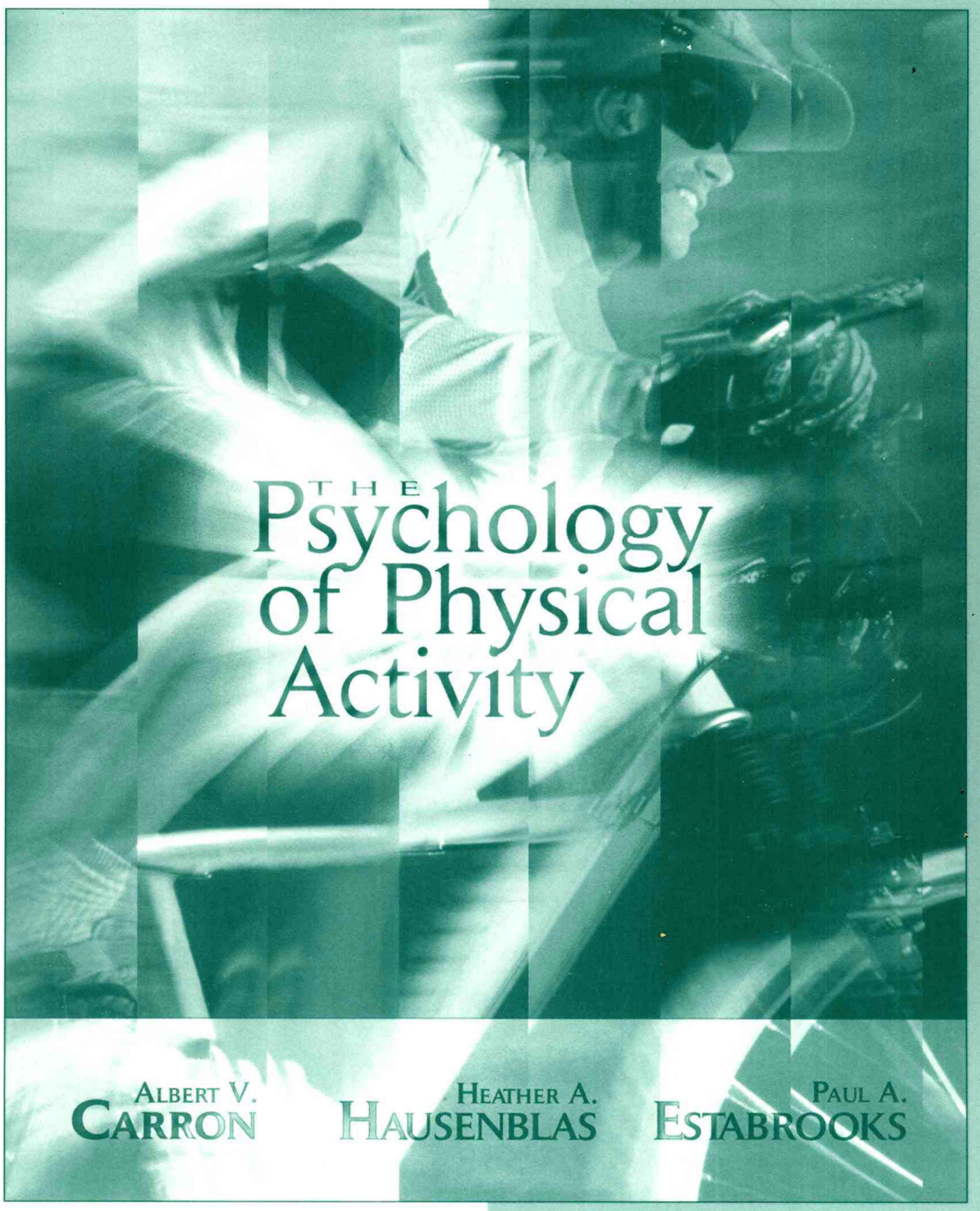
Ready Notes

to accompany



Ready Notes

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The Psychology of Physical Activity

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THE PSYCHOLOGY OF PHYSICAL ACTIVITY
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Chapter 1: The Psychology of Physical Activity

The Psychology of Physical Activity
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The journey of a thousand miles starts in front of your feet

Lao-Tzu

A Tomato's Tale

- **The Tomato Effect**
  - ***a term used to describe a phenomenon whereby highly efficacious therapies are ignored or rejected.***
  - **Why does it occur?**
    - **Because the therapy does not seem to make sense in light of popular beliefs or common *understandings.***
    - **Because people simply ignore the evidence available**

A Tomato's Tale

- From its origins in Peru the tomato played a *significant role in the diet of* most Europeans by 1520.
- However, in North America Tomatoes were considered poisonous.
- Because of the dominant popular belief, tomatoes did not enter the North American Diet until 1820

Does Physical Activity suffer from a tomato effect?

