SES-2410: EXERCISE TESTING AND PRESCRIPTION

Cuyahoga Community College

Viewing: SES-2410 : Exercise Testing and Prescription

Board of Trustees:
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Academic Term:
Fall 2022

Subject Code
SES - Sport and Exercise Studies

Course Number:
2410

Title:
Exercise Testing and Prescription

Catalog Description:
This course is designed to provide the student with foundational concepts and principles in exercise testing and prescription. Through lecture, lab and practical application, students will learn how to conduct pre-exercise screenings, fitness assessments, interpret results, and design and implement exercise programs for the healthy, adult population.

Credit Hour(s):
3

Lecture Hour(s):
2

Lab Hour(s):
2

Requisites

Prerequisite and Corequisite
SES-2310 Advanced Training Concepts and Techniques or concurrent enrollment; or departmental approval.

Outcomes

Course Outcome(s):
Discuss the components of measurement and initial client interview in terms of the types of pre-participation health screenings, questionnaires and other documents needed to obtain health, medical, exercise history and lifestyle information. Discuss the determination of exercise participation levels and risk stratification along with the need for medical clearance and referrals for the healthy adult population.

Objective(s):
1. Discuss the definitions and concepts of measurement as it relates to exercise testing and exercise prescription.
2. Discuss the relationship of physical activity and exercise to health and chronic diseases.
3. Describe the industry-standard guidelines for exercise testing and prescription and the scope of practice for personal trainers outlined by the American College of Sports Medicine (ACSM) and other fitness organizations accredited by the National Commission for Certifying Agencies (NCCA).
4. Identify environmental considerations that provide safe and proper exercise conditions.
5. Discuss test selection, test order, test administration and test interpretation concepts.
6. Identify the components of an initial interview.
7. Identify the types of preliminary heath screening tools used in exercise testing, including, but not limited to the health history questionnaire, Physical Activity Readiness Questionanaire (PAR-Q), lifestyle inventory, informed consent, exercise pre-participation screening and risk stratification and goals.
8. Explain ACSM exercise participation levels, risk factors, and signs and symptoms suggestive of chronic cardiovascular, metabolic and/or pulmonary diseases.
9. Discuss types of fitness assessments and exercise tests to conduct based on a summary of the initial interview, health history questionnaires, PAR-Q, lifestyle inventory, exercise pre-participation screenings, risk stratifications , goals and medical clearance or physician recommendations.

Course Outcome(s):

Demonstrate how to properly conduct client interviews, health screenings and fitness assessments and analyze and interpret the results of the client interview and assessment data to design safe and effective exercise programs for the healthy, adult population.

Objective(s):

1. Demonstrate skill in effective verbal and nonverbal communication during the initial client interview and assessment process.
2. Demonstrate skill in using a variety of multimedia resources, such as e-mail, phone, text messaging, and in person resources for the client interview process.
3. Assess client's current attitudes, preferences, goals and readiness for behavior change using questionnaires and interviews to identify potential barriers, motivators, and expectations necessary to set appropriate program goals.
4. Select and conduct physiological assessments for resting measures, anthropometric measures, body composition, flexibility, muscular fitness, and cardiovascular fitness based on client interview and questionnaire results to establish a baseline for exercise program development.
5. Demonstrate skill in the analysis and interpretation of assessment results, medical history, questionnaires and goals to determine safe, appropriate and effective exercise training programs.
6. Demonstrate skill in delivering test and assessment results in a positive manner.

Course Outcome(s):

Discuss the art and science of exercise prescription, the components and basic elements of an exercise program, and explain how to incorporate health, fitness and skill-related exercises, equipment and training techniques into client programs to improve movement efficiency, enhance activities of daily living, and improve overall health, fitness and physical performance for the healthy adult population.

Objective(s):

1. Discuss the importance of keeping abreast of research and applications in the field of exercise testing and exercise prescription.
2. Discuss the basic components of an exercise program including warm-up, training stimulus, cool-down and stretching.
3. Discuss the components and training principles of a cardiovascular training program including, but not limited to, frequency, intensity, duration, various modalities and methods to monitor training intensity.
4. Discuss the components and training principles of a resistance training program including, but not limited to, load, sets, reps, volume, exercise order, frequency, time and various modalities.
5. Discuss the components and training principles of a flexibility training program including, but not limited to, frequency, intensity, time, and various modalities.
6. Discuss the benefits, risks and contraindications for flexibility and range of motion (ROM) exercises in a training program based on client experience, skill level, current fitness level and goals.
7. Discuss the benefits, risks, and contraindications for resistance training exercises in a training program based on client experience, skill level, current fitness level and goals.
8. Discuss the benefits, risks and contraindications for cardiovascular training exercises in a training program based on client experience, skill level, current fitness level and goals.

