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## Stairs climbing for health

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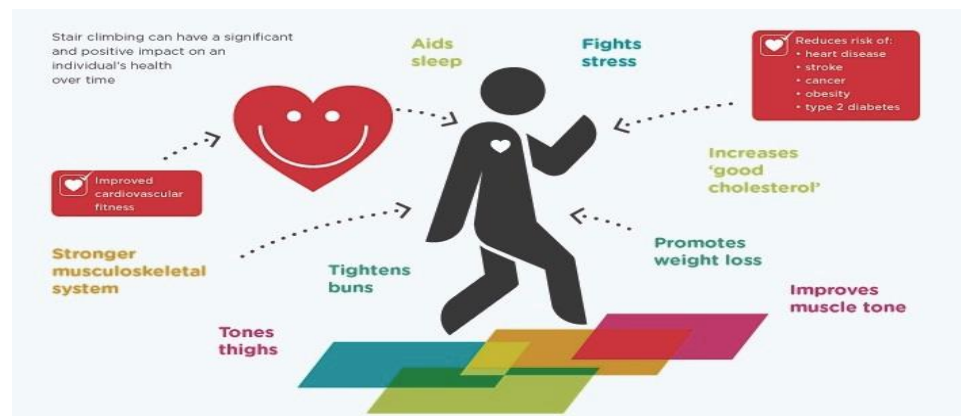
### Abstract

Stair climbing is considered as an efficient, well-tolerated yet vigorous aerobic activity sufficient to improve physical and mental fitness. Stair-climbing opportunities are abundant, and stair climbing does not require monetary outlay or special training and equipment. Stair climbing burns more calories than any other life style physical activities. The present study tries analyzing the physical and mental health benefits of stair climbing. After reviewing the relevant theoretical and empirical evidences, researchers posit that stairs on a regular basis can improve cardiac fitness, enhance our immune system, reduce BMI and in turn it will improve overall fitness. Apart from this stair climbing has numerous psychological benefits. It includes reduced anxiety, depression and enhanced self-esteem, confidence and it will improve the wellbeing of an individual.

**Keywords:** Stair Climbing and BMI

### Introduction

“To get through the hardest journey we need take only one step at a time, but we must keep on stepping”.



The desire for convenience has perpetuated a lifestyle that favors physical inactivity over activity, driving over walking, using elevators and escalators over taking stairs, and using dishwashers and washing machines over hand washing of kitchen items and clothing. These changes mean fewer calories expended in day-to-day activities, potentially leading to weight gain. Recent public health campaigns have focused on finding ways to encourage individuals to expend more energy throughout the day without significant time investments. Regular physical activity is associated with enhanced health and reduced risk of mortality. The current physical activity guidelines state that individuals between the ages of 18 and 65 should engage in 30 minutes of moderate physical activity five days a week (Department of Health, 2004) and importantly individuals can reach these guidelines by engaging in lifestyle physical activities (Dunn, Anderson, & Jakicic, 1998) [9]. Stair climbing is such a life style physical activity which has the potential for an accessible and effective health intervention. Taking stairs has been targeted as one approach toward encouraging more physical activity, as it requires minimal disruption to daily routines and little additional time investment.

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Stair-climbing opportunities are abundant, and stair climbing does not require monetary outlay or special training and equipment. Furthermore, it provides a good return on time investment: stair-climbing uses nearly 10 times the energy used at rest, making it more efficient than walking or even jogging (Ainsworth *et al.*, 2000) <sup>[1]</sup>. Stair climbing is a vigorous physical activity which involves both cardiac and muscle strengthening. So people will get two workouts with one exercise. Since stair climbing shuns most physical activity barriers thus it can be included in all individuals' life (Edwards, 1983) <sup>[10]</sup>.

### Objective

To evaluate the overall Health benefits of Stairs Climbing.

### Health Benefits of Stair Climbing

Stair climbing burns more calories than any other life style physical activities (Ainsworth *et al.*, 2000) <sup>[1]</sup>. Because it is a grueling sport, stair climbing requires less time to do the same intensity of a workout. For example, if a person runs 30 minutes per day, the same workout intensity could be achieved with 15 minutes of stair climbing. Stair climbing is a common training procedure in physiotherapy and sports science. It has both physical and psychological health benefits. Stair climbing builds muscle mass in the legs, including the quadriceps and calves. It is an aerobic sport as it works the cardio-vascular lung package.

Indeed, research has revealed that there is important health benefits associated with taking the stairs on a daily basis even when no other lifestyle changes are made (Boreham, Wallace, & Nevill, 2000) <sup>[4]</sup>. Cross-sectional data have supported this finding: a survey of housing and health, conducted by the World Health Organization in eight European cities, found that among men, residence on a higher floor was associated with lower body mass indices (Shenassa, Frye, Braubach, & Daskalakis, 2008) <sup>[17]</sup>. In an experimental study (Boreham, Wallace, & Nevill, 2000) <sup>[4]</sup>, participants randomly assigned to climb a standardized staircase 04 times a day for 07 weeks showed improvements on several health measures, relative to controls who did not climb the staircase.

