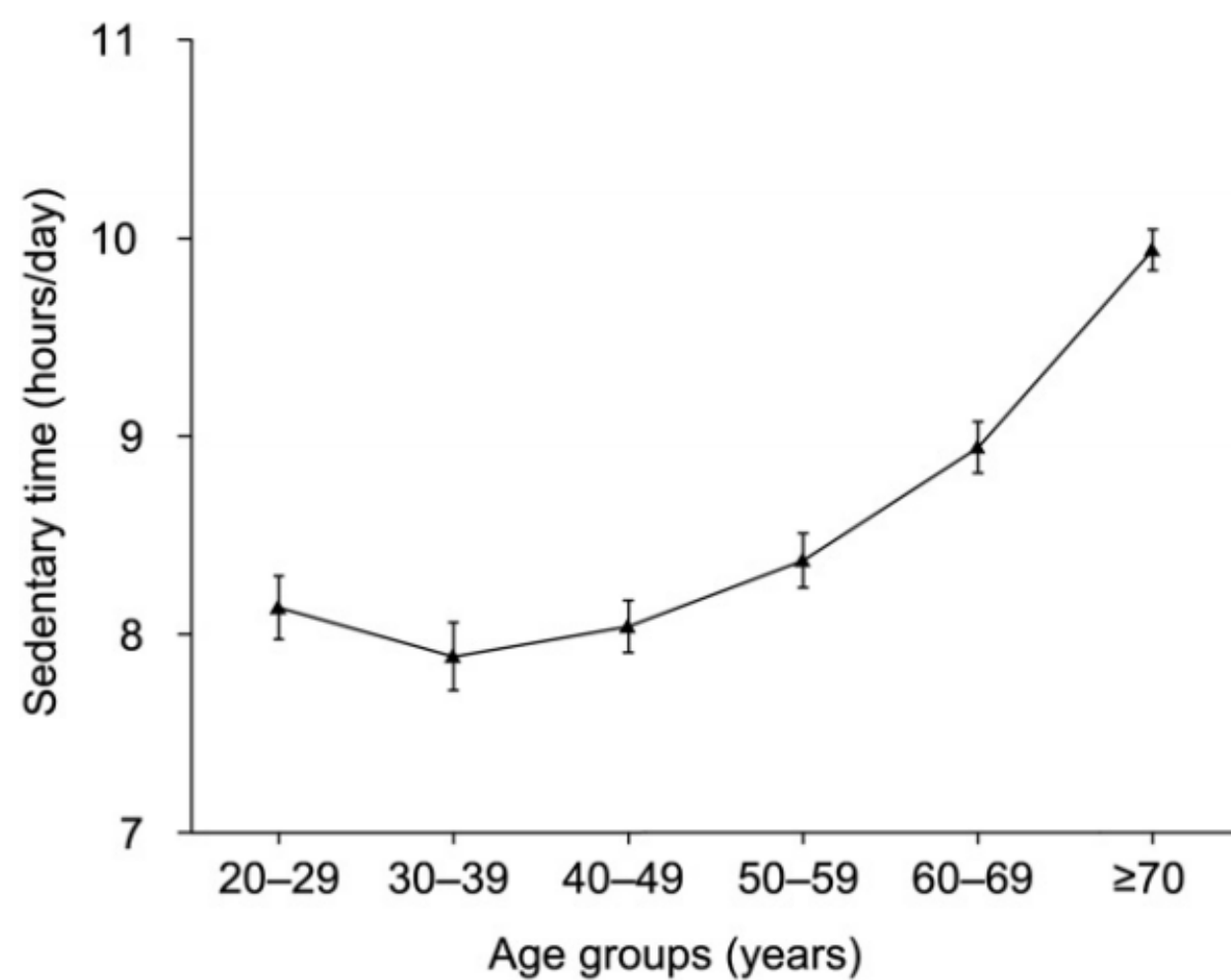


# An intervention to reduce sitting time in older adults pre-surgery

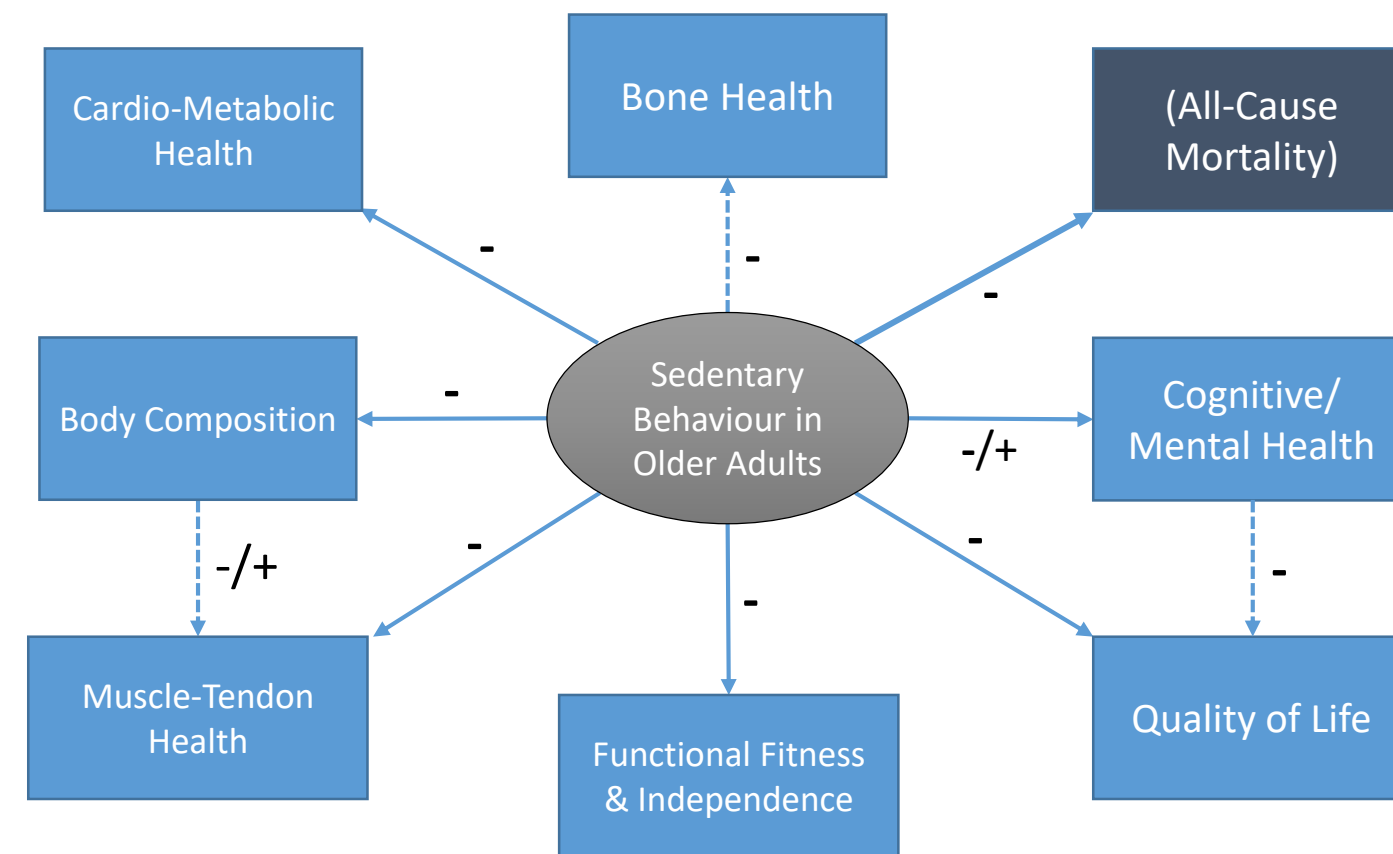


## Background

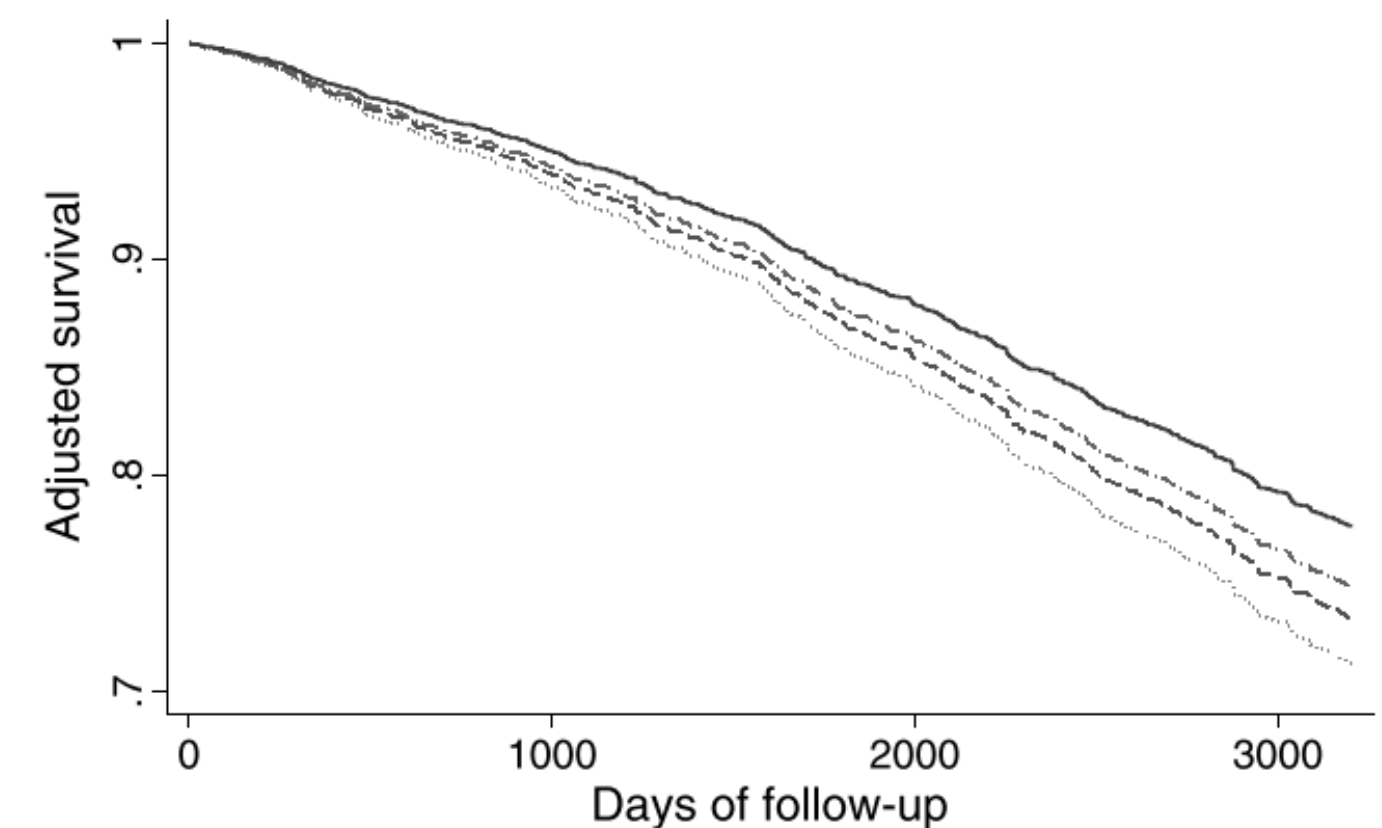
- Sedentary behaviour has been linked to a number of negative health outcomes independent of performance of moderate-to-vigorous physical activity.
- One of the least fit, most inactive populations is older adults above the age of 65 years.
- Few interventions exist in this population.
- No studies exist that assess cardiometabolic health markers or physical function post-intervention.
- No systematic reviews of sedentary behaviour interventions delivered in older adults.
- The purpose of this PhD is thus to fill both of these gaps in the literature.



Prevalence of sedentary behaviour across the lifespan as measured by accelerometry. From the NHANES 2003-2006 data.