Course Outcome(s):

Apply appropriate concepts and principles, using current exercise guidelines, to develop safe and effective exercise programs for the healthy, adult population and analyze and evaluate exercise programs by using assessment data, observations and client feedback to progress and modify programs as needed.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Design an individualized written 5 to 8-week exercise training program based on an individual's goals, medical and lifestyle history and assessment results.
2. Demonstrate how to safely and effectively create a positive exercise experience for an individual using the 5 to 8-week exercise training program.
3. Demonstrate how to create a positive exercise experience for an individual by applying effective communication techniques, motivation techniques and behavior strategies.
4. Demonstrate the importance of professional behavior when training individuals to create a positive exercise experience.
5. Explain the purpose and appropriate time for reassessing client goals and physical fitness levels.
6. Demonstrate the ability to record exercise sessions and perform periodic reevaluations to assess changes in health and fitness status.

Methods of Evaluation:

1. Written assignments
2. Written exams
3. Case study analyses
4. Exercise prescription and program design
5. Exercise testing skills check
6. Oral presentations
7. Online exercise videos

Course Content Outline:

1. Introduction to exercise testing and prescription
2. Overview of physical activity, health and chronic disease
3. Principles of assessment, prescription and exercise program adherence
    a. Physical fitness testing
    b. Test validity, reliability and objectivity
    c. Prediction equation evaluation
    d. Test environment
    e. Test selection
    f. Test order
    g. Test administration
    h. Test interpretation
4. Initial interview
    a. Establish rapport
    b. Goal setting
    c. Behavioral stages of change
5. Pre-participation health screening
    a. Health history-medical history questionnaires
    b. PAR-Q
    c. Lifestyle inventory
    d. Informed consent
    e. Exercise pre-participation screening
    f. Risk stratification
6. Pre-exercise evaluation
    a. Health screening definitions and concepts
    b. Types of health screening assessments
    c. Resting heart-rate
    d. Resting blood pressure
    e. Height
    f. Weight
    g. Body mass index (BMI)
    h. Waist measurement
    i. Interpretation of results
7. Body composition assessment
    a. Body composition definitions and concepts
    b. Types of body composition assessments
    c. Plethysmography (BodPod)
    d. Skinfold measurements
    e. Circumference measurements
    f. Bioelectrical impedance analysis (BIA)
    g. Interpretation of results
8. Muscular fitness assessment
    a. Muscular fitness definitions and concepts
    b. Types of muscular fitness assessments
    c. Muscular strength assessments
        i. Static
        ii. Dynamic
    d. Muscular endurance assessments

        i. Static
        ii. Dynamic
    e. Interpretation of results
9. Flexibility assessments
    a. Flexibility definitions and concepts
    b. Types of flexibility assessments
    c. Sit and reach
    d. Active straight leg raise
    e. Lumbar flexion
    f. Lumbar extension
    g. Shoulder flexion-extension-rotation
    h. Joint range of motion (ROM)
    i. Use of goniometers to measure ROM
    j. Specific ROM tests
    k. Interpretation of results
10. Cardiorespiratory fitness assessments
    a. Cardiorespiratory definitions and concepts
    b. Types of cardiorespiratory tests
    c. Field test
        i. Step tests
        ii. Walk tests
        iii. Jog-run tests
    d. Interpretation of results
11. Basic principles for exercise prescription
    a. Specificity
    b. Overload
    c. Progression
    d. Initial value
    e. Inter individual variability
    f. Diminishing returns
    g. Reversibility
12. Basic elements of the exercise prescription
    a. Warm-up, workout, cool-down
    b. Mode
    c. Intensity
    d. Duration
    e. Frequency
13. Types of exercise prescriptions
    a. Cardiovascular exercise prescription
        i. Components of a cardiovascular training program
        ii. Types of cardiovascular training methods
        iii. Training variables including the frequency, intensity, time, and type (FITT) principle
        iv. Stages of a progression
    b. Resistance training exercise prescription
        i. Components of a resistance training program
        ii. Types of resistance training methods
        iii. Components Training variables including exercise order, load, sets, reps, volume
        iv. Stages of progression
    c. Flexibility and ROM exercise prescription
        i. Components of a flexibility training program
        ii. Types of flexibility and ROM methods
        iii. Placement in an exercise program
        iv. Training variables including FITT principle
        v. Stages of progression
14. Integrated exercise prescription model
    a. Order of exercise training components
        i. Flexibility, muscular fitness cardiovascular
    b. Exercise prescription reevaluation and revision strategies

c. Exercise prescription progression strategies
d. Exercise prescription adherence strategies

Resources

American Council on Exercise. (2020) *The Exercise Professional's Guide to Personal Training*, San Diego, CA: American Council on Exercise.

American College of Sports Medicine. (2021) *ACSM's Guidelines for Exercise Testing and Prescription*, Philadelphia, PA: Lippincott Williams & Wilkins.

American College of Sports Medicine. (2021) *ACSM's Fitness Assessment Manual*, Philadelphia, PA: Lippincott Williams & Wilkins.

American College of Sports Medicine. (2021) *ACSM's Foundations of Strength Training and Conditioning*, Philadelphia , PA: Lippincott Williams & Wilkins.

American Council on Exercise. (2020) *The Exercise Professional's Guide to Personal Training Study Companion*, San Diego: CA.

National Council on Strength and Fitness. (2019) *NCSF Advanced Concepts of Personal Training*, Coral Gables, FL: National Council on Strength and Fitness.

Top of page
Key: 4034