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 **Fitness Leadership Canada**

 Fitness Alberta (FA )

British Columbia Recreation and Parks Association (BCRPA)

Saskatchewan Parks and Recreation Association (SPRA)

Manitoba Fitness Council (MFC)

Ontario Fitness Council (OFC)

Fitness New Brunswick (NBF)

Nova Scotia Fitness Association (NSFA)

**Exercise Theory**

**Performance Standards**

**Fitness Leadership Canada**

**Exercise Theory**

**Performance Standards**

**Foreword: This is an entry level document that is intended as a base of information that will be added to in subsequent trainings, depending on the certifications that are chosen.** 

# Performance Standard

The Exercise Leader will be able to describe the benefits of physical activity and its relationship to health and wellness.

# Competencies

1. Summarize the health-related benefits of physical activity.
2. Describe the potential health impacts of physical inactivity and sedentary lifestyles.
3. Identify modifiable lifestyle behaviours and non-modifiable risk factors and how they increase or decrease the risk of chronic disease.

# Performance Standard

The Exercise Leader will describe and integrate the holistic (whole person wellness) approach to physical activity and lifestyle, identify the elements of the Active Living concept, and discuss the implications for fitness leadership.

# Competencies

1. Define a holistic approach to wellness, describe the benefits as they relate to physical activity, and discuss how to impart this knowledge in a fitness leadership setting.
2. Define Active Living.
3. Identify common barriers to physical activity.
4. Describe and demonstrate ways to encourage participants to commit to exercise and take responsibility for their own health and well-being.



# Performance Standard

The Exercise Leader will demonstrate a basic knowledge of human anatomy.

# Competencies

1. Identify the major muscle or muscle groups and the movements they perform, including: trapezius; erector spinae; deltoid (anterior, middle and posterior); rhomboids; pectoralis major; rectus abdominis; internal and external obliques; transverse abdominis; biceps brachii; triceps brachii; the latissimus dorsi; iliopsoas; gluteus maximus, medius, and minimus; hip adductors; hamstrings; quadriceps (rectus femoris, vastus lateralis, vastus intermedius, vastus medialis); gastrocnemius; soleus; and tibialis anterior.
2. Identify the types of joints, including fibrous, cartilaginous and synovial (e.g., ball and socket, saddle, pivot and hinge) and describe how bone structure influences joint function.
3. Identify joint structures and connective tissues, including the joint capsule, synovial membrane, articular cartilage, joint cavity, ligaments, and tendons.
4. Identify the major bones, including the: cranium, vertebrae (including cervical, thoracic and lumbar areas), scapula, ribs, sternum, humerus, radius, ulna, clavicle, pelvic girdle,

femur, tibia, fibula, and patella.

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**Performance Standard**

The Exercise Leader will demonstrate basic knowledge of the biomechanics involved in human movement.

# Competencies

1. Identify the movements of the hip, elbow, shoulder girdle, spine, wrist, ankle and knee.
2. Identify the major joint actions; including flexion, extension, abduction, adduction, medial/ internal and lateral/external rotation, circumduction, hyperextension, dorsiflexion, plantar flexion, pronation, supination, eversion, inversion, lateral flexion, protraction, retraction, elevation, depression, transverse(horizontal) abduction and transverse(horizontal) adduction.
3. For the following four exercises (push-up, squat, lunge and abdominal curl), identify the agonist, antagonist, and the type of contraction for each phase of the exercise.
4. Define synergist.
5. Define and describe muscle actions (e.g., concentric, eccentric, isometric).
6. Describe how the following impacts stability: a) size of the base of support, b) position of the centre of gravity and c) location of the centre of gravity in relation to the base of support.
7. Using the principle of length of lever, to explain how they can be used to vary the intensity of an exercise.



# Performance Standard

The Exercise Leader will demonstrate through verbal and/or written communication a basic knowledge of exercise physiology and the underlying human movement.

