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
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.
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.
Part 1: Measurement of Physical Activity & Exercise
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
Measurement of PA

- What are the 4 parameters that commonly describe physical activity and exercise?

- What is the relationship between energy expenditure and physical activity?

- What are the advantages and disadvantages of using questionnaires to measure physical activity?

- What are the advantages and disadvantages of using pedometers, accelerometers and heart rate monitors to measure PA?

- What are some ways communities measure PA?
4 Parameters used to describe PA?

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
Classifications of PA

Dependent on:

- % of Maximal \( V_02 \) max
- % of Maximal heart rate
- Amount of effort (RPE)
- MET level
- % of Maximal voluntary contraction (weight training)
### Classification of PA by Intensity

<table>
<thead>
<tr>
<th>Intensity</th>
<th>Relative Intensity</th>
<th>Endurance-Type Activity</th>
<th>Strength-Type Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximal VO₂ Reserve; Heart Rate Reserve (%)</td>
<td>Absolute Intensity (METs) in Healthy Adults (age in years)</td>
<td>Maximal Voluntary Contraction (%)</td>
</tr>
<tr>
<td>Very light</td>
<td>&lt;20</td>
<td>&lt;2.4 - 2.0 - 1.6 - 1.0</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Light</td>
<td>20-39</td>
<td>2.4 - 4.7 - 2.0 - 1.1</td>
<td>30-49</td>
</tr>
<tr>
<td>Moderate</td>
<td>40-59</td>
<td>4.8 - 7.1 - 4.0 - 2.0</td>
<td>50-69</td>
</tr>
<tr>
<td>Hard</td>
<td>60-84</td>
<td>7.2 - 10.1 - 6.0 - 3.0</td>
<td>70-84</td>
</tr>
<tr>
<td>Very hard</td>
<td>≥85</td>
<td>≥10.2 - ≥8.5 - ≥6.8</td>
<td>&gt;85</td>
</tr>
<tr>
<td>Maximal*</td>
<td>100</td>
<td>12.0 - 10.0 - 8.0</td>
<td>100</td>
</tr>
</tbody>
</table>

*Note: Endurance-Type Activity is calculated based on VO₂ and heart rate reserve, while Strength-Type Exercise is based on maximal voluntary contraction.

**TABLE 8.4: Classification of Physical Activity Intensity, Based on Physical Activity Lasting up to 60 Minutes**
### Metabolic equivalents (MET)

