# PAK100 - SAFE EXERCISE LEADER

## PRIMARY CERTIFICATION

## BEHAVIORAL OBJECTIVES

**Training** refers to the process by which one learns information and acquires skills. Training includes participation in programs, seminars, workshops, university programs, individual study, and other forms until the objectives are effectively met.

**Certification** is the process by which an individual's knowledge is assessed through testing.

**Continuing education** is the process of enhancing the basic level of proficiency by participating in programs, seminars, workshops, university programs, individual study, and other forms of learning designed by professionals..

These objectives, set forth by the Exercise Safety Association founding advisory board, recommend guidelines for the training of SAFE Exercise Leaders. They represent the minimum level of competency and knowledge essential for every exercise leader to design and lead a safe class or exercise workout and respond to questions and challenges that arise. In addition, they establish the essential base knowledge for personal trainers and all specialty exercise disciplines.

Proficiency in learning these objectives will prepare the candidate to become a fitness instructor with an appreciation and concern for safety and equip him or her with the necessary information to complete the Exercise Safety Association's SAFE Exercise Leader Primary Certification Examination. The objectives include basic information and general guidelines for working with the average exercising healthy individual without major physical, psychological, or health problems. The focus is not only on the guidelines to achieve general fitness, avoid injury and maintain health for life but also on the philosophy of safe exercise and the Exercise Safety Association.

Furthermore, additional education is strongly recommended through continuing education, advanced courses, and specialty courses to develop and enhance the basic information. This course does not train individuals to work with special populations including but not limited to morbidly obese, pre and post natal females, older adults, physically handicapped, persons with known cardiovascular disease, competitive sport and performance athletes, special physical disciplines, individuals on medications, individuals with other major medical problems, and those recovering from surgery or under medical supervision. Additional specialty training is required to safely work with those populations.

The training objectives are divided into three divisions: leadership and general knowledge of health, core information, and skills and supportive knowledge for leading safe exercise. At the end of this training, the SAFE Exercise Leader will be able to demonstrate an understanding of the basic-principles that follow:

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# DIVISION1: LEADERSHIP AND GENERAL KNOWLEDGE OF HEALTH

## HEALTH, WELLNESS, PHYSICAL FITNESS

### *General Principles of Health and Wellness*

- define health and wellness
- explain the following models: Iceberg Model, Holistic Model, Wellness-Illness Continuum, and Maslow's Hierarchy of Needs
- discuss the concept of locus of control and its relationship to health
- define stress
- explain the positive and negative responses to stress and their effects on health and wellness, recognize symptoms, and discuss techniques that can be incorporated into an exercise session to reduce negative responses to stress

### *General Principles of Physical Fitness*

- define and compare and contrast exercise and physical activity
- define physical fitness
- define and discuss the ten components of fitness
- define somatology
- discuss body types and genetic factors related to fitness

### *General Philosophy of Safe Exercise Related to Health and Fitness*

- discuss misconceptions that individuals commonly have about fitness, factors the effect inaccurate perceptions, training for health vs. training for sports, and philosophy of fitness to enhance life-time health for the average healthy adult.
- discuss Aristotle's principle of the Golden Mean and how it relates to life-long health, wellness, and fitness

## PRINCIPLES OF LEADERSHIP

### *General Principles of Leadership, Safety, and Professional Responsibility*

- define the following terms: group exercise, leadership, safety, certification, continuing education, CPR, First Aid, and special populations
- discuss and explain the legal responsibilities for exercise leaders regarding job classification, taxes, licenses, business entities, liability insurance, music licensing laws, equipment and product liability
- discuss the importance and use of the following forms: health screening forms, physicians release to exercise, informed consent, and injury report
- describe appropriate attire including proper footwear

- discuss qualities of a fitness role model including, positive attitude, strategies to promote adherence, appropriate selection of music, and strategies for participant education

- define the Transtheoretical Model of Change and its relationship to leading participants toward achieving a positive outcome

