

GRADE SEVEN

Students in grade seven continue to develop competence in modified versions of various games/sports, rhythmic, and recreational activities. They vary movement during dynamic and unpredictable game situations. Recreational pursuits become an additional curriculum option, broadening lifelong physical activity options. The ability to analyze skill performance through observing and understanding critical elements (small, isolated parts of the whole skill or movement) is increasingly apparent, as is the application of basic scientific principles of anatomical structures, movement principles, energy balance, and personal fitness. Students relate the importance of physical activity to health, focusing particularly on weight and stress management. Students understand strategies to achieve and maintain personal fitness standards and create plans by setting reasonable and appropriate goals for improvement or maintenance of health-related fitness. Students continue to develop social skills and cooperative behaviors by demonstrating problem solving, conflict resolution, communication skills, appropriate etiquette, integrity, and respect for others.

Motor Skill Development

- 7.1 The student will demonstrate competence and apply movement concepts in modified versions of various game/sport, rhythmic, dance, lifetime, and recreational activities.
 - a) Demonstrate and apply developmentally appropriate movement forms and skill combinations competently in a variety of cooperative and tactical activities that include dynamic and unpredictable situations.
 - b) Demonstrate offensive and defensive strategies and tactics, including creating open space, skilled movement, speed, accuracy, and selection of appropriate skills/tactics to gain an offensive or defensive advantage through modified games/sports.
 - c) Demonstrate basic abilities and safety precautions in recreational pursuits (e.g., inline skating, orienteering, hiking, cycling, ropes courses, backpacking, canoeing, rock climbing).
 - d) Identify and demonstrate dance steps selected by the teacher or student in folk, social, multicultural, contemporary, and line dances.
 - e) Describe and demonstrate how movement is stabilized, including balance (center of gravity and center of support) and planes of motion.
 - f) Demonstrate the progression of learning (practice, self or peer assess, correct, practice at a higher level, and reassess) for a specific skill or movement.

Essential Understandings	Essential Knowledge and Skills
<p>Motor skill development includes combining and applying movement and manipulative skills to changing physical activity/game situations. (7.1.a)</p> <p>Movement forms and skill combinations include developmentally appropriate performance of all critical elements. (7.1.a)</p> <p>Cooperative activities put an emphasis on team building, communication, and trust. (7.1.a)</p> <p>Tactical activities may include small-sided, modified games and sports that may include offense and defense that include dynamic and unpredictable situations. (7.1.a)</p> <p>Offensive strategies may include creating open space, skilled movement, speed, accuracy, communication, and creativity. (7.1.b)</p> <ul style="list-style-type: none"> • Creating open space: knowing where the body is in space in relation to objects and other people and moving at an angle or cutting back to provide an opportunity for a pass. • Skilled movement: the ability to move efficiently. • Direction: the path along which something moves. • Speed: the rate of motion; the ability to move swiftly. • Accuracy: the quality of being precise; the ability to get an object where it is intended to go. • Communication: the ability to deliver and receive valuable information. • Creativity: the ability to produce novel solutions in game situations. <p>Offensive tactics include the selection of appropriate skills and strategies to</p>	<p>In order to meet these standards, it is expected that students will</p> <ul style="list-style-type: none"> • demonstrate and apply developmentally appropriate movement forms and skill combinations competently in a variety of cooperative and tactical activities that include dynamic and unpredictable situations (7.1.a); • demonstrate offensive and defensive strategies and tactics, including creating open space, skilled movement, speed, accuracy, and selection of appropriate skills/tactics to gain an offensive or defensive advantage through modified games/sports (7.1.b); • demonstrate basic abilities and safety precautions in one or more recreational activities (7.1.c); • identify and demonstrate a variety of rhythmic patterns/movements (7.1.d); • describe and demonstrate how movement is stabilized in each plane of motion (7.1.e); • demonstrate the learning progression for a specific skill or movement (7.1.f).