**What are you measuring?**
- metabolic cost of consumption of oxygen at or over rest

**MET levels**
- Unrelated to duration of an activity
- Does change with intensity of activity

<table>
<thead>
<tr>
<th>Light Activity</th>
<th>Less than 3 METs</th>
<th>Walking at 2 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Activity</td>
<td>3-6 METs</td>
<td>Walking at 4 mph</td>
</tr>
<tr>
<td>High Activity</td>
<td>7 &amp; above METs</td>
<td>Running at 6 mph</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>MET Range</td>
<td>Physical Activity</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Archery</td>
<td>3–4</td>
<td>Running</td>
</tr>
<tr>
<td>Backpacking</td>
<td>5–11</td>
<td>12 min per mile</td>
</tr>
<tr>
<td>Badminton</td>
<td>4–9+</td>
<td>10 min per mile</td>
</tr>
<tr>
<td>Basketball</td>
<td>3–9</td>
<td>9 min per mile</td>
</tr>
<tr>
<td>Nongame</td>
<td></td>
<td>8 min per mile</td>
</tr>
<tr>
<td>Game play</td>
<td>7–12+</td>
<td>7 min per mile</td>
</tr>
<tr>
<td>Bicycle</td>
<td></td>
<td>6 min per mile</td>
</tr>
<tr>
<td>Pleasure</td>
<td>3–8+</td>
<td>Sailing</td>
</tr>
<tr>
<td>10 mph</td>
<td>7</td>
<td>Scuba diving</td>
</tr>
<tr>
<td>Bowling</td>
<td>2–4</td>
<td>Skating, ice and roller</td>
</tr>
<tr>
<td>Canoeing, rowing, kayaking</td>
<td>3–8</td>
<td>Skating, snow</td>
</tr>
<tr>
<td>Calisthenics</td>
<td>3–8+</td>
<td>Downhill</td>
</tr>
<tr>
<td>Dancing</td>
<td></td>
<td>Cross-country</td>
</tr>
<tr>
<td>Social and square</td>
<td>3–7</td>
<td>Skiing, water</td>
</tr>
<tr>
<td>Aerobic</td>
<td>6–9</td>
<td>Sledding, tobogganing</td>
</tr>
<tr>
<td>Fencing</td>
<td>6–10+</td>
<td>Snowshoeing</td>
</tr>
<tr>
<td>Fishing</td>
<td></td>
<td>Squash</td>
</tr>
<tr>
<td>Bank, boat, or ice</td>
<td>2–4</td>
<td>Soccer</td>
</tr>
<tr>
<td>Stream, wading</td>
<td>5–6</td>
<td>Stair climbing</td>
</tr>
<tr>
<td>Football (touch)</td>
<td>6–10</td>
<td>Swimming</td>
</tr>
<tr>
<td>Golf</td>
<td></td>
<td>Table tennis</td>
</tr>
<tr>
<td>Power cart</td>
<td>2–3</td>
<td>Tennis</td>
</tr>
<tr>
<td>Walking, carrying bag or pulling cart</td>
<td>4–7</td>
<td>Volleyball</td>
</tr>
<tr>
<td>Handball</td>
<td>8–12+</td>
<td>Walking</td>
</tr>
<tr>
<td>Hiking, cross-country</td>
<td>3–7</td>
<td>1.7 mph</td>
</tr>
<tr>
<td>Horseback riding</td>
<td>3–8</td>
<td>2.0 mph</td>
</tr>
<tr>
<td>Horseshoe pitching</td>
<td>2–3</td>
<td>2.5 mph</td>
</tr>
<tr>
<td>Hunting, walking</td>
<td></td>
<td>3.0 mph</td>
</tr>
<tr>
<td>Small game (walking, carrying light load)</td>
<td>3–7</td>
<td>3.4 mph</td>
</tr>
<tr>
<td>Big game (dragging carcass, walking)</td>
<td>3–14</td>
<td>Uphill</td>
</tr>
<tr>
<td>Mountain climbing</td>
<td>5–10+</td>
<td></td>
</tr>
<tr>
<td>Music playing</td>
<td>2–3</td>
<td></td>
</tr>
<tr>
<td>Paddleball, racquetball</td>
<td>8–12</td>
<td></td>
</tr>
<tr>
<td>Rope jumping</td>
<td>9–12</td>
<td></td>
</tr>
</tbody>
</table>
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

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
- Will be used in study!

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

Ratings of Perceived Exertion

⇒ Assesses single session intensity.
⇒ Borg Scale
  ⇒ 1-10 used for exercise evaluation
  ⇒ 6-20 used to measure level of intensity

Advantages:

⇒ Good Reliability
⇒ Good Validity

Disadvantage:

⇒ No frequency data
<table>
<thead>
<tr>
<th>Fifteen-Category RPE Scale</th>
<th>Category-Ratio RPE Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>6  No exertion at all</td>
<td>0  Nothing at all</td>
</tr>
<tr>
<td>7  Extremely light</td>
<td>0.5 Very, very weak</td>
</tr>
<tr>
<td>8  Very light</td>
<td>(just noticeable)</td>
</tr>
<tr>
<td>9  Light</td>
<td>1  Very weak</td>
</tr>
<tr>
<td>10 Weak (light)</td>
<td>2  Weak (light)</td>
</tr>
<tr>
<td>11 Light</td>
<td>3  Moderate</td>
</tr>
<tr>
<td>12 Somewhat hard</td>
<td>4  Somewhat strong</td>
</tr>
<tr>
<td>13 Strong (heavy)</td>
<td>5  Strong (heavy)</td>
</tr>
<tr>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>15 Very hard</td>
<td>7  Very strong</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>17 Extremely hard</td>
<td>9</td>
</tr>
<tr>
<td>18 Maximal exertion</td>
<td>10 Very, very strong</td>
</tr>
<tr>
<td></td>
<td>(almost max)</td>
</tr>
<tr>
<td></td>
<td>•  Maximal</td>
</tr>
</tbody>
</table>

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
APPENDIX

LEISURE TIME EXERCISE QUESTIONNAIRE

1. Considering a 7-day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time (write in each circle the appropriate number).

