Southbury, CT Schools

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The Region 15 Physical Education program strives to educate students to be healthy and active throughout their lives. We recognize that regular physical activity is imperative to the well being of all people. We know that good health habits begin in childhood. Our focus is to motivate children toward a physically active lifestyle by helping them to value wellness, understand the physiological benefits of exercise, perform a variety of movements and appreciate the joy of activity.

BENEFITS OF EXERCISE TO HEALTH & LIFE

Elementary School

Enduring Understandings:

Good personal health and fitness may help to prevent certain diseases.
Following the training principles is essential to attain a positive outcome from regular exercise.
People who are healthy and fit have a lower mortality rate.

Students are expected to know and be able to do the following:

Topic: Regular Exercise

1. List as many different sports, activities and means of exercise as possible.
2. Survey two adults who exercise regularly and describe the types of exercise the adults do and when they are able to fit exercise into their daily routine.
3. Examine how they are physically active for 60 minutes each day.

Focus Questions:

What is exercise?
What is regular exercise?
What is the minimum amount of time you need to exercise continuously?
How many 15 minute sessions will equal 60 minutes?
Why do people who are healthy and fit have a lower mortality rate?

Activities:

1. List as many different sports, activities and means of exercise as possible (classroom/homework).
2. Survey two adults who exercise regularly and describe the types of exercise the adults do and when they are able to fit exercise into their daily routine.
3. Students will be given activities that allow them to be active continuously a minimum of fifteen minutes.

Topic: Disease

1. Articulate that regular exercise helps to keep you healthy.
2. Give examples of certain diseases that regular exercise may help you prevent.

Focus Questions:

1. What is disease and what can it do to your body?
2. What does healthy mean?
3. Describe what healthy means to you.
4. How can regular exercise help prevent disease?

Activities:

1. Give examples of certain diseases that regular exercise may help you prevent.

Topic: Training Principles

1. Define “regular exercise as being active each day (frequency).
2. Practices a lifestyle of getting an hour of physical activity each day (time).
3. Understand that people can exercise hard or easy (intensity).

Focus Questions:

1. How often, how long, and how hard should you exercise?
2. Why is following the training principles essential to attain a positive outcome from regular exercise?

Activities:

1. Fill out weekly exercise goals worksheets

Topic: Personal Health and Fitness

1. Justifies how each person is responsible for their own fitness.

Focus Questions:

1. Whose job is it to keep you fit?
2. How can you become more responsible for your fitness level?

Activities:

BENEFITS OF EXERCISE TO HEALTH & LIFE

Middle School

Enduring Understandings:

Good personal health and fitness may help to prevent certain diseases.

Following the training principles is essential to attain a positive outcome from regular exercise.

People who are healthy and fit have a lower mortality rate.

Students are expected to know and be able to do the following:

Topic: Regular Exercise

1. Understand that regular activities will improve fitness

Focus Questions:

1. What is: obesity, heart disease, joint pain, stress, cancer, regular exercise?
2. How do these conditions affect the human body?
3. Who is at risk for these diseases?
4. What are examples of regular physical activity?
5. Why is regular physical activity beneficial to our personal health and fitness?

Activities:

1. Participate in physical activity of one hour duration, outside of school (written activity log/journal).
2. Participate in jogging or vigorous walking during physical education class.

Topic: Disease

1. Articulate that people are of greater risk of obesity, heart disease, joint pain, stress and cancer if they do not exercise regularly.

Topic: Training Principles

1. Understand that people must follow the training principles (frequency, intensity, time and type) in order to gain a benefit.

Focus Questions:

1. What is frequency, intensity, time and type?
2. How do these principles enhance a regular workout?
3. What are some activities that you could use to illustrate these training principles?

Activity

1. Regularly participate in a physical activity of one-hour duration outside of school for at least a period of one month (20 - 30 days). They will participate in at least two different activities during that period. They will report on the activities and when they were able to fit them into their daily routine.
2. Keeps a fitness log of both inside and outside school physical activities, noting the training principles of F.I.T.T.

BENEFITS OF EXERCISE TO HEALTH & LIFE

High School

Enduring Understandings:

1. **Good personal health and fitness may help to prevent certain diseases.**
2. **Following the training principles is essential to attain a positive outcome from regular exercise.**
3. **People who are healthy and fit have a lower mortality rate.**

Students are expected to know and be able to do the following:

Topic: Regular Exercise

1. Define lifetime activity as an activity one can engage in to improve or maintain physical fitness throughout their life.
2. Categorize which activities are lifetime activities.
3. Examine which activities you currently engage in are lifetime activities.

Focus Questions:

1. What is it that makes an activity something that you can do for your life?
2. What activities do kids your age do that would be difficult for an older person?
3. What would make those activities difficult for them?
4. What is a lifetime activity?
5. Can older people remain physically active?
6. Can older people improve their fitness?
7. Which physical activities do you do now can be done throughout your lives?
8. How can regular exercise affect your physical fitness throughout your life?
9. Predict how your choices for physical activity will change in the future (5-15 years)?
10. What role will good personal health play in disease prevention and maintaining a high quality life?

Activities:

Philosophy Question:

Prioritize your life (ie. Family, friends, career, exercise, sports, money, religion, etc.) Where does daily exercise rank on your list and why?

Topic: Disease

1. Explain the effect of exercise, in terms of mortality rate and the onset of disease, on people who meet the minimum standard of physical activity versus those who get no exercise at all.

Focus Questions:

1. What is the minimum amount of exercise a person should get to get some health benefit?
2. Why are there so many people who get no exercise at all?
3. What is the increase in the chance of dying for those people who get no exercise at all compared to those who get the minimum amount of exercise?
4. How does regular exercise effect your chances of dying?
5. List 10 diseases that you are more likely to get from not exercising?
6. What is the effect of exercise in terms of the benefit you get from mortality and preventing disease?
7. How does good personal health relate to disease prevention and maintaining a high quality of life?
8. Why is it beneficial for a person to meet the minimum standard of physical activity?

Topic: Personal Health and Fitness

1. Differentiate between health related fitness (components of fitness that directly relate to one's health; muscle strength, muscle endurance, body composition, flexibility, cardiovascular endurance) and skill related fitness (components of fitness that relate to one's athletic ability; speed, agility, power).
2. Construct a personal fitness plan engaging in lifetime activities designed to improve or maintain your health.

Focus questions:

1. List 10 skill related physical activities.
2. List 10 health related physical activities.
3. What does skill related mean?
4. What does health related mean?
5. Describe speed, agility, power, coordination and balance.
6. Describe body composition, strength, endurance, flexibility, and cardio vascular.
7. What is the difference between health related and skill related activities?
8. How are health related and skill related activities connected?
9. Construct a personal fitness plan in which you will engage in lifetime activities designed to improve your health.
10. How will engaging in a lifetime personal fitness plan improve or maintain your health?

Topic: Training Principles

1. Illustrate the use of the principles of progression, overload, and specificity to demonstrate how each applies to improving or maintaining fitness level.

Focus Questions:

1. How would your make progress over time to improve your strength, flexibility, cardiorespiratory and skeletal fitness?
2. Why does your level of fitness improve when you overload?
3. Why does only the area of your body that you exercise improve?

MUSCULAR DEVELOPMENT

Elementary School

Enduring Understandings:

1. **Muscle fibers adapt to specific training.**
2. **Overloading a muscle group increases strength.**
3. **Non-use of a muscle group causes atrophy.**
4. **Principles of training affect muscular capacity.**

Topic: Muscle Groups

1. Compare the sizes and functions of different muscle groups.
2. Explain the relationship between muscles and the skeletal system.
3. Show where there are large, small and mid-sized muscles on their bodies.
4. How can different types of training affect the ways muscles perform?

Focus Questions:

1. Identify large and small muscle groups. Give examples of each (Large = legs, back, chest. Small = fingers, toes, facial muscles).
2. What do muscles do?

Topic: Related Activities

1. State that physical activity helps muscles develop in size and strength.
2. Predicts that activity in which you assert more strain on your muscles than normal movement increases your strength.
3. Performs activities which assert more strain on your muscles than normal movements.
4. Generalize that all muscles can be made stronger.

Focus Questions:

1. How does physical activity help your muscles?
2. Can someone your age get big muscles?
3. Can someone your age increase their strength? How?
4. What's normal movement?
5. What would be an activity that would make your muscles stronger?
6. Can all muscles be made stronger?

Topic: Fiber Types

1. Define muscle fiber.
2. Identify fast movements as movements that require Fast Fibers.
3. Identify slow movements as activities that require Slow Fibers.
4. Analyze which activities require fast movements and which require slow movements.
5. Analyze which activities require Fast Fibers and which require Slow Fibers.
6. Perform fast and slow movements with various muscle groups for a variety of activities.
7. Group activities into those requiring Slow Fibers and Fast Fibers.
8. Compare sports that have many slow movements and those that have many fast movements.
9. When given a set of challenges, decide which to do fast and which to do slowly.

Focus Questions:

1. What is the difference between muscles and muscle fibers?
2. What does fast twitch mean?
3. What does slow twitch mean?
4. Give examples of fast twitch and slow twitch activities.
5. In the sport of_____, what are the fast movements and what are the slow movements?

Topic: Training Principles

1. Define progression as slowly being able to lift more and work harder.
2. Predict which muscle groups become stronger with each of a variety of activities (specificity).
3. Explain how resistance training improves muscles only when done several days a week (frequency).
4. Gauge how quickly their muscles become fatigued (intensity).
5. Rank a group of tasks according to how much strength is needed to perform them (intensity).
6. Compare how long they can continue to be active with fast movements or slow movements (time).

