



Meeting 4

Cardiometabolic Health and Weight Management

Chair: John Jakicic

Members: Wayne Campbell, Loretta DiPietro, Russ Pate, Linda Pescatello, Ken Powell

Experts and Consultants



- **Consultant:**
 - Ronald J. Sigal, M.D., M.P.H.
University of Calgary

Subcommittee Questions



1. What is the relationship between physical activity and prevention of weight gain?
2. In people with normal blood pressure or pre-hypertension, what is the relationship between physical activity and blood pressure?
3. In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

Question #1

What is the relationship between physical activity and prevention of weight gain?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
 - c. Does the relationship vary based on levels of sedentary, light, moderate, or vigorous physical activity?
 - d. Is this relationship influenced by diet (e.g., energy intake) or eating behavior?
- Source of evidence to answer question:
 - De novo systematic review of original articles

Analytical Framework

Systematic Review Question

What is the relationship between physical activity and prevention of weight gain?

Target Population

Adults, ages 18 and older

Comparison

Adults who participate in varying levels of physical activity, including no reported physical activity

Intervention/Exposure

All types and intensities of physical activity including lifestyle activities, leisure activities, and sedentary behavior

Endpoint Health Outcomes

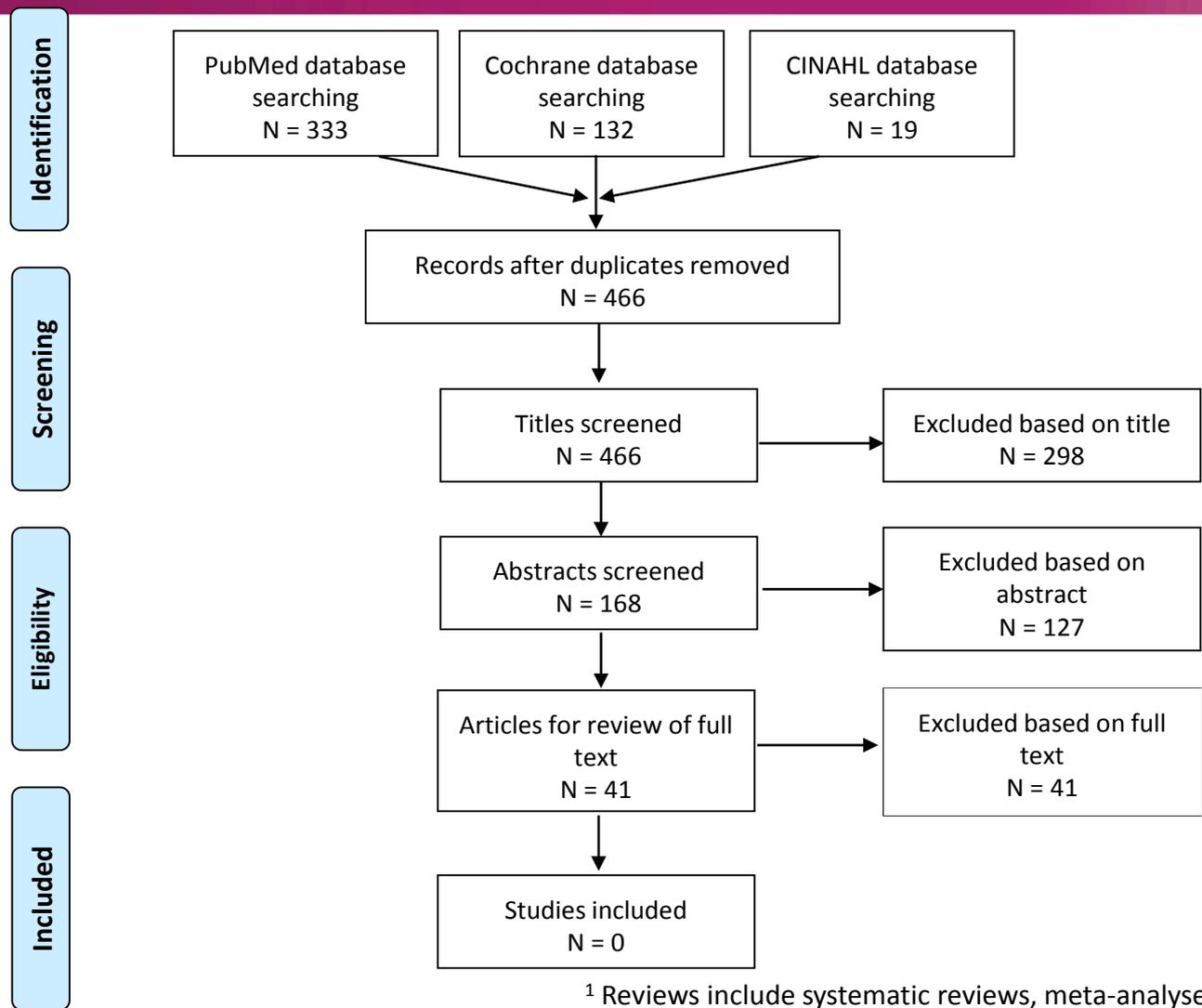
- Weight
- Weight change
- Weight control
- Weight gain

Key Definitions

Clinically significant weight loss: A change in body weight of 5% or more.