Essential Understandings	Essential Knowledge and Skills
<p>gain an offensive advantage. (7.1.b)</p> <p>Modified games/sports break games into their simplest format and then build on the basics, increasing in complexity as students’ skill levels advance. (7.1.b)</p> <p>Recreational activities provide individual, dual, and group opportunities for competitive and non-competitive physical activities (e.g., in-line skating, orienteering, hiking, cycling, ropes courses, backpacking, rowing, canoeing, and rock climbing.) (7.1.c)</p> <p>Safety precautions, such as a proper warm-up and cool-down procedures, affect performance and prevent injury in recreational pursuits. (7.1.c)</p> <p>Correct techniques in outdoor activities help ensure the safety of self and others. (7.1.c)</p> <p>Dance and/or rhythms can provide opportunities for personal enjoyment, self-expression, challenge, and social interaction. (7.1.d)</p> <p>Movement competency involves patterns. (7.1.d)</p> <ul style="list-style-type: none"> • Rhythm activities may include folk, social, world, country, square, contemporary, and line dances. <p>Stability increases in a movement with lower center of the body, the larger the base of support, and the closer the center of the body is to the base of support. (7.1.e)</p> <p>Balance is a static and dynamic process that makes it possible for the body to maintain its center of gravity over its base of support. (7.1.e)</p>	<p>Additional resources:</p> <p>SHAPE America National Standards and Grade-Level Outcomes</p> <p>OPEN Online Physical Education Network</p> <p>Health Smart Virginia</p> <p>PE Central</p> <p>Dynamic PE ASAP</p>

Essential Understandings	Essential Knowledge and Skills
<ul style="list-style-type: none"> • Center of gravity: a balance point or that point about which a body would balance without a tendency to rotate • Center of support: the area beneath a person that includes every point of contact that the person makes with the supporting surface. These points of contact may be body parts (e.g., feet or hands), or they may include objects like crutches or a chair when a person is sitting in it. <p>Movement is stabilized in three planes of motion: (7.1.e)</p> <ul style="list-style-type: none"> • Frontal plane: the front and back halves of the body; side-to-side movements. • Sagittal plane: the right and left halves of the body; forward and backward movements. • Transverse plane: the top and bottom halves of the body; twisting movements. <p>Incorporating all planes of movement into your activity time will increase your range of motion, prevent injuries, and provide greater stability for your body. (7.1.e)</p> <p>Movement learning progression includes practice, self-assessment or peer assessment, correct movement/skill components, practice at a higher level, and reassess. (7.1.f)</p> <p>Self-assessments/peer assessments allow students to detect, analyze and correct errors in personal movement patterns. (7.1.f)</p>	

Anatomical Basis of Movement

- 7.2 The student will understand and apply movement principles and concepts and knowledge of major body structures.
- a) Identify the “core muscles,” including pelvic, lower back, hips, gluteal muscles, and abdomen, and explain their role in stabilizing movement.
 - b) Apply biomechanical principles (e.g., center of gravity, base of support) to understand and perform skillful movements.
 - c) Describe the anatomical planes of motion in which movement occurs, including sagittal plane, frontal plane, and transverse plane.
 - d) Analyze skill patterns and movement performance of self and others, detecting and correcting mechanical errors for selected movements.
 - e) Apply knowledge of anatomy and joint types to accurately describe skill- and fitness-based movements, such as throwing/catching, striking, lunges and push-ups.

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<p>Core muscles act to stabilize the spine, providing firm support for all movement. (7.2.a)</p> <ul style="list-style-type: none"> • Core muscles include the pelvis, lower back, hips, gluteal muscles, and abdomen. • Core muscles are important muscles for support and holding the body upright. Strong core muscles support proper posture and alignment. <p>The structure and function of the muscular system assists in physical performance and stabilization of movement. (7.2.a)</p> <ul style="list-style-type: none"> • Muscles pull on bones to cause movement. • Muscles work in pairs. • Muscles work by contracting and relaxing. <p>Balance works with all movements. (7.2.b)</p> <ul style="list-style-type: none"> • Center of gravity: a balance point or that point about which a body 	<p>In order to meet these standards, it is expected that students will</p> <ul style="list-style-type: none"> • identify core muscles and explain their role in stabilizing movement (7.2.a); • apply biomechanical principles to understand and perform skillful movements (7.2.b); • describe the three planes of motion in which movement occurs (7.2.c); • analyze skill patterns and the movement performance of self and others, detecting and correcting mechanical errors (7.2.d); • describe the anatomy and joint types required to accurately perform a skill or fitness-based movement (7.2.e).

