

Is there evidence that walking groups have health benefits?

A systematic review and meta-analysis



Sarah Hanson, Prof Andy Jones
Norwich Medical School, University of East Anglia, Norwich, UK.
Centre for Diet and Activity Research (CEDAR), Cambridge University,
Cambridge, UK.



Background

- Walking groups are a popular physical activity intervention.
- Walking groups increase physical activity but wider health benefits not known.

Aim

- To quantify the wider benefits to health from outdoor walking groups.

Methods

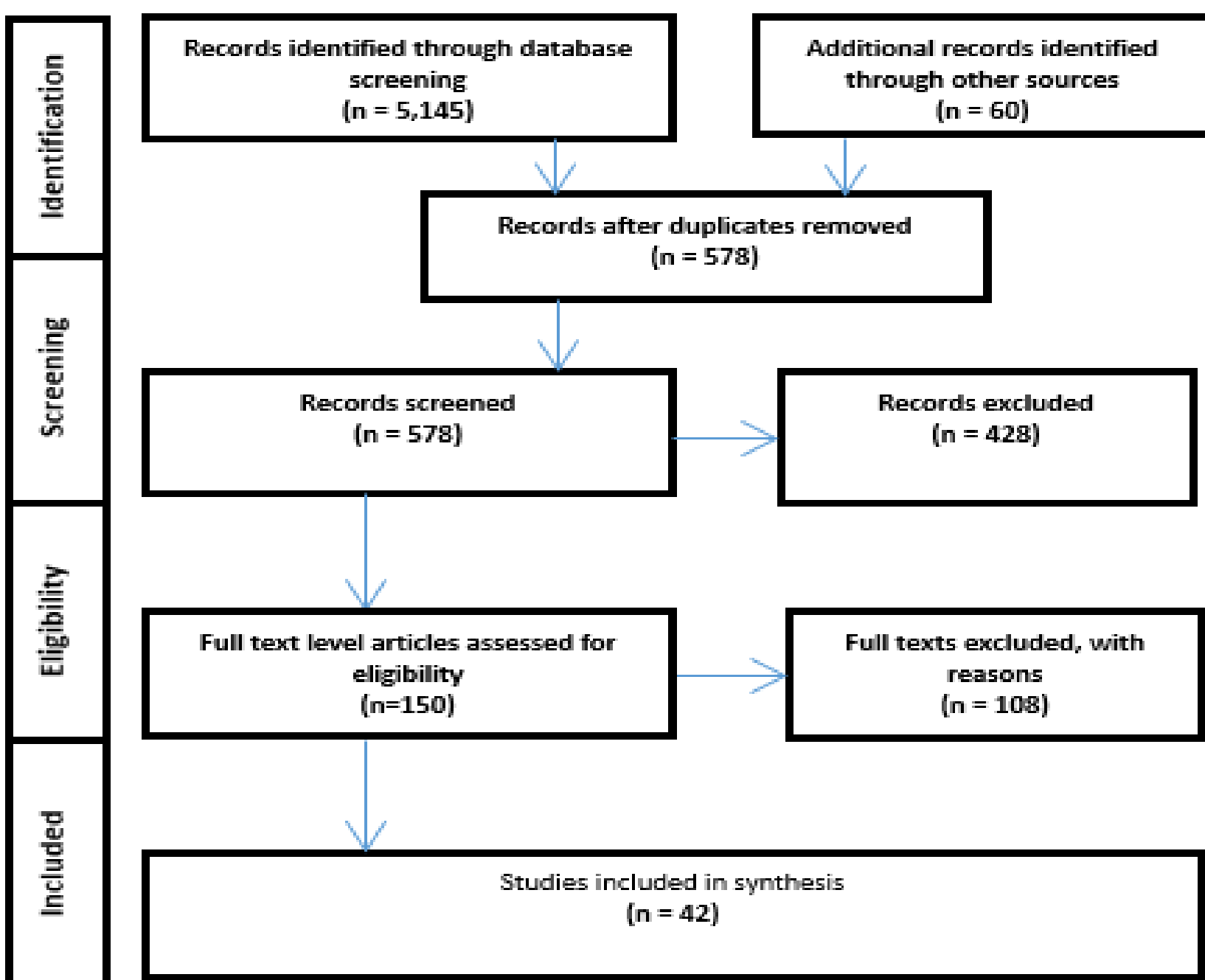
- Searched 7 databases, AMED, EMBASE, MEDLINE (R), PsycINFO, SportDiscus and Cinahl. Also grey literature.
- No date restriction.
- Nine point risk of bias tool with binary scale used for all studies.
- Data extraction sheet developed.