1. Is physical activity an efficacious therapy?
2. Does society in general avoid physical activity?
3. Are people aware of the benefits of physical activity?

1. Is Physical Activity an Efficacious Therapy?

- Chronic physical activity positively influences health ....
  - The skeletal system
    - Bone density in youth
    - Likelihood that bone mineral density will be retained in older adults.
  - The muscle system
    - Hypertrophy
    - Strength and endurance
    - Capillarization & maximal blood flow.

1. Is Physical Activity an Efficacious Therapy?

- The cardiovascular system
  - Cardiac mass
  - Stroke volume and cardiac output
  - Heart rate and blood pressure (lower)
- The respiratory system
  - Ventillatory-diffusion efficiency while active
- The metabolic system
  - Triglycerides (decreased)
  - Adiposity (decreased)
  - High density cholesterol
  - Insulin-mediated glucose uptake

How much Physical Activity is necessary?

- Basic Requirements:
  - 30 minutes or more of moderate intensity performed on most days of the week.
    - Ventillatory-diffusion efficiency while active
- Benefits are related to effort:
  - Additional benefits are associated with increased intensity or duration of the activity.

2. Is Physical Activity Avoided?

- National surveys have been conducted
  - Australia: National Health Foundation (1985)
  - United Kingdom: Sports Council of Great Britain (1990)
  - United States: U.S. Dept of Health & Human Services (1991)
  - Canada: Fitness Canada (1981)
- Estimated percent who are active varies depending on the definition

2. Is Physical Activity Avoided?

- Any participation in one or more of 90 sports in last 12 months
  - ➡ 68%**
- 3 or more hrs/wk during 9 or more months of the year
  - ➡ Approx 56%**
- 3 or more kcal/kg per day
  - ➡ 15 to 20%*

* Canada Fitness Survey
** Center for Disease Control Behavior Risk Factor Survey

2. Is Physical Activity Avoided? A Comparison Across Nations

1. In which of the following countries are the most number of people moderate to highly active?

2. In which of the following countries are most number of people minimally active?

Australia	No. 2 in Physical Activity!!
Canada	No. 3 in Physical Activity!!
Finland	No. 1 in Physical Activity!!
United States	No. 4 in Physical Activity

3. Are People Aware of the Benefits of Physical Activity?

- Godin, Cox, and Shephard (1984) queried physically active and inactive individuals about their knowledge and beliefs about physical activity.

- In most instances, inactive individuals held similar beliefs to active individuals about the benefits of physical activity.

3. Are People Aware of the Benefits of Physical Activity?

- Inactive people agree that physical activity can be used to...
  - control body weight
  - be more healthy
  - relieve tension
  - improve physical appearance
  - feel better
  - meet people
- Yet they don't participate.

Does Physical Activity Suffer from a Tomato Effect?

- YES!!
  - ✓ an efficacious therapy
  - ✓ *Society in general avoids physical activity*
  - ✓ People are aware of the benefits of physical activity
- How can the effect be reduce or eliminated?
- Through science that focuses on the psychology of physical activity.

Psychology of Physical Activity

- Devoted to gaining an understanding of
  - individual attitudes, cognitions, and behaviors in the context of physical activity
  - *the social factors that influence those* attitudes, cognitions, and behaviors

Historical Developments

- Why has the science of physical activity psychology been slow to develop?
  - Traditionally, sport more popular
  - Physical activity as modality for disease prevention and maintenance of general health not fully known until recently
  - Traditionally, biomedical model followed = treatment of disease as opposed to its prevention

Definitions of Important Terms

- Physical Activity
  - Any body movement produced by skeletal muscle that results in a substantial increase over the resting energy expenditure
- Exercise
  - Planned, structured and repetitive PA designed to improve or maintain fitness
- Physical Fitness
  - Person's ability to perform physical activity

Definitions of Important Terms

- Health
  - A human condition with physical, social, and psychological dimensions
- Active living
  - A way of life in which physical activity is valued and integrated into daily life

Related Areas of Interest

- Health vs. Physical Activity vs. Rehabilitative Psychology
- The dependent variable should be used as a main classifying variable
  - Smoking cessation = Health
  - Recovery from a car accident = *Rehabilitative*
  - Improved exercise adherence = Physical activity

END

Chapter 2: The Measurement of Physical Activity

The Psychology of Physical Activity

Albert V. Carron
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Paul A. Estabrooks

It is a capital mistake to theorize before one has data

Sherlock Holmse

Measurement is the Heart of Science

Enables researchers and health-care professionals to:

- Specify which aspects of physical activity are important for a particular health outcome
- Monitor changes in physical activity over time
- Monitor the effectiveness of an intervention
- Determine the prevalence of people guidelines for physical activity

What Should be Measured?

