Chapter 2

Physical Activity Epidemiology
Epidemic of Physical Inactivity

• Physical inactivity and poor diet
  – Responsible for 16% of deaths each year, according to CDC
  – Two of the leading causes of diseases such as cardiovascular disease, type 2 diabetes, and some cancers

• Industrial Revolution and increased technology
  – Reduced occupational physical activity
  – Increased stress
Examples of Healthy People 2010 Physical Activity and Fitness Objectives

- Reduce the proportion of adults who engage in no leisure-time physical activity.
- Increase the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on five or more days per week.
- Increase the proportion of adolescents who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness three or more days per week for 20 or more minutes per occasion.
- Increase the proportion of adults who perform physical activities that enhance and maintain muscular strength and endurance.
- Increase the proportion of adults who perform physical activities that enhance and maintain flexibility.
Examples of Healthy People 2010 Physical Activity and Fitness Objectives (continued)

- Increase the proportion of the nation’s public and private schools that require daily physical education for all students.

- Increase the proportion of adolescents who spend at least 50% of school physical education class time being physically active.

- Increase the proportion of worksites offering employer-sponsored physical activity and fitness programs.

- Increase the proportion of trips made by walking.

- Increase the proportion of trips made by bicycling.

Epidemiology of Physical Activity

• In what physical activities are people most engaged?
• What variations exist in physical activity patterns across groups of individuals?
• Why are certain individuals physically active while others are not?
• How are physical activity, morbidity, and mortality linked?
Consequences of Physical Activity and Inactivity

• Physically active people have lower overall all-cause mortality rates than sedentary people.
• Midlife increase in physical activity is associated with reduced risk of mortality.
• Many conditions can be directly and positively impacted by adoption of a physically active lifestyle.
### Percentage of U.S. Population Considered Overweight (body mass index greater than or equal to 25)

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<td>% Obese</td>
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*Source: National Center for Health Statistics (2005).*
Longitudinal Studies of Physical Activity Level and Morbidity/Mortality Rates

• Subjects: San Francisco longshoremen and Harvard alumni

• Findings:
  – Men who expended 8,500 kilocalories/week on the job had a lower risk of death from coronary heart disease.
  – Men had a reduction in all-cause mortality when participating at least 3 hours/week of leisure-time activity.
Your viewpoint

What characteristics determine if an individual is physically active or not physically active?
Individual Correlates

Demographic & Biological
  Age
  Gender
  Ethnicity
  Occupation
  Education
  Biomedical Status
  Injury
Age & Physical Activity
At what ages do we see a 50% drop in physical activity levels?

• Ages 6-16
• Ages 20-30
• Ages 30-40
• Ages 40-50

• Answer: ages 6-16
Sitting & PA Habits of Children

• Two behaviors each occupy approximately 10 hours per week in the toddlers.*
• Teenagers sat 17-18 hours per week and were PA active for only 4-8 hours p/week.*
• 43% of children in U.S. view TV for more than 2 hours per school day.
• 27% of High Schools engage in PA for 30 minutes 5 or more times per week.
• 29% of High School students participate in physical education.

*The Health Survey for England (2001)
What is the trend in exercise frequency as we age?
Age

• As one get older one tends to be less active, but many older people are very active.
• As we age the frequency of exercise in the general population decreases.
• After 50 a progressively larger number of men and women report no PA
Gender & Physical Activity
What gender engages in more vigorous competitive physical activity?
Gender and Physical Activity

• Men have historically been more physically active than women.
• Men are more likely to engage in vigorous activities, while women engage in more moderate-intensity activity.
Ethnicity & Physical Activity
Which ethnic group is the most physically active?

- Black Americans
- Caucasians
- Hispanics
- Asians
Ethnicity and Physical Activity

• Caucasians tend to be more physically active than other ethnic groups.
• Caucasians tend to engage in more vigorous physical activity than other groups.
• A greater proportion of Hispanic children participate in daily PE at school than other groups.
• Fewer Caucasian high school students watch TV for more than two hours compared to Hispanic and African American students.
Ethnicity and Being Inactive!

- White Americans (36%)
- Asians (42%)
- American Indians (46%),
- Blacks (52%), and
- Hispanic Americans (54%).

- This becomes apparent during high school
Proportion of U.S. Adults Engaged in Various Doses of Physical Activity (by race/ethnicity)

Income & Exercise
Which income group is the least involved in physical activity?

- Low income
- Middle income
- High income
Socioeconomic Status and Physical Activity

• Lower-income individuals are more sedentary (28%) when compared with overall U.S. population (23%).

• Lower-income individuals engage in slightly less vigorous activity (14%) than total U.S. population (16%).

• Exercise rates in England:
  – 88% of men and 84% of women with highest incomes
  – 66% of men and 68% of women with lowest incomes
Occupation & Physical Activity
Which occupational group is the most physically active?

Blue collar workers
White collar workers
Occupation

• Blue collar workers
  – High rate of drop out of cardiac rehab programs
  – Less likely to use worksite exercise facilities
  – Less active in leisure time
    • Perceive they get enough PA at work
Education & Physical Activity
Is education a positive or negative determinate of physical activity involvement?

• Answer: Positive
Children’s level of PA is greater in families where their parents level of education was high.

True or False
Education

• Higher the level of education greater PA during leisure time
• Children’s level of PA greater in families where their parents level of education was high
Education Level and Physical Activity

- Data from Australia on levels of “sufficient” physical activity:
  - 38.6% of individuals with fewer than 12 years of education are sufficiently active.
  - 47% of those with a high school certificate or equivalent are sufficiently active.
  - 52.3% of those who continued education beyond high school are sufficiently active.
Proportion of U.S. Adults Engaged in Various Doses of Physical Activity (by education level)

Health Status & Physical Activity
If your parents are obese you have a less chance that you will be active?
If your parents are obese you have a less chance that you will be active?