Focus Questions:

1. What is progression?
2. _____activity makes what muscles stronger?
3. How often do you need to exercise to make muscles stronger?
4. Can you remember a time when your muscles were too tired to move?
5. Is it harder to roll a yarn ball or a bowling ball?
6. Which activity would tire you out more quickly? _____ or _____
7. Why is it better to do a variety of activities than just one?

Topic: Muscle Function

1. Understand that the stronger your muscles are the easier you can move your body.
2. Understand that the stronger your muscles are the more weight you can move.
3. Demonstrate how muscles help us move and move other things.

Focus Questions:

1. Do muscles help you move your body?
2. Why is it beneficial to strengthen your muscles?
3. How can strong muscles make your life easier?

Topic: Related Definitions

1. Define muscular strength as the ability to move heavy things.
2. Define muscular endurance as the ability to repeat movements over a long period of time.

Focus Questions:

1. What does it mean to be strong?
2. What is the difference between muscular endurance and muscular strength?

MUSCULAR DEVELOPMENT

Middle School

Enduring Understandings:

1. **Muscle fibers adapt to specific training.**
2. **Overloading a muscle group increases strength.**
3. **Non-use of a muscle group results in muscular atrophy.**
4. **Training principles and proper application.**
5. **Good nutrition and weight bearing exercise enhances muscular fitness.**
6. **Accepts their own body type and modifies their physical activity to improve their own wellness**

Students are expected to know and be able to do the following:

Topic: Muscle Groups

1. Distinguish which muscle groups are being strengthened for a wide variety of physical activities.
2. Justifies resistance training using a whole body approach as opposed to isolating muscles
3. Give examples of antagonistic muscle groups
4. Distinguish the function of large and small muscles

Focus Questions:

1. Can you isolate a muscle group?
2. How can a muscle or group of muscles be isolated?
3. Why would this (isolation) be done?
4. When you play a sport, do you use just one muscle group?
5. How can you tell which muscle groups are being worked?

Activities:

1. Participates in resistance training exercises.

Topic: Related Activities

1. Participate in a wide variety of activities that enhance muscular development through resistance
2. Identify the training principles and how they make a variety of activities beneficial to muscular development.
3. Relate muscle development to caloric expenditure during activity and inactivity
4. Explain the relationship between muscular development and bone density through weight bearing exercises.
5. Understand that muscular development does not inhibit flexibility
6. Relate stretching to safety in strength training.

Focus Questions:

1. What is muscular development?
2. Do all activities enhance muscle development? List some that do.
3. What is a calorie?
4. What is metabolism?
5. Can increasing your metabolism benefit the body?
6. How can you increase metabolism?
7. Explain the relationship between bone density and weight bearing exercise.
8. What is flexibility?
9. What activities are used for slow twitch and fast twitch movements?

Activities:

1. Organize muscular development activities, exercises and movements by fast twitch vs. slow twitch and/or muscle groups.

Topic: Fiber Types

1. Define slow twitch muscle fibers as red fibers that are used for movements endurance
2. Define fast twitch muscle fibers as white fibers that are used for explosive activities.
3. Define anaerobic activity
4. Compare the benefits of anaerobic to aerobic activity
5. Differentiate which movements require slow twitch and which require fast twitch during a given activity or sport
6. Explain why atrophy and/or hypertrophy occurs. Explain the difference between the two.
7. Define progression as gradually increasing the intensity of exercise
8. Describe overload in muscle training as increasing the intensity, frequency and time.

Focus Questions:

1. How do aerobic and anaerobic activity differ?
2. Explain the difference between atrophy and hypertrophy.
3. How do fast and slow twitch muscle fibers apply to aerobic and anaerobic actitivity?
4. Define progression and tell why it is important in muscular development.
5. How is the overload principle applied?
6. What training principals must be maintained in order for overload to occur?

Activities:

1. Identify or invent a machine or activity that strengthens a particular muscle group.

Philosophy Question:

Is muscular development a necessary component to achieve and maintain overall health and fitness? Explain your reasoning.

Topic: Methods of Strength Training

1. Differentiate between the methods of increasing muscular strength such as plyometrics, weight training, resistance training, and/or aerobic training.
2. Appraise the benefits of core training

Focus Questions:

1. What is considered your core?
2. How do we improve the strength of the core?
3. What activities can be done to increase muscular strength?
4. How are the different training methods used to increase muscular strength? (plyometrics, isometrics, weight training, resistance training, aerobic training)
5. Why is core training important to muscular development?

Activities:

1. Participates in a variety of muscular development activities.

Topic: Muscle Function

1. Differentiate between flexion and extension of a muscle group.
2. Explain what antagonistic muscles are.
3. Identify the function of skeletal muscles.

Focus Questions:

1. What is flexion? What is extension?
2. Relate weight training to the role of antagonistic muscles.
3. Why is it crucial to maintain a healthy skeletal muscle system?

Topic: Health Benefit

1. Recognize that all components of wellness are affected by improved muscular fitness.
2. Recognize that everyone can improve muscular strength with training.
3. Recognize that there are different body types and accept their own.
4. Accepts that people are different.

Focus Questions:

1. Are there any benefits to improving musculature? Explain.
2. Can everyone benefit from muscular development training?
3. How are the components of wellness affected by muscular development?

Activities:

Philosophy Question:

1. Which aspect of muscular development is most beneficial to you? Performance or Fitness. Why?

MUSCULAR DEVELOPMENT

High School

Enduring Understandings:

1. **Muscle Fibers adapt to specific training.**
2. **Overloading a muscle group increases strength.**
3. **Non-use of a muscle group causes atrophy.**
4. **Principles of training affect muscular capacity.**

Students are expected to know and be able to do the following:

Topic: Muscle Fibers

1. Understand slow twitch muscle fibers are red fibers used for endurance activities.
2. Understand fast twitch muscle fibers are white fibers used for explosive movements.
3. Identify the fiber type predominately used in their choice of activity (specificity)

Focus Questions:

1. What are the two types of muscle fibers?
2. What fiber type is used for explosive activities?
3. What fiber type is used for endurance activities?
4. Why does your body have different fibers?

Activities:

1. Identify the fiber type predominately used in your exercise program.
2. Classify a variety of activities as using either fast twitch or slow twitch fibers.
3. Differentiate between exercises that develop muscle strength and those that develop muscle endurance.
4. Students will participate in weight training activities.
5. Students will practice proper form and safety techniques for all exercises.

Topic: Fitness Concepts

1. Define metabolic rate as the amount of energy expended in a given period.
2. Define basal (resting) metabolic rate as the rate at which energy is used by the body in a resting state.
3. Predict how muscular development enhances resting metabolic rate (intensity)
4. Identify the time frame in which muscular gains occur (approx. 4-6 weeks), and when those gains become visible (approx. 6-8 weeks). (progression)
5. Justify muscular development activities in females who are concerned about appearing too muscular.

Focus Questions:

1. What is metabolic and resting metabolic rate?
2. How does muscular development enhance resting metabolic rate?
3. How long does it take for muscle gains to occur and when do those gains become visible?
4. What are some myths about muscular development in females?

Activities:

a. Students will discuss the relationship between muscle development and metabolism.
b. Teacher will identify the time frame for developing strength gains and visible body composition changes.
c. Teacher will discuss various myths and misconceptions about muscle development.
d. Students will participate in weight training activities.
e. Students will practice proper form and safety techniques for all exercises.

Topic: Muscle Groups

1. Classify the arms, shoulders, back, abdominals and legs as the five muscle regions of the body. (identify specific muscles in each region as they are covered)
2. Categorize which muscle groups make up the core of the body.
3. Demonstrate exercises to strengthen each muscle group.

Focus Questions:

1. What are the five muscle regions of the body?
2. Which muscle groups make up the core of the body?
3. What exercises can you perform to strengthen each muscle group?
4. Why are core exercises an essential component to a fitness program?
5. How can you maintain symmetry in your muscular development program?
6.

Activities:

a. Perform a full body circuit identifying specific muscles in each region.
b. Perform a variety of activities for core development.
c. Students will practice proper form and safety techniques for all exercises.

Philosophy Question:

1. Evaluate the role resistance training currently plays in your exercise program. Identify your strengths and weaknesses, then discuss your action plan for improving your muscular development.

Topic: Methods of Training

1. Modify a program to focus on development of either muscular strength or muscular endurance. (frequency, intensity, time, type)
2. Apply the method of training antagonistic muscle groups to enhance body symmetry.
3. Contrast lifts that require compound movements to those which isolate one muscle group. (intensity)
4. Demonstrate several lifts that require compound movements.
5. Practice good form and safety technique to avoid risk of injury.
6. Examine the benefits of core training versus other types of training.
7. Determine how much rest is required between training days for various exercises.

Focus Questions:

1. How does a muscular strength program differ from a muscular endurance program?
2. What is the benefit of training antagonistic muscle groups?
3. How can compound lifts increase the intensity of your workout?
4. What is the benefit of core training?
5. Should you lift the same muscle group on consecutive days?

Activities:

a. Demonstrate several lifts that require compound movements. (pull-ups; push-ups; lunges; medicine ball; pilates; squats; cleans; etc.)
b. Students will practice proper form and safety techniques for all exercises.
c. Students will develop a program to enhance either muscle strength or muscle endurance, applying the principles of progression and overload, which can be performed outside of class.
d. Students will participate in weight training activities applying the antagonistic method.

