

Health Benefits of Promote Walking in Urban Areas

Subjects: Transportation

Contributor: Christos Karolemeas, Lambros Mitropoulos, Katerina Koliou, Dionysios Tzamakos, Eirini Stavropoulou, Evi Moschou, Konstantinos Kepaptsoglou

The transportation sector contributes significantly to global warming, as well as to urban fabric problems such as traffic congestion, traffic accidents, noise pollution, and air pollution. A shift from fossil fuels to renewable sources and from motorized to non-motorized modes is now considered essential to create sustainable communities. Walking is a sustainable transport mode and several studies have focused on factors affecting it, including travel behavior and sociodemographics.

Keywords: health benefits ; walking ; impact

1. Introduction

Urban areas face numerous challenges in promoting sustainable transport modes, including the need to reduce dependence on motorized vehicles and increase active transport options such as walking. Walking is a sustainable and cost-effective mode of transport that offers numerous health, social, and environmental benefits ^{[1][2]}. In recent years, there has been growing interest in the use of financial incentives as a strategy to promote walking in urban areas. Financial incentives may take various forms, including cash rewards, discounts, or subsidies, and may target different segments of the population, such as employees, students, or low-income individuals ^{[3][4][5]}. Such incentives are designed to motivate and reinforce walking behaviors by providing tangible benefits that can influence individual decision-making and encourage individuals to choose walking as their preferred mode of transport ^{[6][7]}.

The literature on financial incentives to promote walking has focused on the effectiveness, equity implications, and implementation challenges of such incentives. A sample of these studies revealed a focus on the impact of road network design on walking behavior ^[8], the equity implications of financial incentives for active transport modes ^{[9][10]}, and the role of financial incentives in promoting sustainable transport in diverse urban environments ^[7]. Additionally, there is a growing interest in transportation engineering and urban planning regarding infrastructure design ^{[11][12]}.

2. Walking Benefits

2.1. Physical Health

There are numerous studies in the literature that address the effects of walking and physical activity on mortality. Factors that characterize these studies are the user groups, the intensity of walking, and the effects of walking. Early studies concluded that regular walking has significant effects, as it benefits adults with diabetes ^[13], reduces mortality, and prevents cardiovascular disease ^[14].

Several studies concluded that regular physical activity reduces the risk of premature death ^{[15][16]}; however, they all used different metrics to relate walking distance to the effects of walking. For example, Morris et al. ^[17] concluded that walking 15 km per week reduced the risk of death in middle-aged men. Similarly, Diehr and Hirsch ^[18] concluded that walking 28 blocks per week was associated with significant health benefits for older adults. A large study by Matthews et al. ^[19], on more than 67,000 Chinese over an average of 5.7 years, concluded that men who walk or ride bicycles have a lower all-cause mortality rate than men who do not walk or ride bicycles.

Walking was also found to be associated with important cardiovascular health benefits ^{[16][20][21][22]}. Hamer and Stamatakis ^[23] found that walking is associated with a lower risk of death for Scottish men and for women who are diagnosed with cardiovascular disease (CVD). However, Manson et al. ^[24] found an inverse association between walking intensity and cardiovascular events for older women.

Other related health benefits include a reduction in hypertension ^[25], cholesterol, blood pressure, and obesity ^[15], an increase of serum levels of high-density lipoprotein (HDL) cholesterol ^{[26][27]}, treatment of elevated cholesterol ^[28], and a lower risk of developing diabetes ^{[15][27]}. It also positively affects musculoskeletal health ^{[15][25]}, aerobic capacity, and trunk muscle endurance, as well as joint flexibility and stability ^[29]. It reduces the risk of osteoporosis ^[29] or slows the process of osteoporosis, increases bone mineral content or slows its breakdown ^[27], and reduces the risk of colon cancer ^[15], breast cancer, chronic obstructive pulmonary disease, and constipation ^[28].

2.2. Cognitive Health

In addition to physical health benefits, many studies showed that higher levels of activity are associated with better cognitive performance. Research has shown that improvements in cardiovascular fitness are associated with improvements in cognitive function, including motor function, memory, cognitive speed, and attention ^[30]. Physical activity also plays a role in the treatment of dementia ^[28]. Kramer et al. ^[31] found that individuals who received aerobic training showed significant improvements in performance on tasks requiring executive control compared with anaerobically trained subjects. Weuve et al. ^[32] compared older women with varying levels of physical activity and observed less cognitive decline in women who were more active. According to the results of their study, long-term regular physical activity, including walking, was associated with significantly better cognitive function and lower cognitive decline in older women. Finally, physical activity may prevent functional decline in the presence of multiple chronic diseases and delay death through other unexpected mechanisms ^{[33][34]}.

2.3. Mental Health

In recent years, more attention has been paid to the effects of walking on people's mental health and psyche. The literature shows a positive relationship between physical activity and the alleviation of depression and anxiety symptoms ^{[15][27]}. Farmer et al. ^[35] found that women who reported performing little to no physical activities were twice as likely to develop depressive symptoms as women who reported being moderately to vigorously active. Camacho et al. ^[36], based on a sample of 6928 men and women over nine years, concluded that individuals who reported low levels of physical activity had a higher risk of developing depressive symptoms at the end of their study.

In addition to depression and anxiety, other forms of mental well-being were also studied. For example, Morris and Hardman ^[17] mentioned several factors that are associated with walking and may improve the quality of life: enjoyment of the scenery, escape from boring work and dull surroundings, a mild adventure, good company, and good conversation. These findings were also supported by Cavill ^[25], who mentioned that reduced stress and increased relaxation during and after walking resulted in increased well-being. Walking outdoors was found to have a positive effect on mood and self-esteem compared with a walk in a shopping mall ^[37], to be beneficial regarding recovery compared with an urban walk ^[38] and a control day (i.e., no walk) ^[39], and to enhance the capacity for mental restoration. The walking conditions, such as walking by a tree-lined arboretum shielded from traffic, significantly improved mental performance compared with an urban walk in the same area and of the same length ^{[38][40]}.

In summary, walking—alone or under specific conditions—is considered a deceptively simple but obviously effective means of promoting psychological well-being. It becomes essential to promote strategies, such as cognitive engagement strategies, to support interaction and engagement with the external environment to improve multiple dimensions of psychological well-being ^[41]. It allows deep contemplation ^[42], and it can be used as a form of meditation to restore mental abilities, such as direct attention ^[43] and coping ^[44].

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