# Competencies

1. Identify the average range for resting heart rate as well as the range for target exercise heart rate for an individual of a stated age using the Karvonen Method, and 220- age max heart rate method.
2. State whether each of the following increases or decreases during a cardiovascular exercise session: heart rate, blood pressure, stroke volume and respiratory rate.
3. Describe how oxygen enters and moves through the body and how carbon dioxide is removed from the muscles.
4. Describe venous pooling and how to prevent it.
5. Understand blood pressure and normal resting values for diastolic and systolic.
6. Describe how blood pressure adapts to cardiovascular conditioning.
7. Summarize the key elements (endurance, total time, power) of the three energy systems, (aerobic, lactic acid and ATP-CP) and their primary fuel (glycogen/glucose, fats, ATP-CP). Identify the primary system used in various physical activities.
8. Describe the long-term training adaptations of the following fitness components: cardiovascular endurance, muscular endurance, muscular strength and flexibility.
9. Identify and describe how environmental factors (heat, humidity, cold) can affect the body's response to physical activity.

## Performance Standard

The Exercise Leader will demonstrate a basic knowledge of exercise conditioning principles.

## Competencies

1. Describe the FITT Principle: frequency, intensity, time (duration), and type of exercise for improving each of the following health related components of fitness: flexibility, cardiovascular endurance, muscular strength, and muscular endurance.
2. Show how using the “talk test”, rate of perceived exertion, the Borg scale, and training heart rate can be used to monitor and adjust intensity.
3. Identify the pros and cons associated with static, dynamic and ballistic stretching and when each is most appropriate.
4. Describe the importance of developing a balanced muscle conditioning program for the muscles surrounding the major joints.
5. Identify and describe the anatomical limitations to joint range of motion (flexibility).
6. Describe established training methods and principles. (SAID, progressive overload, maintenance, FITT, reversibility, ceiling effect, symmetry).



# Performance Standard #1

The Exercise Leader will exemplify and demonstrate safety in all aspects of planning and delivering of fitness programs as well as demonstrate methods for preventing and managing injuries.

# Competencies

* 1. Describe why and how to use the following pre-screening tools: PAR-Q+ and the EPAR-MEDx
	2. For the following exercises: push-up, squat, lunge and abdominal curl, analyze each for purpose, potential risks to joint structures, and modifications or alternative exercises.
	3. Describe the signs and symptoms of overtraining.
	4. Know the signs and symptoms that would warrant modifying or stopping an exercise session.
	5. Understand the importance of knowing the set of emergency procedures for the facility (i.e., location of the first aid kit, emergency exits, emergency protocols, location of telephone and street address)
	6. Explain the RICE principle (i.e., rest, immobilize, cold and elevation).
	7. Describe and demonstrate neutral posture while standing.

**Performance Standard** #2

The Exercise Leader will select safe and appropriate exercises for the goals and objectives of a group exercise class.

**Competencies:**

1. Identify the process of movement analysis
2. Describe the principles of movement analysis
3. Explain the intended and actual purpose of a given exercise; analyze its potential risks and provide modifications
4. Understand and explain contraindicated exercises
5. Identify common exercise modifications
6. Identify how to progress exercise for a given muscle group
7. Explain the importance of proper body alignment, posture and core stabilization
8. Identify ways to correct errors in technique

**Risk Management**

**Performance Standard #3**

 The Exercise Leader will lead classes in such a way as to minimize and manage risk

Competencies:

1. Assess and address potential environmental safety issues
2. Assess and address potential equipment safety issues
3. Recognize the implications of legal issues
4. Identify common emergency procedures and the Fitness leader’s role



# Performance Standard

The Exercise Leader will be able to explain *Canada's Food Guide*.

# Competencies

1. Using *Canada's Food Guide*, understand and know how to apply the healthy eating recommendations including:
	* + - - Eat plenty of vegetables and fruits, whole grain foods and protein foods.

- Choose protein foods that come from plants more often.

- Choose foods with healthy fats instead of saturated fat

- Limit highly processed foods. If you choose these foods, eat them less often and in small amounts.

