



Meeting 2

Overall Question Prioritization

Committee Members

Overarching Criteria for Question Prioritization

- Potential for greatest public health impact
- Potential to inform public health policy and/or programs
- Existence of mature scientific evidence
- Potential generalizability to the population of interest

Principles for Question Prioritization



- Does the scientific evidence “inform” the Guidelines about selection of a target dose?
 - The type, volume, intensity, or other characteristics of the target dose.
 - The value or reasonableness of selecting a target dose.
- Does the scientific evidence “inform” the Guidelines with new or supportive information regarding the health impact of physical activity?
 - Strength of the scientific support.
 - New health benefits (e.g., reduced risk of dementia) or risks of PA.
 - Confirm previous benefits or risks of PA for which scientific support had been moderate. [Note: Reconfirmation of previously well-established health benefits is less informative.]

Principles for Question Prioritization



- Does the scientific evidence “inform” the Guidelines from a public health perspective?
 - The general population.
 - If a subpopulation, how large a population.
 - If a subpopulation, how new is the information.
 - If a subpopulation, is it an underserved population.
- Does the scientific evidence “inform” the Guidelines about encouraging and facilitating physical activity?
 - Environments that facilitate PA.
 - Types of interventions that encourage PA.
- How confident are we that the scientific evidence will accomplish one or more of the above objectives?

Questions in Process

- Each Subcommittee has its first priority question in process

Subcommittee 2nd Questions

Number 2 Priority Questions

Aging Q2

- What is the relationship between physical activity and physical function?
- What is the nature of the dose-response relationship?
 - What type(s) of physical activity are effective for improving or maintaining physical function;
 - What factors modify the relation between physical activity and physical function?

Brain Health Q2

- What is the relationship between physical activity and emergent properties of brain function?
- Well-being: Is there a relationship between physical activity and perceptions of well-being and quality-of-life in healthy and impaired populations?

Cancer- Primary Prevention Q2

What is the association between sedentary behavior and invasive cancer incidence?

Subcommittee 2nd Questions

Number 2 Priority Questions

Cardiometabolic Health and Weight Mgmt Q2

Is there a relationship between physical activity and blood glucose control (incidence of impaired glucose tolerance or type 2 diabetes mellitus) in adults without diabetes?

- a. Is there a significant relationship?
- b. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- c. Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
- d. Is this relationship independent of weight status?
- e. Does the relationship vary by age, ethnicity or socio-economic status?

Exposure Q2

What is the relation between physical activity and cardiovascular disease mortality?

Subcommittee 2nd Questions

Number 2 Priority Questions

Individuals with Chronic Conditions Q2

In people with neuro-motor disease, what is the relationship between physical activity and (a) risk of cardiovascular disease; (b) physical function; and (c) risk of comorbid conditions?

When physical activity is related to an outcome, additional questions are:

2a. Is there a dose-response relationship and if so, what is its shape?

2b. Does the strength of the relationship depend upon: frequency, duration, intensity, type (mode), how physical activity is measured, and/or characteristics of people (e.g. age, gender)?

Promotion of Physical Activity Q2

What are effective interventions for reducing sedentary behavior?

Subcommittee 2nd Questions

Number 2 Priority Questions

Sedentary Behavior Q2

- What is the relationship between sedentary behavior and mortality from cardiovascular disease?
- Is there a significant relationship?
 - Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - Does the relationship vary by age, sex, ethnicity or socio-economic status?
 - Is the relationship independent of levels of light, moderate or vigorous physical activity?
 - Is there any evidence that bouts or breaks in sedentary behavior are important factors?

Subcommittee 2nd Questions

Number 2 Priority Questions

Youth Q2

- Recent evidence for the effects of moderate-to-vigorous physical activity, vigorous physical activity, and total physical activity of selected types, on health outcomes in youth
- a. Is physical activity related to cardiorespiratory fitness, weight status, and other cardiometabolic risk factors?
 - b. Does physical activity prevent or reduce excessive weight gain that results in overweight or obesity?
 - c. Are muscle-strengthening and bone-strengthening physical activity related to musculoskeletal health?
 - d. Does recent evidence inform dose-response curves for established associations?