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<p>would balance without a tendency to rotate.</p> <ul style="list-style-type: none"> Center of support: the area beneath a person that includes every point of contact that the person makes with the supporting surface; these points of contact may be body parts (e.g., feet or hands) or they may include things like crutches or a chair when a person is sitting in it. <p>Skillful movements use balance, stability, force, and proper form, including athletic position, reaction, and body position while in motion. (7.2.b)</p> <ul style="list-style-type: none"> Balance: even distribution of weight, allowing one to stay upright and steady. Stability: the ability to be stable or firmly fixed. Force: strength or energy caused by movement. Proper form: moving the body through slow controlled movements to prevent injury. Athletic position: upright position usually involving a slight hip hinge and bent knees that allows an individual to move in any direction as quickly as possible. Reaction: the ability to quickly respond to external stimuli. Body position: alignment of body in relation to movements and external stimuli. <p>Planes of motion include the frontal, sagittal, and transverse planes. (7.2.c)</p> <ul style="list-style-type: none"> Frontal plane: the front and back halves of the body; side-to-side movements. Sagittal plane: the right and left halves of the body; forward and backward movements. Transverse plane: the top and bottom halves of the body; twisting 	<p>Additional resources:</p> <p>SHAPE America National Standards and Grade-Level Outcomes</p> <p>OPEN Online Physical Education Network</p> <p>Health Smart Virginia</p> <p>PE Central</p> <p>Dynamic PE ASAP</p> <p>KidsHealth.org</p>

Essential Understandings	Essential Knowledge and Skills
<p>movements.</p> <p>Incorporating all three planes of movement into mobility time increases range of motion, prevent injuries, and provide greater stability for the body. (7.2.c)</p> <p>Critical elements and biomechanical principles (balance, planes of movement) can be used to analyze skill patterns and movement performance. (7.2.d)</p> <p>Different anatomy and joint types are required to perform various skill and fitness-based movements (e.g., throwing/catching, striking, lunges, and pushups). (7.2.e)</p>	

Fitness Planning

- 7.3 The student will apply concepts and principles of training and fitness-planning skills to improve physical fitness.
- a) Identify safe practices for improving physical fitness.
 - b) Complete a self-assessment of health-related fitness and develop a comprehensive personal fitness plan, including SMART (specific, measurable, attainable, realistic, timely) goals, an action plan that incorporates the FITT (frequency, intensity, time, and type of exercise) principle and to meet the Centers for Disease Control and Prevention’s Physical Activity Guidelines for Americans, timeline, documentation of activities inside and outside school, roadblocks/barriers and solutions, midyear and end-of-year assessments, and reflection on progress for improving at least two self-selected components of health-related fitness.
 - c) Identify and apply concepts of fitness improvement using various resources, including available technology, to evaluate, monitor, and record activities for a fitness plan.
 - d) Calculate resting, activity, and recovery heart rate and describe its relationship to aerobic fitness.
 - e) Describe the differences between aerobic and anaerobic activities and provide three examples of each.
 - f) Explain the role of perseverance in achieving fitness goals.

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<p>The risk of injury can be reduced by performing appropriate amounts of activity and setting appropriate personal goals. (7.3.a)</p> <p>Safe practices for improving physical fitness may include (7.3.a)</p> <ul style="list-style-type: none"> • Warm up and cool down properly • Use/wear appropriate equipment for activity and for safety • Vary activities to reduce the risk of overuse injuries • Stay hydrated (water is best unless the activity is strenuous or long) • Be aware of weather • Use appropriate pacing (not too hard or too fast) • Balance types of activities • Rest 	<p>In order to meet these standards, it is expected that students will</p> <ul style="list-style-type: none"> • identify safe practices for improving physical fitness (7.3.a); • complete a self-assessment of health-related fitness and develop a comprehensive personal fitness plan (7.3.b); • identify and apply concepts of fitness improvement using various resources, including available technology, to evaluate, monitor, and record activities for a fitness