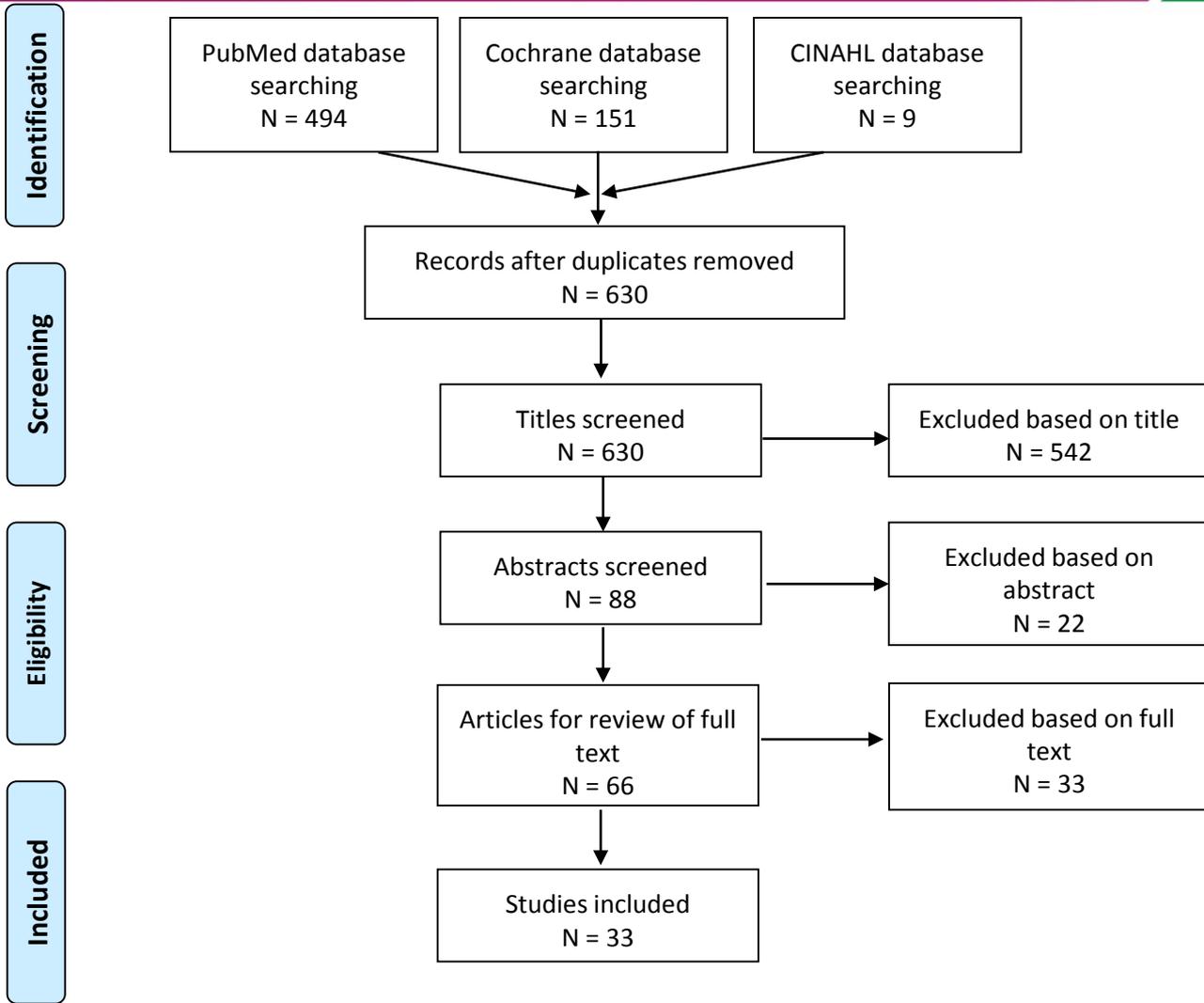
Excessive weight gain: A change in body weight of more than 2 kg per year (reference: Hill) or 10 kg per decade (reference: Williamson). Or, a weight change of $\geq 3\%$ (reference: Stevens).

Search Results: High-Quality Reviews¹



¹ Reviews include systematic reviews, meta-analyses, and pooled analyses.

