PHYSICAL FITNESS
- Body Systems ability to work together efficiently
- Daily activities require no effort
- Health-related fitness improves your health and is more important than skill-related fitness, which improves your ability to perform sport skills.

QUESTIONS:
1. Which is more important – health or skill related fitness? __________________
2. If you are physically fit, what does that mean?
   a. ____________________________________________________________
   b. ____________________________________________________________
   c. ____________________________________________________________
   d. ____________________________________________________________

<table>
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<tr>
<th>Reaction time</th>
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<th>Agility</th>
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<td>Flexibility</td>
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<td>Body Composition</td>
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<tr>
<td>Power</td>
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</tr>
</tbody>
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Health Related Components:  
Skill Related Components:

Use the above words to list the components.

1. ____________________  1. ____________________
2. ____________________  2. ____________________
3. ____________________  3. ____________________
4. ____________________  4. ____________________
5. ____________________  5. ____________________
6. ____________________

TRAINING PRINCIPLES:
1. OVERLOAD is doing more than what you are used to doing. There are 3 ways to apply OVERLOAD:
   i. FREQUENCY is how often you exercise. Measured in the number of days.
   ii. INTENSITY is how hard you exercise. Measured with heart rate or weight/resistance
   iii. TIME is how long you exercise. Measured in minutes/sets & reps
2. PROGRESSION means that the amount and intensity of your exercise should be increased gradually, after the body has adapted to the overload.
3. SPECIFICITY means that the specific type of exercise you do determines the specific benefit you receive. Example: To improve muscular strength, you must do resistance activities.

QUESTIONS:
1. List the 3 training principles.  1. ____________________  2. ____________________  3. ____________________
2. List the 3 ways to apply overload.  1. ____________________  2. ____________________  3. ____________________
3. Define progression. ____________________
4. Running to improve your cardiovascular endurance, what training principle are you applying? ____________

FITNESS CARD
The most accurate way to measure your intensity level would be finding pulse and counting for one minute (or counting for 6 seconds and adding a zero), recording heart rate, or indicating how much weight you used. RPE stands for Rate of Perceived Exertion (or your level of effort).

QUESTIONS:
1. What does RPE stand for? _________________________________________
2. How do you find your exercise intensity? ____________________________

Joe Schmoe just transferred here and has asked for your help in how to fill out his fitness card. He played basketball on Tuesday, January 18 in the Fieldhouse for the entire period. When he took his heart rate at the end of the game, it was 162 beats
per minute. His rate of perceived exertion was hard, about 8/10. He wrote his 2nd long term goal on his card “to successfully run 80 pacers”. Help him fill in the fitness card section below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Fitness component</th>
<th>Intensity</th>
<th>RPE</th>
<th>Goal Worked</th>
</tr>
</thead>
</table>

Cardiovascular fitness is the ability of the heart and lungs to provide oxygen to the working muscles. We test CV fitness using the 20 min walk run or PACER. The cardiovascular system is comprised of the heart, blood vessels, and blood. The respiratory system is the lungs and air passages that bring air, including oxygen, from outside the body into the lungs. CV Endurance improves the heart’s ability to pump blood efficiently. Arteries carry blood AWAY from the heart. Veins carry blood TO the heart. AEROBIC EXERCISE is long, sustained exercise that uses the large muscles of the body and can oxygen is continually supplied to the working muscles. Jogging is an example. ANAEROBIC EXERCISE is short, quick bursts of exercise in which the body cannot supply oxygen to the working muscles fast enough. Sprinting is an example. The benefits of CV Fitness are decreased risk of heart disease, heart attack, high blood pressure, diabetes, stroke, and add years to your life. To apply overload, the healthy fitness zone for cardiovascular endurance is: Frequency: 3-6 days/week; Intensity: 60-80% Heart Rate Max; Time: 20-60 minutes. The Karvonen method for finding heart rate max is 220-age.

QUESTIONS:
1. What 2 systems work together for cardiovascular endurance? 1. ______________ 2. ______________
2. What test measures cardiovascular endurance? ______________
3. What carries blood AWAY from the heart? ______________ What carries blood TO the heart? ______________
4. What is an example of aerobic activity? ______________ Anaerobic activity? ______________
5. Define cardiovascular fitness. ______________
6. What is the Karvonen method for finding heart rate max? ______________
7. What is the healthy fitness zone for cardiovascular strength? a. ______________ b. ______________ c. ______________

Flexibility is ability to move joints through a full range of motion. We measure flexibility with the Sit and Reach. Range of Motion is amount of movement you can make at a joint (elbow, knee, shoulder) Characteristics of Flexibility are body build (how you are put together), hypermobility (ability to extend a joint past a straight line, as if bending backwards), joint laxity (looseness in a joint), and Strength & Flexibility must balanced to maintain health; tight muscles pull on body. The types of Flexibility exercises are ROM Exercises (flexibility exercises that are used to maintain ROM already present) and Stretching exercises (increase ROM by stretching further than current ROM). Examples of Stretching Exercises: Static Stretching is stretching slowly as far as you can without pain until you feel a “pull,” then hold for 15-30 seconds; PNF – variation of static stretching; involves the using body’s reflexes to relax muscles before stretching, to stretch it further. To apply overload, the healthy fitness zone for flexibility: Frequency = 3-7 days/week; Intensity = 30-50% HRM, stretch beyond normal; Time = hold 30 seconds, rest, 3-5 reps or 20 minutes.

