16]. We also need our joints to be flexible so that the muscles can move our limbs efficiently, for example, along the length of the steps we take when walking. Changes we may notice in our body structures include not being able to extend your leg behind you to step forward, difficulty standing on your legs for longer periods of time [22], or difficulty lifting your foot when swinging your leg forward. One systematic review and one umbrella review found that exercise interventions can improve walking speed and measures of physical function in frail older adults. Another systematic review of studies in healthy older adults found that resistance training to strengthen leg muscles was the most effective way to increase walking speed [23]. Table 3 below provides a summary of exercises that have been shown to improve body structures for walking more efficiently.

Table 3. Walking exercises to improve body structures during active and healthy aging

Target	Purpose	Exercise
Strengthening for leg muscles ([23])	To improve strength of leg muscles used in walking	Repeated standing and sitting from a chair Stand close to a support and practice rising up onto your toes and then back on your heels
Stretching [14]	To improve the flexibility of the joints in your leg	Standing on the edge of a step with your forefoot supported, support yourself with your arms, depress your heel Lying on your (left) side raise your right leg and move it backwards as far as you can. Hold and then return it. Repeat on the other side
General fitness [24]	To ensure efficient delivery of oxygen to muscles while you walk	Cycling on a stationary bike Marching on the spot

3.2.3. How can you improve your walking speed?

Are you practicing walking to improve the mechanism in your brain that controls walking? The second approach to increasing your walking speed involves training your brain to walk more efficiently. We can improve our walking by practicing restoring the brain model used to activate muscles and nerves to better meet the demands of walking. To walk efficiently, we need a basic level of conditioning, including our cardiorespiratory system. This means that we do not experience shortness of breath while walking and oxygen is delivered to the muscles efficiently. If walking requires a lot of energy, you will do it less often than people who do not feel tired when walking. Improvements in walking occur when our brain, muscles, joints, and nerves respond more efficiently to meet the demands of walking [25].

Skilled walkers tend to have an efficient approach to walking and are more likely to walk further and have less difficulty moving in general [26]. Two studies evaluated this problem, mostly involving older adults with mild [27] or moderate [28] walking problems. These studies showed that exercise interventions that focused on walking activities produced greater improvements in walking speed than those that focused only on structural issues such as strengthening and flexibility. Table 4 shows the best way to improve your walking efficiency. Our general walking patterns can also be improved with practice. Practicing will increase our walking ability, consume less energy to walk, and make it easier for us to react to our environment while walking.

Table 4. Exercises to improve walking efficiency

Goal	Exercise	Modifications
Practice walking	Practice walking and consciously monitor your progress, All these tasks make your walking task more challenging, so that you become more skillful at making adjustments to your walking pattern with less effort	Try and increase your speed safely for short distances, Walk forwards and practice changing directions, walking sideways then forwards and backwards stepping, Practice walking carrying objects, Practice walking to counting or music to make your walking consistently rhythmical, Walk circular paths, clockwise and counterclockwise or pathways following figures of eight
Practice stepping over objects as you walk	Disturbing your walking pattern and adjusting your balance, Your walking speed is good practice for unexpected disturbances when walking	Place several objects at distances across the floor of a room, then practice walking and stepping over the objects; note changes that occur as you step over the object and then start walking again

3.3. Health Benefits of Walking

3.3.1. Cardiovascular Risk Factors

Brisk walking stimulates blood circulation, strengthens the heart, and lowers blood pressure. This gentle aerobic exercise improves cardiovascular health, reducing the risk of heart disease, stroke, and other cardiovascular ailments. Consistent walking can also help manage cholesterol levels, contributing to a healthier heart as we age [29].

3.3.2. Joint health and mobility

Regular walking can alleviate stiffness in joints and muscles, promoting flexibility and mobility. The low-impact nature of walking reduces strain on joints, making it an ideal exercise for those with arthritis or other joint-related

issues. By keeping joints supple, walking helps maintain independence and enhances overall quality of life.

3.3.3. Mental Well-Being

The benefits of walking aren't just physical. Walking also positively impacts mental health. Regular walks outdoors expose us to natural light and fresh air, boosting mood and reducing stress. It also provides an opportunity for solitude and reflection, promoting mental clarity and emotional resilience. Social walking groups offer companionship and a sense of community, further enhancing well-being [30].

3.3.4. Weight Management

Walking, when combined with a balanced diet, aids in weight management by burning calories and improving metabolism. Even short, frequent walks can contribute to calorie expenditure and help prevent age-related weight gain.

3.3.5. Bone Density and Fall Prevention

Walking is a weight-bearing exercise that helps preserve bone density and strength, reducing the risk of osteoporosis and fractures. Stronger bones, coupled with improved balance and coordination from walking, can lower the

likelihood of falls among older adults. This can help maintain independence and prevent injuries [31].

3.3.6. Cognitive Health

Regular physical activity, such as walking, reduces the risk of cognitive decline and dementia in older adults. Walking stimulates blood flow to the brain, promoting neuroplasticity and cognitive function. By keeping your body and mind active, walking may contribute to a longer, healthier life [32].

Table 5. Benefits of walking during active and healthy aging

Early All-Cause Death
31% risk reduction
45% risk reduction when aerobic fitness is assessed
Cardiovascular Disease
33% risk reduction
Risk reduction of 50% or more when aerobic fitness is assessed
Stroke
31% risk reduction
Risk reduction of 60% or more when aerobic fitness is assessed
Hypertension
32% risk reduction
Risk reduction of 50% or more when aerobic fitness is assessed
Colon Cancer
30% risk reduction
Breast Cancer
20% risk reduction
Type 2 Diabetes
40% risk reduction
Risk reduction of 50% or more when aerobic fitness is assessed

Warburton et al., [33].

4. Conclusion

Older adults are highly susceptible to age-related complications that can cause frailty and impaired cognitive function and reduce overall quality of life. Physical activity, especially walking, has tremendous health benefits, especially for the health and overall well-being of older adults. Walking has the potential to improve health outcomes and promote healthy aging in a variety of populations, including those in sedentary jobs at work, older adults, individuals with chronic conditions, and those at risk for age-related diseases. One of the key advantages of walking-based interventions is their accessibility and affordability. The walk requires no special equipment or facilities and can be done at any time of the day; This makes it an ideal form of physical activity for people of all ages and abilities. Walking may also be included It creates an easy and convenient way to

increase physical activity levels by incorporating it into daily routines, such as commuting to work, running errands, or taking leisurely walks. The good news is that any physical activity is better than no physical activity, and walking is the easiest way to start. Walking reduces the risk or severity of a variety of health outcomes, including cardiovascular and cerebrovascular diseases, type 2 diabetes, cognitive impairment, and dementia, while also improving mental health, sleep, and longevity. Additionally, low-intensity physical exercise, including walking, produces anti-aging effects and helps prevent age-related diseases. It is a powerful tool to promote healthy aging. Engaging in daily routines and promoting walking-based physical activity interventions may be an effective strategy to promote healthy aging and improve health outcomes in all populations.

Conflict of Interest

No conflict of interest is declared by the authors. In addition, no financial support was received.

Author Contributions

Study Design, EB, ND; Data Collection, EB, ND, DTPP, AN, EN.; Data Interpretation, ND, DTPP, AN; Manuscript Preparation, EB, ND, DTPP, AN, EN; Literature Search, EB, ND, DTPP, AN, EN. All authors have read and agreed to the published version of the manuscript.

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