

## The Comparison of Walking Performance in Cold and Warm Biologically Conditions in Physiology

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### Abstract

Walking is the best possible exercise to promote fitness. However, ambient temperature has an impact on walking regimen and performing exercise in different biological conditions can be challenging tasks. For example, both cold and hot temperatures can impair walking performance. In fact, walking in different cold and warm ambient can be challenging physical activity. But suitable sport wears and drinks during walking performances can protect of the body in cold and warm conditions. In this relation, different cold and warm weathers although can challenge walking performance but they account for opportunities for body to adapt to the different seasonal conditions. Thus, performing regular walking in different cold and warm weathers can help individual to stay active as well as fit.

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**Keywords:** Walking exercise, Biological environment, walking gain

**Received:** Nov 24, 2018

**Accepted:** Nov 24, 2018

**Published:** Nov 25, 2018

## Introduction

Performing any type of sport in various conditions can yield several health benefits in human body. An optimal body health promotes any good work in different aspects. This is because, executing regular physical activity can result in continuous physical fitness as well as readiness [1].

Walking is the best possible exercise which simply can be performed with minimum cost of energy in any environments. Particularly, walking accounts for healthiest kind of aerobic exercise as all body segments contract in order to move forward or backward directions. More bodily movements during walking exercise are linked with more healthy activities that can be accompanied with good - health and prosperousness [2, 3].

Walking workouts can be accomplished according to any volume and acceleration depending on the associated biological territory at which walking is being performed. In regards to this, walking can be categorized in habitual at any pace or structural at predetermined pace. Further, the type of walking surface aligned with gravity can change walking pace and oxygen uptake during walking, so that different type of walking demands different level of energy consumptions (higher or lower) [4,5].

Therefore, various walking type present different health benefits in terms of efficiency and effectiveness. Uphill-walking uses for weight - loss program owing to the high level of energy consumption and downhill-walking use to strengthen the musculature due to gravity assistance [6, 7].

Nonetheless, performing exercise such as ordinary walking in different biological conditions can be a challenging task and in this short - review the potential factors which can impact on walking performance will be evaluated in brief.

### *Walking in Cold and Warm Biological Environments*

Physiologically performing walking in non-identical conditions demands different physical bodily efforts. In regards to this, the biological adaption of the different kind of environments including warm or cold is the main determinate in movement's executions (i.e. walking performances) per each condition [8].

Greater body temperature, heart rate, higher circulation, and higher ventilator responses owing to the thermal stress is required while walking in heat conditions. The hot weather dramatically increases the breathing frequency, central and cardiovascular fatigues and oxygen transformations to upper and lower body plus whole skin per second while walking locomotion [9]. Although, the individual adaptations to the environment variations differ between one to another. Indeed, any body movement can be resilience to varied conditions and exercise in hot weather although is challenging work but account for an opportunity to kind of body adaption (i.e. cardiovascular and respiratory adaptations) to heat condition. For example, avoiding intensive physical exertion and performing moderate any type of activity regularly such as systematically walking at moderate pace can be an effective strategy to adapt to the hot weather. Drinking adequate fluid and water can help to prevent dehydration and losing body fluid while walking in heat climate. Many people do not drink enough while performing physical activity so that they are not able to have a free-flowing movement in warm weather [10]. Therefore, having a regular bottle of water while walking can be a good help to maintain body fluid and electrolytes in warm climate. Indeed, drinking enough water (or any proper sport drink) while walking in heat situation reduces the risk of exhaustion and physiological strain in individual over time [11].

Walking regimen in cold weather also may seem an adventure since cold weather is align with different challenges, but it is gain an opportunity for people to get fit and stay active as minimum of health benefit. Cold weather can lead pain, stiffness or cramp and shivering (involuntary muscle contraction) in musculoskeletal - system [12]. This is because, exposure to the cold temperature can cause muscles consume more oxygen uptake while losing more heat and energy that easily can be compensated by wearing proper clothes and drinks during any movement and in part walking [13].

Cold environment can reduce walking pace and velocity which can be recompensed with longer - duration of walking performance, so that cold weather condition does not actually account for a barrier for performing any physical movement including walking exercise. Walking in cold weather as causes more

energy consumptions and calorie intakes, can also lead to the more ideally body mass index (BMI) and body shape in individual who are more active and intend to walk more in cold temperature [14].

#### Glossary

In summary it seems ambient temperature has functional impacts on any kind of exercise in part simple walking. At the first look, different ambient conditions may impair physical activations. For example both cold and hot temperatures can result in hypoxia that can inhibit prolong exercise in different individual. In this relation, performing regular exercise such as 30 minutes walking per each day at moderate pace can help to stay fit as well as active. Proper sport wears and drink are also good preventive strategies to combat sedentary lifestyle in different conditions. Performing regular exercise such as walking in various seasonal warm or cold weather physiologically can be a challenge task whitest at the same time can be an opportunity to adapt with any conditions to stay fit and healthy which of course depends on the individual determinations.

#### References

1. Pène P, Touitou Y. Sport and health. *Bull Acad Natl Med.* 2009; 193(2):415-29
2. Kassavou A, Turner A, French DP. Do interventions to promote walking in groups increase physical activity? A meta-analysis. *Int J Behav Nutr Phys Act* 2013;10:18
3. Hanson S, Jones A. Is there evidence that walking groups have health benefits? A systematic review and meta-analysis. *Br J Sports Med.* 2015 ;49 (11):710-5
4. Bohannon RW. Comfortable and maximum walking speed of adults aged 20-79 years: reference values and determinants. *Age Ageing.* 1997 ;26(1):15-9
5. Jylhä M, Guralnik JM, Balfour J, Fried LP. Walking difficulty, walking speed, and age as predictors of self-rated health: the women's health and aging study. *J Gerontol A Biol Sci Med Sci.* 2001 ;56 (10):M609-17
6. Minetti AE, Moia C, Roi GS, Susta D, Ferretti G. Energy cost of walking and running at extreme uphill and downhill slopes. *J Appl Physiol (1985).* 2002 ;93 (3):1039-46
7. Abe D, Fukuoka Y, Horiuchi M. Economical Speed and Energetically Optimal Transition Speed Evaluated by Gross and Net Oxygen Cost of Transport at Different Gradients. *PLoS One.* 2015 ; 18;10(9):e0138154
8. Galloway SD, Maughan RJ. Effects of ambient temperature on the capacity to perform prolonged cycle exercise in man. *Med Sci Sports Exerc.* 1997 ;29(9):1240-9
9. Gonzalez-Alonso J, Crandall CG, Johnson JM. The cardiovascular challenge of exercising in the heat. *J Physiol.* 2008;586:45–53
10. Costill DL. Water and electrolyte requirements during exercise. *Clin Sports Med.* 1984 ;3(3):639-48
11. American College of Sports Medicine (ACSM). Exercise and fluid replacement. *Med Sci Sports Exerc* 2007;39(2):377-90
12. Oksa J. Neuromuscular performance limitations in cold. *Int J Circumpolar Health.* 2002; 61(2):154-62
13. Ferretti G. Cold and muscle performance. *Int J Sports Med.* 1992; 13: Suppl 1, 185- 187
14. Ely MR, Cheuvront SN, Montain SJ. Neither cloud cover nor low solar loads are associated with fast marathon performance. *Med Sci Sports Exerc.* 2007. 39(11):2029-35