

Chapter 2

Physical Activity Epidemiology

Key Points

- Physical activity epidemiology is the study of the *who, what, where, when, and why* of physical activity behavior.
- Physical activity may be assessed through self-report/survey, wearable/technological devices, and observation.
- Epidemiology is also concerned with the consequences of physical activity and sedentary behavior (e.g., morbidity and mortality rates).
- Studies of physical activity data indicate that many individuals in our society are insufficiently active.
- Levels of physical activity tend to decrease with age and vary according to a number of factors including gender, race/ethnicity, income and education levels.
- An indirect relationship is said to exist between physical activity and morbidity/mortality; those who engage in the greatest amount of activity tend to achieve longer, healthier lives.
- Current evidence suggests excessive sedentary/sitting time increases the incidence of, and mortality risk associated with common chronic diseases independent of the effects of physical activity on morbidity and mortality.

Key Terms

activity log
all-cause mortality rates
epidemiology
insufficiently active
longitudinal studies
morbidity
observation
sedentary behavior
self-report
wearable measures

Essay and Short Answer Questions

1. Summarize the epidemiological evidence concerning adult patterns of physical activity from the countries reviewed in the chapter.
2. Define physical activity epidemiology. Briefly summarize the epidemiological evidence concerning physical activity and the following variables/factors:
 - a. age
 - b. gender
 - c. ethnicity
 - d. socioeconomic status
 - e. educational level
3. What are the primary findings with regard to the San Francisco longshoremen, Harvard Alumni, and Cooper Institute studies?
4. Based on our discussions of industrialization and the decline of physical activity, why are exercise participation and adherence rates so dismal?
5. Discuss the pros and cons and provide examples of the three primary means of measuring physical activity.

Issue for Debate

On the one hand, the rise in technology—increased television watching and computer use, and less time spent on household chores, for example—is to blame for the widespread reduction in physical activity participation.

On the other hand, new technologies such as electronic trackers, mobile devices, apps, and social media can be used for tracking and measuring physical activity and for offering motivation and social support—thus helping to increase physical activity participation.

Which argument regarding technology and its effect on physical activity do you think is more accurate?

Multiple Choice Questions

Choose the *best* answer from the available alternatives

1. Epidemiological information is important to health-care professionals because it allows them to do which of the following?
 - a. Target specific populations for intervention
 - b. Determine the impact of an intervention on physical activity behavior
 - c. Promote the public health consequences of current levels of physical activity behavior
 - d. All of the above
2. What is the most popular time frame for self-report measures of physical activity that rely on memory recall?

- a. One day
 - b. One week
 - c. One year
 - d. None of the above
3. Results from an English study concerning the “sitting” and physical activity habits of toddlers and teenagers found which of the following?
- a. Toddlers sit more than they engage in physical activity
 - b. Toddlers engage in physical activity more than they sit
 - c. Teenagers sit more than they engage in physical activity
 - d. Teenagers engage in physical activity more than they sit
4. Sedentary behavior is defined as:
- a. Any waking behavior with an energy expenditure ≤ 1.5 METs, performed while sitting, reclining or lying down.
 - b. Time spent on screen-based behaviors.
 - c. A position in which one’s weight is supported by one’s buttocks rather than one’s feet.
 - d. Any waking behavior done while lying, reclining, sitting or standing with no ambulation, regardless of energy expenditure.
5. What does the relationship between physical activity patterns in childhood and adulthood indicate?
- a. Active children become active adults
 - b. Active children do not become active adults
 - c. Active children may or may not become active adults
 - d. None of the above
6. Research on sedentary behavior has shown that
- a. Time spent on sedentary behaviors is constant across the lifespan.
 - b. The effects of sedentary behaviors on risk for various chronic diseases are independent of the effects of physical activity.
 - c. Among American school-aged students, ethnicity is unrelated to time spent watching television.
 - d. There is an increased risk for cardiovascular disease for people who engage in more than 5 hours per day of sedentary time.
7. What does data concerning the relationship between physical activity and gender indicate?
- a. Australian males tend to engage in high levels of activity to a greater extent than do Australian females
 - b. Twice as many Canadian boys than girls meet the 24-hour physical activity recommendations for moderate-to-vigorous physical activity
 - c. Other than walking, the most common physical activity types for English men are sports and exercise, whereas “heavy” housework is the top activity for English women
 - d. All of the above

8. What does data from the United States concerning the relationship between physical activity and education indicate?
 - a. Sedentary rates decline dramatically as education level increases
 - b. Sedentary rates increase dramatically as education level increases
 - c. Adolescent activity is not related to the education level of parents
 - d. None of the above
9. Concerning physical activity patterns and mortality (death) rates, what does research indicate?
 - a. Canadian premature deaths may be reduced by up to 10% with increased activity levels
 - b. A midlife increase in physical activity is associated with a reduced risk of mortality
 - c. Contrary to popular opinion, physically active people do not necessarily outlive their sedentary counterparts
 - d. All of the above
10. What do results from the San Francisco longshoremen and Harvard alumni studies indicate?
 - a. Greater physical activity levels are associated with lower mortality risks
 - b. All longshoremen possessed an equivalent CHD risk as a function of their job
 - c. Active individuals live up to one year longer than inactive individuals
 - d. All of the above

Multiple Choice Answers

1. D
2. B
3. C
4. A
5. C
6. B
7. D
8. A
9. B
10. A