- Prepare meals and snacks using ingredients that have little to no added sodium, sugars or saturated fat

- Choose healthier menu options when eating out Make water your drink of choice

- Replace sugary drinks with water

- Use food labels

- Be aware that food marketing can influence your choices

 , e.g., choosing healthy options, choosing variety and using water to satisfy your thirst.

1. Know the differences between the unsaturated, saturated and trans-fat and give a food example of each.
2. Know when you should refer a participant to a Registered Dietitian.



# Performance Standard

 The Exercise Leader will identify safe and effective strategies for obtaining and maintaining a healthy body composition.

# Competencies

1. Explain the energy-in/energy-out concept.
2. Understand that the combination of food intake and physical activity is most effective in maintaining a healthy body composition.
3. Demonstrate an understanding of Body Mass Index (BMI), and this measurement’s limitations. (e.g., it does not differentiate between lean and fat mass)
4. Demonstrate an understanding of waist girth and its use as a predictor of the health-related risks of obesity.
5. Explain how changes in body composition (lean and fat tissue changes) influence basal metabolic rate and subsequent energy balance.
6. Define atrophy and hypertrophy.



# Performance Standard #1

The Exercise Leader will describe the benefits of Group exercise classes.

**Competencies**

1. Define group exercise.
2. Explain the current trends and factors that influence the popularity of group exercise.
3. Describe and explain the benefits of group exercise

**Performance Standard #2**

The Exercise Leader will design an effective program using established methods and training principles.

Competencies:

1. State the steps in class design
2. Demonstrate the ability to provide exercise modifications based on clients’ needs.
3. Describe the components of an exercise class
4. Explain the purpose of a given component of fitness
5. Demonstrate ways to execute the exercise selections
6. Apply the FITT formula to a class
7. Apply principles of conditioning to a variety of GE programs
8. Describe ways to evaluate the effectiveness of class design
9. List and describe functional fitness skills in an appropriate class setting
10. Describe use of a variety of training methods/types (ex. circuit training, sport-specific, interval).

**Use of Music**

**Performance Standard #3**

The Exercise leader will select music appropriate to both the class format and audience

Competencies:

1. List reasons for using music in an exercise setting
2. Identify music appropriate for different class formats and styles (including beats per minute)
3. Identify safe music/mic volumes
4. Describe music copyright laws

### Performance Standard #4

The Exercise Leader will demonstrate how to use equipment to enhance training for various participants and class types, ensuring that it is both safe and effective

1. Apply and understand the principles of the 24 hour movement Guidelines . Available for download at the *Public Health Agency of Canada –*



 **Performance Standard #1**

 The Exercise Leader will understand principles of adult learning, communication skills, and leadership models.

# Competencies

1. Understand the principles of adult learning and how they relate to an exercise environment.
2. Understand how to use effective communication when working with a variety of participants. (ex. non-verbal, verbal, kinesthetic)
3. Describe and apply the principles of effective leadership styles: leader centred dictator, and laissez-faire.
4. Identify intrinsic and extrinsic factors that may motivate adults to participate in physical activity.
5. Understand the principles of adult learning.
6. State forms and techniques of giving /receiving feedback
7. Identify techniques to reduce voice injury

**Performance Standard #2**

The Exercise Leader will demonstrate and identify qualities, strategies, and skills of effective leadership.

Competencies:

1. Identify professional qualities of leadership
2. Identify the skills of effective group exercise leaders
3. Recognize leadership strategies in the delivery of group exercise classes
4. Describe effective leadership styles and motivation techniques
5. Understand the difference between student-centered and teacher centered instruction

**Communication**

**Performance Standard #3**

The Exercise leader will demonstrate knowledge of group dynamics.

Competencies:

1. Explain how to create a supportive, participant-centred environment
2. Identify challenges in leading group exercise classes
3. Explain the stages of group rapport

The Exercise leader will demonstrate knowledge of professional conduct in a group exercise setting.

