

# SES-2420: ADVANCED EXERCISE TESTING AND PRESCRIPTION

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## Cuyahoga Community College

### Viewing: SES-2420 : Advanced Exercise Testing and Prescription

**Board of Trustees:**

December 2021

**Academic Term:**

Fall 2022

**Subject Code**

SES - Sport and Exercise Studies

**Course Number:**

2420

**Title:**

Advanced Exercise Testing and Prescription

**Catalog Description:**

An integrative lecture/lab course designed to provide advanced principles and concepts regarding health screenings, assessments, exercise testing and exercise prescription. Students will learn advanced program design for healthy adults as well as considerations and modifications for clients with obesity, chronic disease, musculoskeletal issues, and clients across the lifespan. This course will provide students the opportunity to gain experience designing workouts, exercise programs, and periodization plans and teach in-person and in a virtual environment using various technology.

**Credit Hour(s):**

3

**Lecture Hour(s):**

2

**Lab Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

SES-2410 Exercise Testing and Prescription; or departmental approval.

## Outcomes

**Course Outcome(s):**

Accurately review the client interview and pre-participation health screening process, gain knowledge on the purpose and application of incorporating health screenings and advanced assessments and exercise tests for healthy adult clients, and develop skills to conduct and interpret advanced screenings and assessments using a variety of technology.

**Objective(s):**

1. Review the elements of a client interview including pre-participation health screening, health history questionnaires, Physical Activities Readiness Questionnaire (PAR-Q), informed consent, and client goal setting.
  2. Identify various health screenings and advanced functional, movement, flexibility, strength, cardiovascular, and performance assessments.
  3. Discuss the selection of appropriate screenings and assessments for healthy adult clients.
  4. Demonstrate proficiency in administering and interpreting results from screenings and assessments to develop a client-centered exercise training program.
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**Course Outcome(s):**

Apply advanced concepts and principles using current professional exercise guidelines and evidence-based practices to develop and instruct safe and effective exercise programs and periodization plans for healthy adult clients through various modalities and analyze and evaluate exercise programs through various technologies.

**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. Identify current professional exercise guidelines.
2. Define and list the steps of evidence-based practice.
3. Discuss personalized implementation and progression strategies for exercise programming for healthy adult clients.
4. Explore functional, flexibility, resistance, and cardiorespiratory training exercises and exercise progressions that can be incorporated into a personalized, evidence-based exercise program.
5. List key considerations for program maintenance.
6. Identify programming considerations for training recovery.
7. Discuss elements of a personalized, evidence-based exercise program and periodization plan.
8. Design personalized, evidence-based exercise programs and periodization plans.
9. Demonstrate how to effectively implement a personalized evidence-based exercise program and periodization plan.
10. Demonstrate how to record exercise sessions and perform periodic reevaluations of exercise programs using various technology.
11. Demonstrate how to modify or revise a personalized, evidence-based exercise program and periodization plan to assess changes in health, fitness and performance status.
12. Demonstrate how to conduct personal training sessions and group workouts in person or in a virtual environment.

**Course Outcome(s):**

Apply exercise guidelines and program modifications and considerations of exercise testing and exercise prescription for clients with obesity, chronic disease, musculoskeletal injuries, and across the lifespan and apply the exercise guidelines and program considerations to conduct and analyze health screenings and assessments and design, implement, and evaluate appropriate exercise programs for these clients.

**Objective(s):**

1. Describe the role and scope of a personal trainer in working with clients who have or have had obesity, chronic diseases, musculoskeletal injuries and clients across the lifespan.
2. Describe the major factors that contribute to obesity.
3. Explain the chief components of a behavioral-weight loss plan.
4. Outline key dietary strategies for weight loss and weight maintenance.
5. Discuss the role of physical activity and exercise in the prevention and treatment of overweight and obesity.
6. Analyze considerations of health screenings, assessments, and exercises for clients with obesity.
7. Apply the general principles of training and exercise programming for clients with obesity
8. Identify the types of chronic diseases.
9. Describe the major factors that the role of personal trainers play in improving the health and quality of life for clients with chronic disease through physical activity, healthy eating, and other lifestyle risk factors.
10. Analyze considerations of health screenings, assessments, and exercises for clients with chronic diseases.
11. Apply the general principles of training and exercise programming to specific chronic diseases.
12. Identify signs of acute and chronic injuries or conditions.
13. Recognize when referral to a healthcare professional is indicated.
14. Analyze considerations of health screenings, assessments, and exercises for clients with musculoskeletal injuries.
15. Design safe and effective exercise programs for clients with a history of common musculoskeletal injuries.
16. Identify clients across the lifespan including youth, older adults, and women during pregnancy and postpartum period.
17. Describe the recommended exercise guidelines for youth, women during pregnancy and the postpartum period, and older adults.
18. List the risk factors for exercises for youth, older adult, and women during pregnancy and postpartum period.
19. Explain the benefits of muscular and cardiorespiratory exercise programs for youth, older adults, and women during pregnancy and postpartum period.
20. Apply appropriate exercise programming to avoid injury during workouts.
21. Analyze considerations of health screenings, assessments, and exercises for youth, older adults, and women during pregnancy and postpartum period.
22. Design safe and effective exercise programs for youth, older adults, and women during pregnancy and postpartum period.

