SM 422
Therapeutic Exercise

COMPETENCIES

RISK MANAGEMENT AND INJURY PREVENTION

Cognitive Domain

- Compares and contrasts the use of various types of flexibility and stretching programs, considering the results athletes and others involved in physical activity would expect if they followed a recommended routine.
- Compares and contrasts the use of various types of strength training and cardiovascular conditioning programs, considering the effects that athletes and others involved in physical activity would expect if they followed a recommended routine.
- Lists the safety precautions, hazards, and contraindications of various stretching, strengthening, or flexibility routines and/or equipment.

Psychomotor Domain

- Administers static and dynamic postural evaluation procedures, including tests for muscle shortening.
- Uses commercial fitness equipment to administer standard physical fitness tests and records and interprets the test results.
- Able to operate contemporary isometric, isotonic, and isokinetic strength testing devices.
- Provides supervision and instruction to an individual in the use of commercial weight training equipment.
- Implements and administers fitness programs, including correction or modification of inappropriate, unsafe, or dangerous fitness routines.

Affective Domain

- Accepts the moral, professional, and legal responsibilities to conduct safe programs to minimize injury and illness risk factors for individuals involved in physical activity.
- Appreciates and respects the concepts and theories pertaining to strength, flexibility, and endurance programs or routines.

PATHOLOGY OF INJURIES AND ILLNESSES

Cognitive Domain

- Analyzes the normal physiological responses of the human body to trauma and inactivity of specific body tissues (ligaments/capsules, muscles, tendons, and bones)
- Describes the integration and coordination of cell function in response to injury (e.g., sources of cell injury, inflammation, healing, and repair).
- Defines the inflammatory response to acute and chronic injury and illness.
- Identifies the implications of various underlying pathologies and uses this knowledge to select appropriate therapeutic modalities and therapeutic exercise protocols.

Affective Domain

- Understands how the use of exercise will improve the non-diseased organ system, thus enhancing overall wellness.

ACUTE CARE OF INJURIES AND ILLNESSES

Cognitive Domain

- Cites the signs, symptoms, and pathology of acute inflammation.
- Recognizes the proper technique for using ambulatory aids, including selecting an aid appropriate for the injury and person.
- Recommends ambulatory aids to coordinate movement on flat, slippery, or uneven terrain and to navigate steps, ramps, doors, or obstacles, and evaluates the patient's technique in using the aids.

Affective Domain

- Empathizes with individuals facing the daily challenges of using ambulatory aids.

THERAPEUTIC MODALITIES

Cognitive Domain

- Illustrates the use volumetric and anthropometric measurements to determine the effectiveness of treatment outcomes.

THERAPEUTIC EXERCISE

Cognitive Domain

- Predicts the physiological process of wound healing and tissue repair and its implications (limitations, contraindications) on the development and progression of an appropriate rehabilitation or reconditioning program.
- Describes and interprets appropriate measurement and functional testing procedures as they relate to therapeutic exercise (e.g., use of isokinetic devices, goniometers and dynamometers, postural stability test, hop tests, specific function tests).
- Uses objective measurement results (muscular strength/endurance, range of motion) as a basis for developing individualized rehabilitation or reconditioning programs.
- Describes common surgical techniques, pathology, and any subsequent anatomical alterations that may affect the implementation of a rehabilitation or reconditioning exercise program.
- Interprets the results of injury assessment and determines an appropriate rehabilitation or reconditioning plan to return the patient to physical activity.
- Defines the basic components of activity-specific functional progressions in a therapeutic exercise program.
- Describes the mechanical principles applied to the design and use of rehabilitation or reconditioning exercise equipment (leverage, force).
- Recommends the appropriate therapeutic exercise plan and determines appropriate therapeutic goals and objectives based on the initial assessment, frequent reassessments, and appropriate goal setting.
- Describes the appropriate selection and application of ther ex taking into consideration: a. the physiological responses of the human body to trauma, b. the physiological effects of inactivity and immobilization on the musculoskeletal, cardiovascular, nervous, and respiratory systems of the human body, c. the associated anatomical and/or biomechanical alterations of commonly used primary and reconstructive surgery, d. the physiological adaptations induced by the various forms of therapeutic exercise, such as fast- versus slow-twitch muscle fibers, e. the physiological responses of additional factors, such as age and disease.
- Describes the indications, contraindications, theory, and principles for the incorporation and application of various contemporary therapeutic exercises, including: a. isometric, isotonic, & isokinetic exercise, b. eccentric vs concentric exercise, c. open-vs closed-chain exercise, d. elastic, mechanical,& manual resistance exercise, e. joint mob exercise, f. plyometrics-dynamic reactive exercise, g. PNF for muscular strength/endurance, stretching, and improved ROM, h. exercises to improve neuromuscular coordination & proprioception, i. passive, active, & active-assisted exercise, j. cardiovascular exercise, including the use of stationary bicycles, upper-body ergometer, treadmill, and stair climber, k. aquatic therapy, l. functional rehabilitation And reconditioning, m. sport-specific activity, n. soft tissue mobilization

