**PICO Question: For elderly adults, does Nordic walking (NW), also referred to as pole walking (PW), improve walking endurance more effectively than regular walking?**

 Physical endurance activities that are suitable, appealing, and relatively inexpensive for elderly individuals are important to support compliance with a regular fitness practice to support health and wellness. As one of the most rapidly growing segments of the population, regular fitness activities become even more important to minimize the effects and associated costs of chronic disease and disabilities. Walking, particularly brisk walking, is considered an effective endurance activity.

 Interventions that are complementary to walking, such as Nordic walking (NW), may help to enhance the effects of walking, improve compliance with fitness guidelines, support independent function and community living, reduce health care and assisted living costs, and improve health care related quality of life. Reported benefits of NW, based on studies of healthy young adults, include significant increases in oxygen uptake, caloric expenditure and heart rate (HR), and increased arm and upper trunk engagement - all with a decreased rate of perceived exertion (RPE) when compared to equivalent walking interventions. This review explored the clinical relevance of NW, and compared NW effects with walking (W) in the elderly population.

 The literature review included a systematic review of 13 randomized control trials (RCTs) of NW, of which 6 RCTs were with elderly (65+ yrs) or near-elderly (60-64 yrs) subjects. These 6 RCTs were reviewed, of which only one directly compared NW with W. Three additional studies were reviewed comparing NW with W – a non-randomized controlled trial, a cohort trial and a randomized pilot trial in a rehabilitation setting. All studies supported significant improvements of endurance effects of NW when compared with non-exercise groups, but there were no significant differences between the NW and W groups in endurance measures. The current evidence, therefore, does not support the superior endurance effects of NW over W for the elderly that was earlier demonstrated in young adult populations. Two studies reported significant improvements in upper body strength with the NW group over the W group; this strengthening effect, however, was not as pronounced when compared to a resistive exercise group. Several studies suggested that NW had greater appeal than walking for some elderly participants as a regular or adjunct physical fitness activity, which in turn may help to improve adherence to fitness guidelines, improve community participation, and enhance quality of life.

 The number of quality studies on NW effects for the elderly are limited, diverse, and utilized a wide array of outcome measures that may not adequately capture NW benefits for this population. All reviewed studies showed significant positive NW effects in at least one outcome measure. A few adverse but resolved effects were reported during one 6 month study, including exercise induced hypotension, falls, and shoulder overuse injuries. More research is needed to examine benefits of NW relative to upper body strength, long term physical activity participation, and quality of life for the elderly.

 The adaptability of NW lends itself to numerous clinical and community applications. The type of pole, pole height, type of pole tip, level of wrist support, handle design, degree of pole shock absorption or stiffness, and poling technique adds layers of variation that need to be considered for optimum use, based upon the individual’s functional abilities and goals, and the environment or terrain chosen for poling. A capstone project that builds a foundation of both educational and resource capability for Nordic walking for UNC physical therapy students and faculty may assist with furthering this exploration and investigation of rehabilitative and fitness effects of Nordic walking for the elderly.

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