

Introduction:

Exercise must be performed regularly throughout life to achieve the benefits of physical fitness, wellness, and disease prevention. Maintaining a regular program of good health behavior, exercise, and healthy dietary practices to achieve wellness requires motivation and a lifetime commitment to a healthy lifestyle.

Activate Prior Knowledge:

"Physical activity is something you do. Physical fitness is something you acquire, a characteristic or an attribute one can achieve by being physically active. And exercise is structured and tends to have fitness as its goal" *Anonymous*

Standards:

PANPE2a: Identify the health, wellness and fitness benefits of selected alternative physical activity

PANPE2b: Evaluate personal fitness requirements for participation in selected alternative physical activity



Objectives:

- Describe the five health-related components of fitness
- Identify the six skill-related components of fitness
- Explain the principles of overload, progression, specificity, reversibility, individuality, and recovery
- Describe how much physical activity is recommended for optimal health and wellness

Guiding Questions:

1. What is the difference between exercise and physical activity?
2. Why is cardio respiratory endurance such an important component of physical fitness?

Being Physically Active is the Key

Physical activity: Bodily movement using skeletal muscles that results in an expenditure of energy. A pattern of physical activity is regular if activities are performed in some order.

Structured activities:

- Sports
- Dance

Home/Work Activities:

- Walking
- Climbing Stairs
- Mowing the lawn

Physical Fitness is a measure of a person's ability to perform physical activities that require endurance, strength, or flexibility. A fit person is able to carry out the typical activities of living, such as work, and still have enough energy and vigor to respond to emergencies and to enjoy leisure activities.

Attributes of people that have an ability to perform physical activity:

- Believe in product-oriented outcomes
- Emphasis is placed on achieving a higher state of being
- Increased ability of the body to function efficiently and effectively
- Overall health and well-being is enhanced

Exercise Categories:

Anaerobic exercise	<ul style="list-style-type: none"> • Does not require oxygen for energy • High intensity & lasts only a few seconds to approximately two minutes • Activities range from a tennis serve to an eight-hundred-meter run
Aerobic exercise	<ul style="list-style-type: none"> • Requires oxygen for energy • Generally less intense but longer in duration • Events lasting longer than several minutes • Two-mile run; Tour de France bicycle race
Note: Potentially, a person can use both systems, as in soccer, where a match requires ninety minutes of continuous activity with short high intensity bursts of energy.	

Overall - Exercise

- Any physical activity that improves or maintains physical fitness
- Planned, structured, and repetitive bodily movement

Benefits of exercise

- Develops or maintains one or more components of physical fitness
- Improves endurance, flexibility, and strength
- Decreases risk of chronic diseases

Healthy People 2020 - National Health Goals

- Attain high quality, longer lives free of preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve the health of all groups.
- Create social and physical environments that promote good health for all.
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

Physical activity levels have declined:

More than 55% of U.S. adults do not engage in recommended amounts of activity
25% are not active at all

Developing Physical Fitness

A physically active lifestyle improves health but may not improve current fitness level, a structured, formal exercise program improves physical fitness level and provides even greater health improvements.

How Much Physical Fitness Activity Is Enough?

- Moderate-intensity versus high-intensity exercise
- Continuous versus intermittent exercise

NOTE: Low-intensity exercise improves health but may not be very beneficial for improving physical fitness

Rate of Perceived Exertion (RPE)

- Versatile method to measure exercise intensity for all age groups
- Estimates how hard you feel like you're exerting yourself during exercise
- Good measure of intensity because it is individualized
- Is based on your current fitness level and your overall perception of exercise level.
- Scale ranges from 1 to 10

Modified Perceived Exertion Scale

SCALE	INTENSITY
0	Rest
1	Extremely Easy
2	Very Easy
3	Light
4	Moderate
5	Somewhat Difficult
6	Moderately Difficult
7	Hardwork
8	Very Hardwork
9	Very Very Hardwork
10	Maximum

Talk Test

The talk test is a subjective measure of the level of exercise/workout intensity.

The exercise/workout should be:

- at a level where you can answer a question, but not comfortably carry on a conversation
- at an intensity that allows you to breathe comfortably and rhythmically

The exercise/workout is too difficult if you:

- must to take a breath between every word said
- are breathless, or can't talk, you're working too hard! Lower the resistance level and slow down
- If you experience dizziness or lightheadedness, stop overexerting yourself!

Moderate Intensity vs. Vigorous Intensity

Recently, the U.S. Government published new physical fitness guidelines which discuss "moderate" and "vigorous" exercise intensity. So what does that mean? **Moderate workouts** may provide health benefits such as reduced risk of high blood pressure, certain cancers, stroke and diabetes. **Vigorous workouts** may provide those benefits, **plus** may aid in weight loss and increased muscle mass.