- Body composition is a major determinate to physical activity
  - Obese children and adolescents are less active
  - If your parents are obese this lessens the chance that the children will be active
What biomedical factors are directly related to dropping out of physical activity?

Answer: Injury, Obesity, Disability

- Healthy people are most active
- Disabled people are least involved
- Special education students have the highest dropout rate from exercise
Focus on Special Populations

- Misconception: People with a disability or chronic disease are insufficiently healthy to participate in exercise and do not reap benefits from exercise.
- Consequence: People with a disability or chronic disease are far less active than general population and are at increased risk for secondary physical and psychological health problems.
Are injuries the number one cause for people to drop out of exercise?
INJURY

Injury is as high as 50% per year for individuals who regularly exercise in high intensity PA.

20% of exercises and non-exercisers report 3 or more relapses during any year.

- Injuries being the most common

But injuries are not considered to be the major cause for people to drop out of exercise because few people regularly exercise at high intensity levels.
Your Viewpoint

What psychological factors determine if an individual is physically active or not physically active?
Psychological Correlates

Barriers
Self-efficacy
Attitude
Intention to exercise
Enjoyment
Body image
Knowledge of PA
Barriers & Physical Activity

• Which one the following is considered to be not a perceived barrier to physical activity?
  – Lack of time
  – Lack of access to convenient facilities
  – Lack of safe environments in which to be active

Answer: Lack of time is really an excuse not a barrier according to researchers.
Self-efficacy & Physical Activity

• As the client’s perception of being in control of their exercise program increases physical activity involvement decreases?
• Answer: False
Self-efficacy is the most powerful determinate of behavior.

For girls and boys, self-efficacy to exercise despite tiredness and homework was the most important predictor of PA.
Which of the psychological correlates has the strongest relationship to being physically active?

1. Barriers to exercise
2. One’s level of self-efficacy
3. Attitude toward exercising
4. Enjoyment in exercising
5. Body image

Answer: 2
Intentions & Physical Activity

If a person has a strong intention to engage in physical activity they are more likely to exercise? True or false

Answer: True
Knowledge & Physical Activity

Q16: Knowledge of the health benefits have a strong effect on one's exercise.
Individual Determinates

• Knowledge of health and exercise benefits has little or no affect on one to exercise.
Which one of the following is considered to have a positive effect on PA adherence?

A. Low body image
B. Unsafe workout environment
C. Perceiving that the PA facility is accessible.
D. Frequent mood disturbance by the client

Answer is: C
Negative Psychological Aspects

– Perceived barriers to exercise
  • Lack of access to convenient facilities
  • Lack of safe environments
– Frequent Mood disturbances
– Low Body Image
Personality Traits & Exercise

Which two of the following personality traits are positively related to PA behavior?

A. Neuroticism
B. Extraversion
C. Openness
D. Conscientiousness

Answer: B & D
Your Viewpoint

• What characteristics of physical activity are positive determinates to promote exercise adherence in an individual?
Characteristics of Physical Activity

Intensity of exercise
Perceived effort of exercise
Duration
Exercise Intensity & Physical Activity

Low exercise intensity that is short in duration has what affect on exercise adherence?

A. Positive  
B. No affect  
C. Negative

Answer: Positive

Longer the duration and higher the intensity of exercise, the less likely people will adhere to exercise.  
Short-bout group exercise increased exercise adherence.
Perceived Effort & Exercise

If I perceive that the exercise requires allot of effort, I will adhere to my exercise program?

Answer: False

Adults are more likely to adopt moderate level activities rather than high intensity activities.
Your Viewpoint

• What behavioral factors about an individual determine if they will be active or not active?
Smoking

Physical Activity History
PA History & Exercise

If you are an active adults; you were physically fit as a child? True or False

Answer: True
Physical fitness testing in boys facilitates the identification of those at increased risk of becoming sedentary?

Answer: True
Which one of the following are positive predictors of adult PA involvement?
A. Parental encouragement to exercise
B. Level of education
C. Participation in organized sport after H.S.
D. Spousal encouragement

Answer: All are positive
Smoking & Physical Activity

Which is a better predictor of physical activity involvement: good dietary habits or smoking?

Answer: good dietary habits
Smoking and Exercise

In general smokers do not exercise? True or False

Answer is: True
Summary of Physical Activity Participation Patterns

• Number of people worldwide who exercise at minimal level is extremely low.
• Amount of time engaged in physical activity declines with age.
• Men are more likely to engage in vigorous exercise, but women tend to engage in as much, if not more, moderate activity.

(continued)
Summary of Physical Activity Participation Patterns (continued)

• It appears that low income groups and ethnic minorities tend to participate in less physical activity than does the general population.

• Education level is directly related to physical activity levels; that is, the more education, the greater the participation in physical activity.
Summary

Positive Correlates
Young, well educated
White, white collar occupation
Male
Healthy
Enjoys exercise
Expects + results
High intention
High self-efficacy
Extraversion and conscientiousness
Self-motivated
Eats a healthy diet
Low perceived barriers
High body image
Safe environment in which to PA

Negative Correlates
Neuroticism
High perceived barriers
Low self-efficacy
Low perceived exercise competency
Lowly motivated
Not healthy or injured
Disabled
Lowly educated
Hispanic or Black
Female (especially single mom’s)
Aged
Low perceived enjoyment
Smokes (key to lifestyle behavior)
Low body image
Blue collar occupation
Lack of access in or of a PA facility
Your Viewpoint

If you were an owner of health club and based on these individual determinates of exercise just discussed, who would you assume would be members of your club?