Competencies:

1. Understand the concept of Scope of Practice
2. Understand the Code of Conduct
3. Act as a Resource
4. Maintain your certification

**FLC Performance Standards**

**Working Definitions**

*As new specialty standards are developed, new working definitions will be added to this list.*

***Active Listening:***

*A communication skill involving the use of open-ended and closed questions, restating, paraphrasing, reflection of meaning and feeling, and summarizing.*

***Active Living:***

*A way of life in which individuals make meaningful and satisfying physical activities an integral part of daily living.*

***Active Stretching:***

*The muscles are stretched by the contraction of the opposing muscles.*

***Acute:***

*Reactions that occur immediately.*

***Adult Learning:***

*Refers both to the process which individuals go through as they attempt to change or enrich their knowledge, values, skills, or strategies, and to the resulting knowledge, values, skills, strategies, and behaviours possessed by everyone****.***

***Alignment:***

*Safe posture for a given activity.*

***Apparently healthy:***

*Individuals People who have been medically cleared through the use of an evidence-based screening tool. Ex. ParQ+*

***ATP****:*

*Adenosine Triphosphate. A high-energy phosphate molecule required to provide energy for cellular function and chemical fuel for muscle contractions****.***

***Beat:***

*Regular pulsations that have an even rhythm.*

***Body Composition:***

*Refers to the fat and non-fat components of the human body.*

***Borg Rate of Perceived Exertion***

*A perception scale to monitor or interpret the intensity exercise.*

*BMI: Body Mass Index.*

*Ratio of weight to height (Body Weight [kg] / Height [m2]), used to determine thinness/fatness and the relative risk for disease.*

***BMR: Basal Metabolic Rate.***

*The minimum energy expenditure required to sustain life at a resting state.*

***Calorie:***

*1 calorie = the amount of heat required to raise the temperature of 1 g of water 1 degree C (1000 calories = 1 kilocalorie). Used to measure the energy value of food and the cost of physical activity.*

***Cardiac Output:***

*The amount of blood circulated by the heart each minute; cardiac output = heart rate x stroke volume. (Q= HR x SV)*

***Chronic:***

Reactions that occur over a period of time***.***

***Circuit Training:***

*A muscular conditioning or cardiovascular training method involving a series of exercise stations, movement patterns, pieces of exercise equipment, or muscle groups.*

***Class Design:***

*Warm-up, workout (cardiovascular, muscular conditioning), final cool-down.*

***Classic Choreography:***

*A structured form of movement patterns to music. Precise movement combinations are performed to the specific phrases of the music. When the musical phrase repeats itself, so does the movement pattern that has been choreographed for it.*

***Closed Question:***

*Question that requires a yes or no answer****.***

***Components of Fitness:***

*Cardiovascular, muscular strength, muscular endurance, flexibility, body composition.*

***Concentric:***

*Common form of muscle contraction that occurs in rhythmic activities when the muscle fibers shorten as tension develops*

***Conduction:***

*Transfer of heat or cold through molecular contact. Movement of an electrical pulse such as through a neuron.*

***Contract-Relax:***

*A technique where the muscle is isometrically contracted before it is stretched. Involves altering the outputs from both the muscles (e.g. spindles) and joint (e.g. golgi tendon organs) receptors which influence the resultant range of motion about a joint (e.g. PNF)*

***Convection:***

*The transfer of heat or cold via the movement of a gas or liquid across an object, such as the body.*

***Decibels:***

*The loudness or intensity of sound. Scale (in decibels) for common sounds in everyday life:*

*140 - Threshold of feeling*

*120 - Sound causing discomfort*

*100 - High speed train*

*80 - Heavy road traffic*

*60 - Normal conversation*

*40 - Quiet conversation*

*20 - Whispered conversation*

*0 - Auditory threshold (0.0002 dyne/cm)*

***D.R.I.L.L.:***

*Direction, Rhythm, Intensity, Lever, Locomotion. A technique for making changes to exercise movements.*

***Dynamic Constant:***

*Resistance is constant (same) throughout movement while force generated is dynamic or changing dependent on range of motion (ex: free weight, body weight, barbells, medicine balls, kettlebells)*