<table>
<thead>
<tr>
<th>TIMES PER WEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) STRENuous EXERCISE (HEART BEATS RAPIDLY)</td>
</tr>
<tr>
<td>(i.e. running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)</td>
</tr>
<tr>
<td>b) MODERate EXERCISE (NOT EXHAUSTING)</td>
</tr>
<tr>
<td>(i.e. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)</td>
</tr>
<tr>
<td>c) MILD EXERCISE (MINIMAL EFFORT)</td>
</tr>
<tr>
<td>(i.e. yoga, archery, fishing from river bank, bowling, horseshoes, golf, snowmobiling, easy walking)</td>
</tr>
</tbody>
</table>

2. Considering a 7-day period (a week), during your leisure-time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

<table>
<thead>
<tr>
<th>OFTEN</th>
<th>SOMETIMES</th>
<th>NEVER/RARELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. □</td>
<td>2. □</td>
<td>3. □</td>
</tr>
</tbody>
</table>
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 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
- Objective is to accumulate 10,000 steps per week
How many steps do healthy people take?

- 12,000-16,000 steps/day in 8-10 year old healthy children (lower for girls)
- 7,000-13,000 steps/day in healthy adults
- 6,000-8,500 steps/day in older healthy adults
How many steps should be taken?

- 10,000 steps/day = 300-400 kcal/day
- 300-400 kcal/day X 7 days = 2100 – 2800 kcal/week
- Need 9,000 steps/day = normal weight
- Need 15,000 steps/day to achieve weight loss goals (Leermaker, Dunn, & Blair, 2000)

- A workplace walking program that prescribes 10,000 steps/day reports an 88% attrition rate (Irwan, et. al., 2000)
- Older adults have difficulty in achieving 10,000 steps/day
- A walking program for women that require 10,000 steps/day is associated with reduced adherence (Sidman, 2002)

- 30 minute moderate-intensity walk results in 3,800-4,000 steps.
Heart Rate Monitors

Can provide minute-by-minute data for up to 48 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
Direct Observation

Advantages:

- It is accurate
- It involves little inference with the participant’s routine
- Diverse dimensions related to physical activity can be quantified
- It can be used as a criterion method for validating other measures of physical activity

Limitations:

- It is time-consuming
- Observation is expensive
- Observations may not reflect habitual physical activity
Ways communities can measure PA levels

- **Environmental**
  - Miles of trails per capita
  - # of PA facilities per capita in schools
  - Availability of facilities to the public
  - # of programs for PA in community
  - # of agencies that sponsor PA events
  - Zoning regulations

- **Behavioral Outcome Measures**
  - Observation of usage
  - Membership in PA organizations (YMCA, Health clubs)
  - Sales of selected PA equipment, videos, etc.
Ways communities can measure PA levels

- **Policy & Regulations**
  - PE in K-12 curriculum
  - Amount/\% of local budget per capita devoted to physical activity/recreation
  - Density of recreation facilities & new construction

- **Information**
  - \% of health-care providers that engage the public to exercise more
  - \# of worksite materials linked to PA
  - \% of schools offering curricula in grades k-12
  - \# of medical reports dealing with PA
  - “Point of purchase” education materials on PA
Part II: Determinates & Correlates of Exercise
Individual Correlates

Demographic & Biological
- Age
- Gender
- Ethnicity
- Occupation
- Education
- Biomedical Status
- Injury
Question 1

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)
Question 2

- What is the trend in exercise frequency as we 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.

From the age of 6 to 16…..50% decline in PA.

Further decline in PA occurs in adulthood.

After 50 a progressively larger number of men and women report no PA.
Question 3

What gender engages in more vigorous 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.
- Reasons may be family and sociocultural influences (role conflict & mans world).
Question 4

When does it become apparent that there are distinct differences in physical activity levels between races?

- Pre-school
- Elementary
- High school
- College

Answer: High school
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.
Proportion of U.S. Adults Engaged in Various Doses of Physical Activity (by race/ethnicity)

Question 5

Which occupational groups has the highest dropout rate of cardiac rehab programs?

a. Blue collar workers
b. 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
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
Question 6

- Is education a positive or negative determinate of physical activity involvement?

