

Correlates of Adult Sedentary Behavior: A Systematic Review

Ryan E. Rhodes, Rachel Mark &
Cara Temmel



**University
of Victoria**



Introduction

- Health benefits of regular, moderate and vigorous intensity physical activity (MVPA) continue to accumulate as the research in this domain grows (Warburton et al., 2010)
- A more recent research literature is beginning to evaluate the deleterious health effects of sustained sedentary behavior (i.e. <1.5 METs) (Ford et al., 2005; Owen, et al., 2010)

Introduction, continued

- Seems worthy to understand the correlates of sedentary behavior and target these in intervention efforts much like the approach taken in MVPA
- Reviews on the correlates of sedentary behaviors has been predominantly focused on children
(Tremblay et al., 2011; Australia Department of Health and Ageing, 2010)
- Adults also spend considerable time in sedentary leisure pursuits
(Canadian Fitness and Lifestyle Research Institute, 1996)

Purpose

To collect, theme, appraise, and review the existing literature that has focused on the correlates of sedentary behavior among adults.



Framing of the Review

- Correlates were grouped into categories based on the social ecological model:
 - socio-demographic variables (e.g. age, sex, and ethnicity),
 - cognitive variables (e.g. goal orientation, intention),
 - behavioral variables (e.g. smoking, MVPA),
 - social variables (e.g. modeling, child/peer/spouse),
 - physical environment variables (e.g. neighborhood).

Evidence Acquisition: Inclusion Criteria

- Correlate of sedentary behavior
- English language journals
- Adults 18+
- Measure of sedentary behavior independent of MVPA

Search Strategy and Screening

- Database searches were performed in August 2011:
- ISI Web of Knowledge, CINAHL, Nursing/Academic Edition, Health Technology Assessments, MEDLINE, PsycARTICLES, PsycCRITIQUES, PsycINFO, and SPORTDiscus
- Manual cross-referencing of reference lists was also completed to ensure the saturation of the literature search
- Final screening by three reviewers – 100% consensus