- Here are some concepts that distinguishes between moderate vs. vigorous intensity:

Moderate-Intensity Activity (For example, walking a mile in 14 to 23 minutes)

- Ranges from 40-60% of one's max heart rate.

- Slightly increased rate of breathing
- Feels “light” to “somewhat hard”
- Can easily carry on a conversation

Vigorous-Intensity Activity (For example, walking a mile in less than 14 minutes, jogging, cycling, and playing endurance sports are all considered vigorous activity.)

- Elevates heart rate above 60% of one’s max heart rate.
- Increased rates of breathing and sweating
- Feel “somewhat difficult” to “very difficult”
- Activity can be beneficial when accumulated in several shorter bouts of daily activity

Physical Activity for Teens

The amount of activity recommended for youth:

Recommendation #1- should be a priority and a minimum expectation for all youth

All youth should be physically active on a daily basis, or at least 3 days per week, as part of community activities, games, physical education, recreational times with family, school, sports, and other appropriate times.

Recommendation #2 - is the most attainable goal

Youth should engage in three or more sessions per week of activities that last 30 minutes or more and require moderate to vigorous levels of exertion.

Physical Fitness Consists of:

- Five (5) health-related fitness components
- Six (6) skill-related components
- 2 non-performance components

Health-Related and Skill Related Physical Fitness

- Characterized by moderate and regular activity
- Matches the majority of people

Fitness Related to Athletic Ability

- Factors controlled by genetics
- People who want to perform at a high level
- Not for the majority

Health-Related Physical Fitness

- Focus of physical education
- All students can improve their health status
- Succeed regardless of ability or genetics
- Physiological areas that offer protection from diseases related to sedentary lifestyle
- Regular activity can positively influence

Components of Health Related Fitness

Cardiovascular Fitness: the ability to exercise your entire body for long periods

- Aerobic exercise is any type of exercise that increases heart rate.
- Aerobic capacity is the functional status of the cardiovascular system, measured as the maximum Volume of oxygen consumed by the muscles during exercise (VO_{2max})

Muscular Strength: the amount of force your muscles can produce (muscles exerting force)

- One repetition maximum (1 RM) is the maximum amount of weight you can move at one time
- Facilitates learning motor skills
- Important for completing everyday tasks
- Helps to maintain proper body alignment
- Prevents back and leg pain

Muscular endurance: the ability to use your muscles many times without tiring, exert force over an extended time

- Key for everyday life activities
- Helps to maintain good posture
- Enhances athletic performance

- Improves ability to cope with everyday stressors

Flexibility: the ability to use your joints fully through a wide range of motion; range of movement a joint or sequence of joints moves

- Stretching lengthens muscles, tendons, and ligaments
- Less subject to injury
- Creates sound posture
- Less lower back pain

Examples

- Yoga blends mental and physical aspects of exercise; it promotes balance, coordination, flexibility, and mental focus.
- Tai chi is a Chinese form of yoga; it is designed to increase range of motion while reducing muscular tension.
- Pilates combines stretching with movement against resistance.

Body Composition: is the percentage of body weight that is made up of fat when compared to other body tissue, such as bone and muscle.

- Proportion of body fat to lean muscle mass
- BMI (height and weight formula)
- Excessive Fat is good predictor of health problems
- High percentage of lean muscles increases ability to adapt to stress

Benefits of skill-related fitness

- Enables a person to perform in sport activities
- Closely related to athletic performance
- Strongly influenced by natural or inherited traits
- Difficult for the majority of students to achieve
- Useful for performing motor tasks

Components of Skill Related Fitness	
Agility	Agility is the ability to change the position of your body quickly and to control body's movements. People with good agility are most likely to be good at activities such as: diving, soccer, ice skating, wrestling, etc.
Balance	Balance is the ability to keep an upright posture while standing still or moving. People with good balance are most likely to be good in activities such as gymnastics, ice skating, rhythmic gymnastics, ski-jumping, surfing, etc.
Coordination	Combination of body movements created with the kinematic (such as spatial direction) and kinetic (force) parameters that result in intended actions smoothly and efficiently work together
Power	Power is the ability to use strength and speed. People with good power might have the ability to put the shot, throw the discus, high jump, play football, speed swim, speed skate, etc.
Reaction Time	Reaction time is the amount of time it takes to move once you realize the need to act. People with good reaction time are able to make fast starts in track or swimming, or to dodge a fast attack in fencing or karate.
Speed	Speed is the ability to perform a movement or cover a distance in a short period. People with leg speed can run fast, while people with good arm speed can throw fast or hit a ball that is thrown fast.