QUESTIONS:
1. Define flexibility. ______________ Test to measure it? ______________
2. What does flexibility need to be balanced with for healthy muscles? ______________
3. What are the 2 types of flexibility exercises? 1. ______________ 2. ______________
   a. What are the 2 types of stretching activities? i. ______________ ii. ______________
4. What is the healthy fitness zone for flexibility?
   a. ______________
   b. ______________
   c. ______________
Muscular Strength is the amount of force a muscle can exert. Balance flexibility and muscular strength for healthy muscles. We measure Strength with the Push up test. Muscular Endurance is the amount of force a muscle can repeatedly exert. We measure Endurance with the Sit up test. Resistance is a force that acts against your muscles. Skeletal muscle is the type of muscle that attaches to bones and makes movement possible. The types of muscular fitness exercises are isometrics, isotonics, plyometrics, calisthenics, and resistance training. Isometric Contractions occur when muscles contract and pull with equal force in opposite directions so no movement can occur. Isotonic Contraction is a muscle contraction that pulls on bones and creates movement. Calisthenics use body weight as the resistance. Repetitions are the number of consecutive times you do an exercise. Set is a group of repetitions. Guidelines: Exhale on the exertion phase, start with low intensity exercises and then progress slowly, always move through a full range of motion so you do not lose flexibility. The types of muscular fitness exercises are isometrics, isotonics, plyometrics, calisthenics, and resistance training. The healthy fitness zone for muscular strength is: Frequency: 3-5x/week, Intensity: 60-90% 1 rep max, Time: 3 sets, 4-8 reps. The healthy fitness zone for muscular endurance is: Frequency: 3-5x/week, Intensity: 30-50% 1 rep max, Time: 4 sets, 12-20 reps.

QUESTIONS:

1. Define muscular strength. ________________________________  Test to measure it? _________
2. Define muscular endurance. ________________________________  Test to measure it? _________
3. What does muscular strength need to be balanced with for healthy muscles? ____________________________
4. What type of exercise uses your body weight as the resistance? ____________________________
5. What is the type of contraction that produces movement? ____________________________
6. What is the type of contraction where NO movement occurs? ____________________________
7. What is the healthy fitness zone for muscular endurance?
   a. ________  b. ________  c. ________
8. What are the 5 types of muscular endurance exercises? 1. ________ 2. ________ 3. ________
   4. ________  5. ________
9. What is the healthy fitness zone for muscular strength?
   a. ________  b. ________  c. ________

BRAIN RESEARCH AND PHYSICAL ACTIVITY

- Increased EXECUTIVE FUNCTIONING (planning, organization, ability to multi-task)
- Research performed by Jon Ratey, Clinical Associate Professor of Psychiatry at Harvard Medical School
  - Exercise increases CEREBRAL BLOOD FLOW, spurring cell growth
  - Exercise stimulates the PRODUCTION of a protein called BDNF (brain-derived neurotrophic factor) - “MiracleGro for brain”
- Promotes neuroplasticity, which enables brain cells to be trained to a different state and to take in new information
- Increased blood flow helps prime the brain for learning by helping person stay focused, alert, aroused, and less fidgety
- Exercise releases chemicals to have a positive response in the body.
EXERCISE improves FOCUS, ATTENTION, MOOD (Serotonin released); decreases STRESS (endorphins released that make you feel good) & ANXIETY (dopamine brings on feelings of enjoyment, increases motivation)

QUESTIONS:
1. What does increased blood flow from exercise do for the brain? __________________________________________

2. Identify the chemical and its response from exercise:
   a. ____________________  b. ____________________  c. ____________________

**Body Composition** is the ratio of lean body tissue to fat tissue. We measure body composition by the skinfold test or electrical impedance. Healthy Range for Males = 10%-25%; Females= 18%-32%. Body fatness is the percentage of the body that is fat tissue. Benefits of fat include insulati (heat and cold), shock absorption (protects organs and bones), use vitamins effectively, stored energy, and make you look good. Influences on body fatness are heredity, metabolism, maturation, early fatness, diet, physical activity.

<table>
<thead>
<tr>
<th>Fitness Target Zones for Fat Control – DIET</th>
<th>&amp;</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Frequency: 3 regular meals, 4-5 small meals</td>
<td></td>
<td>3-6x/week</td>
</tr>
<tr>
<td>• Intensity: To lose fat-3,500 calories less than normal</td>
<td>To maintain-normal intake of calories</td>
<td>40-60% HR Max</td>
</tr>
<tr>
<td>To gain fat- 3,500 calories more than normal more than normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Time: Lose no more than 1 to 2 pounds per week</td>
<td></td>
<td>20+ minutes</td>
</tr>
</tbody>
</table>

QUESTIONS:
1. Define body composition. ___________________________ Test to measure it? ____________

2. What does body fatness mean? __________________________________________

3. What is the healthy range for males? ____________________________

4. What is the healthy range for females? ____________________________

5. What 6 factors influence body composition? 1. ______________ 2. ______________ 3. ______________
   4. ______________ 5. ______________ 6. ______________

6. What is the ACTIVITY healthy fitness zone for body composition?
   a. ______________  b. ______________  c. ______________

7. What are the 5 benefits of body composition?
   1. ______________ 2. ______________ 3. ______________ 4. ______________ 5. ______________

8. What is the DIET healthy fitness zone for body composition?
   a. ______________  b. ______________  c. ______________

**Goal-setting** is a plan to determine what you want to accomplish and establishing how to do it. **Long-Term** goals are overall what you want to accomplish. Example – I want to run 30 pacers by next school year. **Short-Term** goals are specific to what you will do to try to achieve your long-term goal. Example – I will do a cardiovascular workout 3 times/week at 60% HRM for 20 minutes for 4 weeks.

QUESTIONS:
1. I want to run 30 pacers by next school year is an example of a ________ goal.

2. I will do a cardiovascular workout 3 times/week at 60% HRM for 20 minutes for 4 weeks is a ________ goal.

3. What is a plan to determine what you want to accomplish and establishing how to do it? ____________________________