- Revises goals and objectives, and develops criteria for progression and return to activity, based on the level of functional outcomes.
- Describes appropriate methods of assessing rehabilitation and reconditioning progress and interprets the results.
- Interprets physician notes, post-operative notes, and physician prescriptions as they pertain to a rehabilitation or reconditioning plan.
- Describes rehabilitation, functional, and reconditioning progress using follow-up notes, progress notes, SOAP notes, etc.
- Compares the effectiveness of taping, wrapping, bracing, and other supportive/protective methods for facilitation of safe progression to advanced therapeutic exercises and functional activities.
- Applies manufacturer's guidelines for the inspection and maintenance of therapeutic exercise equipment.

Psychomotor Domain

- Demonstrates appropriate methods of evaluating rehabilitation and reconditioning progress and interpreting results.
- Measures the physical effects of injury using contemporary methods (isokinetic devices, goniometers, dynamometers, manual muscle testing, calipers, functional testing) and uses this data as a basis for developing individualized rehabilitation or reconditioning programs.
- Records rehabilitation or reconditioning progress (e.g., follow-up notes, progress notes).
- Demonstrates the appropriate application of contemporary therapeutic exercises including the following: a. isometric, isotonic, and isokinetic exercise, b. eccentric vs concentric exercise, c. open- vs closed-kinematic chain exercise, d. elastic, mechanical, and manual resistance exercise, e. joint mobilization exercise, f. plyometrics-dynamic reactive exercise, g. proprioceptive neuromuscular facilitation (PNF) for muscular strength/endurance, muscle stretching, and improved range of motion, h. exercises to improve neuromuscular coordination and proprioception, i. passive, active, and active-assisted exercise, j. cardiovascular exercise, including the use of stationary bicycles, upper-body ergometer, treadmill, and stair climber, k. aquatic therapy, l. functional rehabilitation and reconditioning, m. sport-specific activity, n. soft tissue mobilization
- Demonstrates the proper techniques for the performance of commonly prescribed rehabilitation and reconditioning exercises.
- Performs a functional assessment for safe return to physical activity.
- Inspects therapeutic exercise equipment to ensure safe operating condition.

Affective Domain

- Accepts the professional, ethical, and legal parameters that define the proper role of the certified athletic trainer in the treatment, rehabilitation, or reconditioning of athletes and others involved in physical activity.
- Accepts the moral and ethical obligation to provide rehabilitation or reconditioning to athletes and others involved in physical activity to the fullest extent possible.
- Respects the proper role of attending physicians and other medical and paramedical personnel in the treatment and rehabilitation or reconditioning of athletes and others involved in physical activity.
- Respects accepted medical and paramedical protocols regarding the confidentiality of medical information, medical and therapeutic prescriptions, and health care referral as they relate to the rehabilitation or reconditioning process.

NUTRITIONAL ASPECTS

Cognitive Domain

- Identifies the nutritional considerations in rehabilitation, including nutrients involved in healing and nutritional risk factors.

PSYCHOSOCIAL INTERVENTION AND REFERRAL

Cognitive Domain

- Compares the psychosocial requirements of various sports activities to the readiness of the injured or ill individual to resume physical participation.
- Understands the psychological and emotional responses (motivation, anxiety, apprehension) to trauma and forced physical inactivity as they relate to the rehabilitation and reconditioning process.
- Describes the basic principles of mental preparation, relaxation and visualization techniques, general personality traits, associated trait anxiety, locus of control, and athlete and social environment interactions.
- Describes the motivational techniques that the certified athletic trainer must use during injury rehabilitation and reconditioning.

Psychomotor Domain

- Uses motivational techniques with athletes and others involved in physical activity.
- Develops and implements stress reduction techniques for athletes and others involved in physical activity.
- Develops and implements mental imagery techniques for athletes and others involved in physical activity.

Affective Domain

- Accepts the role of social support during the injury rehabilitation process.

HEALTH CARE ADMINISTRATION

Cognitive Domain

- Constructs a basic research design and statistical interpretation pertaining to the formulation and interpretation of a case study, outcome measurement, and literature review and interpretation.