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**Methods of Evaluation:**

1. Written exams
2. Written assignments
3. Case studies
4. Exercise program plan assignments
5. Periodization plan assignment
6. In-person student-client training sessions
7. Virtual training sessions
8. Exercise training/teaching videos

**Course Content Outline:**

1. Review of pre-participation health screenings
  - a. Client interview
  - b. Exercise pre-participations screening
  - c. Health history and medical history questionnaires
  - d. Physical activity readiness questionnaire
  - e. Informed consent and assumption of risk
  - f. Risk stratification
2. Review of basic health screenings and fitness assessments
  - a. Resting heart rate
  - b. Resting blood pressure
  - c. Circumference measurements
  - d. Height and weight
  - e. Body mass index
  - f. Body composition
  - g. Flexibility
  - h. Muscular fitness
  - i. Cardiovascular fitness
3. Movement assessments, advanced fitness assessments and exercise tests for the healthy adult population
  - a. Static postural assessment
  - b. Functional movement screens (FMS)
  - c. Motor control screens (MCS)
  - d. Flexibility and range of motion (ROM)
  - e. Movement and performance assessments
    - i. Squat assessments
    - ii. Standing long jump
    - iii. Vertical jump
    - iv. Speed, agility, quickness testing
  - f. Cardiorespiratory fitness assessments
    - i. Maximal exercise tests
    - ii. Sub-maximal exercise tests
4. Integrated exercise programming for the healthy, adult population
  - a. Evidence-based practice for exercise programming
    - i. ACSM guidelines for exercise programing
    - ii. Scientific research on exercise programming
    - iii. Client goals and assessment findings
    - iv. Personal trainer experience and expertise
  - b. Flexibility training
  - c. Functional movement and resistance training
    - i. Functional training
    - ii. Movement training
    - iii. Load training
    - iv. Performance training
  - d. Cardiorespiratory training
    - i. Aerobic base training
    - ii. Aerobic fitness training

- iii. Aerobic endurance training
- iv. Anaerobic performance and power training
- e. Designing periodization plan and integrated client-centered exercise program
  - i. Incorporation of various modalities and technology
- f. Implementing periodization plan and integrated client-centered exercise program
  - i. In-person and virtual environment
- g. Assessment, modifications and revisions to periodization plans and integrated client-centered exercise programs.
  - i. Incorporation of various modalities and technologies
- 5. Exercise program considerations for clients with obesity
  - a. Causes of being overweight and obesity
  - b. Nutritional guidelines
  - c. Health screenings and assessments
  - d. Exercise guidelines
  - e. Exercise modifications
  - f. Exercise program design
  - g. Client-centered approach to working with clients with overweight/obesity
- 6. Exercise program considerations for clients with chronic disease
  - a. Types of chronic diseases
    - i. Cardiovascular disease
    - ii. Cerebrovascular disease
    - iii. Metabolic disorders
    - iv. Other chronic conditions
    - v. Health screenings and assessments
    - vi. Exercise guidelines
    - vii. Exercise modifications
    - viii. Exercise program design
    - ix. Client-centered approach to working with clients with chronic diseases
- 7. Exercise program considerations for clients across the lifespan
  - a. Exercise and youth
    - i. Health screenings and assessments
    - ii. Exercise guidelines
    - iii. Exercise modifications
    - iv. Exercise program design
    - v. Client-centered approach to working with youth
  - b. Exercise and older adult
    - i. Structural changes with aging
    - ii. Health screenings and assessments
    - iii. Exercise guidelines
    - iv. Exercise modifications
    - v. Exercise program design
    - vi. Client-centered approach to working with older adults
  - c. Exercise for women during pregnancy and postpartum period
    - i. Physical and physiological changes during pregnancy
    - ii. Health screenings and assessments
    - iii. Exercise guidelines
    - iv. Exercise modifications
    - v. Exercise program design
    - vi. Client-centered approach to working with women during pregnancy and postpartum period
- 8. Exercise considerations for clients with musculoskeletal issues
  - a. Types of musculoskeletal injuries
    - i. Acute
    - ii. Chronic
    - iii. Upper extremity
    - iv. Lower extremity
  - b. Inflammation and healing process
  - c. Prevention of musculoskeletal injuries
  - d. Health screenings and assessments
  - e. Exercise guidelines
  - f. Exercise modifications

- g. Exercise program design
- h. Client-centered approach to working with clients with musculoskeletal injuries

## Resources

American College of Sports Medicine. (2021) *ACSM's Foundation of Strength Training and Conditioning, 2nd ed.*, Philadelphia, PA: Lippincott, Williams & Wilkins.

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American College of Sports Medicine. (2021) *ACSM's Guidelines for Exercise Testing and Prescription, 11th ed.*, Philadelphia, PA: Lippincott, Williams & Wilkins.

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

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Jacobs, P. L. (Ed.). (2018) *NSCA's Essentials of Training Special Populations*, Champaign, IL: Human Kinetics.

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

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Williamson, P. (2018) *Exercise for special populations, 2nd ed.*, Philadelphia, PA: Lippincott, Williams & Wilkins.

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## Resources Other

- Bridge Athletic App
- Muscle and Motion Strength Training App

Top of page

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