Search Results: Original Research



Description of the Evidence



- 33 original research studies
 - 26 of these studies showed an inverse association between physical activity and weight gain, increased BMI, or onset of overweight/obesity
 - 7 studies had one measure of physical activity
 - 19 studies had two or more measures of physical activity
 - 7 of these studies did not show an inverse association between physical activity and weight gain, increased BMI, or onset of overweight/obesity

Draft Key Findings

- 26 of the 33 studies reviewed showed an inverse association between physical activity and weight gain, increased BMI, or onset of overweight/obesity.
- The evidence for a specific volume threshold of physical activity that is associated with prevention of weight gain in adults is inconsistent.
 - 1 study showed >1 hr/wk of moderate-intensity physical activity (Rosenberg et al. 2013)
 - <1 hr/wk may be sufficient if the intensity is vigorous (Williams and Wood 2006)
 - Some evidence also supports the need to achieve >150 minutes per week of moderate-intensity physical activity (Hamer et al. 2013; Smith et al. 2017; Hankinson et al. 2010; Moholdt et al. 2014) or >300 minutes per week (Lee et al. 2010; Gebel et al. 2014; Blanck et al. 2007)

Draft Conclusion Statement

- **Conclusion Statement:** Strong evidence demonstrates a relationship between greater amounts of physical activity and attenuated weight gain in adults, with some evidence to support that this relationship is most pronounced when physical activity exposure is above 150 minutes per week.
- **Grade: Strong**

Draft Key Findings – Dose Response

- Only 6 of the 33 studied provided evidence of a dose-response relationship of physical activity and:
 - Weight gain (Sims et al. 2012; Moholdt et al. 2014; Gebel et al. 2014; Blanck et al. 2007).
 - Maintenance of a healthy weight (Brown et al. 2016).
 - Development of obesity (Rosenberg et al. 2013).

Draft Conclusion Statement

- **Conclusion Statement:** Limited evidence suggests a dose-response relationship between physical activity and the risk of weight gain in adults, with greater amounts of physical activity associated with lower risk of weight gain.
- **Grade:** Limited

Draft Key Findings – Age

- Six studies analyzed the data specifically by age. This pattern of results was inconsistent.
 - Macinnis et al. (2014)
 - In ages 40 to 49 years, but not in adults ages 50 to 59 years, or 60 to 69 years.
 - Williams (2007)
 - Running attenuated weight gain in men younger than 55 years and in women younger than 50 years.
 - Moholdt et al. (2014): odds of gaining ≥ 2.3 kg
 - In men ≥ 40 years, but not in those younger.
 - In women across the age spectrum (< 40 years, 40 to 59 years, and ≥ 60 years).
 - Williams and Thompson (2006)
 - Results consistent between men ages < 45 and ≥ 45 years, but not consistent in women.
 - Lee et al. (2010)
 - Association in women younger than age 64 years, but not in women ages 65 years and older.
 - Sims et al. (2012)
 - Association in women ages 50 to 59 years, but not in those 60 to 69 years, or 70 to 79 years.

Draft Conclusion Statement

- **Conclusion Statement:** Limited and inconsistent evidence suggests that the relationship between greater amounts of physical activity and attenuated weight gain in adults varies by age.
- **Grade:** Limited

Draft Key Findings - Gender

- 16 studies included both men and women
- 10 studies presented findings separately by sex
 - 8 of these 10 studies reported that the association between physical activity and weight gain was consistent for both men and women.

Draft Conclusion Statement

- Conclusion Statement: Moderate evidence indicates that the relationship between greater amounts of physical activity and attenuated weight gain in adults does not appear to vary by sex.
- Grade: Moderate

Draft Key Findings - Intensity

- Total leisure-time physical activity was consistently inversely associated with weight change across the studies (N=7).
- Studies (N=2) reporting on moderate-intensity activity showed a consistent pattern of inverse associations with weight gain.
- Studies (N=8) reporting on vigorous intensity activity showed a consistent pattern of inverse associations with weight gain.
- Studies (N=8) reporting on moderate-to-vigorous intensity activity showed a consistent pattern of inverse associations with weight gain.
- Light-intensity physical activity was either not associated with weight change (1 study) or was associated with weight gain (1 study).

Draft Conclusion Statement

- Conclusion Statement: Strong evidence demonstrates that the significant relationship between greater time spent in physical activity and attenuated weight gain in adults is observed with moderate-to-vigorous physical activity.
 - Grade: Strong
- Insufficient evidence is available to determine an association between light intensity activity and attenuated weight gain in adults.
 - Grade: Grade Not Assignable

Draft Conclusion Statement

- Conclusion Statement: Insufficient evidence is available to determine whether the relationship between greater amounts of physical activity and attenuated weight gain in adults varies by race/ethnicity.
 - Grade: Grade Not Assignable
- Conclusion Statement: Insufficient evidence is available to determine whether the relationship between greater amounts of physical activity and attenuated weight gain in adults varies by socio-economic status.
 - Grade: Grade Not Assignable
- Conclusion Statement: Insufficient evidence is available to determine whether the relationship between greater amounts of physical activity and attenuated weight gain in adults varies by initial weight status.
 - Grade: Grade Not Assignable

Draft Research Recommendations

- Conduct longitudinal research on lower exposure levels of physical activity to allow for an enhanced understanding of the dose-response associations between physical activity and weight gain across a wider spectrum of exposure.
- Conduct large research trials with ample sample sizes to allow for stratum-specific analyses to determine whether the influence of physical activity on the prevention of weight gain varies by age, sex, race/ethnicity, socio-economic status, or initial weight status.
- Conduct experimental research on varying intensities (light, moderate, and vigorous) of physical activity, while holding energy expenditure constant, to determine the independent effects of physical activity intensity on weight gain.
- Conduct research that quantifies energy intake and eating behavior to determine whether these factors influence the association between physical activity and weight gain.