Haskell *et al.* (2007) <sup>[11]</sup> reported that climbing stairs maintain general and skeletal health and physical independence. Teh and Aziz (2002) <sup>[18]</sup> described stair climbing as a vigorous-intensity physical activity, with oxygen uptake reaching approximately 80% of maximal values in young adults, which corresponds to nearly 10 metabolic equivalents (METs) of energy expenditure. Stair climbing programmes are highly promoted in many European countries for the weight management of obese and overweight patients (NHS Clinical Knowledge Summaries, 2008). A study done by Lee and Paffenbarger (1998) <sup>[14]</sup> reported that men who climb between 20-35 flights of stairs a week had lower risk of stroke and mortality rate. Shenassa, Frye, Braubach and Daskalakis (2008) <sup>[17]</sup> found stair climbing for a prolonged period reduced body mass index. Stair climbing uses the muscles of the legs, in particular the quadriceps and the buttocks so prolonged stair climbing helps to reduce the weight and waist circumference. Stair climbing enhances our immune system and it will reduce the likelihood of developing chronic health problems such as Type-2 diabetes and high blood pressure. It builds muscle strength and tone and is shown to build bone density and reduces chance of fractures in adults. It can also raise metabolic rate which helps with body weight.

### Heart and Stair Climbing

In addition to weight control, regular stair climbing has additional benefits including decreasing an individual's risk of premature death from cardiovascular disease (Yu, Yarnell, Sweetnam, & Murray, 2003) <sup>[19]</sup>. As little as seven minutes of stair climbing per day can half an individual's risk of a heart attack over a 10 year period (Yu *et al.*, 2003) <sup>[19]</sup>. Boreham *et al.*, (2000) <sup>[4]</sup> found that stair climbing improve cardio vascular fitness by reducing blood pressure and cholesterol level. Stair use, especially when climbing, is a vigorous physical activity that can be easily engaged in by most of the population and several studies have shown it to be effective in improving aerobic capacity and cardiovascular disease risk factors (Meyer *et al.*, 2009) <sup>[16]</sup>. Boreham *et al.* (2005) <sup>[3]</sup> showed that stair climbing for a period of 8 weeks produced a 17.1% increase in maximum oxygen intake and a 7.7% reduction in low density lipoprotein in young women.

### Mental Health and Stair Climbing

Apart from physiological benefits associated with stair climbing, a number of psychological benefits have also been reported in the literatures. These benefits include reduced depression (Byrne A, Byrne D. G, 1993; Klein M. H *et al.*, 1985) <sup>[6, 13]</sup>, anxiety (Cameron O.G., Hudson C.J., 1986) <sup>[7]</sup> and anger (Buchman B. P, *et al.*, 1991) <sup>[5]</sup> as well as generally improved mood. Furthermore, a reduction of coronary-prone (i.e., Type-A) behavior has also been associated with physical exercise (Blumenthal J. A, 1980) <sup>[2]</sup>. Since anger and hostility, both subcomponents of the global Type-A behavior pattern, have been related to coronary heart disease (Julius M, 1986) <sup>[12]</sup>. Every time when we climb stairs our body releases chemical substance named endorphins which make us feel happy and calm. Eventually, our focus and concentration will improve, and we feel less stressed out.

### Conclusion

Stair use is not only a simple form of physical activity that increases caloric expenditure to help prevent weight gain, but also it is a more sustainable behavior for traveling within multilevel buildings. Stair climbing is a vigorous physical activity that can be easily implemented in everyday life by most of the population. Several studies suggest that it is effective in improving aerobic capacity and CVD risk factors. 100–150 climbed floors each week corresponding to 8–12min of daily exercise, the improvement in aerobic capacity (VO<sub>2</sub>max) may reach more than 10% corresponding to an increase in aerobic capacity of approximately 1 MET in previously untrained persons. This magnitude of improvement has been associated with a 12–20% reduction of all-cause mortality including CVD in epidemiological studies. Therefore, consistent stair use by most of the population is expected to have a sizeable impact on public health. The question that remains to be answered is how to stimulate stair use by the general population. Information at point-of-choice and changes in architectural design may prove important ways to increase stair use. Architectural designs like numbering the stairs, painting stairs like piano keys, writing quoting on the steps, stair case decals etc. will motivate individuals to use stairs. It will take a multidisciplinary approach between health professionals, architects, urban planners, and social scientists to find out what the best ways are to help ourselves and fellow citizens to make simple healthy choices for integrating physical activity in our daily life routine such as choosing the stairs at a point-of-choice.

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