Topic: Adaptations to Muscular Development

1. Explain how muscle fibers break down and regenerate with activity and recovery.
2. Relate how adaptations to the nervous system allow strength gains to occur by the ability to recruit more motor units and to recruit those units in a more synchronized pattern.
3. Explain that ligament tissue strength increases.
4. Explain that tendon tissue strength increases.

Focus Questions:

1. In what ways do muscles gain strength and size? (regeneration of muscle fibers; recruitment of motor units)
2. How is ligament and tendon tissue strength affected through muscle development?

Activities:

a. Group discussion on adaptations to muscle development.
b. Students will practice proper form and safety techniques for all exercises.
c. Students will participate in weight training activities applying the antagonistic method.

Topic: Your Lifestyle

1. Design a weight bearing muscular development plan involving exercises that can be done at home.
2. Apply the principles of overload, progression, and specificity to their workout.
3. Participate in weight training exercises as part of class.
4. Develop a list of criteria with which to judge a fitness facility.
5. Rate a fitness facility.

Focus Questions:

1. What is necessary to have a successful weight training at home?
2. Do you need to purchase expensive equipment? Why?
3. How do you get stronger overtime safely?
4. What is an example of the principle of overload in your weight training program?
5. How do you increase upper body strength? Core strength? Leg strength?
6. Can you demonstrate 10 different weight training stations?
7. Can you demonstrate two different stations that exercise various muscle groups?
8. What are the benefits of weight bearing exercise that are done in class?
9. What are the positives/negatives in belonging to a fitness center? What appeals to you about joining a fitness center?

BODY COMPOSITION / WEIGHT MANAGEMENT

Elementary School

Enduring Understandings:

1. **Weight control is a balance of calories consumed and calories expended.**
2. **Exercise can help control the percentage of body fat by increasing the body's metabolism.**
3. **High intensity work-outs increase resting metabolism.**
4. **Consuming the proper portions of the six main nutrients, combined with exercising, ensures a healthy BMI.**
5. **An unhealthy BMI indicates an increased risk of multiple health hazards.**
6. **The most effective way to manage weight is through a combination of resistance training, aerobic exercise and adjusting caloric intake.**

Topic: Nutrients

1. Identify fat as a nutrient used in the body for energy, warmth, and transportation of vitamins and provides protection for internal organs.
2. State that daily food intake for kids should contain no more than 30% fat.
3. Complete a worksheet identifying fats, oils and sweets.
4. Identify the food groups.

Focus Questions:

What nutrient is used in the body for warmth, transportation of vitamins, and provides protection for internal organs?

Should you have fat in your diet?

Identify carbs, fats, proteins, vitamins, minerals, and water.

How can consuming the proper portions of the six main nutrients, combined with exercising, ensure a healthy BMI?

Why can a high BMI be bad for your health?

Topic: Body Composition/Weight Management

1. Distinguish that people have different sizes and shapes.
2. State that water makes up approximately 65% of our body.
3. Explain that everyone has some fat.
4. Recognize that too much fat or too little fat is not good for you, and that you should strive to have the right amount of fat.

Focus Questions:

1. How much of our body is made up of water?
2. Do you need body fat to be healthy?
3. Why do you need body fat to be healthy?
4. Why is too much or too little fat not good for you?

Topic: Calories

1. Define a calorie as a measure for energy their bodies need for normal daily activities.

Focus Questions:

1. What are calories used for?
2. Why would someone want to count calories?

Activities:

1. Complete a worksheet on calories and activities.

Topic: Training Principles

1. Apply the concepts of frequency, intensity, time, overload, progression and specificity; and then relate body composition and weight management to controllable health risk factors.

Focus Questions:

1. How often should you exercise to maintain a healthy body composition?

Topic: Weight Control

1. Explain that to lose body fat, you can decrease caloric intake, increase caloric expenditure, or use a combination of the two.
2. State that fat cells were formed before they were born, year one, and during adolescence.
3. Discuss that exercise can control the amount of body fat because exercise burns calories and/or fat for energy.

Focus Questions:

1. Will burning calories help you lose body fat?
2. When are fat cells formed?
3. How can you control the amount of body fat?

Topic: Metabolism

1. Articulate that food gives your body energy.
2. State that if food is not used for energy, it can turn into fat.

Focus Questions:

1. What does your body use food for?
2. Why do you need energy?
3. What happens to the food not used for energy?

Topic: Health Risk Factors

1. Identify that too much or too little fat is a health risk.
2. Identify that heart disease is a health hazard of excessive fat.

Focus Questions:

1. Is it possible to have too much fat?
2. Is it possible to have too little fat?
3. What happens to your heart and arteries if you have too much fat?

BODY COMPOSITION / WEIGHT MANAGEMENT

Middle School

Enduring Understandings:

1. **Weight control is a balance between calories consumed and calories expended.**
2. **Exercise can control the percentage of body fat by increasing the body's metabolism.**
3. **High intensity workouts increase metabolism.**
4. **Consuming the proper proportion of the six main nutrients, combined with exercise ensures a health BMI.**
5. **An unhealthy BMI indicates an increased risk of multiple health hazards.**
6. **The most effective way to manage weight is through a combination of resistance training, aerobic exercise and adjusting caloric intake.**

Students are expected to know and be able to do the following:

Topic: Nutrition

1. Decide whether the amount of fat in a food item is within the daily recommended allowance by reading a food label. (Daily intake, calories, fat etc.)
2. Compare saturated fats (much less healthy) to polyunsaturated or monounsaturated fats.
3. Decide whether the amount of calories in a food item is within the daily allowance by reading the label.

Focus Questions:

1. What is a calorie?
2. What is metabolism?
3. How does caloric intake/expenditure impact weight management?
4. How does regular exercise affect metabolism?
5. Why do you want to increase HDL's and lower LDL's?
6. Why are saturated fats and trans fats a factor in the heart health risk factor of high cholesterol?
7. What types of food would you find saturated fats in? Trans fats?

Activity: Compare several food labels. Given these choices make a decision as to which you would choose as a snack and why.

Topic: BMI/Body Composition

1. Identify that fat cells are made during adolescence.
2. Calculate their own BMI using at least one of the BMI formulas
    i. BMI = $\frac{\text{WEIGHT X 700}}{\text{HEIGHT}}$
        a. HEIGHT
    or a chart or a skin fold reading.
3. Define lean body mass as the amount of muscle tissue and other non-fat tissue such as bone, ligaments, and tendons.
4. Recognize obesity as having a BMI ≥30. Recognize that a healthy percentage of body fat for a male is 10-20% and 15-25% for a female. Compare their number to a standard.

Focus Questions:

1. Adolescence is from what ages?
2. What is BMI? How do you calculate BMI?
3. Why is adolescence a critical time in one's body composition?
4. How can knowledge of one's BMI be helpful in gauging one's personal fitness?
5. What is meant by lean body mass?
6. What is the indicator of obesity?
7. How does obesity impact wellness?
8. What are recognized as healthy percentages?

Activities:

1. Calculate your BMI and compare to a standard measurement chart.

Topic: Training Principles

1. Define frequency as regular exercise 3-6 times per week.
2. Define intensity as the harder you work the more calories you burn off. And you raise your metabolism.
3. Explain that you must work for an extended period of time to burn calories and raise your metabolism.
4. Define overload as harder than normal everyday activities.
5. Relate that increasing gradually the length of time you workout is progression.
6. Describe specificity as aerobic exercise burns more calories and last longer.

Focus Questions:

1. What are the training principles?
2. What does FITT stand for and give examples.
3. How can we modify a regular exercise session/routine using the training principles?
4. Why is the implementation of training principles effective in managing one's personal wellness?
5. Explain with examples what progression, overload and specificity mean.

Activities:

1. Exercise and give examples of the training principles used.

Topic: Weight Control

1. Illustrate that weight management is the balance of calories consumed versus calories expended.
2. Define body composition as the amount of muscle, fat, bone and other tissue.
3. Identify that an ideal diet for kids should be composed of 15% protein, 30% fat and 55% carbohydrates.
4. Identify inactivity as the major cause in increased body fat.
5. Explain the relationship between exercise, metabolism and body fat.
6. Consciously practices a lifestyle that includes exercise and controls body fat with the end result being burning calories and increased metabolism.

Focus Questions:

1. What is a calorie?
2. What is weight management?
3. Why is caloric intake/expenditure a factor in weight control?
4. What is body composition?
5. What are proteins, fat, and carbohydrates? (examples of each)
6. How should a typical person's daily intake look in percentages of protein, fat, and carbohydrates?
7. How would you find out what is in a food product?
8. Why is serving size a major consideration to one's choices prior to consumption?
9. What are different types of fats?
10. What are better or worse?
11. Why are some fats better or worse for us relative to cholesterol?
12. What is metabolism?
13. How are metabolism, regular exercise, and caloric intake/expenditure tied together?

Activities:

Practice a lifestyle that includes exercise and controls body fat with the end result being burning calories and increased metabolism.

Topic: Health Risk Factors

1. Associate multiple health hazards with excessive fat: breathing difficulties, diabetes, cancer, high blood pressure, heart disease, stroke, kidney disorders, surgical risk, and pregnancy problems, less resistance to infection, shortened life expectancy and social discrimination.

