

A Rapid Review on Nordic Walking as a Novel Approach to Rehabilitation-Exercise or Sport?

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ABSTRACT

Nordic Walking (NW) is an advanced walking technique that combines walking with the use of poles, to build core as well as upper body conditioning. This review was documented to focus on the literature regarding the use of NW in rehabilitation. A thorough search of articles from databases (PubMed, Scopus, Web of Science, Pedro, Cinhal, EBSCO) was conducted to identify randomised control trials done on NW. Ten randomised control trials were found and discussed in this review. The trials discussed the efficacy of NW on functional capacity, quality of life, gait patterns, balance strength, weight, ejection fraction, psychological parameters, and blood composition in various populations such as patients with Parkinson’s disease, elderly women, post menopausal women, lung transplants. The results of the study prove that NW can be used as a safe and efficient method of rehabilitating patients.

Keywords: Aerobic training, Exercise tolerance, Physiotherapy, Power poles

INTRODUCTION

Nordic Walking (NW) is being promoted worldwide by International Nordic Federation; founded in 2000. NW involves walking, using the poles, increases the use of muscles in addition to the speed of walking, both the factors contributing to an increase in maximal oxygen consumption (VO₂) and lactate [1]. NW involves use of specifically made poles which helps performing aerobic training outdoor. Nordic walking is done with power poles, which are made of light-weight aluminium and weigh around 440 grams a piece [2]. The pole’s body is designed to compress when it first makes contact with the ground, then spring back to its original length during the push-off part of the walking stride [3]. Furthermore, the body of the poles is designed to adapt to the user’s height. The pole’s tip is composed entirely of rubber and is meant to be shock-absorbing and is non slip. The power poles’ handles are anatomically engineered to accommodate one’s hand [4]. Because of the use of the traditional NW poles, it improves the workout intensity of walking. When compared to walking without poles, it increases maximal oxygen consumption and heart rate by 20% on average in healthy people [5].

The most important benefit of NW is that, it takes less time in performing the same amount of conventional walking along with

additional resistance training sessions [6]. NW improves resting heart rate, blood pressure, exercise capacity, maximal oxygen consumption, and quality of life in patients with diabetes, obesity, chronic obstructive pulmonary disease, and Parkinson’s disease, among other conditions [7].

The aim of this review was to comprehensively describe, examine, and interpret the health advantages of NW generally, taking into account its impacts on functional ability, quality of life, and other health-related parameters.

LITERATURE SEARCH

The review was based on the articles from PubMed, Scopus, Web of Science, Pedro, Cinhal, and EBSCO. The available literature in English language on NW between 2018 and 2022 was analysed. The key terms used to find the articles were “Nordic Walking poles”, and “Nordic Walking”. Only the randomised control trials were included and systematic reviews and meta-analysis studies were excluded. A total of 52 articles met the criteria, out of which 10 research papers were finalised. Rest of the articles did not apply a proper NW technique and were not used in rehabilitation [Table/Fig-1] [8-17].

Author	Sample size and age of the participants	Intervention	Outcome measures	Conclusion
Runeno SD et al., (2019) [8]	77 participants; 17 to 23 years	Nordic Walking (NW) vs Physical training	Body composition, level of physical working capacity and psycho-emotional status.	NW is a highly efficient form of physical exercise with a strong motivational component for young adults to lose extra body weight and significantly boost morphofunctional and psychosocial aspects in students.
Panou H et al., (2019) [9]	35 participants; 67±4.44 years	NW and no intervention	Strength, flexibility, balance, movement coordination, and functional capacity.	In geriatric patients, NW enhances numerous functional parameters.
Rossi AP et al., (2020) [10]	32 participants; 50-90 years	NW vs conventional walking	Weight, arterial stiffness and biochemical parameters.	A significant weight loss is determined by a moderate calorie restriction paired with either NW or walking. Furthermore, NW is more tolerable than walking and has the added benefit of enhancing vascular compliance at the level of the upper limb.
Nagyova I et al., (2020) [11]	83 participants; 59.1±7.0 years	Conventional cardiovascular rehabilitation vs NW	Exercise ergometry, metabolic equivalent of tasks, ejection fraction, Six-Minute walking test.	NW appears to be particularly well-suited for those with restricted functional and motivational capacities. It is a readily available, safe, and efficient low-threshold cardiac rehabilitation exercise training technique.