Question Prioritization - QHM



QHM (high medium)

Brain Health Q3/6

What is the relationship between physical activity and emergent properties of brain function?

- a. Affect: Is there a relationship between physical activity and affect and does such a relationship exist across a continuum of mood and affective disorders (i.e., depression)?

Cardiometabolic Health and Weight Mgmt Q3/8

Is there a relationship between physical activity and weight control during pregnancy and postpartum in adults?

- a. Is there a significant relationship?
- b. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- c. Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
- d. Does the relationship vary by age, ethnicity or socio-economic status?

Exposure Q5/8

What is the relation between bout duration of continuous aerobic physical activity and cardiorespiratory fitness OR health outcomes?

Question Prioritization - QHM

QHM (high medium)

Sedentary Behavior Q4/5

What is the relationship between sedentary behavior and incidence of diabetes, obesity, cardiovascular disease and cancer?

- a. Is there a significant relationship?
- b. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- c. Does the relationship vary by age, sex, ethnicity or socio-economic status?
- d. Is the relationship independent of levels of light, moderate or vigorous physical activity?
- e. Is there any evidence that bouts or breaks in sedentary behavior are important factors

Youth Q3/3

Sedentary behavior and health in youth

- a. Is sedentary behavior associated with health outcomes, including weight status/body composition, in youth?
- b. Are the effects of sedentary behavior on health outcomes in youth independent of the effects of light, moderate, or vigorous physical activity on those outcomes?

Question Prioritization - QLL

QLL (low low)

Cardio-metabolic Health and Weight Mgmt Q7/8

- Is there a relationship between physical activity and inflammatory markers in adults?
- Is there a significant relationship?
 - Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
 - Is this relationship independent of weight status?
 - Does the relationship vary by age, ethnicity or socio-economic status?

Cardio-metabolic Health and Weight Mgmt Q8/8

- Is there evidence that physical activity adds to the magnitude of weight loss achieved with caloric restriction in adults?
- Is there a significant relationship?
 - Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
 - Does the relationship vary by age, sex, ethnicity or socio-economic status?

Exposure Q8/8

- Is cardiorespiratory fitness a modifiable mediator of the benefits of physical activity? Should it be treated as an outcome?

Question Prioritization - QMM



QMM (medium medium)

Aging Q3/3

- What is the relationship between physical activity and risk of frailty?
- What is the nature of the dose-response relationship?
 - What type(s) of physical activity are effective for preventing or delaying frailty?
 - What factors modify the relation between physical activity and risk of frailty?

Brain Health Q4/6

- What is the relationship between physical activity and emergent properties of brain function?
- Anxiety: Is there a relationship between physical activity and anxiety and does such a relationship exist across the continuum of anxiety disorders?

Brain Health Q5/6

- What is the relationship between physical activity and emergent properties of brain function?
- Sleep: Is there a relationship between physical activity and sleep and circadian rhythms that include normal to impaired sleep behaviors?

Brain Health Q6/6

- What is the relationship between physical activity and biomarkers of brain health?

Question Prioritization - QMM

QMM (medium medium)

Cardio-metabolic Health and Weight Mgmt Q4/8

- Is there a relationship between physical activity and metabolic syndrome, and the components of metabolic syndrome (blood pressure, lipids, abdominal adiposity) in adults?
- Is there a significant relationship?
 - Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
 - Is this relationship independent of weight status?
 - Does the relationship vary by age, ethnicity or socio-economic status?

Cardio-metabolic Health and Weight Mgmt Q5/8

- Does physical activity alter body composition (lean tissue, fat tissue, intramuscular fat) with weight loss in adults?
- Is there a significant relationship?
 - Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
 - Does the relationship vary by age, sex, ethnicity or socio-economic status?

