

**PROTOCOL: A scoping review to identify physical activity cohort studies for the
Physical Activity Cohort Repository (PACe)**

The Physical Activity Cohort Repository (PACe) project was initiated by the Epidemiology Council of International Society of Physical Activity (ISPAH). The project aims to create a central database of cohort studies that have prospectively collected data on physical activity and/or sedentary behaviour (self-report and/or device-based measurement) at two or more timepoints.

The PACe will contain information about the size, location, years of baseline recruitment and broad demographics of the cohort; how and when physical activity and/or sedentary behaviour were measured; links to publications outlining the details of the cohort study (ideally a cohort profile); and links to study websites with information about the study and how to request access to the data (if applicable).

Knowledge and critical assessment of the epidemiological methods used to measure physical activity and sedentary behaviour variables in longitudinal studies are required to continue building physical activity research capacity worldwide. This repository of cohort studies will help to maximize the investments made into cohort studies, by encouraging researchers to return to existing studies and apply contemporary causal inference methods. For example, a researcher interested in emulating a target trial to estimate the effects of sustained physical activity interventions on all-cause mortality would find the PACe a helpful tool to identify cohort studies that have an appropriate data structure to apply g methods.

The overarching aims of the PACe are to contribute to building a stronger evidence base related to the health effects of physical activity and/or sedentary behaviour; and to facilitate international collaboration that will help build research capacity in low- and middle-income countries.

Keywords: Physical activity; Sedentary behaviour; Cohort study; Epidemiology; Public health; Causal inference.

Start date: 01/01/2020

Completion date: 30/09/2021

Date of protocol submission to ISPAH website: 31/03/2021 (Version 2.0)

Stage of review at time of this submission:

1. Preliminary searches – Completed
2. Piloting of the study selection process – Completed
3. Formal screening of search results against eligibility criteria – Completed
4. Data extraction – Not started
5. Risk of bias (quality) assessment – Not applicable
6. Data compilation and synthesis – Not started
7. Manuscript preparation and submission – Not started.

Review question

To identify cohort studies with prospective measures of physical activity and/or sedentary behaviour (self-report and/or device-based measurement) at three or more timepoints through a scoping review of the literature. We will then produce an online, searchable repository containing

information about these cohort studies, to facilitate more extensive epidemiological research on physical activity and/or sedentary behaviour.

Searches

The databases that will be used for the search include PubMed and Web of Science, with the terms "physical activity" OR "physically active" OR "physical inactivity" OR "physically inactive" OR "fitness" OR "exercise" OR "exercises" OR "walk" OR "walking" OR "sedentary" OR "active transport" OR "active transports" OR "active transit" OR "active travel" OR "commute" OR "active commuting" OR "bicycle" OR "bicycling" OR "bike" OR "biking" OR "active living" OR "active-living" AND "cohort profile" OR "cohort study".

We will also search the 'Cohort Profile' papers published in the International Journal of Epidemiology.

The search will be conducted in February - May 2020. There will be no age, dates of publication or language restrictions.

Condition being studied

Cohort studies prospectively measuring physical activity and/or sedentary behaviour at three or more timepoints.

Participants/population

The population of interest is participants in cohort studies examining physical activity and/or sedentary behaviour, worldwide. The population included in the cohort studies will be children and adolescents (< 18 years), adult population (18 - 60 years), older adult population (> 60 years), or more than one age group. Cohort studies that include pregnant women or focus on clinical populations (e.g. cancer survivors) will be eligible.

Exposure

Exposures are physical activity or sedentary behavior variables (self-report and/or device-based measurement) at three or more timepoints.

Inclusion/exclusion criteria

To be incorporated into PACe: (i) The study must be a prospective cohort study with three or more waves of data collection that include measures of physical activity and/or sedentary behaviour. (ii) Physical activity and/or sedentary behaviour measurements can be self-reported, or measured by device (e.g. accelerometer, pedometer). (iii) Physical activity and/or sedentary behaviour may also be retrospectively collected (e.g. adult participants asked about physical activity during childhood) but this retrospective assessment can only count as one of the three required waves of physical activity assessment. (iv) We will restrict to cohorts with $\geq 1,000$ participants at baseline. (v) No restriction on outcomes.

