

# Olympic Fitness

## OBJECTIVE

Students will discover how their heart rate <sup>stopwatch</sup> changes with exercise.

## MATERIALS

## BACKGROUND

The rate at which the heart beats when a mammal is relaxed and inactive is the resting heart rate. Resting heart rates are measured in beats per minute (bpm), and rates vary between individuals depending on their age and fitness. Generally, the fitter the individual, the lower the resting heart rate. The average resting heart rate of adult humans, ages 18 to 25, is about 70 bpm. Olympic athletes usually have lower resting heart rates, some under 50 bpm. A polar bear has a resting heart rate of about 46 bpm.

During exercise, the heart rate increases in order to pump more blood (which carries oxygen) to the working muscles. The maximal heart rate in humans is a person's heart rate at exhaustion. As a general guideline, the average maximal heart rate is equal to 220 bpm minus a person's age in years. In one study, sedentary males in their mid-40s had a maximal heart rate of 188 bpm after exercising on a treadmill. Trained male athletes of the same age had a maximal heart rate of 177. When walking briskly, polar bears have a heart rate of about 148 bpm.

## ACTION

1. Ask the students to define "faster" and "slower."
2. Show the students how to feel their heart beat. Have them place their forefinger and middle finger on their carotid artery and lightly press down to feel the heart beat, or have them use the same two fingers to feel the pulse on the thumb-side of the wrist. Have them count how many times their heart beats in 30 seconds and multiply the rate by two.
3. Have the students run in place for one minute. Have them record their heart beat again. Is it faster or slower?
4. Compare the students' heart rates to an average adult's and a polar bear's. Are their heart rates faster or slower?

## DEEPER DEPTHS

Divide the students into groups of four. Assign two students to be the official Olympic recorders, one to be the timekeeper, and one to be the "athlete." Show the recorders how to record breathing and blinking rates. Have one watch how often the athlete breathes and the other watch how often the athlete blinks. It's important that the subject doesn't know what is being recorded-this may skew the results. Tell the recorders to take the subject's blinking and respiration rates for one minute. Record the results. Next, have the subject run in place for three minutes, then have the recorders take the subject's respiration and blinking rates for one minute. Compare the results.