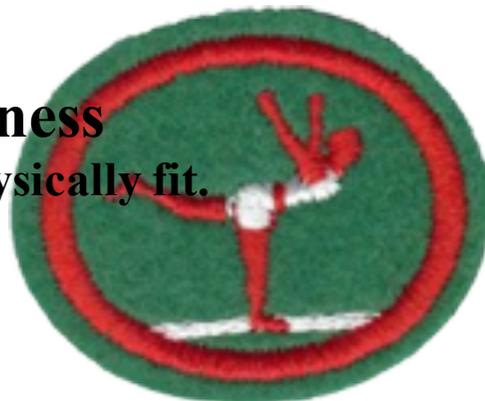


Physical Fitness

1. List ten benefits of being physically fit.

1. You will have more energy
2. Effective weight control
3. Less likely to suffer from constipation
4. Improved brain function and concentration
5. Less depression
6. Better self-image & More attractive
7. Better sleep
8. Greater bone strength
9. Fewer 'aches and pains' and other physical complaints
10. Improved ability to handle stress
11. More leisure opportunities available to you
12. Easier pregnancy and childbirth



2. Know how the following help to achieve a balance for your body:

a. Exercise

Exercise, especially aerobic exercise, improves the function of the heart and lungs. It also improves the oxygen- carrying capacity of the blood. These are all important for avoiding heart disease and clogged arteries (which can cause early death). Exercise also consumes calories, which helps control weight. When exercise and diet are in balance, the calories taken in equal the calories expended, and weight is maintained.

Exercise also alters the chemical balance in your body, producing mood-lifting endorphins which make a person feel happier.

Our bodies were designed for regular activity, but sadly, people in modern times are mostly sedentary. Exercise is a great way to restore the body's natural need for activity, making it function the way it was intended to by our Creator.

b. Proper eating

A good diet improves your physical, emotional, mental, and spiritual well-being. If you take in more calories each day than you expend, you will gain weight. This is true whether you are under-weight, over-weight, or at a healthy weight. Conversely, if you take in fewer calories than you expend, you will lose weight, and again, this is true regardless of how much you currently weigh.

Proper eating means that your vitamin and mineral intake is sufficient to prevent disease, that your caloric intake is equal to your caloric needs, and that the *types* of food you eat are well balanced. It means that the amount of carbohydrates, proteins, and fat in your diet is also balanced.

If your diet is not well-balanced, your health will suffer. For instance, if your diet does not provide you with enough calcium, your body will "steal" calcium from your bones (calcium is needed in order for your muscles to function). This will weaken your bones which will make them more fragile and susceptible to fractures. If your diet does not provide you with sufficient vitamins, you will get a disease - indeed, that is the very definition of *vitamin*. Any nutrient whose lack causes a disease is a vitamin. It is also possible to take too many vitamins and get vitamin poisoning. So it is important that your vitamin intake is also balanced.

If your diet contains too much fat, it will build up under your skin and in your arteries. This is bad for your heart, as it constricts the passage through which the heart must pump your blood. In other words, it makes your heart have to work harder to achieve the same results.

c. Emotional stability

Emotional stability helps us to positively deal with stress in our lives. Exercise and diet both play an important part in emotional stability. Too much (or too little) food can contribute to irritability. Regular exercise is a great outlet for stress, and sticking with a regular exercise program tends to help people stick with other things as well, enabling them to solve difficult problems at work or in school.