Comparator/control

No comparator or control is applicable for this scoping review.

Types of study to be included

Only prospective cohort studies will be included. Where multiple research papers have been published from the one cohort study, we will use the (i) cohort profile if one exists; (ii) the publication

that best describes measures of physical activity and/or sedentary behaviour; and (iii) the publication that describes the maximum number of waves of data collection, as required. Multiple publications may be needed to source the necessary information for the PACe. Cohort study websites (if applicable) will also be reviewed as these may provide quick access to the key parameters of the study, and information about how to apply for access to the cohort data.

Data extraction

All titles and abstracts identified in the search will be screened, and data from each included cohort will be extracted by two authors (12 volunteers will conduct this work, in pairs). When conflicting decisions are made, other authors will be consulted (LB, BL, TB, ARV). Covidence systematic review software will be used for screening titles/abstracts and finding duplicates, and Google forms will be used for data extraction.

For studies selected in this scoping review, the following data will be extracted:

- * Year of study commencement
- * Country/State/City where cohort conducted
- * Sample size at baseline
- * Study population (description including age range)
- * Number of waves of data collection including physical activity and/or sedentary behaviour
- * Self-reported physical activity (yes/no)
- * Name of self-report measure of physical activity (if yes)
- * Self-reported sedentary behaviour (yes/no)
- * Sedentary behaviour domain (total/occupation/transport/household/recreation) (if yes)
- * Name of self-report measure of sedentary behaviour (if yes)
- * Device-based measured physical activity and/or sedentary behaviour (yes/no)
- * Name of device(s) used (if yes)
- * Other factors measured by cohort study:
 - sociodemographic factors (yes/no)
 - health status during pregnancy for birth cohorts (yes/no)
 - health status of participants including chronic conditions and comorbidities (yes/no)
 - anthropometry (self-reported or measured; yes/no)
 - sleep (yes/no)
 - other health behaviours e.g. smoking, dietary intake, alcohol (yes/no)
 - clinical examination e.g. blood pressure, heart rate (yes/no)
 - biological samples collected e.g. blood, saliva (yes/no)
 - neighbourhood characteristics (yes/no)

- Geo-coding (yes/no)
- mortality via vital status linkage (yes/no)
- cancer incidence via cancer registry linkage (yes/no)
- other disease endpoints via administrative data linkage e.g. hospital admissions (yes/no).

Main outcomes

- (i) Identify cohort studies that measured physical activity and/or sedentary behavior (self-report and/or device-based measurement) worldwide.
- (ii) Create the Physical Activity Cohort Repository (PACe), a central database of cohort studies.
- (iii) House the PACe on the ISPAH website, and make this resource freely available to ISPAH members.

Additional outcomes

The PACe repository will contain information about the size, location, years of baseline recruitment and broad demographics of the cohort, how and when physical activity and/or sedentary behavior were measured, links to publications outlining the details of the cohort study (ideally a cohort profile), and links to study websites with information about the study and how to request access to the data (if applicable).

The PACe will be reviewed and updated by the Epidemiology Council of ISPAH each (two year) term.

Risk of bias (quality) assessment

Risk of bias will not be included in this scoping review, because the primary purpose is to identify cohort studies with measures of physical activity/sedentary behaviour for the purpose of creating the PACe as a research resource for ISPAH members. Risk of bias is also dependent upon outcome measures, and we are solely focussing on physical activity and/or sedentary behaviour (exposures of interest).

Strategy for data synthesis

Data will be organized and collected in Covidence and Google forms. Data will be presented initially in a table, with specific columns relating to data extraction topics. This table will be used to create the PACe, which allow users to search for cohort studies that meet certain criteria (e.g. looking for studies with >100,000 participants at baseline and collected device-based physical activity data).

Dissemination plans

PACe will be housed on the ISPAH website, and made freely available to all ISPAH members. An abstract for a symposium about the PACe has been submitted to the 8th ISPAH meeting. A manuscript describing the methods and results of the scoping review, will be submitted to a peer reviewed journal.

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Conflict of interest: None

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