- Answer: Positive
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.
Question 7

Children’s level of PA is greater in families where their parents level of education was low.
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
Question 8

If your parents are obese you have a less chance that you will be active.
Biomedical Status

- Healthy people are most active
- Disabled people are least involved
- Special education students have the highest dropout rate from exercise
- Body composition is the 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
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.
Question 10

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.
Psychological Correlates

Barriers
Self-efficacy
Attitude
Intention to exercise
Enjoyment
Body image
Knowledge of PA
Question 11

- Which one the following is reported to be a perceived barrier to physical activity but really is only an excuse?
  - 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.
Question 12

- As the client’s perception of being in control of their exercise program increases physical activity involvement decreases?
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.
Question 13

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

Answer: True
Q16: Knowledge of the health benefits have a strong effect one to exercise.

Answer: Knowledge of health and exercise has no affect.
Question 16

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
Question 17

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

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

Answer: B & D
Characteristics of Physical Activity

Intensity of exercise

Perceived effort of exercise

Duration
Question 18

Who are mostly likely to become member of health club?

Answer: Young adults (predominately male) who are white, highly educated, healthy, and not obese.
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.
Question 20

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.
Behavioral Correlates of PA

Smoking and Diet

Physical Activity History
Question 21

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

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

Answer: True
Question 23

Which one of the following are positive predictors of adult PA involvement?

A. Parental encouragement to exercise
B. Participation in organized sport after H.S.
C. Spousal encouragement

Answer: All are positive
Question 24

Having good dietary habits is a predictor of physical activity involvement?

Answer: True
Question 25

In general smokers do not exercise? True or False

Answer is: True
Determinates of who will adhere to exercise cannot be forgotten!

<table>
<thead>
<tr>
<th>Demographic/Biological</th>
<th>Psychological</th>
<th>Behavioral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Barriers</td>
<td>Exercise intensity</td>
</tr>
<tr>
<td>Gender</td>
<td>Self-efficacy</td>
<td>Exercise duration</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Intention to exercise</td>
<td>Personality</td>
</tr>
<tr>
<td>Income</td>
<td>Attitude toward exercise</td>
<td>Perceived effort in exercising</td>
</tr>
<tr>
<td>Occupation</td>
<td>Enjoyment of exercise</td>
<td>Smokes</td>
</tr>
<tr>
<td>Education</td>
<td>Body image</td>
<td>Eats a healthy diet</td>
</tr>
<tr>
<td>Biomedical Status</td>
<td></td>
<td>History of being an exerciser or athlete</td>
</tr>
</tbody>
</table>
Adherence Determinates

**Positive Correlates**

- Young, well educated
- White, white collar occupation
- Male
- Healthy
- Enjoys exercise
- High intention to exercise
- High exercise self-efficacy
- Extraversion and conscientiousness
- Eats a healthy diet
- Low perceived barriers
- High body image
- Safe environment in which to PA
- History of being an athlete

**Negative Correlates**

- Neuroticism or mood swings
- High perceived barriers
- Low self-efficacy or intention to exercise
- Low perceived exercise competency
- Not healthy or injured or disabled
- Lowly educated
- Hispanic or Black
- Female (especially single mom’s)
- Aged
- Low perceived enjoyment or body image
- Smoker (key to lifestyle behavior)
- Blue collar occupation
- Lack of access in or of a PA facility*
- Overweight or obese
Develop a “Risk of Non Adherence Screening Inventory (RNASI)”

- This information of correlates and determinates are same whether you use it for exercise, physical therapy, or athletic training.

- Develop a questionnaire that includes what the key determinates & correlates that who enable you to indentify what clients would be at risk of non adherence before they started their program.

- Purpose is to identify these clients before hand before they drop out of their rehab or exercise program.
Questionnaire

1) Instructions

2) List of questions about key determinate and correlates that will be given to your client.
   - Length should be short
   - One page
   - Can be completed in less than 10 minutes

3) Scale
   - Likert Like scale (e.g., 1-10; one being the worst and 10 being the best)
   - 4 point scale (never = 0, sometime = 1, often = 2, always = 3)
   - Yes or no: yes = 1 point and no = 0 points

4) Scoring & Evaluation system:
   - Add up the points and the total score determines if the client is at risk.