***Providing a Safe Exercise Environment***

- describe guidelines for a safe exercise environment including proper temperature, ventilation, lighting, floor surface, safe set-up, strategies for modifications in compromising environments, proper level of sound, and providing means of hydration
- define and discuss methods of cueing
- define the following terms: pulse rate, pulse rate sites, heart rate, Karvonen Formula, target heart rate, resting heart rate, maximum heart rate, sub-maximal heart rate, perceived exertion, overtraining, overexertion, dyspnea index, and participant response,
- calculate a target heart rate using the Karvonin Formula
- demonstrate methods of monitoring exertion levels, proper technique including alignment and correct posture, and methods of correction
- discuss the importance of pre-planning exercise sessions and general strategies for modificationwhile in session
- identify and demonstrate the beat of music
- identify special populations that require specialty training above the parameters of these objectives: morbidly obese, pre and post natal females, older adults, physically handicapped, persons with known cardiovascular disease, sport and performance athletes, special physical disciplines, individuals on medications, individuals with major medical problems, and those recovering from surgery or under medical supervision.
- discuss strategies for protecting self (i.e. the instructor) from voice injury, loss of hearing, burn-out, overtraining, and overexertion

# DIVISION 2: CORE INFORMATION AND SKILLS FOR DESIGNING AND LEADING SAFE EXERCISE SESSIONS

## BASIC ANATOMY, KINESIOLOGY, AND EXERCISE EVALUATION

***Basic Organization of the Human Body***

- define the following terms: anatomy, cell, tissue, organs, organelle, mitochondria, hyaline, adipose, reticular, fibrous, discs, diaphysis, epiphysis, Haversian Canal, and epiphyseal plate
- identify the 10 systems of the human body
- discuss the general organization of the human body
- define the two categories of connective tissue and their characteristics
- define and discuss the six types of dense connective tissue, their
- characteristics, and their relevance to safe exercise
- define the following terms: impact, low impact, high impact, intensity, low intensity, and high intensity, and explain their relevance to dense connective tissue

***The Skeletal System***

- identify the major bones

***Terminology Related to Movement***

- define kinesiology
- define the following terms: anatomical position, superior, inferior, anterior, posterior, medial, lateral, proximal, distal, flexion, extension, hyper-extension, abduction, adduction, horizontal abduction, horizontal adduction, internal rotation, external rotation, circumduction, supine, prone, supination, pronation, dorsi-flexion, plantar-flexion, inversion, eversion, elevation, depression, retraction, protraction, lateral flexion, forward flexion, axial rotation, sagittal plane, frontal plane, and transverse plane

***The Major Joints***

- define articulation
- define and discuss general information about range of motion
- identify three categories and six types of articulations
- discuss the general importance of performing exercises withkn the natural joint range of motion
- identify the major diseases and injury conditions for the following major joints: vertebral column, shoulder, hip, knee, elbow, ankle, wrist
- identify and discuss the structure and available range of motion for the following major joints: vertebral column, shoulder, hip, knee, elbow, ankle, wrist
- identify the following parts of the vertebra: body, spineous process, transverse process, facet, intervertebral foramina, intervertebral disc, annulus fibrosis, nucleus pulposis and vertebral canal
- identify the following parts of the shoulder: glenohumeral joint, scapulothracic joint, acromoclavicular joint, acromioclavicular ligament, sternoclavicular joint, acromion, coracoid process
- identify the following parts of the hip: acetabulum, trochanter, head of the femur, pubic symphysis, and anterior superior iliac spine
- identify the following parts of the knee: condyles, tibial tuberosity, meniscus, cruciate and collateral ligaments
- identify the following parts of the elbow: olecranon process, epicondyles, trochlea, semi-lunar notch
- identify the following parts of the wrist: radiocarpal joint, intercarpal joints
- identify the following parts of the ankle: talotibial and subtalar joint

***Terminology Related to Muscle***

- define the following terminology: actin, myosin, sarcomere, myofibril, fasiculae, contraction, static, active, ballistic, developmental, and PNF stretching, isokinetic, isotonic, resistance, agonist, antagonist, synergistic, stabilizer, proprioceptor, sensory nerve, motor nerve, golgi tendon organ, kinesthetic awareness
- explain the three properties of muscle
- define the three types of contractions and demonstrate examples

- explain the three types of levers in the body
- explain the principle of transferred momentum and its relationship to exercise
- explain the functioning of the following: muscle contraction, the stretch reflex, and the lever system