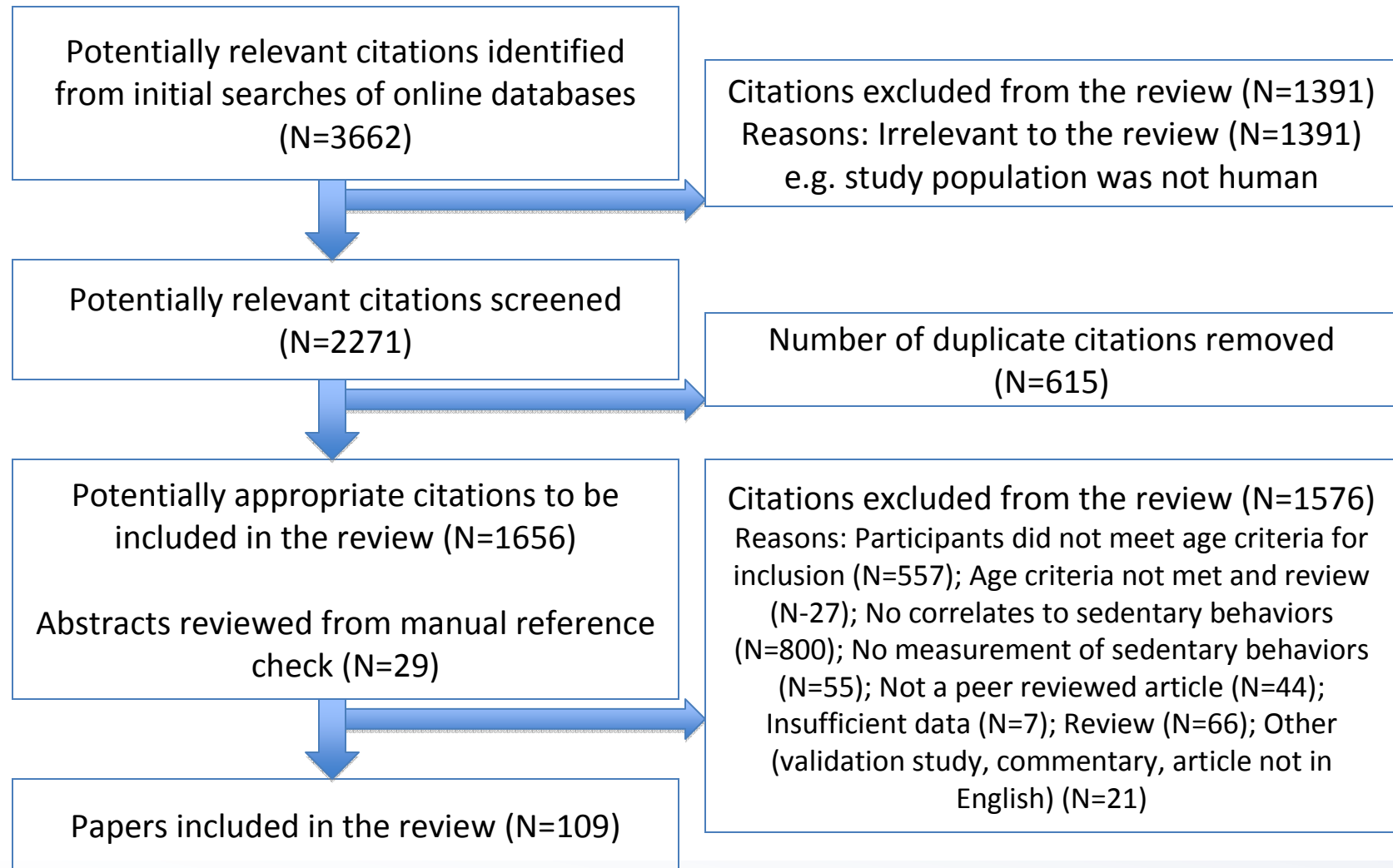
Analysis

- Risk of bias/study quality was assessed with a tool modified from the Cochrane Collaboration's instrument
- 7 questions in a yes (1) /no (0) format:
 - Low risk of bias/high quality = 5 to 7
 - Moderate quality/bias = 2 to 4
 - Low quality/high risk of bias = 0 to 1

Analysis

- Findings present in >3 studies were considered a theme
- Themes were evaluated with the criteria used by Sallis and Colleagues
 - positive or negative association = >59% of studies
 - indeterminate assessment was given if 34-59% of studies showed an association,
 - null result was provided when <34% of studies showed any association

Evidence Synthesis: Results



Evidence Synthesis: Sample Characteristics

- 25/82 samples = high quality/low risk of bias, and the rest = moderate quality
- Papers published between 1982 and 2011
- n ranged from 39 to 123,216
- Aged 18 and 91 years
- North American participants ($n = 47$), South America ($n = 2$), Europe ($n = 17$), Australia/New Zealand ($n = 12$), Asia ($n = 3$)
- 76% were cross-sectional designs

Evidence Synthesis: Demographics

Correlate	Sedentary Behavior(s)	Number of Studies	Association
Age	TV Viewing	20	+
	Screen Viewing	3	?
	Computer Use	5	-
	Reading	3	0
	General Sitting	10	?
Education	TV Viewing	18	-
	Computer Use	4	+
	General Sitting	6	0
Employment Status: Unemployed/retired	TV Viewing	15	+
	Computer Use	4	?
	Sitting	7	?
Manual Labor	Sitting	4	?
Increased Occupational Physical activity	TV/Screen Viewing	4	0

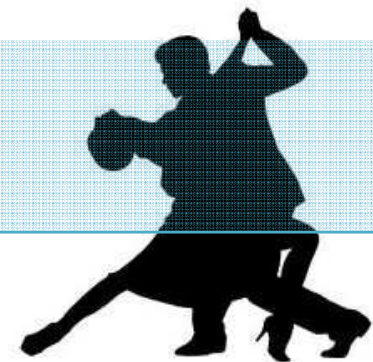
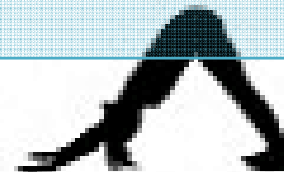
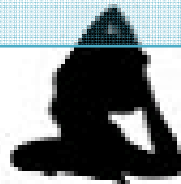
Evidence Synthesis: Demographics, Cont.