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<ul style="list-style-type: none"> • Consult with a coach/teacher or exercise specialist. <p>Fitness planning includes self-assessment of the health-related components of fitness and development and implementation of a personal fitness plan. (7.3.b)</p> <ul style="list-style-type: none"> • Health-related components of fitness: <ul style="list-style-type: none"> ○ Muscular strength: the ability to exert a maximal amount of force for a short period of time, such as lifting weights. ○ Muscular endurance: the ability of a muscle to repeatedly exert force against resistance. ○ Flexibility: the ability of a joint to move through a full range of motion. ○ Cardiovascular endurance: the ability of the heart, lungs, and blood vessels to deliver oxygen to working muscles. ○ Body composition: the components that make up a person’s body weight (percentages of fat, bone, water, and muscle in the human body). <p>SMART goal setting provides focused, realistic, and measurable goals and objectives for improving and/or maintaining at least two self-selected components of health-related fitness. (7.3.b)</p> <ul style="list-style-type: none"> • Specific: Goals are straightforward and detail what is to be accomplished. • Measurable: Goals must be able to be measured for improvement (how much, how many, how will you know the goal is accomplished?). • Attainable: Goals require effort beyond what already has been achieved. • Realistic: Goals need to be achievable and reachable. 	<p>plan (7.3.c);</p> <ul style="list-style-type: none"> • calculate resting, active, and recovery heart rate and describe its relationship to aerobic fitness (7.3.d); • describe the difference between aerobic and anaerobic capacity and provide examples of each (7.3.e); • explain the role of perseverance in achieving fitness goals (7.3.f). <p>Additional resources: SHAPE America National Standards and Grade-Level Outcomes KidsHealth.gov Health Smart Virginia MyPlate.gov OpenPhySED Physical Activity Guidelines for Americans, 2nd ed. Healthy Children.org</p>

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<ul style="list-style-type: none"> • Timely: Goals should have a time element attached to keep you on track to accomplish in a given time period. <p>Creating an action plan that incorporates the FITT (frequency, intensity, time, and type of exercise) principle sets guidelines to apply when developing fitness plan action steps to become or remain physically fit. (7.3.b)</p> <ul style="list-style-type: none"> • Frequency: how often you exercise. • Intensity: how hard you exercise. • Time: how long you exercise. • Type: what kind of exercise you do. <p>A timeline for goal achievement and for activities helps hold one accountable. (7.3.b)</p> <p>Recording/documenting, monitoring, and evaluating activities are important to meeting personal goals. (7.3.b)</p> <p>Documentation of activities inside and outside school, including plans for roadblocks/barriers and solutions, helps when reassessing progress mid-year and at the end of the year. (7.3.b)</p> <p>Reflection on progress at reassessment milestones allows changes to be made to the fitness plan as needed. (7.3.b)</p> <p>Fitness improvement can be evaluated through a variety of resources, including available technology to evaluate, monitor, and record activities for fitness. (7.3.c)</p> <ul style="list-style-type: none"> • Technology available to monitor and record – pedometers, heart rate 	

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<p>monitors, apps;</p> <ul style="list-style-type: none"> • Exercise journal – how you feel before, during, and after activity, energy level, successes and challenges, rate of perceived exertion. <p>Heart rate can be used to help determine personal fitness levels. (7.3.d)</p> <p>Individuals within the healthy range in aerobic capacity will recover quicker after aerobic activity. (7.3.d)</p> <ul style="list-style-type: none"> • Resting heart rate (RHR) is best taken after 10 minutes of rest. • Active heart rate can be taken at multiple points during activity and include being taken immediately after stopping activity. • Recovery heart rate is the decrease in heart rate that occurs one minute after maximal exercise. A faster decrease in heart rate is associated with individuals with higher levels of fitness. <p>The body responds differently based on the demands placed on it by physical activity. (7.3.e)</p> <ul style="list-style-type: none"> • Anaerobic capacity (without oxygen) is activity in which the body incurs an oxygen debt during short-duration maximal exercise such as lifting a weight; lactic acid is the byproduct. • Aerobic capacity (with oxygen) is the body’s ability to consume oxygen during exercise such as running and biking; it provides energy at a slower rate for long-term exercise. <p>Perseverance contributes to the accomplishment of fitness goals. (7.3.f)</p> <ul style="list-style-type: none"> • Perseverance is the continued effort to do or achieve something despite difficulties, failure, or opposition; the quality that allows someone to continue trying to do something even though it is difficult. 	

Social and Emotional Development

- 7.4 The student will demonstrate and apply skills to work independently and with others in physical activity settings.
- a) Apply safety procedures, rules, and appropriate etiquette in physical activity settings by self-officiating modified physical activities/games.
 - b) Create guidelines and demonstrate how to solve problems and resolve conflicts in activity settings.
 - c) Explain the importance of cooperating with classmates, and demonstrate supportive behaviors that promote feelings of inclusion and safety of others.
 - d) Describe and demonstrate strategies for dealing with stress, such as deep breathing, guided visualization, and aerobic exercise.
 - e) Demonstrate effective communication skills by providing feedback to a peer, using appropriate tone, and other communication skills.
 - f) Identify positive mental and emotional aspects of participating in a variety of physical activities.
 - g) Describe how participation in physical activities creates enjoyment, reduces stress, and improves mental and emotional wellness.
 - h) Identify specific safety concerns associated with at least one activity that includes rules, equipment, and etiquette.
 - i) Identify and describe instances that do not support feelings of inclusion (e.g., marginalization).