***The Maior Muscles***

- identify the location, origins, and insertions of the major muscles
- perform an exercise that stretches and contracts each of the major muscles and muscle groups
- organize basic patterns of balanced movements using the major muscles

***Posture, Stability, Muscle Balance, and Alignment***

- identify the center of gravity, line o gravity and correct posture in the human body in the following positions: standing, seated on the floor, seated in a chair, prone, supine, side lying, and four point (on hands and knees).
- identify the following conditions: lordosis, scoleosis, and kyphosis
- define the following terms: base of support, line of gravity, equilibrium, balance, and stability
- explain procedures to conduct plumb line, leg lowering, and posture analysis tests

***Exercise Evaluation and Injury Prevention***

- discuss the four point exercise evaluation formula and use it to analyze a variety of exercises for safety and effectiveness
- compare and contrast a variety of exercises using the A,B,C System of Exercise Evaluation
- discuss general exercise safety principles

## BASIC EXERCISE PHYSIOLOGY AND PROGRAMMING

***Basic Exercise Physiology***

- define the following terms: exercise physiology, energy, potential energy, kinetic energy, metabolism, aerobic, anaerobic, adenosine triphosphate, lactic acid, Kreb cycle, phosphorylation, adenisonedophosphate, creatine phosphate, stroke volume, cardiac output, blood pressure, systolic blood pressure, dyastolic blood pressure, hemoglobin, cardiovascular diseasedisease,atherosclerosis, arteriosclerosis, coronary heart disease, myocardial infarction, ischemia, angina pectoris, stroke, thrombus, embolus, oxygenconsumption, valsalva maneuver, hypotension, hyperventilation,
- discuss the first Law of Thermodynamics, the three energy systems in the body, and the energy continuum
- identify the major parts of the circulatory and respiratory systems: heart muscle, ventricles, atrium, arteries, veins, capillaries, arterioles, venules, trachea, bronchii, bronchioles, lungs, alveoli
- explain the route of blood flow through the heart

- identify the major parts and the general functioning of the respiratory system
- explain the general effects that medications may have on the heart during exercise

***Training Principles and guidelines for structuring an exercise class/session***

- discuss the training principles and benefits of training
- list a safe workout structure for the following: aerobic class, muscle conditioning session, circuit workout and HIIT

# DIVISION 3: SKILLS AND SUPPORTIVE KNOWLEDGE FOR LEADING SAFE EXERCISE

## BASIC NUTRITION AND WEIGHTLOSS

***Nutrition Basics***

- define the following terms: nutrition, essential nutrient, nutritional relevancy, macronutrient, minor nutrient, HDL high density lipoprotein, LDL low density lipoprotein, total cholesterol/HDL ratio, trans fat, complex carbohydrate, and calorie
- discuss the six essential nutrients including: recommended percentages in the daily diet, their function, number of calories per gram, foods containing the nutrients, utilization, storage, RDA, and DRI
- explain the history of the food groups and the FDA website
- discuss the U.S. Dietary Goals for Americans
- explain the potential risk of exceeding recommended amounts of essential nutrients

***Nutrition and Exercise***

- discuss the importance of adequate hydration
- discuss common misinformation regarding supplements, protein powder, energy drinks, and ergogenic aids
- explain a recommended pre-exercise meal

***Nutrition and Energy Balance***

- explain the concept of energy balance as it relates to weight maintenance
- calculate estimated calories using the simple caloric formula and the food FDA recommendations
- define basal metabolic rate, set point theory, cellulite
- discuss recommended serving size
- discuss misconceptions and/or dangers of the following: diet pills, fad diets, starvation diets, saunas, plastic sweat suits, body wraps, cellulite, and spot reduction
- discuss safe strategies for weight loss including: the safe number of pounds per week to lose, effects of increased exercise, principles of calorie reduction

- compare and contrast solely reduced caloric diet and solely increased exercise with combined diet and exercise

## PROFESSIONAL RESOURCES

- discuss the process of peer reviewed science
- explain the difference between sensationalized and scientific information
- provide examples of professional Continuing Education and other credible exercise sources