- **Type:**
  - The main physiological systems that are activated during the activity
- **Frequency**
  - The number of times a person engages in an activity over a pre-determined period of time
- **Duration**
  - The temporal length of the activity
- ***Intensity***
  - The degree of overload an activity imposes on physiological systems in comparison to resting states

Important Measurement Issues

- **What are you measuring?**
  - Physical Activity versus Energy Expenditure versus METs
- **Validity**
  - The ability of a test to accurately assess what it is developed to assess.
- **Reliability**
  - The ability of a test to yield consistent and stable scores

Important Measurement Issues

- **Feasibility**
  - The practicality of the measure for its intended population
- **Objectivity**
  - the ability of different testers to provide similar test scores for a given individual

Subjective Techniques to Assess Physical Activity

- **Typically paper and pencil questionnaires.**
  - Easy to administer
  - Relatively inexpensive
  - Can be used to assess a large sample of individuals quickly

Self Report Measures

- **Godin's Leisure Time Physical Activity questionnaire**
  - Assesses a typical week's strenuous, moderate, and mild physical activity
  - Calculation for METS
  - Validity and reliability data available
- **Advantages:**
  - Speed and ease of administration
  - Typical week
- **Disadvantage:**
  - Reliability is questionable for mild and moderate activity

Self Report Measures

- **7-Day Physical Activity Recall**
  - Assesses a *previous week's moderate, hard and* very hard physical activity
  - Calculation for METS
  - Validity and Reliability are strong
- **Advantages:**
  - Speed and ease of administration
  - Calculation of total energy expenditure
  - Occupational and leisure activities.
- **Disadvantage:**
  - Previous week may not provide typical participation

Self Report Measures

- **Lifetime Total Physical Activity Questionnaire**
  - Assesses lifetime involvement in occupational, household, and exercise/sport physical activity
  - *Interview based with cognitive cues and recall calendars*
- **Advantages:**
  - Provides history
- **Disadvantage:**
  - No strong validity data

Self Report Measures

- **Ratings of Perceived Exertion**
  - *Assesses single session intensity.*
- **Advantages:**
  - Good Reliability
  - Good Validity
- **Disadvantage:**
  - No frequency data

Self Report Measures-For Children

- **Early physical activity measures for children were completed by parents or teachers**
  - Typically were not valid or reliable
  - 7-Day Recall--invalid and unreliable
- **Previous Day Physical Activity Recall**
  - Good Reliability

Self Report Measures-For Older Adults

- Physical Activity Scale for the Elderly
  - Assesses a variety of physical activities of daily living
  - Specific cues for older adults
- Advantages
  - Quick to complete
  - Good validity and reliability

Diary Methods

- Typically completed at the end of each day
- Can be modified to specific behaviors
- Advantages
  - No need for observation
  - Detailed information can be obtained
- Disadvantages
  - Expensive to reduce the data to analyzable form
  - Heavy participant burden
  - Questionable validity due to tedium

Self Report Measures-Overview

- Many questionnaires are available to assess physical activity
- However there is no gold standard for measurement
- All self-report measures are associated with error
- They are relatively effective indicants of which people are more or less active

Objective Measures of Physical Activity

- Technology has only recently become available to objectively assess the minutes spent at different intensities of physical activity.
- Activity monitors have the potential to provide substantial benefits over self-report--they avoid the biases and inaccuracies of recall.

Pedometers

- Pedometers are simple movement device counters that can estimate habitual physical activity over a relatively long period.
- Less obtrusive devices
  - Light weight
  - clip onto a belt or are worn around the ankle

Pedometers

- Limitations with the reliability and validity of mechanical and electronic pedometers.
  - Low validity
  - Some devices show high deviations from the actual step rate

Accelerometers

- Caltrac
  - assesses vertical movement of the trunk which is one characteristic of walking and running
- Has adequate reliability for both children and adults
- Limitations
  - Bicycling, weight lifting skating, and swimming cannot be assessed well with the device

Heart Rate Monitors

- Can provide minute-by-minute data for up to 16 hours.
- Good validity
- Limitations
  - Heart rate monitors cannot distinguish accurately between light and moderate intensity activities
  - Elevated heart rates can be produced by mental stress in the absence of physical activity
  - Heart rate monitors can be inconvenient to use
  - Various electronic devices interfere with the recording resulting in lost data

Doubly Labeled Water

- Doubly labeled water technique considered by some to be the gold standard
- Measures energy expenditure
- Assessment of doubly labeled water requires that the participant ingest known amounts of hydrogen and oxygen isotopes.
- Energy expenditure can be calculated based on the difference between rates of loss of hydrogen and oxygen.