Essential Understandings	Essential Knowledge and Skills
<p>Participation in physical activities can provide an opportunity for developing an understanding and respect for differences among people. (7.4.a)</p> <p>Self-officiating may include following safety procedures, calling own violations and implementing consequences, helping teammates follow safety procedures, rules and etiquette, settling questions/conflicts/problem solving with other players, and consulting with the teacher as needed for clarification/additional guidance. (7.4.a)</p> <ul style="list-style-type: none"> • Self-officiate: a physical activity officiated by the players, on the honor system, rather than by an outside observer such as a referee. 	<p>In order to meet these standards, it is expected that students will</p> <ul style="list-style-type: none"> • apply safety procedures, rules, and appropriate etiquette in physical activity settings by self-officiating modified physical activities/games (7.4.a); • create guidelines and demonstrate how to solve problems and resolve conflicts (7.4.b); • explain the importance of cooperating with

<ul style="list-style-type: none"> • Etiquette: promotes acceptable actions, behavior, or conduct within an activity. Elements: <ul style="list-style-type: none"> ○ Be kind ○ Be courteous ○ Be respectful <p>To maintain a positive learning environment, students must use communication skills to solve problems and resolve conflicts that arise. (7.4.b)</p> <ul style="list-style-type: none"> • Problem-solving <ul style="list-style-type: none"> ○ Identify/define the problem. ○ Generate several solutions. ○ Evaluate the pros and cons of each solution. ○ Choose a solution. ○ Implement, document, and reflect on the solution. • Conflict resolution skills <ul style="list-style-type: none"> ○ Able to reduce own stress quickly (calming oneself before addressing the conflict) ○ Be emotionally aware of yourself and the other person (How are you feeling? How is the other person feeling?) ○ State the conflict ○ Propose solutions or compromises ○ Agree on a solution or compromise to try • Communication skills <ul style="list-style-type: none"> ○ Listening carefully to others ○ Speaking directly to each other ○ Speaking honestly, and with kindness <p>A responsible participant views behaving well and including others as important as playing safely. (7.4.c)</p>	<p>classmates and demonstrate supportive behaviors that promote inclusion and safety of others (7.4.c);</p> <ul style="list-style-type: none"> • describe and demonstrate strategies for managing stress (7.4.d); • demonstrate effective communication skills (7.4.e); • identify positive mental, social, and emotional aspects of participating in physical activities (7.4.f); • describe how participation in physical activities creates enjoyment, reduces stress, and improves mental/emotional wellness (7.4.g); • identify safety concerns (rules, equipment, etiquette) associated with at least one activity (7.4.h); • identify and describe instances that do not support feelings of inclusion (e.g., marginalization) (7.4.i). <p>Additional resources: OPEN Online Physical Education Network Health Smart Virginia PE Central EverFi KidsHealth.org</p>
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All classmates should have a safe learning environment and the opportunity for safe participation. (7.4.c)

- Supportive behaviors may include listening, helping, encouraging, ensuring everyone is included, taking turns, following rules, and modifying rules as needed for inclusion.

Stress is necessary for creativity, learning, and survival. It's only harmful when it becomes overwhelming and interrupts the healthy state of equilibrium that the nervous system needs to maintain. (7.4.d)

- Stress: the body's reaction to a change that requires a physical, mental, or emotional adjustment or response.

Effectively dealing with stress means to activate the body's natural relaxation response by practicing relaxation techniques. (7.4.d)

- Relaxation techniques:
 - Breathing meditation: deep breathing
 - Progressive muscle relaxation: systematically tense and relax different muscle groups in the body
 - Body scan meditation: focus on the sensations in each part of your body
 - Mindfulness: staying calm and focused in the present moment
 - Visualization: imagining a scene in which you feel at peace
 - Yoga: moving and stationary poses, combined with deep breathing
 - Tai chi: a self-paced, non-competitive series of slow, flowing body movements
 - Rhythmic/aerobic exercise (such as running, walking, rowing, or cycling): engaging in the present moment, focusing your mind on