Table 1: Inclusion and exclusion criteria

Inclusion	Exclusion
Adults from the age of 19	Youths and children up to and including 18
Interventions where people walk as part of a defined walking group intervention	Studies that do not involve a walking group intervention <i>eg</i> they walk with a physiotherapist
Where the walking is group based, or where the walking is predominantly group based but participants may also walk on their own to supplement this	Participants walking only rarely in groups, or walking on their own, such as home-based or pedometer based programmes with no group walking
Walking outdoors or walking predominantly outdoors but occasionally indoors (<i>eg</i> inside tracks or shopping malls for weather reasons)	Walking indoors or predominantly indoors
Studies that compare group walking with group Nordic walking where group walking can be isolated as an intervention and the outcome directly related to group walking	Studies examining Nordic walking only
Studies with physiological, psychological or wellbeing outcomes such as blood profiles (<i>eg</i> lipids, HbA1c), cardiovascular measures (<i>eg</i> BP), psychological (<i>eg</i> Beck depression inventory), wellbeing (<i>eg</i> EQ5D)	Studies where the outcomes are solely physical activity such as step outcomes or logs of physical activity
Studies where the outcome can directly be related to the walking group intervention	Studies with a mixed intervention (<i>eg</i> walking with calcium supplements or walking combined with a health education intervention) where the outcome cannot be isolated and directly attributed to group walking
Papers and documents written in English	Papers and documents not written in English

Figure 1: PRISMA flow diagram



Results

- 42 studies in 14 different locations, predominantly USA.
- Total of 1,843 participants.
- 74,000 hours of participant walking time.
- Participants had a broad range of health conditions e.g. arthritis, overweight, dementia, diabetes.
- Interventions varied in intensity and volume.
- Statistically significant improvements in systolic and diastolic blood pressure, resting heart rate, body fat, body mass index, total cholesterol, VO₂max, quality of life for physical functioning, 6 minute walk time, and depression.
- Sub-analysis of those diagnosed with depression and BMI ≥25 strengthened the results.
- Results of sub-analysis of those with Type II diabetes not significant for HbA1C and fasting glucose.
- Good rates of adherence and virtually no adverse effects.

Table 2: Summary meta-analysis table: difference between baseline and end of intervention

Outcome measure	n	Effect	95% Confidence intervals	Heterogeneity	Test for overall effect
Systolic BP (mmHg)	440	-3.72	(-5.28, -2.17)	Chi ² = 12.02, df = 12 (P = 0.44); I ² = 0%	Z = 4.70 (P < 0.001)
Diastolic BP (mmHg)	440	-3.14	(-4.15, -2.13)	Chi ² = 23.16, df = 12 (P = 0.03); I ² = 48%	Z = 6.09 (P < 0.001)
Resting HR (beats per minute)	252	-2.88	(-4.13, -1.64)	Chi ² = 2.96, df = 7 (P = 0.89); I ² = 0%	Z = 4.53 (P < 0.001)
Body fat (%)	328	-1.31	(-2.10, -0.52)	Chi ² = 4.00, df = 6 (P = 0.68); I ² = 0%	Z = 3.25 (P = 0.001)
Body mass index (kg/m ²)	451	-0.71	(-1.19, -0.23)	Chi ² = 5.52, df = 11 (P = 0.90); I ² = 0%	Z = 2.92 (P = 0.003)
Total cholesterol (mmol/L)	271	-0.11	(-0.22, -0.01)	Chi ² = 12.58, df = 9 (P = 0.18); I ² = 28%	Z = 2.13 (P = 0.03)
VO ₂ max (ml/kg/min)	166	2.66	(1.67, 3.65)	Chi ² = 9.67, df = 6 (P = 0.14); I ² = 38%	Z = 5.28 (P < 0.001)
SF36 score (physical functioning) (points)	68	6.02	(0.51, 11.53)	Chi ² = 0.26, df = 1 (P = 0.61); I ² = 0%	Z = 2.14 (P = 0.03)
6 minute walk time (metres)	65	79.6	(53.37, 105.84)	Chi ² = 0.71, df = 1 (P = 0.40); I ² = 0%	Z = 5.95 (P < 0.001)
Depression score* (effect size)	101	-0.67	(-0.97, -0.38)	Chi ² = 24.14, df = 4 (P < 0.001); I ² = 83%	Z = 4.44 (P < 0.001)
Waist circumference (cm)	35	-3.55	(-8.08, 0.98)	Chi ² = 0.52, df = 1 (P = 0.47); I ² = 0%	Z = 1.54 (P = 0.12)
HbA1C (%)	66	-0.11	(-0.25, 0.03)	Chi ² = 1.17, df = 3 (P = 0.76); I ² = 0%	Z = 1.53 (P = 0.13)
Fasting glucose (mmol/L)	85	-0.09	(-0.28, 0.11)	Chi ² = 3.33, df = 4 (P = 0.50); I ² = 0%	Z = 0.87 (P = 0.38)
Low density lipids (mmol/L)	268	-0.05	(-0.16, 0.06)	Chi ² = 8.83, df = 9 (P = 0.45); I ² = 0%	Z = 0.93 (P = 0.35)
High density lipids (mmol/L)	251	0.01	(-0.04, 0.07)	Chi ² = 8.04, df = 8 (P = 0.43); I ² = 0%	Z = 0.45 (P = 0.65)
Triglycerides (mmol/L)	271	-0.05	(-0.12, 0.03)	Chi ² = 13.39, df = 9 (P = 0.15); I ² = 33%	Z = 1.25 (P = 0.21)
SF36 score (mental health index) (points)	68	2.70	(-2.09, 7.48)	Chi ² = 0.18, df = 1 (P = 0.67); I ² = 0%	Z = 1.10 (P = 0.27)

* Note: all analyses fixed effects model and mean difference except depression score (effect is standardized mean difference)

Conclusion and discussion

- Outdoor walking groups have wide-ranging health benefits including reducing blood pressure, body fat, total cholesterol and risk of depression.
- Outdoor walking groups appear to be an acceptable intervention to participants, with high levels of adherence, low levels of attrition and virtually no side effects.
- Provides clinicians and commissioners with evidence of an effective option to recommend to patients.

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