Focus Questions:

1. What is a health risk associated with excessive fat?
2. Why is excessive fat a health risk factor?

Activities:

Topic: Myths

1. Articulate that muscle does not turn into fat.
2. Conclude that there is no easy way to get and stay in shape and that spot reducing does not exist

Focus Questions:

1. What are myths associated with weight management?

Activities:

Practice a lifestyle that includes exercise and controls body fat with the end result being burning calories and increased metabolism.

Exercises and gives examples of the training principals used.

Calculates your BMI and compare to a standard measurement chart.

Topic: Metabolism

Define metabolism.
Define metabolic rate.

BODY COMPOSITION / WEIGHT MANAGEMENT

High School

Enduring Understandings:

1. **Weight control is a balance between calories consumed and calories expended.**
2. **Exercise can control the percentage of body fat by increasing the body's metabolism.**
3. **High intensity workouts increase resting metabolism.**
4. **Consuming the proper proportion of the six main nutrients, combined with exercise ensures a healthy BMI.**
5. **An unhealthy BMI indicates an increased risk of multiple health hazards.**
6. **The most effective way to manage weight is through a combination of resistance training, aerobic exercise and adjusting caloric intake.**

Students are expected to know and be able to do the following:

Topic: Nutrients and Calories

1. Design an action plan to increase the nutritional value of their diet based on the six main groups of nutrients, caloric expenditure, and personal body composition and weight management goals. (six main groups of nutrients: water, carbohydrates, fats, proteins, minerals, and vitamins; 3500 calories in one pound; food type and portion size are factors in the amount of calories consumed)

Focus Questions:

1. What does a balanced diet consist of?
2. What are the best forms of each nutrient?
3. How does caloric consumption relate to weight loss/gain?
4. What are some factors that play a role in caloric consumption?
5. How do parents/guardians influence your diet?

Topic: Metabolism

1. Relate the factors of body weight, gender, age, temperature, and heredity to metabolism and metabolic rate.
2. Relate exercise intensity to metabolism and resting metabolic rate. (low intensity exercise increases fat metabolism and increases metabolic rate during the activity period; high intensity exercise increases carbohydrate metabolism and metabolic rate during the activity period, and sustains an elevated resting metabolic rate after activity is stopped)

Focus Questions:

1. What physiological factors affect metabolic rate?
2. What environmental factors affect metabolic rate?
3. What are the benefits of low intensity exercise?
4. What are the benefits of high intensity exercise?
5. How does exercise intensity affect metabolic rate?
6. How can you increase your resting and active metabolism?

Philosophy Question:

1. Is it more important to increase your resting metabolism or your active metabolism? Why?

Topic: Body Mass Index / Body Composition

1. Differentiates between the characteristics of the three body types. (endomorph: a heavy person with a soft and rounded body; mesomorph: a person with a well-developed muscular body; ectomorph: a person with a thin non-muscular body)
2. Calculate their Body Mass Index.
   BMI = [weight in lbs. ÷ height in inches ÷ height in inches] x 703
3. Classify a variety of BMI as normal, overweight, or obese. (normal = less than 25; overweight = 25.0 – 29.9; obese = 30 or higher)
4. Differentiate between measuring for body weight and body composition. (body weight is a measured using a scale; body composition is measured through skinfold testing, bioelectric impedance, or hydrostatic weighing; body composition measure the amount of lean tissue in the body versus adipose tissue)
5. Perform skinfold measurements and calculations to determine body fat percentage.
6. Identify inactivity as the major cause of increased body fat.
7. Analyze the caloric balance of a variety of exercise and diet patterns.
8. Explain the negative aspects of crash dieting.
9. Explain excessive fat is associated with multiple health hazards: breathing difficulties, diabetes, cancer, high blood pressure, heart disease, stroke, kidney disorders, surgical risk, pregnancy problems, less resistance to infection, shortened life expectancy, and social discrimination.

Focus Questions:

1. What methods of body weight and body fat percentage measures exist?
2. How do these methods differ from one another?
3. Which method would be most accurate to measure body composition change?
4. What factors may affect validity of these measurements?
5. What has been identified as the major cause of increased body fat?
6. What health hazards are associated with excessive fat?
7. How do crash diets and yo-yo diets affect your body composition and overall health?
8. Why is it important to employ both a proper diet and exercise when trying to manage your weight?

CARE AND PREVENTION OF INJURIES

Elementary School

Enduring Understandings:

1. **Dress/Attire can contribute to or prevent climate related injuries.**
2. **Appropriate muscular conditioning can decrease the chance of sprains and strains.**
3. **Skeletal health is affected by well planned conditioning**
4. **Application of First Aid Principles may reduce severity of injuries.**

Topic: Conditioning

1. The more fit you are, the less likely you are to get injured.

Focus Questions:

1. Why would being fit help prevent injuries?

Topic: Climate/Prevention

1. Identify the importance of dressing warmly when playing in cold weather such as snow.
2. Discuss the need to drink a lot of water and dressing cool when exercising in hot weather.
3. Identify the importance of drinking water to replace the sweat they lose when exercising.
4. Explain why sun screen should be applied to exposed skin on sunny days.

Focus Questions:

1. How does water help your body when it's cold?
2. How does dressing appropriately reduce injuries?
3. Why do you sweat?
4. What can happen to you if you get sunburn?
5. How does drinking water prevent your body from becoming dehydrated?

Topic: Treatment

1. Articulate that ice should be placed on a body part that is twisted during activity and rest until the pain goes away.

Focus Questions:

1. What does ice do for an injury?

Topic: Training Principles

1. Identify that intensity should be modified to match the existing weather conditions.
2. Articulate that regular exercise and conditioning may prevent injuries (frequency).

Focus Questions:

1. Should you adjust your activity level when it's hot or cold?
2. How and why should you adjust your activity level based on the weather?

Topic: Safety

1. Identify that helmets should be worn when bike riding.
2. Identify that helmets, wrist guards, knee and elbow pads should be worn when in-line skating, skate boarding, and scooter riding.
3. Explain why certain types of footwear should be worn for specific activities.

Focus Questions:

1. Do you need to wear protective gear all the time?
2. What could happen if you don't wear the proper footwear?

CARE AND PREVENTION OF INJURIES

Middle School

Enduring Understandings:

1. **Dress/Attire can contribute to or prevent climate related injuries.**
2. **Appropriate muscular conditioning can decrease the chance of sprains and strains.**
3. **Skeletal health is affected by well planned conditioning**
4. **Application of First Aid Principles may reduce severity of injuries.**

Students are expected to know and be able to do the following:

Topic: Treatment

1. Define the acronym RICE and articulate its relation to sprains and strains.

Focus Questions:

1. What does each letter of RICE stand for?
2. How does proper attire impact risk of injury?
3. How does appropriate muscular conditioning impact risk of injury?
4. How is skeletal health impacted by planning conditioning sessions?
5. How do the conditioning principles impact severity of injury?

Activities:

Topic: Skeletal Care

1. Identify muscle, tendons, and ligaments as the stabilizers of joints and the role strengthening plays in joint injury prevention.
2. Articulate that long bones are more susceptible to fracture because of their function and hollowness.

Focus Questions:

1. What is a muscle, a tendon and a ligament?
2. Why is it important to strengthen the muscles, tendons, and ligaments in relation to joints?
3. Which are the long bones? (give examples)
4. Why are they more susceptible to injuries?

Activities:

Topic: Prevention

1. Distinguish between pain and discomfort.
2. Predict what would happen if you did not properly dress for the weather conditions.
3. Explain the importance of wearing non-constricting multilayered clothing, including gloves, hats, masks, and socks, to prevent cold injuries from occurring.
4. Explain why it is important to hydrate prior to exercise.
5. Predict what injuries may occur in a variety of sports if you are a "weekend athlete". (Frequency)
6. Vary the intensity to decrease the risk of injury. (Intensity)
7. Predict how varying the time of an activity can affect the chance of injury from over use. (Time)
8. Explain the relationship between overloading a body system during a workout and how that can help to improve fitness and reduce the risk of injury. (Overload)
9. Reduce the risk of injury by gradually increasing the intensity of their workout. (Progression)
10. Apply both strength and flexibility conditioning to a variety of muscle groups in order to prevent injury to those muscles. (Specificity)

Focus Questions:

1. What clothing choices would you make when exercising in hot or cold weather?
2. What is hydration? Why is it important?
3. What injury consequences are you risking by ignoring the training principles?
4. What is different between pain and discomfort?
5. What is strain/sprain?
6. What is cool down/warm-up?
7. How should you deal with pain during activity?
8. How should you deal with discomfort?
9. Why is hydration important?
10. How might your body respond to <u>not</u> following training principles? Be specific.
11. How should you deal with a sprain? A strain?
12. How do warm-ups/cool-downs aid in injury precaution?
13. How does risk of injury differ between those who participate in regular activity and those who are "weekend warriors"?

Activities:

1. Create a month long calendar showing an activity and how it applies to the training principles.
2. Demo a warm-up and/or cool-down activity.
3. Draw a conclusion of the risk of injury if they don't follow each of the training principles.