<p>how your body feels right now</p> <p>Physical activity can help with managing stress. (7.4.d)</p> <p>When done in the right way and with the right intentions, feedback communication is the avenue to performance greatness. (7.4.e)</p> <ul style="list-style-type: none">• Feedback: supports the development of self-regulated learning, critical thinking, and reciprocal learning<ul style="list-style-type: none">○ Two corrections at the most should be identified for feedback○ Should be specific and meaningful○ Given with the goal of improvement○ Timely○ Honest○ Respectful○ Clear○ Issue-specific○ Objective○ Supportive○ Motivating○ Action-oriented○ Solution-oriented <p>Effective communication gives you the best chance of successfully delivering your message. (7.4.e)</p> <ul style="list-style-type: none">• Positive and respectful ways to communicate include talking at an appropriate tone, waiting for a turn to speak, allowing others to provide feedback, and using appropriate body language (eye contact, gestures).• Verbal communication: the use of words to send an oral or written	
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message. Verbal communication skills may include being friendly, thinking before speaking, being clear, focusing on body language, and being an active listener.

- Nonverbal communication includes facial expressions, body language, gestures, and tone and voice volume. Nonverbal communication skills may include making eye contact, facial expressions, gestures (nodding), posture, tone of voice, and volume of voice.

Exercise/physical activity improves mental health by reducing anxiety, depression, and negative mood and by improving self-esteem and cognitive function. (7.4.f)

Exercise has been found to alleviate symptoms such as low self-esteem and social withdrawal. (7.4.f)

Exercise enhances mood and overall well-being, provides opportunities to connect with family and friends, enjoy the outdoors, unwind, meet new people with similar interests, exercising with others can be motivating, sense of belonging, and opportunities to develop social skills. (7.4.f)

Participation in physical activities creates enjoyment when engaging in activities that a person likes to do and participate with people they enjoy. (7.4.g)

Physical activity causes the release of endorphins in the brain, a chemical that triggers a positive feeling in the body, the body's natural "feel good" chemicals also help to reduce/relieve pain and stress. (7.4.g)

Safety concerns should include activity-specific rules, equipment, and etiquette. (7.4.h)

<ul style="list-style-type: none">• Etiquette is a diplomatic code of conduct that promotes a decorum of socially responsible and polite behaviors (e.g., shaking hands/giving high fives/congratulating other teams at the end of a game). <p>Creating opportunities that allow everyone to participate and succeed contributes to an inclusive environment. (7.4.i)</p> <ul style="list-style-type: none">• Inclusion: feeling a sense of belonging, acceptance, and value<ul style="list-style-type: none">○ Belonging: feeling needed, important, and respected within the group○ Accepted: being welcomed into the class’s community○ Valued: knowing you are worthy and desirable• Marginalization: treatment of a person or group as insignificant or peripheral	
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Energy Balance

- 7.5 The student will describe rate of perceived exertion and nutrients (energy) needed for a variety of activities and explain the importance of sleep for energy balance.
- a) Explain the connection between an RPE scale and heart rate, and the body’s response to physical activity.
 - b) Define and describe the anaerobic and aerobic energy systems.
 - c) Identify the nutrients needed for optimal aerobic and anaerobic capacity and for muscle strength and endurance.
 - d) Calculate resting heart rate (RHR) and describe its relationship to aerobic fitness and an RPE scale.
 - e) Explain the effects of sleep on energy balance.

Essential Understandings	Essential Knowledge and Skills
<p>Rate of perceived exertion (RPE) is a way of measuring physical activity intensity level. Scales may range from five to 20 levels. (7.5.a)</p> <p>Example (variation of Borg scale):</p> <ul style="list-style-type: none"> • Level 1 – Very light activity (watching TV) • Level 2 – Light activity (can maintain for hours, easy to breathe) • Level 3 – Moderate activity (breathing heavily, somewhat comfortable) • Level 4 – Vigorous activity (borderline uncomfortable, short of breath) • Level 5 – Very hard activity (difficult to maintain exercise intensity, barely breathe) • Level 6 – Max effort activity (almost impossible to keep going, out of breath) <p>The RPE scale relies on bodily sensations during exercise, such as muscular fatigue, increased sweating, and increased breathing rate and heart rate. (7.5.a, 7.5.d)</p> <p>Using the RPE scale helps you recognize your body’s signs of exertion and modify your normal workout intensity. (7.5.a)</p>	<p>In order to meet these standards, it is expected that students will</p> <ul style="list-style-type: none"> • explain the connection between an RPE scale and heart rate, and the body’s response to physical activity (7.5.a); • define and describe the anaerobic and aerobic energy systems (7.5.b); • identify the nutrients needed for optimal aerobic and anaerobic capacity and muscle strength and endurance (7.5.c); • calculate resting heart rate (RHR) and describe its relationship to aerobic fitness and an RPE scale (7.5.d); • explain the effects of sleep on energy balance (7.5.e). <p>Additional resources: SHAPE America National Standards and Grade-</p>