Committee Discussion

What is the relationship between physical activity and prevention of weight gain?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
- c. Does the relationship vary based on levels of sedentary, light, moderate, or vigorous physical activity?
- d. Is this relationship influenced by diet (e.g., energy intake) or eating behavior?

Question #2

In people with normal blood pressure or pre-hypertension, what is the relationship between physical activity and blood pressure?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, weight status, or resting blood pressure level?
 - c. Does the relationship vary based on: frequency, duration, intensity, type (mode), and how physical activity is measured?
-
- Source of evidence to answer question:
 - SR/MA/Existing Report

Analytical Framework

Systematic Review Question

In people with normal blood pressure or pre-hypertension, what is the relationship between physical activity and blood pressure?

Target Population

Adults, ages 18 and older with normal blood pressure or pre-hypertension

Comparison

Adults who participate in varying levels of physical activity, including no reported physical activity

Intervention/Exposure

All types and intensities of physical activity including lifestyle activities, leisure activities, and sedentary behavior

Endpoint Health Outcomes

- Blood pressure: Systolic, Diastolic, Mean
- Disease progression (normal bp to pre-hypertension or hypertension; pre-hypertension to hypertension)

Key Definitions

- **Hypertension or high blood pressure** is defined as having blood pressure higher than 140/90 mmHg or being on antihypertensive medications regardless of the BP level.
- **Pre-hypertension** is defined as having blood pressure between 120–139 or 80–89 mmHg or 139/89 mmHg.
- **Normal blood pressure** is defined as having blood pressure below 120 and 80 mmHg.

Common Inclusion/ Exclusion Criteria

- Language
 - Exclude: Studies that do not have full text in English
- Publication Status
 - Include: Studies published in peer-reviewed journals, PAGAC-approved reports
 - Exclude: Grey literature
- Study Subjects
 - Exclude: Studies of animals only

Inclusion/Exclusion Criteria

- Date of Publication
 - Original Research: Include 2006–Present
 - Existing Sources: Include 2006–Present
- Study Subjects
 - Include: Adults, ages 18 and older
- Study Design
 - Include: Randomized controlled trials, Prospective cohort studies, Systematic reviews, Meta-analyses, Pooled analyses, PAGAC-Approved reports
 - Exclude: Non-randomized controlled trials, Retrospective cohort studies, Case-control studies, Cross-sectional studies, Before-and-after studies, Narrative reviews, Commentaries, Editorials
- Exposure/Intervention
 - Include: All types and intensities of physical activity including lifestyle activities, leisure activities, and sedentary behavior; acute or chronic exercise
 - Exclude: Missing physical activity; Only used as confounding variable
- Outcome
 - Include: Blood pressure: Systolic, Diastolic, Mean; Disease progression

Search Terms: Physical Activity



- Aerobic activity(ies)
- Aerobic endurance
- Bicycl*
- Cardiovascular activity(ies)
- Endurance activity(ies)
- Endurance training
- Exercise(s)
- Free living activity(ies)
- Functional training
- Leisure-time physical activity
- Lifestyle activity(ies)
- Muscle stretching exercises
- Physical activity(ies)
- Physical conditioning
- Qi gong
- Recreational activity(ies)
- Resistance training
- Running
- Sedentary lifestyle
- Sedentary
- Speed training
- Strength training
- Tai chi
- Tai ji
- Training duration
- Training frequency
- Training intensity
- Treadmill
- Walking
- Weight lifting
- Weight training
- Yoga

Search Terms: Outcome

arterial pressure(s)

blood pressure(s)

bp decrease

bp measurement

bp monitor(s)