***Dynamic Progressive:***

*Resistance changes within force curve and ROM due to structure of equipment (ex: tubing, springs, composite materials*

***Dynamic Variable:***

*Amount of resistance changes to match the force curve within ROM (ex: levers, cam, pulley, selective weight stack)*

***Dynamic Stretching:***

*The muscles surrounding a joint are stretched by the force(s) generated as a body part is repeatedly moved.*

***Eccentric:***

*A type of muscle contraction that occurs as the muscle fibers lengthen, such as when a weight is lowered through a range of motion. The contractile force generated by the muscle is weaker than an opposing force, which causes the muscle to stretch*

***Evaporation:***

*Heat loss through conversion of water to vapour (e.g. perspiration).*

***Exercise:***

*A form of physical activity that is planned, structured, and repetitive. Its main objective is to improve or maintain physical fitness.*

***F.I.T.T.:***

*Frequency, Intensity, Time, Type.*

***Flexibility:***

*The ability of a joint(s) to move through a full range of motion.*

***Free Style:***

*Unstructured, non-choreographed exercise movements.*

***Free Weights:***

*Any equipment used for weight training that is not connected to an external apparatus, e.g. barbells, dumbbells and kettlebells*

***Functional Fitness:***

*Possessing physical abilities to conduct day-to-day activities with ease. Exercise strategies which carry over (transfer) to day-to-day activities****.***

***Golgi Tendon Organs:***

*A sensory organ within a tendon which, when stimulated, causes an inhibition of the entire muscle group.*

***Health-Related Fitness:***

*Comprises those components of fitness that exhibit a relationship with health status.*

***Heart Rate Maximum:***

*Maximum number of times the heart beats per minute estimated using 220 minus the participant’s age.*

***Holism (Holistic):***

*Holism is a concept that considers an individual’s body, mind and spirit.*

***Informed Consent:***

*Ensuring a client/participant is fully aware of all implications prior to undertaking the activity. This means they have read the consent form and have had all of their questions answered to their level of comfort.*

***Inverse Stretch Reflex:***

*Causes a muscle to contract when lengthened too quickly, and of the inverse stretch reflex,* ***which*** *causes a muscle to relax when its tendon is*

***Isokinetic:***

*Is a type of strength training in which specialized machines, or dynamometers, maintain a constant speed of movement. It typically blends the intense contractions of isometric exercises with the range of motion achieved in isotonic exercises and can provide a maximal strength workout. (ex: hydraulic or electrically assisted machines)*

***Isometric:***

*Of or involving muscular contraction against resistance in which the length of the muscle remains the same. Ex. Plank*

***Joint stability:***

*Refers to the resistance offered by various musculoskeletal tissues that surround a skeletal joint. Several subsystems ensure the stability of a joint. These are the passive, active and neural subsystems pulled with too.*

***Karvonen Heart Rate:***

*The calculation of training heart rate (THR) by adding a given percentage of maximum heart rate reserve to the resting heart rate:*

*1. Maximum Heart Rate (MHR) = 220-age;*

*2. Heart Rate Reserve (HRR) = MHR B Resting Heart Rate(RHR);*

*3. For training range, use 50% to 85% of HRR;*

*4. THR = RHR + % of HRR.*

***Kilojoule:***

*A measure of energy (4.2 kilojoules = 1 kilocalorie).*

***Learner/Participant-Centred:***

*Focused on the needs and concerns of the individual.*

***Liability:***

*Legal responsibility.*

***Linking/Add On:***

 *A choreography technique that requires a part-to-whole teaching technique. It involves teaching a simple movement of combination A, then you teach a simple movement of combination B, then add them together to create the whole. Additional combinations can be linked similarly to create a pattern.*

***Musical Phrase:***

*A group of notes forming a distinct unit within a larger piece.*

***Musical Tempo:***

*The rate of speed at which music is played. Fitness Leaders often determine the tempo of music by counting the beats per minute.*