Szeffler-Derela J et al., (2020) [12]	40 participants; 50-75 years	NW vs standard rehabilitation	Gait quality and balance control, Quality of life.	Patients with Parkinson's disease benefit from the six week NW program, in terms of improving functional performance, gait quality, and quality of life.
Monteiro DP et al., (2020) [13]	33 participants; 50 years or more	NW and conventional walking	Quality of life, psychological function.	Compared to free walking, NW significantly improved quality of life in the areas of individuality, companionship, and socialisation.
An TG et al., (2020) [14]	32 participants; 65 or older	NW vs general leisure group	Muscle strength and balance.	For elderly with high-risk for depression, NW is beneficial.
Micielska K et al., (2021) [15]	32 participants; 61±12 years	NW vs High Intensity Interval Training (HIIT)	Myostatin concentration.	This study showed that endurance exercise in the form of NW caused myostatin levels to drop and decorin levels to rise, with the effects of vitamin D status on these changes being controlled. It also implies that a high-volume, low-intensity NW can benefit older adults more than a low-intensity, high-intensity workout.
Witkowska A et al., (2021) [16]	74 participants; Over 55 years	NW and conventional walking	Exercise stress test, lipid profile, and body mass.	Training program for NW and traditional walking both resulted in an increase in aerobic capacity and a decline in total cholesterol.
Reed JL et al., (2022) [17]	135 participants; 61±7 years	HIIT vs NW	Functional capacity, depression, health specific quality of life.	All exercise programs (HIIT, NW) were helpful in enhancing CAD patients' physical and emotional health. However, NW has shown clinical as well as statistical superiority in improving the functional capacity which in turn a predictor of future cardiovascular events.

[Table/Fig-1]: Compilation of randomised control trials on NW in rehabilitation process [8-17].

NORDIC WALKING IN REHABILITATION

Nordic walking is being considered as a novel regime or technique in the world of rehabilitation due to its uniqueness and popularity. Studies have been done in the past few years to explore the effectiveness of NW in a wide variety of population involving coronary diseases, Parkinsonism, osteoarthritis. Researchers have been delved into various aspects such as functional capacity, cognitive function, quality of life, gait training, muscle strength etc. into which NW can be proven effective.

Evidences has shown that NW has imposed a positive effect on several aspects which are relevant for human bodily functioning such as heart rate, functional capacity, health-related and overall quality of life in wide variety of populations. The randomised control trials included in this review has compared the potential benefits of NW with that of various training programs on the grounds of responses of the body. The older adults are proven to be benefited excessively, when the studies were analysed, in terms of balance control, flexibility, strength, and movement coordination when compared to no intervention given, owing to the benefit of usage of poles, in turn, more usage of muscle mass [9]. Additionally, positive effects has been seen in the mood of the patients, those having possible risks of depression [14]. In patients with Coronary Artery Disease (CAD), NW leads to improved patient's physical and mental health when compared with High Intensity Interval Training (HIIT). Further, enhanced exercise capacity lowers the risk of cardiovascular events [17].

A small number of trials has shown the effectiveness of NW in neurodegenerative disorder such as Parkinson's disease. Patients are seen to be benefited in terms of quality of gait, control of balance and quality of life [12]. Trials on obese younger adults has shown a strong motivational component to lose extra body weight and significantly boost functional and psychological aspects in them [8]. NW is widely recognised in the literature as a safe, pragmatic, and easily accessible kind of endurance exercise training that has a variety of positive impacts on both healthy individuals and persons with a variety of disorders. Therefore, NW might be suggested to those who want to enhance their daily physical activity as part of primary or secondary prevention with a comprehensive cardiorespiratory training programme.

CONCLUSION(S)

Nordic walking is being adapted as a new form of physical activity amongst various population. NW is proven to be an effective and interesting type of aerobic training approach used in rehabilitation.

However, most researches are still required in respiratory conditions, related to rehabilitation. The 10 trials, compiled in the review, has shown beneficial effects of NW as a safe, effective, and feasible form of aerobic training in a large number of diseased population and the healthy ones too. However, further trails needs to be done in the population with respiratory conditions and cardiovascular conditions. Additionally, those who want to enhance their physical activity as a component of preventive might use NW as a training program.

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