bp reduction

bp response

diastolic pressure

hypertension

hypertensive

hypotension

hypotensive

mean arterial

normotension

normotensive

pre hypertension

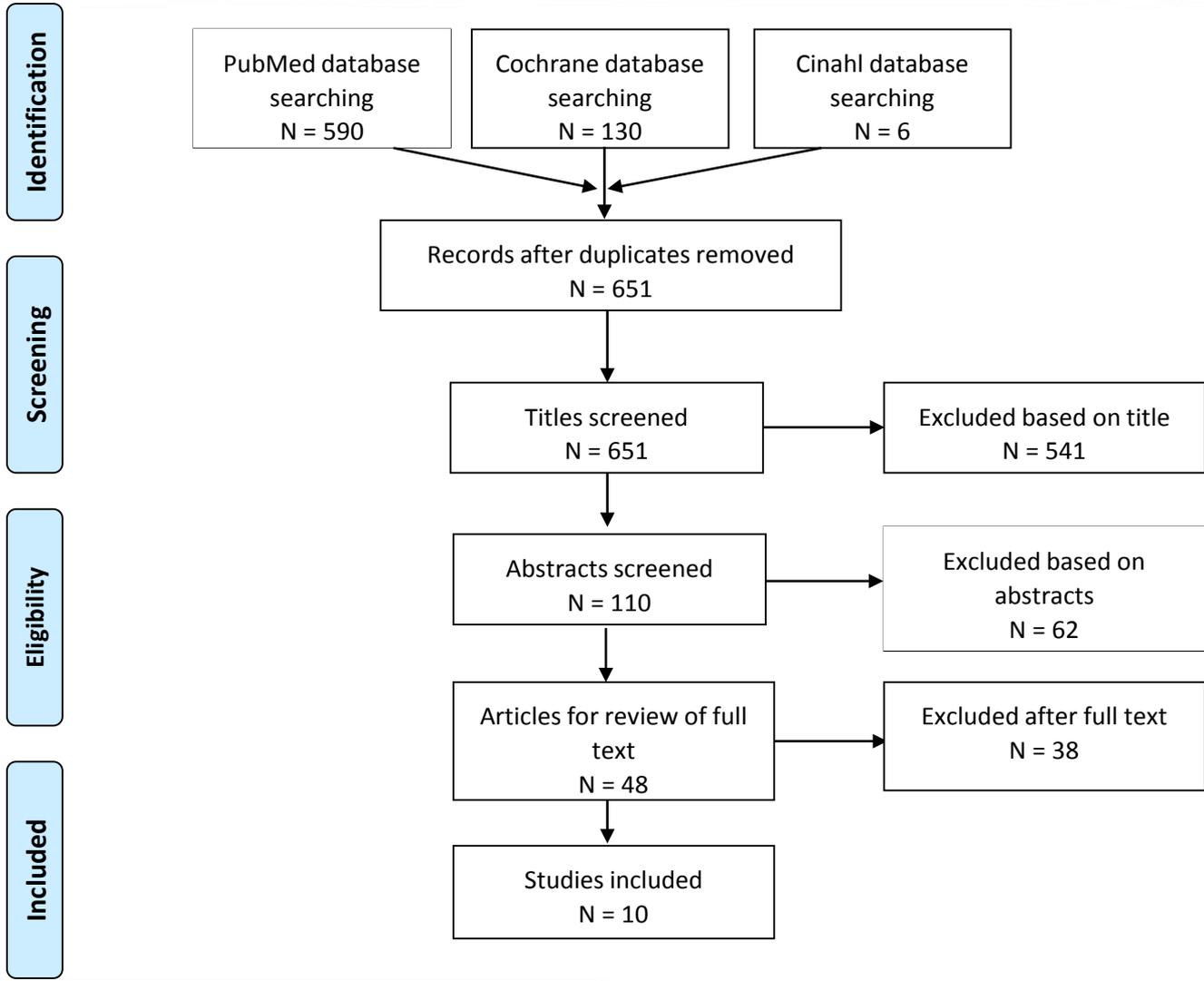
pressure monitor

pulse pressure

systolic pressure

venous pressure

Search Results: High-Quality Reviews¹



Description of the Evidence

- There were 10 qualifying meta-analyses identified and included:
 - Coverage dates ranged from earliest coverage to 2016.
 - The total number of included studies ranged from 6 to 93.
 - The total included study sample size consisted of 485,747 adults, ranging from 233 to 330,222 participants.
- The meta-analyses consisted of:
 - 2 meta-analyses examined longitudinal prospective cohort studies [Huai, 2013; Liu, 2017].
 - 8 meta-analysis examined randomized clinical control trials involving a physical activity intervention among sedentary adults at baseline [Carlson, 2014; Casonatto, 2016; Cornelissen, 2011, 2013b; Corso, 2016; Fagard 2007; MacDonald, 2016; Murtagh, 2015].
- Inclusion of hypertension, prehypertension, and normal blood pressure
 - 10 of the meta-analyses included adults with hypertension and normal blood pressure [Carlson, 2014; Casonatto, 2016; Cornelissen, 2011, 2013b; Corso, 2016; Fagard 2007; Huai, 2013; Liu, 2017; MacDonald, 2016; Murtagh, 2015].
 - 5 of the meta-analyses included adults with prehypertension [Cornelissen, 2011, 2013b; Corso, 2016; MacDonald, 2016; Murtagh, 2015].
- The qualifying meta-analyses, as well as their included primary level studies, often did not follow the JNC 7 blood pressure classification scheme [Chobanian, 2003], as the blood pressure classification schemes varied throughout this literature.

Draft Key Findings

- In a meta-analysis among 136,846 adults initially free of hypertension at baseline (i.e., those with normal blood pressure) Huai et al. [2013] reported:
 - 11.4% of adults developed hypertension after an average of 10 years (2 to 45 years) of follow up.
 - “High” amounts of leisure-time physical activity (i.e., volume and/or intensity) were associated with a 19% lower risk of hypertension compared to the reference group engaging in “low” leisure-time physical activity (RR 0.81 [95% CI 0.76-0.85]).
 - Moderate amounts of recreational physical activity were associated with an 11% decreased risk of hypertension compared to lower amounts of recreational physical activity (RR 0.89 [95% CI, 0.85-0.94]).
 - No significant associations were found with occupational and commuting physical activity and incident hypertension.

