The effects of pole walking on health in adults: a systematic review
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CRD summary
The authors concluded that pole walking programmes had some beneficial effects on both physical and psychosocial health in adults with and without clinical conditions. The authors’ conclusions reflect the evidence presented but lack of reporting of statistical analysis and wide variation between studies mean the reliability of the conclusions is unclear.

Authors’ objectives
To evaluate the effects of pole walking programmes on physical and psychosocial health in adults.

Searching
PubMed, The Cochrane Library, EMBASE, SPORTDiscus, CINAHL and PEDRO were searched between February and October 2011 for relevant peer-reviewed full-text articles. Some search terms were reported. Reference lists of included articles were searched manually. Articles in English, German, Dutch, French, Spanish and Finnish were eligible.

Study selection
Eligible trials were randomised controlled trials (RCTs) or controlled trials of programmes that included a main component where participants walked with poles compared with other exercise programmes, non-exercise or non-intervention control groups. Participants had to be 18 years or older. Outcomes of interest were objective or subjective measures of physical or psychosocial health.

Most studies included participants diagnosed with a medical condition (such as type 2 diabetes, cardiovascular disease, musculoskeletal disease); two studies included non-clinical populations. The average age of participants ranged from 45 to 69 years. Some studies included only female or male participants. Fewer than half of the studies reported which pole walking technique was used: four used Nordic walking and two used Exerstriding techniques. Most intervention programmes required participants to exercise at moderate intensity. The average duration of pole walking programmes was 14.2 weeks (range three to 24 weeks). Frequency of intervention sessions ranged from one to five sessions per week with a duration from 20 to 70 minutes. Some interventions were conducted under supervision. Control groups included exercise, high intensity exercise with voice therapy, home exercises and no exercise. Some studies had more than one control group. Outcome measures and measurement instruments varied widely between studies.

Two reviewers independently selected studies for inclusion.

Assessment of study quality
Two reviewers independently assessed study quality using the Delphi list. Criteria included randomisation, concealed treatment allocation, similarity of groups at baseline, specified eligibility criteria, blinded outcome assessor, point estimates and measures of variability for between-group differences, and intention-to-treat analysis. Blinding of trainers and participants were not rated. A quality score was generated as a percentage of the maximum score for each study; high quality was defined as 50% or more.

Data extraction
Data on physical, psychosocial or other outcomes with subcategories for physical measures were extracted to enable calculation of between-group differences. The authors did not state how many reviewers extracted data. Authors were contacted for additional information where necessary.

Methods of synthesis
Data were combined in a narrative synthesis with additional information provided in tables.

Results of the review
Thirteen studies (1,051 participants, range 12 to 212) were included in the review. Eleven studies had a quality score of
50% or more (range 29% to 86%). Eleven studies reported groups were similar at baseline, 12 specified eligibility criteria, nine reported blinding of outcome assessors, five reported use of intention-to-treat analysis and four reported measures of variability. Dropout rates from the pole walking programmes ranged from 0% to 13% and in one study 25%. Drop-out rates were similar between studies (where reported). Eleven studies were RCTs and eight of these reported concealed randomisation.

All studies reported at least one beneficial effect of pole walking compared with the control group.

Cardiorespiratory measures: Significant improvements were reported for pole walking groups compared to control groups for endurance (six out of six studies), oxygen uptake measures (three out of five studies), rating of perceived exertion (two out of four studies) and heart rate and blood pressure (two out of five studies). No effects of pole walking were found for ankle brachial index measures (one study).

Functional status: Significant positive effects were reported for functional status in pole walking groups (two out of five studies). One study found greater improvements in a control group that used Lee-Silverman Voice Therapy than the pole walking group.

Pain: Significant improvements in pain scores were reported for pole walking groups compared to control (three out of five studies).

Psychosocial measures: Significant improvements in quality of life and well-being measures were reported for pole walking compared to control groups (six out of nine studies).

Results of other physical measures in fewer than five studies were reported. Injuries from pole walking were reported.

Authors’ conclusions
Pole walking programmes had some beneficial effects on both physical and psychosocial health in adults with and without clinical conditions.

CRD commentary
The review question was clear with appropriate although broad inclusion criteria. Several relevant sources were searched. Efforts were made to locate studies in several languages and this reduced potential for language bias. Study quality was assessed and fully reported. Appropriate duplicate methods were used to reduce reviewer error and bias for study selection and quality assessment; it was unclear whether similar methods were used for data extraction.

A narrative synthesis was appropriate given the variation between studies for interventions, outcomes and participants. Results for individual studies were reported without supporting data or levels of statistical significance and this meant it is not possible to verify the findings reported in the review. Most studies had small samples. Some studies used self-reported measures; some studies were unsupervised so levels of adherence were uncertain.

The authors’ conclusions reflect the evidence presented but lack of reporting of statistical analysis and wide variation between studies mean the reliability of the conclusions is unclear.

Implications of the review for practice and research
Practice: The authors stated that it was difficult to generalise the benefits of pole walking to populations other than those in the review and caution was needed about the benefits for people with other health conditions.

Research: The authors stated that further research was needed and should report a clear description of technique, training periods and poles, include population-specific measures of outcomes including balance in older adults, upper limb muscle use and neck pain, test effectiveness of pole walking as exercise for people with knee joint pathology and evaluate the effects of pole walking programmes in healthy populations without clinical conditions to assess safety, maintenance and health outcomes.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.