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<p>Anaerobic and aerobic respiration are ways your body converts food into energy so that your brain, muscles, and other organs can function normally. (7.5.b)</p> <p>In aerobic exercise, oxygen is used to create a metabolic reaction in cells. This reaction produces the cellular energy required for the body to move. (7.5.b)</p> <p>During anaerobic exercise, the body requires immediate energy. The body relies on stored energy sources, rather than oxygen, to fuel itself. (7.5.b)</p> <ul style="list-style-type: none"> • Anaerobic exercise includes breaking down glucose stored in the body, which provides energy from 6 up to 90 seconds. <p>The body uses different pathways to create energy from macronutrients (carbohydrates, proteins, and fats.) (7.5.c)</p> <ul style="list-style-type: none"> • Most energy is derived from the breakdown of carbohydrates and fats, the two main energy nutrients used during exercise. <p>For optimal aerobic and anaerobic capacity, the body needs to break down carbohydrates and convert it to glycogen, so it can be used as energy or fuel. (7.5.c)</p> <p>Aerobic processes in cellular respiration can only occur if oxygen is present. (7.5.c)</p> <ul style="list-style-type: none"> • When a cell needs to release energy, it initiates a chemical exchange that launches the breakdown of glucose. This sugar is carried through the blood and stored in the body as a fast source of energy. The breakdown of glucose releases carbon dioxide, a byproduct that needs 	<p>Level Outcomes</p> <p>KidsHealth.gov</p> <p>Health Smart Virginia</p> <p>MyPlate.gov</p> <p>OpenPhyzed</p> <p>Physical Activity Guidelines for Americans, 2nd ed.</p>

Essential Understandings	Essential Knowledge and Skills
<p>to be removed from the body.</p> <ul style="list-style-type: none"> ○ Aerobic exercise conditions enable you to exercise for long periods of time, potentially benefiting from the sustained energy expenditure (i.e., calories burned). ○ With aerobic training, you become much more efficient at using fat as an energy source for exercise. This allows muscle and liver glycogen to be used at a slower rate. <p>Anaerobic energy processes do not use oxygen. (7.5.c)</p> <ul style="list-style-type: none"> • In anaerobic exercise, glycogen, from carbohydrates, is used as fuel. However, there is not enough oxygen in the system to fully break it down. <ul style="list-style-type: none"> ○ Lactic acid is a byproduct of an anaerobic process. Lactic acid which builds up in muscle cells as aerobic processes fail to keep up with energy demands. ○ Lactic acid leads to fatigue and muscle soreness that can be recovered from by breathing in more oxygen and through the circulation of blood. These processes help carry the lactic acid away. <p>Resting heart rate (RHR) can be used to help determine personal fitness levels including cardiovascular health. (7.5.d)</p> <p>In general, a lower heart rate at rest indicates more efficient heart function and better aerobic/cardiorespiratory fitness. (7.5.d)</p> <ul style="list-style-type: none"> • Resting heart rate (RHR) is best taken after 10 minutes of rest. <p>Monitoring your heart rate, and comparing to an RPE scale, will allow you to</p>	

Essential Understandings	Essential Knowledge and Skills
<p>track the changes taking place in your cardiovascular system as you move toward aerobic fitness. (7.5.d)</p> <p>Energy balance is the balance between calories consumed (energy in) and calories expended (energy out), which helps maintain a healthy body weight. (7.5.e)</p> <p>Short sleep (less than recommended/sleep deficit) is associated with weight gain due to increased food intake, decreased energy expenditure, and changes in levels of appetite-regulating hormones. (7.5.e)</p> <p>Transitioning from an insufficient to adequate/recovery sleep schedule can lead to decreased energy intake, especially of fats and carbohydrates, and lead to weight loss. (7.5.e)</p>	