Draft Key Findings

- In a meta-analysis among 330,220 adults initially free of hypertension at baseline (i.e., those with normal blood pressure) Liu et al. [2017] reported:
 - 20.5% adults developed hypertension after 2 to 20 years of follow up.
 - The risk of hypertension was reduced by 6% (RR 0.94 [95% CI 0.92-0.96]) for each 10 MET-hr•wk⁻¹ increase in leisure-time physical activity.
 - For adults with 20 MET-hr•wk⁻¹ of leisure-time physical activity, the risk of hypertension was reduced by 12% (RR 0.88 [95% CI 0.83-0.92]); and for those for 60 MET-hr•wk⁻¹ of physical activity, the risk of hypertension was reduced 33% (RR 0.67 [95% CI 0.58-0.78]).
 - The relationship between leisure-time physical activity and incident hypertension was linear, with no cutoff of benefit.
 - These same dose-response patterns were seen for total physical activity such that for each 50 MET-hr•wk⁻¹ increase in total physical activity, the risk of hypertension was reduced 7% (RR 0.93 [95% CI, 0.88-0.98]); and for 64.5 MET-hr•wk⁻¹, the risk of hypertension was reduced by 10%.

Draft Conclusion Statement

- **Conclusion Statement:** Strong evidence demonstrates an inverse, dose-response relationship between physical activity and incident hypertension among adults with normal blood pressure.
- **Grade: Strong**

Draft Conclusion Statement

- **Conclusion Statement:** Insufficient evidence exists to determine whether a dose-response relationship exists between physical activity and incident hypertension among adults with prehypertension.
- **Grade:** Grade not assignable

Draft Key Findings

- No conclusions can be made regarding the influence of age, sex, race/ethnicity, socio-economic status, or weight status on the relationship between physical activity and blood pressure, as the magnitude and precision of the effect could not be determined from findings that were too scarce and/or too disparate to synthesize.
 - In the few instances in which age, sex, race/ethnicity, socio-economic status, or weight status were examined as moderators of the blood pressure response to exercise training, results were disparate and were not reported by the BP classification of the sample as hypertension, prehypertension, and normal blood pressure.

Draft Conclusion Statement

- **Conclusion Statement:** Insufficient evidence exists to determine whether the relationship between physical activity and blood pressure varies by age, sex, race/ethnicity, socio-economic status, and weight status among adults with normal blood pressure and prehypertension.
- **Grade:** Grade not assignable

Draft Key Findings

- Of the 6 meta-analyses examining blood pressure classification as a moderator of the blood pressure response to physical activity, 5 found that the greatest blood pressure reductions occurred among samples with hypertension followed by samples with prehypertension and normal blood pressure [Carlson, 2014; Cornelissen, 2013b; Corso, 2016; Fagard, 2007; MacDonald, 2016] .
- Of these, 3 recent meta-analyses of moderate to high quality with coverage from inception until 2016 and sample sizes ranging from 2,344 to 5,223 adults with hypertension, prehypertension, and normal blood pressure examined the blood pressure response to aerobic, dynamic resistance, and combined aerobic and resistance exercise training by blood pressure classification [Cornelissen, 2013b; Corso, 2016; MacDonald, 2016].
- These 3 meta-analyses found that adults with hypertension experienced blood pressure reductions, on average, of 5-8 mmHg that were ~2 times greater than the blood pressure reductions of 2-4 mmHg from exercise training among adults with prehypertension and ~4-5 times greater than the blood pressure reductions from exercise training of 1-2 mmHg among adults with normal blood pressure.

Draft Conclusion Statement

- **Conclusion Statement:** Strong evidence demonstrates the magnitude of the blood pressure response to physical activity varies by resting blood pressure level, with greater benefits occurring among adults with prehypertension than normal blood pressure.

- **Grade: Strong**

Draft Key Findings

- No conclusions can be made regarding the influence of frequency, intensity, time, and duration of physical activity on blood pressure, and how physical activity was measured, as the magnitude and precision of the effect could not be determined from findings that were too scarce and/or too disparate to synthesize.
 - In the few instances in which frequency, intensity, time, and duration were examined as moderators of the blood pressure response to exercise training, results were disparate and were not reported by the BP classification of the sample as hypertension, prehypertension, and normal blood pressure.
 - No meta-analyses reported any physical activity measure outside of the structured physical activity intervention.