CARE AND PREVENTION OF INJURIES

High School

Enduring Understandings:

1. **Dress/Attire can contribute to or prevent climate related injuries.**
2. **Muscular conditioning can decrease the chance of sprains and strains.**
3. **Skeletal health is affected by conditioning.**
4. **Application of first-aid principles may reduce severity of injuries.**
5. **Ingesting the proper nutrients is essential for skeletal health.**

Students are expected to know and be able to do the following:

Topic: Conditioning

1. Describe cross-training as participating in a variety of training and conditioning programs in order to maximize physical fitness and/or performance.
2. Identify shin splints as a common lower leg injury.
3. Prescribe reverse calf stretches and tubing exercises to prevent shin splints.
4. Relate physical conditioning to injury prevention (injuries interrupt conditioning; the better physical condition you are in the less likely you are to get injured).
5. Explain that improving physical conditioning is dependent on being able to sustain regular activity. (frequency)

Focus Questions:

1. How can cross-training help you maximize physical fitness and performance?
2. Why is physical conditioning an important factor in injury prevention?
3. How do injuries affect frequency of exercise and overall conditioning?

Topic: Exercising in Heat

1. Identify hyperthermia as an excessive rise in body temperature.
2. Categorize the three stages of heat illness. (heat cramps: inability of the body to take care of internally generated heat; heat exhaustion: reaction of the body characterized by fatigue, weakness, and collapse due to loss of fluids through perspiration; heat stroke: reaction of the body characterized by extremely high body temperature and disturbance of the body's cooling mechanism)
3. Recommend preventive measures to avoid heat illness. (wear light colored clothing; wear clothing that allow air to get to your body; exercise during the cooler parts of the day)
4. Justify the role of water in hydration and muscle performance.

Focus Questions:

1. What are the three stages of hyperthermia?
2. How can hyperthermia become a life-threatening situation?
3. How can you protect yourself from heat-related injuries?
4. Why is water the most important factor in heat illness prevention?

Topic: Exercising in Cold Weather

1. Identify hypothermia as an excessive drop in body temperature.
2. Categorize two stages of cold illness. (frostnip: a mild form of cold injury; frostbite: damage to skin and other tissues caused by injury)
3. Recommend preventive measures to avoid cold illness. (wear layers; wear a hat to keep in heat; keep skin covered)

Focus Questions:

1. What are the two stages of hypothermia?
2. How can hypothermia become a life-threatening situation?
3. How can you protect yourself from cold weather related injuries?

Topic: Skeletal Care

1. Describe different ways bones can be stressed: tension, compression, bending, torsion, and shearing.
2. Differentiate between a closed fracture (bone does not penetrate the skin) and an open fracture (bone penetrates the overlaying skin).
3. Explain proper first aid procedure applied to broken bones. (call 911 or seek medical attention; immobilize the injured area and ice; do not move the victim unless in immediate danger; try not to leave the victim)
4. Practice weight bearing exercises and proper nutrition as a means of developing bone density.
5. Compare and contrast characteristics of healthy and weak bones

Focus Questions:

1. How can skeletal (bone) injuries occur?
2. What is the difference between an open and a closed fracture?
3. How would you assist a person who has suffered a broken bone?
4. Name several weight bearing exercises. How do these exercises help in the prevention of skeletal diseases?
5. Why is nutrition an important element to skeletal care?
6. How do healthy and weak bones differ?

Topic: Joint Motion and Stability

1. Differentiate between a sprain and a strain. (a sprain is an injury to a joint; a strain is an injury to a muscle)
2. Explain proper first aid for musculoskeletal injuries. (ice, rest, compression, elevation, refer to a medical doctor)
3. Define ligaments as fibrous tissue connecting bone to bone.
4. Define tendons as fibrous tissue connecting muscle to bone.
5. Recommend taping and bracing as a means of artificial support used to stabilize joints.

Focus Questions:

1. How do injuries affect joint motion and stability?
2. What first aid care would you provide for a musculoskeletal injury?
3. How is taping and braces used to help people with joint injuries?

Topic: Warm-up & Cool Down

1. Practice a warm-up and cool down as part of their daily exercise routine.

Focus Questions:

1. Why are warm-ups and cool down essential in preventing injuries?
2. How can proper warm-ups and cool downs affect your performance?

Topic: Philosophical

Focus Questions:

1. Assessing your current exercise practices, how do you protect yourself from injury?
2. In your opinion, how effective is the warm-up at the beginning of physical education class in preventing injuries? Justify your answer.

Activities

1. You have an opportunity to try a new activity. There is a risk to the activity as well as a physical benefit. What consideration would go into determining whether or not to try it? Would you try the activity? Why or why not?

SKELETAL FITNESS

Elementary School

Enduring Understandings:

1. **Weight bearing exercise increases bone density.**
2. **Ingesting the proper nutrients is essential for skeletal health.**
3. **The combination of ingesting calcium and regular weight bearing exercises improves bone density.**

Topic: Nutrition

1. State that calcium is essential for building strong bones and teeth.
2. Give examples of foods rich in calcium.

Focus Questions:

1. What is calcium?
2. How does calcium help bones?
3. What foods have calcium?
4. Why is it important to have calcium in your diet and at an early age?
5. How does calcium affect you later in life?

Topic: Physical Activity

1. State that physical activity and nutrition can affect the health of your skeletal system.
2. List types of weight bearing exercises and activities.

Focus Questions:

1. Is it enough to just consume calcium?
2. How does physical activity help your bones?
3. What does weight bearing mean?
4. Why is it important to do both, exercise and eat food containing calcium?

Activities:

List five activities that are weight bearing.

Topic: Skeletal Physiology

1. State that bones have different shapes and sizes.
2. Communicate that muscles attach to bone.
3. Explain that when muscles move your bones that your body moves.
4. State that your body is able to stay upright because of the strength of your bones.
5. Define the function of bones (like steel girders in a building, bones serve as a framework to give support). Bones serve to support the body and they also provide protection for certain internal organs.

Focus Questions:

1. What kinds of shapes are bones?
2. What do muscles have to do with bones?
3. How do muscles move bones?
4. What would happen to your body if you had no bones?
5. What do your bones do for your body?

Topic: Training Principles

1. Identify that increasing overload will help to increase bone density.
2. Articulate that proper progression of weight bearing activities can help promote bone density.
3. Identify that specificity can help increase bone density.

Focus Questions:

1. How do you exercise your bones more than you are used to in normal activitiy?
2. Explain how you can gradually increase how much weight bearing exercises you do?
3. Show activities that would be weight bearing for your legs.
4. Show activities that would be weight bearing for your arms.

SKELETAL FITNESS

Middle School

Enduring Understandings:

1. **Weight bearing exercise increases bone density.**
2. **Ingesting the proper nutrients is essential for skeletal health.**
3. **The combination of ingesting calcium and regular weight bearing exercises improves bone density.**
4. **The combination of calcium rich foods and weight bearing exercises improves skeletal fitness.**

Students are expected to know and be able to do the following:

Topic: Physical Activity

1. Describe how your body adapts to weight bearing exercise
2. Explain how weight bearing exercises can help increase bone mass and strengthen your skeletal system.
3. Categorize osteoporosis as a risk factor and describe how the training principles and calcium rich foods can affect that risk.
4. Give examples of weight bearing exercises.

Focus Questions:

1. What is osteoporosis?
2. How can the training principles lower the risk of osteoporosis?
3. Why is the combination of diet and exercise important to skeletal fitness?

Activities:

1. Have a balanced diet that includes calcium rich foods and regular exercise.
2. Design a weight bearing exercise plan that can be completed at home.

Topic: Skeletal Physiology

1. Explain how weight bearing exercises can help increase bone mass and strengthen your skeletal system.
2. Distinguish between the Different kinds of bones in the skeletal system. (Long, short, flat and irregular)
3. Give an example of each type of bone and where it is found in the body.
4. Detail the functions of the skeletal system. (to provide a strong, stable, and mobile framework on which muscles can act, protect your organs and tissues from trauma, produce new red and white blood cells, and store minerals such as calcium and phosphorus).
5. Explain the relationship between bones, bone marrow and blood. (bone marrow is inside of your bones, blood is made in the marrow.
6. Why do you need to build strong bones during your teen years? Distinguish between a ligament (attaching bone to bone) and a tendon (Attaching muscle to bone or another muscle).
7. How would you strength the skeletal system?

Focus Questions:

1. What are weight bearing exercises?
2. How are weight bearing exercises beneficial for skeletal fitness?
3. What are four types of bones and where are they found?
4. What is the function of the skeletal system?
5. Why is it important to increase bone mass?
6. Why would you want to maintain the health of the skeletal system?
7. What is a ligament and tendon? What role does each have?
8. How does the health of the soft tissue (ligaments & tendons) affect skeletal health?

Topic: Nutrition

1. Explain why proper diet is important to skeletal health.

Focus Questions:

1. What are calcium rich foods?
2. What benefits for your skeletal system is from calcium?
3. Why is the combination of proper diet and exercise important to skeletal fitness?
4. How can proper diet and exercise lower your risk of osteoporosis?

RESPIRATORY BENEFITS OF EXERCISE

Elementary School

Enduring Understandings:

1. **The condition of the heart and lungs is positively or negatively affected by the amount of aerobic exercise.**
2. **Good pulmonary fitness helps prevent disease.**
3. **To achieve a positive outcome from regular exercise you must apply the training principles.**
4. **Aerobic exercise increases lung capacity.**

Students are expected to know and be able to do the following:

Topic: Respiration / Aerobic and Anaerobic Activity

1. Define inhaling and exhaling
2. Articulate that they use the oxygen in the air as fuel for muscles.

Focus Questions:

1. What does it mean to inhale?
2. What does it mean to exhale?
3. Where does oxygen come from?
4. What do we use oxygen for?
5. How does oxygen act as fuel?
6. How is the condition of the heart positively or negatively affected by the amount of aerobic exercise?