***Neuromuscular Recruitment:***

***Non-Verbal Communication:***

*Physical communication through body language.*

***Open-ended Question:***

*A question that requires one or more sentences to answer it.*

***Osteoporosis:***

*Decreased bone mineral content that causes increased bone porosity.*

***PARQ+***

 *Leading best practice screening tool. A Research based Physical Activity Readiness Questionnaire. A self-administered pre-screening tool for beginning any exercise program*

***Passive Stretching:***

*The muscles surrounding a joint are stretched by an external force.*

***Physical Activity:***

*All leisure and non-leisure body movement produced by the skeletal muscles and resulting in a substantial increase in resting energy expenditure.*

***Range of Motion***

*How far the person's joints can be moved in different directions. The exercises help you move all the person's joints through their full range of motion.*

***Resistance Training***

 *A type of physical exercise specializing in the use of resistance to induce muscular contraction which builds the strength, anaerobic endurance, and size of skeletal muscles. When properly performed, strength training can provide significant functional benefits and improvement in overall health and well-being, including increased bone, muscle, tendon and ligament strength and toughness, improved joint function, reduced potential for injury*

***S.A.I.D.:***

*Specific Adaptation to Imposed Demands. Conditioning effects are specific to the type of training performed.*

***Static Stretching:***

*The muscles surrounding a joint are slowly and gently stretched and then held in this position for longer than 10 seconds.*

***Steady State:***

*Oxygen supply equals oxygen demand required for energy needs during sub-maximal work.*

***Stretching:***

*A technique used to move a joint and the surrounding muscles through and beyond their accustomed range of motion.*

***Stretch Reflex***

*The stretch reflex (myotatic reflex) is a muscle contraction in response to stretching within the muscle. It is a monosynaptic reflex which provides automatic regulation of skeletal muscle length. When a muscle lengthens, the muscle spindle is stretched, and its nerve activity increases.*

***Single joint:***

*Single joint exercises aka isolation exercise are those where one muscle group is engaged. For example biceps curl*

***Spotting Techniques:***

*Spotting in weight or resistance training, is the ways of supporting another person during a particular exercise, with an emphasis on allowing the participant to lift or push more than they could normally do safely.*

 ***Super sets*** *(The concept of a superset is to perform 2 exercises back to back, followed by a short rest (but not always). This effectively doubles the amount of work you are doing, whilst keeping the recovery periods the same as they are when you complete individual exercises.)*

***Multi-joint or compound***

*Exercises can be classified either as compound, which are exercises that involve more than one muscle group, or isolation exercises, which are exercises that isolate a muscle group by concentrating on that one group of muscles.*

***Repetitions***

 *“Reps” are the terms used to describe the number of times you perform an exercise. A rep is the number of times you perform a specific exercise.*

***Sets:***

*A set is the number of cycles of reps that you complete.*

***Weightroom:***

*A space that is set up with a variety of equipment usually with a mix of free weights and weight machines.*

***Periodization****:*

*Organized approach to training that involves progressive cycling of various aspects of a training program during a specific period of time (Kravitz, L. & Frankel, C. (n.d.).*

***DOMS:***

***Delayed onset muscle soreness that develops 12-72 hours after exercise (ACSM, 2011, De***

***Resources***

***Exercise Physiology (Energy, Nutrition, and Human Performance). Frank Katch, Victor Katch, William McArdle, Williams and Wilkins, Maryland, USA, current edition.***

***The Canadian Physical Activity, Fitness and Lifestyle Appraisal (CPAFLA). Canadian Society for Exercise Physiology (CSEP), Ottawa, Ontario, current edition.***

***Canadas Physical Activity Guide to Healthy Active Living, Canada=s Physical Activity Guide to Healthy Active Living for Older Adults, Canada=s Food Guide to Healthy Eating. Health Canada, Fitness and Active Living Unit, Ottawa, Ontario, current editions.***

***PAR-Q & You, PARmed-X for Pregnancy, PARmed-X. Canadian Society for Exercise Physiology (CSEP), Ottawa, Ontario, current editions.***