Draft Conclusion Statement

- **Conclusion Statement:** Insufficient evidence exists to determine whether the relationship between blood pressure and physical activity varies by the frequency, intensity, and duration of physical activity, and how physical activity is measured among adults with normal blood pressure and prehypertension.
- **Grade:** Grade not assignable

Draft Key Findings

- 3 meta-analyses examined the blood pressure response to aerobic exercise training [Cornelissen, 2013b; Fagard, 2007; Murtagh, 2015], 3 meta-analysis examined the blood pressure response to resistance exercise training [Casonatto, 2016; Cornelissen, 2011; MacDonald, 2016], 1 meta-analysis examined the blood pressure response to combined aerobic and resistance exercise training [Corso, 2016], and 1 meta-analysis the blood pressure response to isometric resistance training [Carlson, 2014].
- Of these, 3 recent meta-analyses of moderate to high quality with coverage from inception until 2016 and sample sizes ranging from 2,344 to 5,223 adults with hypertension, prehypertension, and normal blood pressure examined the blood pressure response to aerobic, dynamic resistance, and combined aerobic and resistance exercise training by blood pressure classification [Cornelissen, 2013b; Corso, 2016; MacDonald, 2016].
- These 3 meta-analyses found that blood pressure was reduced by 5 to 8 mmHg among adults with hypertension, 2 to 4 mmHg among adults with prehypertension, and 1 to 2 mmHg among adults with normal blood pressure following exercise training, independent of type (mode) of physical activity.

Draft Conclusion Statement

- **Conclusion Statement:** Moderate evidence indicates the relationship between resting blood pressure level and the magnitude of benefit does not vary by type (mode) of physical activity among adults with normal blood pressure and prehypertension.
- **Grade:** Moderate

Draft Research Recommendations

- Conduct randomized control trials that examine the influence of age, sex, race/ethnicity, socio-economic status, and weight status on physical activity and blood pressure and other clinical outcomes that include incident hypertension and adverse events related to physical activity participation among adults with normal blood pressure and prehypertension.
- Conduct randomized clinical control trials that examine the influence of the frequency, intensity, time, and type (mode) of physical activity on blood pressure and other clinical outcomes that include incident hypertension and adverse events related to physical activity participation among adults with normal blood pressure and prehypertension.
- Conduct research that discloses the *standard* criteria and methods that were used to determine the blood pressure status of the study sample to better isolate samples with hypertension from those with normal blood pressure and prehypertension, and report results separately by blood pressure classification.
- Conduct randomized controlled trials to examine the influence of complementary and alternative physical activity types (modes), such as yoga and Tai Chi, on blood pressure and other clinical outcomes compared to traditional types (modes) of physical activity among adults with normal blood pressure and prehypertension.
- Conduct research that examines both the acute (i.e., short-term or immediate) and the chronic (i.e., long-term or training) blood pressure response to physical activity.

Committee Discussion

In people with normal blood pressure or pre-hypertension, what is the relationship between physical activity and blood pressure?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, weight status, or resting blood pressure level?
- c. Does the relationship vary based on: frequency, duration, intensity, type (mode), and how physical activity is measured?

Question #3

In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
 - c. Does the relationship vary based on: frequency, duration, intensity, type (mode), and how physical activity is measured?
- Source of evidence to answer question:
 - SR/MA/Existing Report

Analytical Framework

Systematic Review Question

In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

Target Population

Adults, ages 18 and older

Comparison

Adults who participate in varying levels of physical activity, including no reported physical activity

Intervention/Exposure

All types and intensities of physical activity including lifestyle activities, leisure activities, and sedentary behavior

Endpoint Health

Outcomes

Type 2 diabetes

Key Definitions

Non-diabetic/normal: Having an A1C below 5.7%, fasting blood glucose less than 100 mg/dL, and an OGTT 2 hour blood glucose lower than 140 mg/dL.

Prediabetes: Having an A1C of 5.7%–6.4%, fasting blood glucose of 100–125 mg/dl, and an OGTT 2 hour blood glucose of 140 mg/dL–199 mg/dL.

Diabetes: Having an A1C of 6.5% or higher, fasting blood glucose of 126 mg/dL or higher, and an OGTT 2 hour blood glucose of 200 mg/dL or higher.

Common Inclusion/ Exclusion Criteria

- Language
 - Exclude: Studies that do not have full text in English
- Publication Status
 - Include: Studies published in peer-reviewed journals, PAGAC-approved reports
 - Exclude: Grey literature
- Study Subjects
 - Exclude: Studies of animals only

Inclusion/Exclusion Criteria

- **Date of Publication**
 - Original Research: Include 2006–Present
 - Existing Sources: Include 2006–Present
- **Study Subjects**
 - Include: Healthy adults, ages 18 and older without diabetes; People who are overweight or obese; Adults with pre-diabetes or impaired glucose tolerance
 - Exclude: Adults with a chronic condition (besides obesity); Hospitalized patients; Smokers only
- **Study Design**
 - Include: Randomized controlled trials, Prospective cohort studies, Systematic reviews, Meta-analyses, Pooled analyses, PAGAC-Approved reports
 - Exclude: Non-randomized controlled trials, Retrospective cohort studies, Case-control studies, Cross-sectional studies, Before-and-after studies, Narrative reviews, Commentaries, Editorials, Time series
- **Exposure/Intervention**
 - Include: All types and intensities of physical activity including lifestyle activities, leisure activities, and sedentary behavior
 - Exclude: Studies that do not include physical activity (or the lack thereof) as the primary exposure variable or used solely as a confounding variable; Studies missing physical activity (mental games such as Sudoku instead of physical activities)
- **Outcome**
 - Include: Type 2 diabetes