Activities:

1. Cardio games

Topic: Lungs

1. Articulate that they have two lungs.
2. Explain that the air you breathe goes into the lungs.
3. Identify lungs when shown a picture.
4. Articulate that the better shape you are in the more air you can bring into the lungs.

Focus Question:

1. What are your lungs used for?
2. Why is it that the better shape you are in, the more air you can bring into your lungs?

Activities:

Topic: Disease

1. Identify asthma as a condition that causes difficulty breathing.
2. Articulate that if air is polluted, you bring in oxygen and pollutants into your lungs.

Focus Questions:

1. Does air pollution make it harder to breathe?
2. Can air pollution make people sick?
3. What is asthma?
4. What to kids that have asthma have to do to be active safely?
5. How is breathing affected by asthma?
6. How do air pollutants affect your lungs?
7. Your friend has asthma and didn't bring his/her inhaler when playing basketball, would you let them play? Explain.
8. Why does air pollution make people sick?

Topic: Regular Exercise

1. Articulate that they breathe faster when they exercise.
2. Discuss why they breathe faster when they exercise.

Focus Questions:

1. What happens to your breathing when you are physically active? Why?
2. Why do we breathe faster when we exercise?
3. Why do you believe healthy lungs are important?
4. If someone you cared about smoke, would you say something to them? Why or why not?

Topic Training Principles

1. Identify that the more aerobic exercise you perform, the healthier the lungs become (Time, Progression).
2. Identify that aerobic exercise is good for the lungs (Specificity).
3. Articulate that regular aerobic exercise is good for the lungs (Frequency).

Focus Questions:

1. What activities are good for your lungs because they get them to work harder than when you are relaxing?
2. What makes an activity good for your lungs?
3. How often should you be active in order to help your lungs stay healthy?
4. How is exercise good for your lungs?
5. What would you include in an exercise program to make your lungs healthier? How long and how often?

CARDIO-RESPIRATORY FITNESS

Elementary School

Enduring Understandings:

1. **Aerobic exercise can reduce controllable heart health risk factors.**
2. **Exercising within the heart rate zone strengthens the heart muscle.**
3. **Aerobic exercise increases heart rate zone.**
4. **Technology can help monitor workout intensity.**

Students are expected to know and be able to do the following:

Topic: Physiology of the Heart

1. State that the heart is a muscle that pumps blood to your muscles and body.
2. Identify that the heart is a muscle approximately the size of your fist.
3. Locate the heart in the middle of the chest.

Focus Questions:

1. What does the heart do?
2. How big is your heart?
3. Where is your heart located?
4. Why is aerobic exercise good for you?
5. You like playing with your grandparents. You find out one of them has heart disease. What would you do with them?

Activities:

1. Healthy Heart tag.
2. Cardio games.
3. All Star Action.

Topic: Training Principles

1. Explain that exercise is a way to strengthen the heart muscle.
2. Understand that regularly increasing heart rate through regular exercise increases the strength of your heart rate (frequency).
3. Understand that one hour of exercise is recommended each day (time).
4. State that exercising in your heart rate zone strengthens the heart muscle (intensity).

Focus Questions:

1. How can you strengthen your heart?
2. How often, how long, and how hard should you exercise?
3. Why do you need a strong heart?

Activities:

1. Jump rope
2. Step aerobics
3. Capture the flag
4. Stations

Topic: Heart Rate

1. Explain that pulse changes with activity.
2. Define heart rate as the number of beats per minute.
3. Understand that your heart rate tells you how hard you are working.
4. Define heart rate zone.
5. Demonstrate taking their pulse.
6. Locate two areas to find your pulse rate.

Focus Questions:

1. What is pulse rate?
2. What is heart rate?
3. Locate the two areas to find your heart rate.
4. Why is it important to monitor your heart rate?
5. How do you know if you are working too hard or not hard enough?

Activities:

1. Heart rate monitors
2. Pulse meters
3. Stations using stethoscope
4. Heart worksheets

Topic: Risk Factors

1. Identify that activity is good for your body.
2. State that being active helps you look and feel good.
3. State that regular exercise can help reduce the chance of heart disease.

Focus Questions:

1. Why is regular exercise important (to look and feel good)?
2. How do you prevent heart disease?
3. How does regular exercise make you feel and look good?
4. If someone that you knew had heart disease, what controllable risk factors could they have changed to prevent it?

Activities:

1. Cardio worksheets
2. Cardio games

CARDIO-RESPIRATORY FITNESS

Middle School

Enduring Understandings:

1. **The condition of the heart and lungs is affected (positively or negatively) by the amount of aerobic exercise.**
2. **Aerobic exercise can reduce controllable heart health risk factors.**
3. **To achieve a positive outcome from aerobic activity you must exercise in your target heart rate zone and apply the principles of training.**
4. **Aerobic exercise increases the efficiency of the heart and lungs.**
5. **Technology can help monitor your workout intensity.**

Students are expected to know and be able to do the following:

Topic: Respiration

1. Articulate that the purpose of aerobic training is to improve the body's ability to deliver oxygen to muscles and to expire carbon dioxide from the lungs.
2. Describe the effects that exercise has on the lungs.

Focus Questions:

1. What is aerobic training?
2. What is the purpose of cardio vascular exercise?
3. Why would you want to participate in aerobic training?

Activities:

1. Participate in aerobic activities.

Topic: Aerobic and Anaerobic Activity

1. Articulate that air is partly oxygen.
2. Differentiate between aerobic and anaerobic exercise and give an example of each.
3. State the relationship between aerobic exercise and blood pressure.

Focus Questions:

1. Why does a conditioned person have a lower resting heart rate than someone who is not conditioned? Support your answer.
2. What is aerobic/anaerobic? (example of each)
3. What is blood pressure and what could high blood pressure be an indicator of?
4. What is relationship between aerobic exercise and blood pressure (during and after training)
5. Why is aerobic exercise important to the management of high blood pressure?
6. Why would you want to lower high blood pressure?
7. Given the choice between an aerobic exercise and an anaerobic exercise, which would you choose and why?
8. How could you combine aerobic and anaerobic activities into one workout and what would be the benefit?

Activities:

1. Determine from a list of exercises which is aerobic and be able to defend your decision.

Topic: Regular Exercise

1. Articulate that regular exercise allows the lungs to be more efficient.
2. Predict the difference in resting heart rate between an individual who is unconditioned to one who is conditioned.
3. Explain that the lower your resting heart rate the more time your heart gets to rest between beats.
4. Articulate that when oxygen levels are too low, the brain sends a signal to the lungs, telling them to work harder.

Focus Questions:

1. What is meant by regular exercise?
2. What is a benefit of a lower resting heart rate?
3. Why would you want to have a lower resting heart rate?
4. Overtime, what is the benefit of a lower resting hear rate?
5. Why do you breathe easier after participating in regular exercise?
6. what activities can be done to up lung efficiency and lower resting heart rate?
7. How can you increase lung capacity?
8. What occurs when oxygen levels in your body are too low?
9. Why is higher stroke volume valuable to the heart?
10. Explain how regular exercise affects the cardio-respiratory system.

Activities:

1. Participate in aerobic activities.

Topic: The Physiology of the Heart

1. Explain that the pressure of the blood on the artery walls causes pulse.
2. Define blood pressure as the measure of the blood forced against the walls of the arteries.
3. Explain that blood circulates from the heart out to the muscles and back to the heart; and carries oxygen and nutrients
4. Explain that stroke volume is the amount of blood the heart pumps with each cycle.

Focus Questions:

1. What is heart rate, resting heart rate, THR, MHR?
2. How would you calculate each?
3. What is pulse?
4. What is blood pressure?
5. What are veins, arteries, and what do they do?
6. What does the blood carry to the muscles?
7. What is stroke volume?
8. How is pulse affected by physical activity?
9. How does the heart muscle become stronger?
10. How can you modify a workout using FITT?
11. Why would you want a better conditioned heart?

Activities:

1. Demonstrate taking pulse before, during and after exercise.
2. Calculate RHR, THR, MHR.

Topic: Training Principles

1. Explain that increasing heart rate through exercise strengthens the heart muscle.
2. Apply the concepts of frequency, intensity, time, overload, progression, and specificity and relate pulmonary fitness to controllable health risk factors.
3. Explain the difference between aerobic and anaerobic exercise.
4. Explain that a lower resting heart rate allows the heart to rest between beats.

Focus Questions:

1. How do concepts of FITT, O & P work in creating an aerobic workout?
2. How can you manipulate the training principles of FITT and O & P when creating an aerobic workout?
3. What is aerobic/anaerobic exercise and give an example?
4. Explain the effect of cardio respiratory fitness on cardiac efficiency.
5. Why would you want to lower a resting heart rate?
6. Why would you want your cardio-respiratory system to be efficient?

Activities:

1. Apply the concept of FITT, OPS by using mypyramid.com, designate a workout and/or fill out an activity sheet.
2. Choose an activity and demonstrate the FITT principle.
3. Experiment with different ways of checking the intensity of a workout.
4. Figure out your HR, RHR, THR, MHR.

