

PE 371

Exercise Physiology

Competencies

RISK MANAGEMENT AND INJURY PREVENTION

Cognitive Domain

- Defines the use of standard tests, test equipment, and testing protocol for the measurement of cardiovascular respiratory fitness, body composition, posture, flexibility or muscular strength, power, and endurance.
- Describes the body's anatomical and physiological adaptation to cardiovascular and muscular conditioning programs.
- 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.
- Identifies the precautions and risks associated with exercise in adolescents.

Psychomotor Domain

- Uses commercial fitness equipment to administer standard physical fitness tests and records and interprets the test results.
- Provides supervision and instruction to an individual in the use of commercial weight training equipment.

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 the importance of the body's thermoregulatory mechanisms for acclimation and conditioning, fluid and electrolyte replacements, proper practice and competition attire, and weight loss.
- Appreciates and respects the concepts and theories pertaining to strength, flexibility, and endurance programs or routines.

PATHOLOGY OF INJURIES AND ILLNESSES

Cognitive Domain

- Describes and explains cell adaptation
- Predicts the body's adaptation to exercise during and following illness and injury.
- Describes the aging process as it relates to athletes and others involved in physical activity.
- Describes cellular homeostasis and the integration and coordination of cell function in response to disease.
- Analyzes the physiologic responses of diseases to physical activity and inactivity.
- Describes the pathology of diseases of the blood that would impair strenuous physical activity.

Affective Domain

- Appreciates that an understanding of pathology is essential to care for athletes and others involved in physical activity.
- Understands how the use of exercise will improve the non-diseased organ system, thus enhancing overall wellness.

ASSESSMENT AND EVALUATION

Cognitive Domain

- Describes the physiological and psychological effects of physical activity and their impact on the performance of athletes and individuals involved in other forms of physical activity.
- Explains the distinction between body weight and body composition.
- Describes the use of basic somatotyping to quantify objective physical characteristics.

PHARMACOLOGY

Cognitive Domain

- Describes how physical activity may influence a drug's therapeutic effect.
- Recognizes the difference between cortical and anabolic steroids and other androgenics.
- Lists the general indications, contraindications, and adverse reactions of bronchodilators and other prescription and nonprescription respiratory medications as they relate to physical activity.
- Lists the general indications, contraindications, and adverse reactions of beta-blockers and antihypertensives.
- Identifies the usage patterns, general effects, and adverse short- and long-term reactions of performance enhancing drugs.

GENERAL MEDICAL CONDITIONS AND DISABILITIES

Cognitive Domain

- Recognizes the relationship between changes in blood pressure and changes in activity level.
- Recognizes the relationship between changes of respiration rate and changes in activity level.
- Describes the various menstrual irregularities, the relationship that physical activity plays in their development, their resolutions, and their implications on performance, as well as detrimental systemic effects
- Identifies the physiological effects and the changes to woman's body caused by pregnancy, and describes the body's response to exercise during pregnancy. Also identifies the indications and contraindications for exercise throughout pregnancy.

NUTRITIONAL ASPECTS

Cognitive Domain

- Constructs methods to determine the recommended daily allowances (RDAs) of a healthy diet for athletes and others involved in physical activity.
- Describes the nutritional food pyramid and explains its use.
- Lists the primary organizations responsible for nutritional information.
- Explains the importance of good nutrition in enhancing performance and preventing injury and illness.
- Evaluates the energy and nutritional demands of specific activities and the nutritional demands placed on athletes and others involved in physical activity.
- Applies the principles of nutrition, including the roles of fluids and electrolytes, vitamins, minerals, ergogenic aids, macronutrients, carbohydrates, protein, fat, and dietary supplements, as they relate to the dietary and nutritional needs of athletes and others involved in physical activity
- Illustrates the physiological processes and time factors involved in the digestion, absorption, and assimilation of food, fluids, and nutritional supplements as they relate to the design and planning of pre- and post-activity meals, considering menu content, time scheduling, and the effect of tension and anxiety before activity.

- Paraphrases the prevailing misconceptions regarding the proper use of food, fluids, and nutritional supplements.
- Describes the advantages or disadvantages of supplementing nutrients in the athlete's diet.
- Describes the principles, advantages, and disadvantages of the ergogenic aids and dietary supplements used by athletes and others involved in physical activity, in an effort to improve performance.
- Analyzes the principles of weight control, including body fat percentage, caloric requirements, effects of exercise, and fluid loss.
- Identifies the consequences of improper fluid replacement.
- Describes and applies the principle of caloric balance.
- Summarizes the proper use of food, fluids, and exercise in weight control to dispel the prevailing misconceptions regarding weight control diet fads and fallacies.
- Explains the guidelines for safe weight loss and weight gain.
- Describes the principles of body mass index computation.

Psychomotor Domain

- Accesses and uses information regarding the principles of fluid and electrolyte replacement.
- Applies the principles of nutrition, including the roles of fluids and electrolytes, vitamins, minerals, and ergogenic aids, as they relate to the dietary and nutritional needs of athletes and others involved in physical activity.
- Designs a pre-participation meal.
- Includes the proper percentages of carbohydrates, protein, and fat in a diet based on age, gender, and type and level of physical activity.

Affective Domain

- Appreciates the role of proper nutrition in the health care of athletes and others involved in physical activity.

PROFICIENCIES

INSTRUCTED & EVALUATED

Nutritional Aspects

The student will demonstrate the ability to access and recommend nutritional guidelines for the following:

- weight loss
- weight gain

The student will demonstrate the ability to use the nutritional food pyramid.

The student will demonstrate the ability to access and assess the following nutritional intake values:

- RDA or equivalency
- vitamin intake
- protein intake
- mineral intake
- fat intake
- fluid intake
- carbohydrate intake

Psychosocial Intervention And Referral

The student will demonstrate the ability to determine energy expenditure and caloric intake.

Nutritional Aspects

The student will demonstrate the ability to calculate the basal metabolic rate of energy expenditure.