Scheme to depict the health effects of sedentary behaviour in older adults



Adjusted survival in Spanish older adults >60 years with different patterns of sedentary.

## Interventions targeting sedentary behaviour in older adults: a systematic review

### Overview

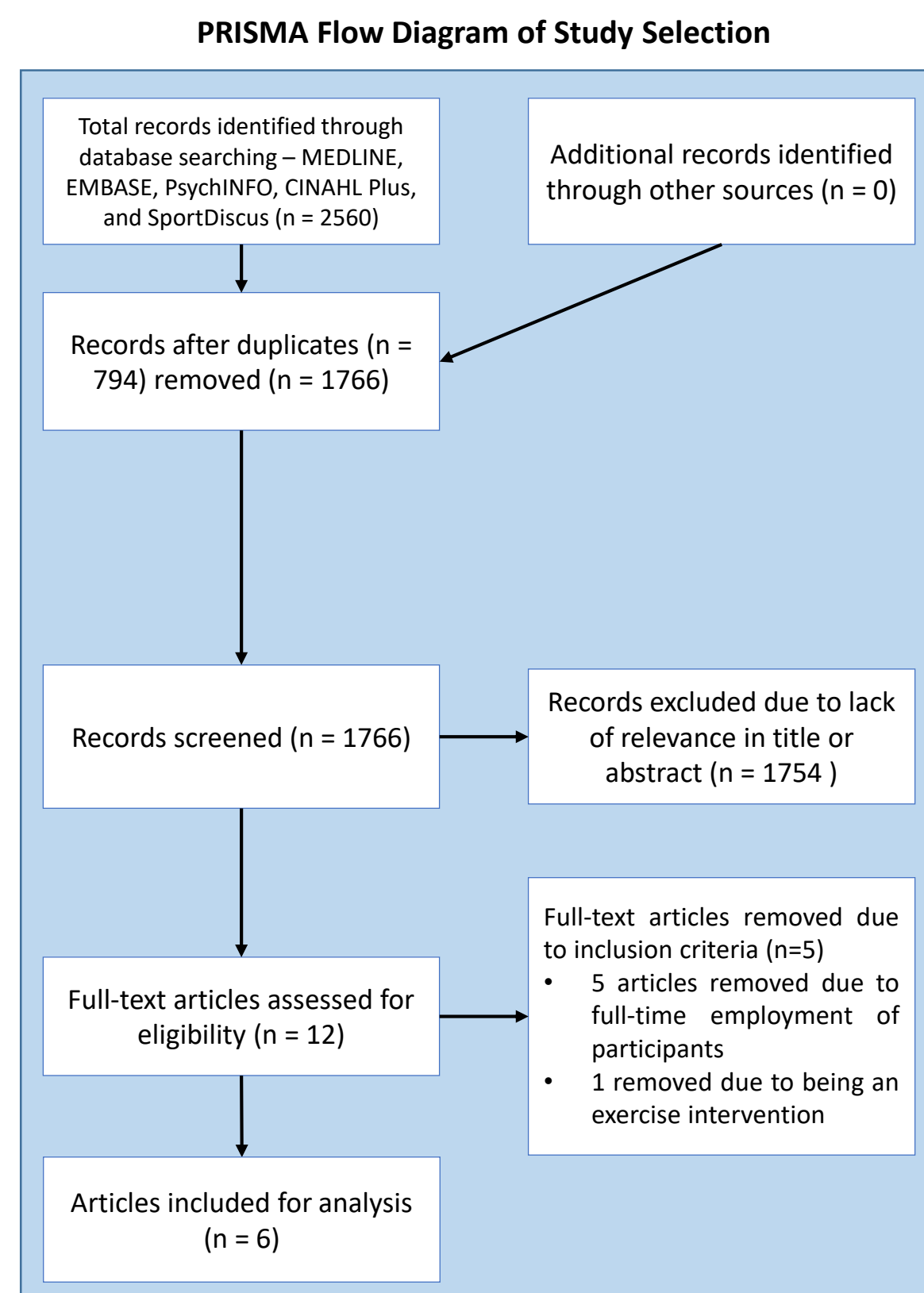
- Objectives:
  - To assess the efficacy of interventions to reduce sedentary behaviour in older adults.
  - To assess the feasibility and safety of interventions to reduce sedentary behaviour in older adults.
- Databases searched:
  - MEDLINE, PsychINFO, CINAHL Plus, SportDiscus, EMBASE.
- Inclusion criteria:
  - All participants in study >45 years with a mean age >60.
  - In paid work ≤ 2 days per week.
  - Must be an intervention to reduce sedentary behaviour.
  - Sitting time must have been measured.
- Outcome measures:
  - Sedentary behaviour variables, feasibility, and safety data were extracted.