Topic: Risk Factors

1. Articulate how a healthy cardio-respiratory system affects wellness.
2. Articulate that being heart healthy depends on the ability of our body to deliver oxygen and nutrients to muscle, tissue, organs and bones that we need oxygen to produce energy in the muscles.
3. Explain how increased levels of cholesterol affect the body (arteriosclerosis and heart disease).
4. Explain HDL and LDL.
5. State the 6 risk factors associated with heart diseases that are controllable as: inactivity, obesity, high blood pressure, high cholesterol level, stress and smoking. (Three are uncontrollable: gender, heredity and age.)

Focus Questions:

1. What is the cardio-respiratory system?
2. How does a cardio-respiratory system affect wellness?
3. What is cholesterol and its effect on the body?
4. Differentiate between HDL and LDL.
5. What are the six controllable risk factors?
6. What are the three that are uncontrollable?
7. Why would you want to have an efficient C-R system?
8. Why would you want to raise HDL and lower LDL?
9. How does participating in regular exercise help lower LDL?
10. How does participating in regular exercise help lower your risk factors for heart disease?

Activities

1. Determine from a list of exercise, which is aerobic, and be able to defend decision (exercises that condition the heart and lungs are: aerobic dancing, bicycling, brisk walking, stationary cycling, hiking uphill, jogging, jumping rope, rowing and swimming...)
2. Apply the concepts of frequency, intensity, time, overload, progression, and specificity by using the website mypyramid.com, design a workout and filling out an activity sheet.
3. Choose an activity and demonstrate the FIT training principle.
4. Compare the methods of checking for intensity such as the talk test, target heart rate or perceived rate of exertion and demonstrate use of at least one during a workout.
5. Demonstrate taking pulse before, during and after aerobic activity
6. Calculate resting heart rate, target heart rate and maximum heart rate
7. Identify those foods that are good/bad for cholesterol levels.

CARDIO-RESPIRATORY FITNESS

High School

Enduring Understandings:

1. **The condition of the heart and lungs is affected (positively or negatively) by the amount of aerobic exercise.**
2. **Aerobic exercise can reduce controllable heart health risk factors.**
3. **To achieve a positive outcome from aerobic activity you must exercise in your target heart rate zone and apply the principles of training.**
4. **Aerobic exercise increases the efficiency of the heart and lungs.**
5. **Technology can help monitor your workout intensity.**

Students are expected to know and be able to do the following:

Topic: Respiration

1. Define respiration as the process of exchanging oxygen and carbon dioxide.
2. Define peak expiratory flow rate as a test used to measure how fast air can be exhaled from the lungs.
3. Measure their peak expiratory flow using a peak flow meter.
4. Relate their peak expiratory flow to the overall health of their lungs [normal PEF= (height in cm. – 80) x 5].

Focus Questions:

1. How can cardiovascular training improve your respiration?

Topic: Lungs

1. Identify alveoli as the site of gas exchange in the lungs.
2. Explain how regular aerobic exercise can improve the efficiency of gas exchange.

Focus Questions:

1. How can regular aerobic exercise improve the efficiency of gas exchange in the lungs?

Topic: Cardiovascular System

1. Explain how blood adapts to cardiovascular training. (increases the number of red blood cells carrying oxygen to the muscles and carbon dioxide back to the lungs; increases the number of white blood cells functioning to fight disease and illness)

Focus Questions:

1. How can aerobic exercise increase efficiency of your cardiovascular system?
2. Why is cardiovascular exercise an important factor in fighting diseases?

Topic: Aerobic Exercise Training Principles

1. Explain that during aerobic exercise you increase heart rate, stroke volume, and blood flow to the muscles while decreasing vascular resistance.
2. Relate the following physiological adaptations to aerobic training: increase red blood cells; increase total blood volume; increase stroke volume; decrease blood pressure; decrease resting heart rate; improved recovery rate.

Focus Questions:

1. How can F.I.T.T. (Frequency, Intensity, Time & Type) be useful in aerobic exercise training?
2. Develop an aerobic exercise program that demonstrates cardiovascular progression based on their current fitness level and target heart rate range.

Activities:

Develop an aerobic exercise program that demonstrates cardiovascular progression based on their current fitness level and target heart rate range.

Topic: Disease

1. State the nine risk factors associated with heart disease are: inactivity, obesity, high blood pressure, high cholesterol, stress, smoking, gender, heredity, and age.
2. Formulate a means of controlling the risk factors.
3. Identify asthma as a chronic condition characterized by the closing of the airway and shortness of breath.
4. Discuss how aerobic conditioning can benefit an asthmatic.
5. Discuss the effect of air quality one's ability to be active.

Focus Questions:

1. What are some aerobic activities/exercises that can be used in preventing heart disease?
2. How can cardiovascular help in fighting diseases?

Topic: Cholesterol

1. Define cholesterol as a wax that is produced by the body in the liver.
2. Identify LDL as bad cholesterol that leads to clogging of the arteries.
3. Identify HDL as good cholesterol that helps remove excess cholesterol from the body.
4. Identify the ratio of HDL to LDL as the most important number in determining health risk (LDL to HDL ratio should be $\leq$ 2:1).
5. Relate diet, heredity, and amount of regular exercise to total cholesterol.

Focus Questions:

1. Why is the ratio of LDL to HDL the most important number in determining health risk?
2. How can cardiovascular exercise decrease the risk in cholesterol related diseases?

FLEXIBILITY

Elementary School

Enduring Understandings:

1. **Full range of motion promotes safe and effective stretching.**
2. **Improper stretching has the potential for causing injury.**
3. **Tendons attach muscle to bone.**
4. **Flexible muscles enhance performance.**
5. **Proper application of training principles decreases the chance of becoming injured.**

Students are expected to know and be able to do the following:

Topic: Stretching

1. Identify that a way to increase flexibility is to stretch.
2. Identify that stretching produces elastic elongation that increases the extensibility of muscles.
3. Identify that stretching helps your muscles get ready for exercise.
4. Perform flexibility exercises as a part of the warm-up and cool down segments of class.

Focus Questions:

1. What is the best way to increase flexibility?
2. How does stretching help you get ready for exercise?
3. What is a warm-up?
4. What is a cool down?
5. What system (muscles) become longer when you stretch?
6. Why are some people more flexible than others?

Topic: Flexibility

1. Define the following terms:
    - Flexibility – the ability to move body joints through a full range of motion.
    - Range of motion – the natural distance and direction of movement of a joint.
    - Stretching – increasing the range of motion
    - Joint – the point where two bones come together.

Focus Questions

1. Define Flexibility.
2. Define Range of Motion.
3. Define Stretching.
4. What is a joint.

Topic: Safety

1. State some of the reasons for stretching to increase flexibility and to reduce the risk of injury, reduce the chance of low back pain, and help relieve emotional tension.
2. Identify the following safety rules for stretching:
    - Ballistic stretching has the potential for causing injury.
    - Using partners to help you get extra stretch can cause injury because they do not know how much pain you are in and may force your body part too far.
    - Start at a proper level and know when to increase the frequency, intensity, or amount of time of flexibility exercises.
    - Stretch according to what you feel not according to what others do.
    - Include flexibility with cardiovascular and muscular strength training programs to prevent muscle imbalance from occurring.

Focus Questions:

1. What are the reasons for improving your flexibility?
2. What are the safety rules for stretching?
3. Why is it important to have flexibility when playing sports?

Topic: Training Principles

1. Discuss that to increase flexibility one must engage in a deliberate training program. This could be in the form of a separate flexibility program or combined with the warm-up and cool-down phases of your overall fitness program.
2. State that proper stretching should contain the following elements:
    - Method – use static stretch
    - Frequency – stretch each muscle group daily if possible, but at least three days a week. Stretch before and after work outs.
    - Intensity – stretch muscles beyond their normal length. They should feel stretch sensations in the muscles and not in the joint.
    - Time – hold each stretch 15-30 seconds to feel the tightness release.

Focus Questions:

1. What do you need to do to improve your flexibility over time?
2. What are methods of stretching?
3. How often should you stretch to improve your flexibility?
4. Why should you stretch muscles beyond their normal length?
5. How long should you hold each stretch?

FLEXIBILITY

Middle School

Enduring Understandings:

1. **Full range of motion promotes safe and effective stretching.**
2. **Improper stretching has the potential for causing injury.**
3. **Good flexibility improves performance.**
4. **Proper application of training principles can increase flexibility and decrease the risk of injury.**

Students are expected to know and be able to do the following:

Topic: Muscles and Joints

Explain and demonstrate the kind of motion the joints in the body allow.

- Pivot - such as in the neck - rotating motion
- Hinge joint - Such as in the knee - permits back and forth motion
- Ball and socket - Such as the hip and shoulder - allowing for movement in many different directions
- Gliding joint - such as wrists and ankles - allow bones to slide over one another

Focus Questions:

1. What are the types of joints?
2. Give an example of each type of joint and where it is located.

Topic: Stretching

1. Explain and demonstrate the kind of motion these joints in the body allow:
   - Pivot: such as in the neck – rotating motion
   - Hinge joint: such as in the knee – permits back and forth motion
   - Ball and socket: such as the hip and shoulder – allowing for movement in many different directions
   - Gliding joint: such as wrist and ankles – allow bones to slide over one another

Focus Questions:

1. Can you identify the neck, chest, shoulder, lower back, hamstrings, groin, quadriceps, calves, and Achilles tendon?
2. How does proper stretching help avoid injury and discomfort?

Activities:

1. Demonstrate how to stretch _____(specific muscle). Repeat with variety of muscles.

Topic: Range of Motion

1. Articulate that flexibility is the lengthening of the muscles and if you do not use the range of motion available in a joint, muscles begin to shorten and you lose flexibility.