Psychomotor Domain

- Demonstrates the ability to prepare a sample design for scientific research in the areas of a case study, outcome measurement, and literature review.

PROFICIENCIES

INSTRUCTED & EVALUATED

Risk Management and Injury Prevention

The student will demonstrate the ability to perform and evaluate the results of the following tests:

- flexibility tests
- strength (repetition) testing
- agility tests
- speed tests

The student will demonstrate the ability to establish repetition maximum tests.

The student will demonstrate the ability to perform an isokinetic test for the knee and shoulder.

The student will demonstrate the ability to interpret data obtained from isokinetic testing and to use this information to determine appropriate follow-up care.

The student will perform isometric tests for the following parts of the body:

- ankle
- foot/toes
- knee
- hip
- trunk/torso
- shoulder
- elbow
- wrist
- hand/fingers;

The student will perform the following tests:

- upper body strength test
- lower body power test
- lower body strength test
- upper body muscular endurance test
- upper body power test
- lower body muscular endurance test

The student will select range-of-motion exercises and activities for all major muscle groups and their associated joints and instruct a client to perform these exercises. The exercises must include the following body regions and joints:

- cervical region
- hip and pelvis
- shoulder: joint and girdle
- knee
- elbow
- leg
- wrist
- ankle
- hand and fingers

- foot and toes
- lumbar region

The student will demonstrate the proper lifting technique for the following exercises:

- parallel squat
- arm curl
- heel raises
- triceps extension
- power clean
- knee curl (flexion)
- bench press
- knee extension
- shoulder press
- leg press
- dead lift

The student will demonstrate the proper spotting technique for the following exercises:

- parallel squat
- bench press
- shoulder press
- power clean
- dead lift

Therapeutic Exercise

Exercise to improve the range of motion of the upper extremity, lower extremity, trunk, and cervical spine.
The student will demonstrate the ability to instruct the following exercises:

- passive range-of-motion exercises
- active range-of-motion exercises
- active-assisted range-of-motion exercises
- joint mobilization
- self-mobilizations

Exercise to improve muscular strength.
The student will demonstrate the ability to instruct exercises for the following parts of the body using isometric and progressive resistance techniques:

- lower extremity
- upper extremity
- cervical spine
- trunk and torso

Exercise to improve muscular endurance.
The student will demonstrate the ability to instruct the following exercise modalities:

- Upper body
    - Aquatic
    - UBE/stationary bicycle
    - physioballs
- Lower Body
    - Aquatic
    - stationary bicycle
    - stair
    - physioballs
    - treadmill

Exercise to improve muscular speed.
The student will demonstrate the ability to instruct the following activities:

- Upper body
  - reaction drills
- Lower Body
  - reaction drills
  - sprint work
  - Fartlek training

Exercise to improve muscular power.
The student will demonstrate the ability to instruct plyometric exercises for the upper and lower extremities.

Exercise to improve neuromuscular control and coordination.
The student will demonstrate the ability to instruct the following activities:

- Upper body
  - PNF patterns
  - rhythmic stabilization
  - double- and single-arm balancing
  - wobble board or balance apparatus
  - weighted-ball rebounding or toss
- Lower Body
  - PNF patterns
  - proprioception board or balance apparatus
  - incline board
  - Single-leg balancing
- Neck
  - Stabilization
  - postural correction
- Trunk
  - Stabilization
  - postural correction

Exercise to improve agility.
The student will demonstrate the ability to instruct the following activities:

- Upper body
  - Throwing
  - catching
- Lower Body
  - Carioca
  - cross-over
  - figure eight (8)

Exercise to improve cardiorespiratory endurance.
The student will demonstrate the ability to instruct the following activities:

- Upper body
  - upper-body ergometer
  - stationary bicycle
  - aquatic
  - stair climber
- Lower Body
  - bicycle ergometer
  - treadmill

- stair climber
- aquatic

The student will demonstrate the ability to assess joint end point and to select and perform appropriate joint mobilization techniques for the appendicular and axial skeleton, including the following:

- long-axis distraction
- appropriate glides (e.g., anterior/posterior, superior/inferior)

The student will demonstrate the ability to instruct and perform exercises to improve activity-specific skills (running, striking, throwing, catching, swimming, biking, climbing, etc.).

Psychosocial Intervention And Referral

The student will simulate the following motivational techniques used during rehabilitation:

- verbal motivation
- imagery
- visualization
- desensitization

Health Care Administration

The student will demonstrate the ability to prepare and interpret sample design for scientific research.

- The student will interpret the following basic literature:
  - case study
  - outcome measurement, including statistical interpretation
  - literature review