Correlate	Sedentary Behavior(s)	Number of Studies	Association
Gender (Male)	TV Viewing	29	0
	Computer Use	9	?
	Video Games	4	+
	Screen Viewing	6	0
	Reading	4	0
	General Sitting	9	0
Ethnicity	TV Viewing	13	?
	General Sitting	3	0
Income	TV Viewing	14	?
	Computer Use	3	0



Evidence Synthesis: Behavioral

Correlate	Sedentary Behavior(s)	Number of Studies	Association
BMI	TV Viewing	28	+
	Computer Use	4	?
Smoking	TV Viewing	9	?
	General Sitting	5	0
Alcohol Consumption	TV Viewing	8	0
	General Sitting	4	0
Leisure Time Physical Activity	TV Viewing	25	-
	Computer Use	3	0
	Screen Viewing	6	-
	General Sitting	9	0
Caloric Intake	TV Viewing	10	0
	General Sitting	3	0



Evidence Synthesis: Social

Correlate	Sedentary Behavior(s)	Number of Studies	Association
Children in Home	General Sitting	4	-
Marital Status	TV Viewing	9	?



Evidence Synthesis: Cognitions

Correlate	Sedentary Behavior(s)	Number of Studies	Association
Sedentary Attitude	TV Viewing	3	+
	General Sitting	3	+
Depressive Symptoms	TV Viewing	4	+
	Computer Use	3	0
Life Satisfaction	TV Viewing	7	-



Conclusions

- TV viewing proved the most prevalent sedentary behavior, followed by sitting time, computer time and videogames
- Considerable research has accumulated on the socio-demographic and behavioral correlates
- Limited research on the cognitive, social, or environmental categories

Conclusions, continued

- Those who watch a lot of TV tend to be less educated, older, unemployed or work less hours, and have higher BMI
 - Finding is independent of gender
- High computer users are more likely to be younger and more educated
 - Computer game users are more likely to be male



Conclusions, continued

- General sitting behavior was not associated with education, ethnicity, or gender, but negatively related to the presence of children in the home.
- Occupational variables such as employment type and physical activity on the job are relatively under-researched at present. More evidence is needed on these topics before any firm conclusions can be drawn.

Discussion

- Alcohol consumption is not related to sedentary behavior in any practical significance, but smoking is less conclusive
- Total caloric intake and sedentary behavior had limited association
- TV viewing and lower leisure-time physical activity was present in most of the studies reviewed, but this association was not found for general sitting or computer use

Discussion, continued

- Sedentary attitudes were a strong correlate of all sedentary behaviors
- Depressive symptoms and low satisfaction with life were also noted as positive correlates of sedentary behavior



Future Directions

- Sedentary behaviors have relatively distinct correlates – may need to be measured separately for targeted intervention
- Development of standardized metric of assessment needed (e.g. quartiles vs. full range of hours)
- Presentation of effect sizes for quantitative synthesis

Limitations

- Limited to published work and may be subject to publication bias
- Limited to English language journals and the results may not generalize
- Limited to the search terms and databases contained in our methods section

Acknowledgments

- Canadian Institutes of Health Research
- Canadian Cancer Society
- Social Sciences and Humanities Research Council of Canada
- Canadian Diabetes Association



Canadian Institutes
of Health Research

Instituts de recherche
en santé du Canada



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada



Canadian
Cancer
Society

Société
canadienne
du cancer