Focus Questions:

1. What is range of motion?
2. How can you measure range of motion in different joints?
3. How do you maintain flexibility through out your life?
4. Can you improve flexibility through out your life?

Topic: Safety

1. State some of the reasons for stretching to increase flexibility are to reduce the risk of injury, reduce the chance of low back pain, and help relieve emotional tension.

Focus Questions:

1. What is tension?
2. What kind of injuries can occur through inflexibility?
3. Are all kinds of stretching equally important for all kinds of sports?
4. How is flexibility related to low back pain?
5. Why do inflexible muscles cause low back pain?
6. Explain the causes of tension.
7. How can stretching relieve tension?

Topic: Training Principles

1. Apply the concepts of frequency- stretch each muscle group daily or 3x week, intensity- stretch beyond normal, time- hold stretch for 10 – 15 sec, overload- to stretch a muscle longer than normal, progression - gradual increase intensity by stretching farther (1st time hold the longer or increase the number of stretches, then stretch farther), specificity- stretching specific muscles at specific joints, and relate flexibility to controllable health risk factors.

2. Explain how poor flexibility affects a person's quality of life.

3. Explain the relationship between strength and flexibility and tell why you should do both. (Keep muscles on opposite sides of a joint balanced)

Focus Questions:

1. How often should you stretch to gain a benefit?
2. How do you overload your muscles to improve flexibility?
3. How do you improve your flexibility over time?
4. Demonstrate a stretch, using proper form for each of the following areas: Neck, shoulders, back, hips, hamstrings, thighs and calves.
5. How does poor flexibility affect a person's quality of life?
6. Explain the relationship between strength and flexibility.
7. Why is it important to be strong and flexible?

FLEXIBILITY

High School

Enduring Understandings:

1. **Full range of motion promotes safe and effective stretching.**
2. **Improper stretching has the potential for causing injury.**
3. **Good flexibility improves performance.**
4. **Proper application of training principles can increase flexibility and decrease the risk of injury.**

Students are expected to know and be able to do the following:

Topic: Terms

1. Compare three different methods of stretching: static stretching (slowly stretching muscle to its furthest point and holding for 15-30 seconds); dynamic stretching (stretches performed in a continuous, slow and controlled manner); ballistic stretching (stretching in a rapid bouncing movement).
2. Perform a variety of stretches safely.

Focus Questions:

1. What is static stretching?
2. What is dynamic stretching?
3. What is ballistic stretching?
4. What is the difference between static, dynamic and ballistic stretching?
5. How can you identify which type of stretching you should do?
6. Demonstrate a stretch, using proper form for each of the following areas: Neck, shoulders, back, hips, hamstrings, thighs and calves.

Philosophy:

Evaluate your immediate family (mother, father, siblings, grandparents). How has flexibility, or lack of it, affected their life? How important is flexibility to you? Why?

Topic: Training Principles

1. Associate a lack of flexibility to possible risk of injury.
2. Design a stretching program for a sport or activity of the students choosing. (specificity)
3. Recognize that through stretching flexibility can be maintained or improved throughout one's lifetime.

Focus Questions:

1. How is flexibility related to preventing injuries?
2. Can you improve or maintain flexibility later in your life?

Activities:

1. Design a stretching routine for your sport.

STRESS

Middle School

Enduring Understandings:

1. **Regular exercise enhances the body's ability to respond to stressors.**
2. **Regular exercise helps to burn off and use up stress hormones and neurochemicals.**
3. **Regular exercise discourages negative behaviors**
4. **Good lifestyle decisions can lessen stressors.**
5. **Exercise provides an outlet for emotions.**
6. **Relaxation and meditation reduces stressors.**
7. **Stress is the antithesis of happiness**

Students are expected to know and be able to do the following:

Topic: Stressors

1. Identify that anxiety, depression and stress can have harmful effects on the quality of life.
2. Articulate that a stressor is something that causes stress.
3. Articulate that both good events and bad events can be stressors.(ie. TV, video games, events)

Focus Questions:

1. What are stressors?
2. What kinds of events can be stressors?
3. How does anxiety, depression and stress have a harmful effect on your life?
4. How does regular exercise help lessen stressors?

Topic: Physical Activity

1. Relate how exercise, especially regular exercise, enhances the body's ability to respond to stress.

Focus Questions:

1. How can regular exercise and physical fitness help you to cope with stress?

Topic: Relaxation and Meditation

1. Perform deep breathing exercises.

Focus questions:

1. How does deep breathing help you to relieve stress?

Topic: Lifestyle

1. Understand that fruits and vegetables contain nutrients that help to relieve stress.
2. Articulate that limiting caffeine and staying hydrated is beneficial to the nervous system and assists in combating the effects of stress.
3. Understand that they should take responsibility for their own stress.

Focus Questions:

1. What types of foods are best to fight the bad effects of stress?
2. How is good hydration helpful in fighting stress?
3. Why is it up to each person to take responsibility for their own stress?
4. How do certain foods help us deal with stress?

Topic: Training Principles

1. Each person should monitor their own stress and take steps to keep it in balance with the rest of their lives (frequency).
2. Correlate stress with the relevant health risk factors (blood pressure, body weight, cholesterol)
3. Plan time to relax and exercise (time).
4. Be able to perform exercises and relaxation methods that reduce stress (specificity).

Focus Questions:

1. Who is responsible for managing your stress?
2. Is stress self imposed or does it come from other people and events?
3. How does stress effect blood pressure, body weight and cholesrol?
4. When is a good time for your to relax and exercise?
5. How can you fit relaxation and exercise into your daily routine?
6. What are some relaxation methods that you can do?
7. Demonstrate relaxation methods that reduce stress?

Topic: Psychological Responses and Emotions

1. Articulate that perceptions are based on past experiences, influenced by personality traits and are difficult to unlearn. Our perceptions become our reality.

Focus questions:

1. What is a perception?
2. What are the major experiences that we have in our lives that could influence our perceptions?
3. How are our perceptions influenced by our experiences and personalities?
4. Why do past experiences have impact6 upon who we are now?

Topic: Negative Behaviors

1. Understand that TV and video games can be over stimulating and increase stress levels.
2. Understand that overeating and being overweight can stress our bodies.
3. Understand that inactivity can lead to stress.

Focus questions?

1. Are TV and video games stimulating or relaxing? Why?
2. Is being overweight stressful? How?
3. Is inactivity stressful? How?

STRESS

High School

Enduring Understandings:

1. **Regular exercise enhances the body's ability to respond to stress.**
2. **Regular exercise helps to burn off stress hormones and neurochemicals.**
3. **Regular exercise discourages negative behaviors.**
4. **Good lifestyle decisions can lessen stress.**
5. **Exercise provides an outlet for emotions.**
6. **Relaxation and meditation reduce stress.**
7. **Stress in an antithesis of happiness.**

Students are expected to know and be able to do the following:

Topic: Stressors

1. Describe several positive and negative stressors currently affecting their lives.

Focus Questions:

1. Name three positive stressors that occur in your life.
2. Name three negative stressors that occur in your life.
3. How do these stressors effect your life?

Topic: Physical Activity

1. State that exercise on a regular basis relieves stress by burning up stress hormones and neurochemicals.
2. Explain exercise can act as an anti-depressant by combating anxiety.
3. Identify exercise as an outlet for negative emotions such as impatience, avoidance, frustration, anger, and irritability.

Focus Questions:

1. What are stress hormones and neurochemicals?
2. How does regular exercise affect stress hormones and neurochemicals?
3. How does exercise affect depression and anxiety?
4. How does exercise effect negative emotions?

Philosophy Question:

1. Depression, anxiety and stress are sometimes treated by doctors with medication. Compare the benefits of treating these conditions with medication vs. alleviating them with physical activity. How does stretching relieve muscle tension?

Topic: Physiological Responses

1. Explain that exercise releases endorphins into the blood stream producing a sensation of happiness and well-being.
2. Identify the following negative physical conditions caused by stress: depression, high blood pressure, ulcers, some forms of cancer, aging, headaches (including migraines), and asthma attacks, blood sugar fluctuations in diabetics, muscle tension, and increased heart rate.
3. Articulate tense muscles restrict circulation.
4. Articulate that prolonged biochemical responses to stress can be harmful and cause negative physical conditions.

Focus Questions:

1. What are endorphins? What do they do?
2. How does exercise effect happiness and well being?
3. What is depression, High blood pressure, ulcers, cancer, physical aging, blood sugar, muscle tension?
4. What negative physical conditions can be caused by stress?
5. What does stress do your musculature?
6. How do tense muscles restrict circulation?
7. What is the relationship between your bodies response to stress and negative physical conditions?

Topic: Relaxation and Meditation

1. Explain that relaxation techniques and meditation can relieve stress by increasing blood flow and relaxing tense muscles.
2. Participate in a variety of relaxation and meditation activities.
3. Discuss the benefits of relaxation and meditation techniques in relation to the controllable health risk factors.
4. Exercise has the effect of allowing people to sleep more soundly.

Focus Questions:

1. What effect does relaxation and meditation have on relieving stress?
2. Demonstrate a variety of relaxation and meditation activities.
3. What are the controllable health risk factors?
4. What is the relationship between relaxation and meditation to controllable health risk factors?
5. What effect does sleep have on stress?
6. What is the relationship between sleep and stress?
7. How can lack of sleep and stress affect your appetite?
8. How are the controllable risk factors affected by relaxation and meditation?