### Results

- Six eligible studies were identified
  - Three included control groups.
  - Three were repeated measures pre-post designs.
  - Only one study randomised participants.
- The overall level of quality of included studies was poor.
- A narrative synthesis was conducted as the level of heterogeneity in outcomes and outcome reporting were too high for a meta-analysis to be performed.
  - The narrative synthesis is suggestive that interventions have the potential to reduce sitting time in older adults.
  - Included studies reported feasible and safe implementations of their interventions in most samples, with the exception of one subsample from a study of sheltered housing residents.

### Conclusion

The amount and quality of evidence level is currently insufficient to make any definitive conclusions regarding efficacy, but results so far are promising. Future studies require a more rigorous design to assess the effects of a sedentary behaviour reduction on health markers and function, and include follow-up to assess duration of behaviour change.



## Feasibility Study

### Overview

- Assess the feasibility of a six-week intervention purpose-built to reduce sedentary behaviour in older adults >65 years awaiting orthopaedic surgery.
- Collect preliminary data about its effect on physical function and cardiometabolic biomarkers.
- Perform post-surgery 6-week follow-up to attain information about intervention effects on recovery.

### Patient Population

- Older adults >65 years old awaiting hip or knee surgery, individuals are thus likely to be sedentary.
- Sample size approx. 30 individuals.
- Centre: Russel's Hall Hospital, Dudley.

### Main Outcomes

Measures of Feasibility (Primary Outcomes)	Preliminary Measures of Efficacy (Secondary Outcomes)
Acceptance	ActivPal3 + Measure of Older Adult's Sedentary Time (MOST)
Practicality	Sit-to-stand transitions, avg. length of sedentary bout, number of bouts ≥30 minutes
Adoption	Short Physical Performance Battery
Ease of recruitment	Cardiometabolic Biomarkers – HDL, LDL, CRP.
Adherence	Body composition – BMI, waist circumference

### Design Rationale

- Design is informed by the systematic review, other literature, and intervention components are designed with Self-Determination Theory as a theoretical framework.
- The study uses a number of components to enact behaviour change:
  - Group discussions – older adults will inform each other about contexts in which sedentary behaviour is accumulated.
  - Sedentary behaviour education – participants will be educated about the negative health impact of sitting for prolonged periods.
  - Incremental goal-setting – before the start of the intervention, participants will choose 6 contexts in which to reduce sedentary behaviour. Participants will add one goal per week, where all 6 are being worked towards at the endpoint.
  - Environmental modification – by modifying their own environments, participants will make prolonged sedentary behaviour more difficult to accumulate.
  - Personalised feedback – informing participants about the actual patterns of their sedentary behaviour and physical activity beforehand.
  - Phone calls – three phone calls over six weeks will maintain participant motivation.
- Repeated measures design will be used in the feasibility trial.
- Three assessment points: baseline, one week pre-surgery, and 6 weeks post-surgery. Measures at baseline and pre-surgery are complete, and at follow-up are reduced.

## Definitive Trial Protocol

- The final component of ESR3's PhD is a design for a rigorous randomised controlled trial to reduce sedentary behaviour in older adults.
- The design of this intervention will be informed by the feasibility trial and the systematic review.
- Will be powered to detect significant differences in health and function, and intended for a large sample of community-dwelling older adults >65 years.

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