Search Terms

Physical Activity:

Aerobic endurance

Bicycl*

Endurance training

Exercises

Free living activity(ies)

Functional training

Leisure-time physical activity

Lifestyle activity(ies)

Muscle stretching exercises

Qi gong

Recreational activity(ies)

Outcome:

Diabetes

Running

Speed training

Tai chi

Tai ji

Training duration

Training frequency

Training intensity

Treadmill

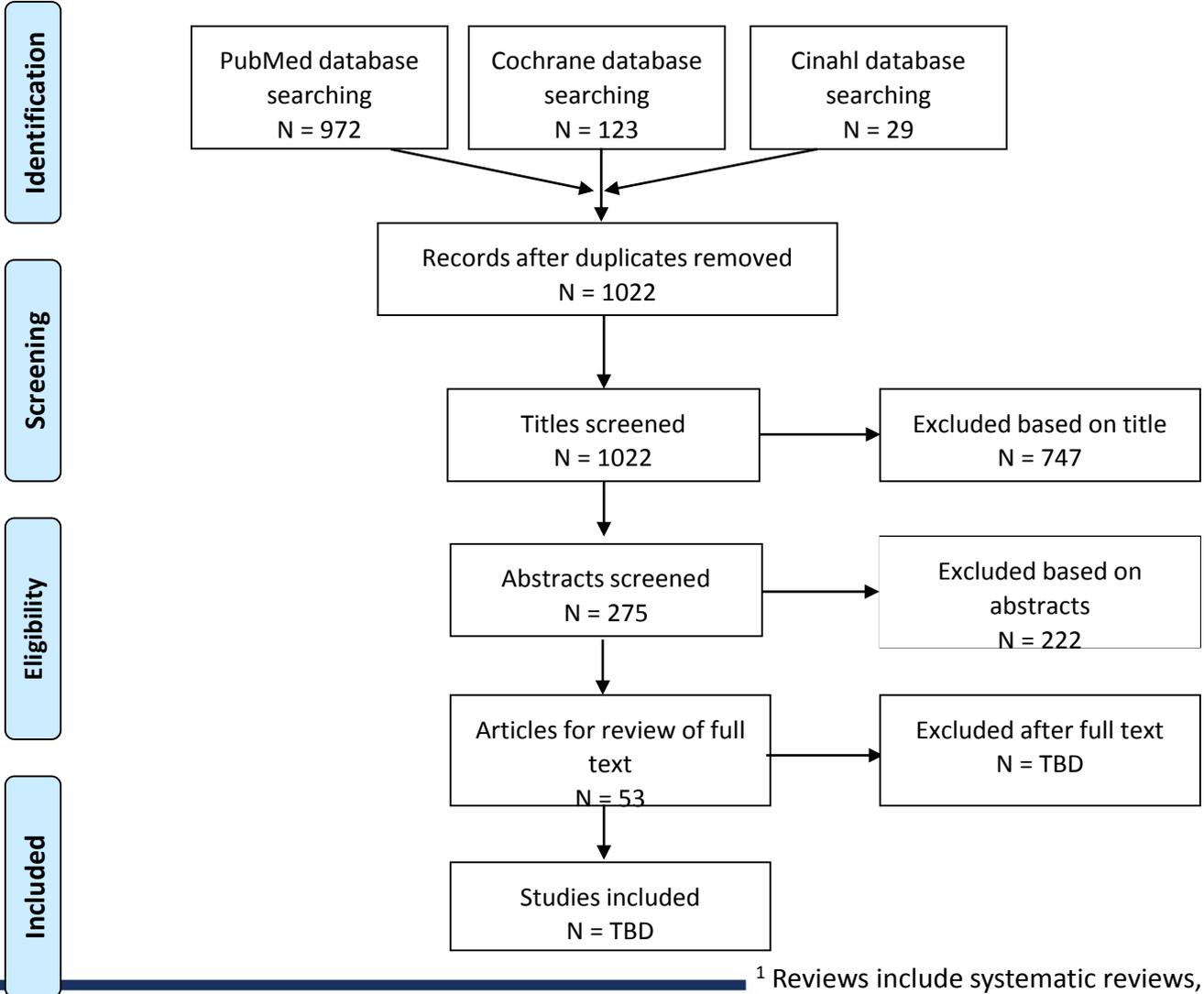
Weight lifting

Weight training

Yoga

Diabetes Mellitus

Search Results: High-Quality Reviews¹



¹ Reviews include systematic reviews, meta-analyses, and pooled analyses.

Committee Discussion

In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
- c. Does the relationship vary based on: frequency, duration, intensity, type (mode), and how physical activity is measured?

Next Steps

- Final edits to Q1 document (including tables)
- Final edits to Q2 document (including tables)
- Q3
 - Extraction (underway)
 - Review of the evidence
 - Document development and conclusions
- Integration of full document for final report