Note: Different activities require different parts of skill -related fitness. Many sports require several parts. For example, a skater might have good agility, but may not possess good power. Some people have more ability that is natural in skill areas than others. Good health does not necessarily translate into good skill-related fitness.

What Are the Principles of Fitness?

Principles of fitness are general principles of exercise adaptation that guide fitness programming.

Principle of Overload

The principle of overload states that the amount of training you undertake must be more than your body or body system is used to. Consistent overloads cause an adaptation—a change in the body as a result of an overload. In exercise training, this is called a training effect; that is an increase in physical fitness as a result of overload adaptations in body systems.

The **dose–response relationship** states that the amount of adaptation you can expect is directly related to the amount of overload or training dose you complete.

Principle of Diminished Returns

The principle of diminished returns states that the rate of fitness improvement diminishes over time as fitness levels approach genetic limits. Increasing physical activity results in greater health gains only to a certain threshold. If a person continue to push against their threshold limit, those actions may actually cause harm.

Principle of Progression

The principle of progression states that in order to effectively and safely increases your fitness; you need to gradually increase your program’s intensity, frequency, and/or time. Simply stated, you need to increase your workout levels enough to see results.

Principle of Specificity

The principle of specificity states that improvements to a particular body system will occur only if that body system is appropriately overloaded. The type of training must be targeted to the goal.

Principle of Reversibility

The principle of reversibility states that all training adaptations will revert toward initial levels when training is stopped. This is the “use it or lose it” principle.

Principle of Individuality

The principle of individuality states that adaptations to a training overload may vary greatly from person to person. Individual differences in training adaptations are greatly influenced by a person’s genetics.

Principle of Rest and Recovery

The principle of rest and recovery states that you need to give your body time to recover from the increased physiological and structural stresses that you place on it.

Constant training with insufficient rest and recovery is called overtraining. It can result in diminished health, fitness, and performance.

If you are Physically Fit:

- A body system that works efficiently
- Good health
- Increased ability to cope with stress
- Proper energy level to complete daily activities
- Boosted high-density lipoproteins

Value of Physical Fitness:

- Enjoy life
- Look good
- Able to maintain weight
- More confident in abilities
- Natural high (feeling good)
- Reduced risk of Type II diabetes
- Decreased risk of a heart attack

Summary:

Sports and recreation activities are a great way to improve your current level of fitness. When choosing a sport or activity, consider the following:

- Do you want to participate in a new sport or activity or improve in a sport or activity you have participated in before?
- Do you want to participate in individual sport or activity or a team sport or group activity?
- What activities are available in your area?
- Do you have access to facilities?

Student Practice:**M1 L1.1: Par-Q and You**

The purpose of this laboratory activity is to determine individual readiness to engage in a fitness program. Complete the Physical Activity Readiness Questionnaire (Par-Q), you sign, have parent/guardian sign, scan it and upload it as an attachment in Schoology.

M1 L1.2: Estimation of Intensity

This laboratory activity gives you an opportunity to estimate the intensity of your workout by using the talk test and rate of perceived exertion method. You can estimate your exercise heart rates by using the RPE scale rather than manually counting your pulses. Upon completion of the assignment, upload your results.

M1 L1.3: Personal Best - Great Beginnings

The purpose of this laboratory activity is to help you understand the need to design a personal physical fitness program based on realistic goal setting in relation to your personal performance, and to provide information about a method of breaking personal barriers. Open the attached document. Read and complete the document as directed. Upon completion, upload the document.

Resources

Presidential Active Lifestyle Award (PALA+): <https://www.hhs.gov/fitness/programs-and-awards/pala/index.html>

The Presidential Active Lifestyle Award (PALA+), a program of the President's Council on Sports, Fitness & Nutrition (PCSFN) <https://www.hhs.gov/fitness/index.html>, promotes physical activity and good nutrition, because it takes both to lead a healthy lifestyle. Start the eight-week program to help you maintain or improve your health. It's a great way to help manage and reach your health goals.

Team Nutrition Resources for Schools: <https://www.fns.usda.gov/tn/school>

USDA What's Cooking? Find recipes, watch how to videos and learn nutrition facts. There is a tool to create your own recipe book. <https://www.fns.usda.gov/tn/school>

MyPlate for Teens: <https://www.choosemyplate.gov/teens>

This USDA webpage has links to various resources that you might find helpful. There is a link to a free BMI Percentile Calculator.

MyPlate Plan: <https://www.choosemyplate.gov/MyPlatePlan>

The MyPlate Plan shows your food group targets – what and how much to eat within your calorie allowance. Your food plan is personalized, based on your age, sex, height, weight, and physical activity level.