Question Prioritization - QMM

QMM (medium medium)

**Cardio-metabolic
Health and Weight
Mgmt Q6/8**

Is there a relationship between physical activity and weight change following clinically meaningful weight loss of at least 5% in adults?

- a. Is there a significant relationship?
- b. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- c. Does the relationship vary based on levels of sedentary, light, moderate or vigorous physical activity?
- d. Does the relationship vary by age, sex, ethnicity or socio-economic status?

Exposure Q3/8

What is the relation between physical activity and cardiovascular disease incidence?

Exposure Q4/8

What is the relation between step count per day and mortality (all-cause or cause-specific) or disease incidence (e.g., coronary heart disease, type 2 diabetes)?

Exposure Q6/8

What is the relation between high intensity interval training and reduction in cardiometabolic risk?

Question Prioritization - QMM

QMM (medium medium)

Exposure Q7/8

How does the declining basal level of activity influence the volume of physical activity (presumably MVPA) required to maintain a similar level of energy expenditure per day?

Individuals with Chronic Conditions Q3/4

In people with osteoarthritis, what is the relationship between physical activity and (1) progression of osteoarthritis and (2) risk of co-morbid conditions, and (3) physical function?

When physical activity is related to an outcome, additional questions are:

3a. Is there a dose-response relationship and if so, what is its shape?

3b. Does the strength of the relationship depend upon: frequency, duration, intensity, type (mode), how physical activity is measured, and/or characteristics of people (e.g. age, gender)?

Question Prioritization - QMM

QMM (medium medium)

Individuals with Chronic Conditions Q4/4

For the following chronic conditions, can the relationship between physical activity and (1) disease progression, (2) risk of co-morbid conditions, (3) physical function and (4) measures of quality of life be ascertained from existing systematic reviews of the literature?

- 1) Peripheral artery disease
- 2) Chronic renal disease
- 3) Type 2 Diabetes
- 4) Cancer survivors
- 5) Hypertension
- 6) Lipid disorders
- 7) Obesity
- 8) HIV/AIDS
- 9) Osteoporosis
- 10) Rheumatoid arthritis
- 11) Low back pain
- 12) Intellectual disability including Downs Syndrome
- 13) Epilepsy
- 14) Mixed connective tissue disease (e.g. systemic lupus erythematosus).
- 15) Traumatic brain injury

When one or more systematic reviews of sufficient quality exist, and when the review(s) concludes physical activity is related to an outcome:

4a. Is there a dose-response relationship and if so, what is its shape?

4b. Does the strength of the relationship depend upon: frequency, duration, intensity, type (mode), how physical activity is measured, and/or characteristics of people (e.g. age, gender)?

Question Prioritization - QMM

QMM (medium medium)

Sedentary Behavior Q4/5

- What is the relationship between sedentary behavior and incidence of diabetes, obesity, cardiovascular disease and cancer?
- Is there a significant relationship?
 - Is there a dose-response relationship? If yes, what is the shape of the relationship?
 - Does the relationship vary by age, sex, ethnicity or socio-economic status?
 - Is the relationship independent of levels of light, moderate or vigorous physical activity?
 - Is there any evidence that bouts or breaks in sedentary behavior are important factors



Meeting 2

Committee Discussion

A stylized human figure in motion, rendered in shades of blue, pink, and green, set against a background of diagonal stripes in dark blue, pink, and green. The figure is positioned in the upper half of the slide, appearing to be in a dynamic pose. The background is divided into four quadrants by two white diagonal lines that intersect at the center.

Meeting 2

Wrap Up and Next Steps

Abby King, PhD and Ken Powell, MD, MPH
Co-Chairs, 2018 Physical Activity Guidelines Advisory
Committee



Meeting 2

Meeting Adjourned

Richard D. Olson, MD, MPH
Designated Federal Officer



ODPHP

Office of Disease Prevention
and Health Promotion