

Title : Efficacy, characteristics, behavioural models and behaviour change strategies, of non-workplace interventions specifically targeting sedentary behaviour; A systematic review and meta-analysis of randomised control trials in healthy ambulatory adults Curran F, Blake C, Cunningham C, Perrotta, van der Ploeg H, O'Donoghue G

Background

Sedentary behaviour (SB) research has grown exponentially and suggests that reduction in SB is best achieved by interventions specifically targeting SB. However, efficacy for interventions to reduce SB is often contaminated by interventions primarily or co-targeting other behaviours and outcomes.

Aims

To systematically review the efficacy of interventions specifically targeting SB reduction, as a sole primary outcome, from randomised control trials in healthy ambulatory adults.

To identify the intervention characteristics, behaviour change techniques (BCT's) and underlying theories, and their relation to intervention effectiveness.

Methodology

We followed PRISMA reporting guidelines. Six electronic databases and grey literature were searched. Only randomised or cluster randomised controlled trials, from 2000 to 2020, in adult populations with a sole primary outcome of change in sedentary behaviour were included.

Data codebooks were developed, and data extracted, for study characteristics, quality assessment, demographics, and primary and secondary outcomes. Intervention characteristics were coded using the TIDieR framework and the BCT Taxonomy v1, was used to code BCTs.

A narrative synthesis and meta-analysis was conducted using mixed methods random effects models.

Results

Of 5589 studies identified, 7 studies met the inclusion criteria.

Only 1 study reported follow-up anthropometry or biomarkers; (No significant differences) 51 heterogenous device based outcomes were reported.

6 studies reported activPAL3 measures of mean daily sitting time, and 4 reported mean daily standing time, stepping time and number of sedentary breaks.

Pooled analysis of weighted mean differences for intervention vs control revealed;

- A decrease in mean daily sitting time of -32.4mins CI (-50.3, -14.4)
- An increase in mean daily standing time of 31.75mins CI (13.7, 49.8)
- An increase in mean daily stepping time of 9.5mins CI (2.8, 16.3)
- An increase in rate of sedentary breaks per day of 3.6 (CI 1.6, 5.6)

Conclusion

Although limited by small sample sizes and short follow up periods, this review suggests that interventions specifically designed to change sedentary behaviour, reduce overall daily sitting time by half an hour, with an equivalent increase in standing time, in the short to medium term.

The most potent BCTs, or active ingredients, identified by the review are 'goal setting behaviour' and 'feedback on behaviour'.

Intervention fidelity and delivery of content will be improved by addressing the TIDieR components 'planning and implementing strategies to measure and enhance adherence to the intervention'.

Standardisation of device based outcomes and reporting is necessary for sedentary behaviour research.

Biography

Fiona Curran is a PhD candidate in University College Dublin, a registered physiotherapist with a masters in Health Informatics. The focus of her research is development of a complex intervention to interrupt sedentary time in people living with obesity using co-design methods. She is also an EU CHAMELEONS scholar. [email; fionacurran2@ucdconnect.ie](mailto:fionacurran2@ucdconnect.ie)

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