

Milford High School Wellness Cardio-vascular Fitness

Lifestyle Disease is a disease that is caused partly by unhealthy behaviors and partly by other factors.

Cardiovascular Diseases (CVDs) are diseases and disorders that result from continued damage to the heart and blood vessels. Examples: strokes, heart attacks and high blood pressure.

Three Major Energy Systems are involved in utilizing different “fuels” in the skeletal muscles depending on the effort required. The *ATP-PCr* for short, all-out burst of energy under a 15 seconds period. It has a quick recovery in minutes. The *Glycolitic*, aerobic and anaerobic, system is requiring glycogen which as limited supplies in the muscles and liver. It takes over for minutes of intense effort requirements. Passed the anaerobic threshold, it produces lactic acid and lactate causing muscle cramps, discomfort and a need to lower the level of efforts or to stop. Finally, the *Oxidative* system, it requires free fatty acids for energy. The effort level needs to be moderate and for a period of 20 minutes or longer. The energy reserve is practically unlimited. Overall muscle fatigue will be the performance limiter. Exercising at that level would be categorized as fat burning exercises.

Aerobic Exercise refers to exercise that is of moderate intensity, undertaken for a long duration. Aerobic means "**with oxygen**", and refers to the use of oxygen in a muscle's energy-generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time.

Anaerobic Exercise is typically athlete used, in non-endurance sports, to build power and by body builders to build muscle mass. Muscles that are trained under anaerobic conditions develop biologically differently giving them greater performance in short duration-high intensity activities. Anaerobics are activities that are carried out '**without oxygen**' readily available in the muscles.

Five Components of Health- Related Fitness

Health related fitness - describes qualities that are needed to maintain and promote a healthy body.

1. **Muscular Strength** - is the amount of force that a muscle can apply in a given contraction. (Muscles are challenged to contract more than they are used to during weight training and the muscles cells become larger as overall strength increases).
2. **Muscular Endurance** - is the ability of the muscles to keep working over a period of time.
3. **Cardio respiratory Endurance** - is the ability of your heart, blood vessels, lungs, and red blood cells to deliver oxygen and nutrients to all of your body's cells while you are being physically active.
4. **Flexibility** - is the ability of the joints to move through their full range of motion.
5. **Body Composition** - refers to the ratio of lean body tissue (muscle and bone) to body-fat tissue.

Aerobic zone is a heart rate range that can vary from one person to another. Example: 135 to 170 beats per minute.

Anaerobic zone is a heart rate range above 165-170 heartbeats per minute and a person's MHR.

Maximum heart rate (MHR) is the maximum number of times your heart should beat per minute while doing any physical activity.

Minimum target heart rate - exercising below this rate will not build cardio respiratory endurance.

Physical fitness is the ability of the body to perform daily physical activities without getting out of breath, sore, or overly tired. The shorter the recovery time, the better your cardio health is.

Pace is how you control your effort based on your heart rate during the exercise.

Recovery time is the amount of time it takes for the heart to return to RHR after strenuous activity.

Resting heart rate (RHR) is the number of times the heart beats per minute while at rest. (Such as just before you get up from a good nights sleep.)

Target heart rate zone is a heart rate range within which the most gains in cardio respiratory health will occur. It can be set based on the results you want choosing the right pace.

Determine your heart rate

1. Using the tips of your index and middle fingers, locate your carotid artery. It is located just below your jaw in the groove where your head and neck meet. Search around until you feel a steady beat under the skin. You can also find your radial artery in your wrist lined up with your thumb.
2. Count your pulses for 15 seconds. Multiply the number of beats in 15 seconds by 4 to get your heart rate in beats per minute (**bpm**).

Determine your MHR

1. Subtract your age from 220.

Determine your target heart rate zone

1. Multiply your MHR by 0.6 (60% effort) and .85 (85% effort) to calculate your target heart rate zone.

Example of a 15-year old

1. MHR would be 205
2. Target heart rate zone would be between 123 and 173