3. Define the following exercises:

a. Isometric

Isometric exercise is a form of physical exercise in which the muscles flex and hold a stationary position. No movement of a load takes place, and the exercises require little in the way of equipment. An example of an isometric exercise is placing the palms of the hands against each other and pushing. Isometric exercises are primarily used in physiotherapy and injury rehabilitation because the intensity can be rapidly and precisely adjusted, which makes them very safe. They are now rarely used outside this context.

b. Isotonic

Isotonic exercise is a form of strength training in which each effort is performed against a specific opposing force. Exercises are isotonic if a body part is moving against the force. Exercises are isometric if a body part is holding still against the

force. Resistance exercise is used to develop the strength and size of skeletal muscles. Properly performed, resistance training can provide significant functional benefits and improvement in overall health and well-being, though it does very little for the cardiovascular system. The classic example is weight lifting.

c. Isokinetic

Isokinetic exercise is similar to isotonic exercise, except that motion is resisted through an entire circuit. In weight lifting, resistance is present only when lifting - gravity lowers the weights. In isotonic training, the downward motion is also resisted.

d. Anaerobic

Anaerobic exercise requires very little oxygen uptake. An example would be sprinting, as a sprinter can run the 100 yard dash while holding his breath. Short bursts of exercise fall into this category.

e. Aerobic

Aerobic exercise is the most beneficial of all the types listed here, as it requires the body to use large amounts of oxygen over an extended period of time. This improves cardiovascular health. Examples include jogging, swimming, skating, and many other activities.

4. Know the meaning of the principles involved in the following exercise program:

a. Warm up

There are two purposes for warming up before exercising. The first is that it stretches and warms the muscles, decreasing the likelihood of an injury. The second is that it gradually increases the heart rate in preparation for the workout. Warming up can be as easy as doing leg stretches for a few minutes. Slowly warming up can help people do even more aerobic exercise than if they had not warmed up at all.

b. Aerobic exercises

This is the main part of an exercise program, and the part from which most of the benefits of exercise are derived. Any exercise that increases oxygen intake and increases the heart rate past the target rate and is performed for at least 20 minutes can be considered aerobic.

c. Cool down

The cool down phase should last for about five minutes after the aerobic phase. It allows the heart to gradually slow. If you were jogging, walk around for five minutes. If you were swimming, walk around in the shallow end of the pool. If you were bicycling, get off the bike and walk it around for five minutes. Most heart attacks that happen in conjunction with an exercise program occur *after* the aerobic phase. Allowing the heart to

gradually slow protects it and lessens the chance of an incident.

d. Calisthenics

This portion of the program should last ten minutes. It builds up muscle strength which decreases the chance of injury during future aerobic activities.

5. Know how to determine your heart rate at rest and after exercise.

First you'll need to find your pulse. You can do this by placing a finger on your wrist just below the thumb joint, or by placing your hand over your heart. If you have just exercised, you can often *hear* your heart beat, and feel it as well. If you cannot, then you'll need to take your pulse the same way as when you are at rest. The only problem with determining your heart rate after exercise is that what you *really* want to do is determine what it was *when* you were exercising, and when you stop exercising, the heart slows. It takes a few seconds to find your pulse, and then at least 15 seconds to measure it, and in that time, the heart can slow significantly. Therefore, you should add 10% to whatever number you measure.

If you have a stethoscope, you can hear your heart even when you are rested. You can also find your pulse by placing a finger on the neck below the jaw, but this is not recommended as placing pressure there can alter your heart rate.

Once you find your pulse, count the heartbeats over a 15 second interval. Then multiply by four. You can also count the heartbeats over a 20 second period and multiply by 3, or over a 30 second period and multiply by 2. Do not use a period shorter than 15 seconds though, as any errors are also multiplied, and it is better to multiply them by a small number than by a large one. For instance, if you count 7 pulses over 6 seconds when you should have counted 8, you will miscalculate your heart rate by 10 beats.

6. Know how to determine the minimum rate at which your heart should be beating to obtain the best aerobic conditioning effect.

Men

Use the following formula for men:

$$rate = \left(205 - \frac{age}{2}\right) \times 80\%$$

In words, you subtract half your age from 205 and then multiply by 80%. Let's

run through this for an 18 year-old man.

First take half of 18 which is 9. Subtracting that from 205 gives us 196. Multiplying 196 by 80 and dividing by one hundred (to get 80%) gives us 156.8 which we can round to 157.

Women

Use the following formula for women:

$$rate = (220 - age) \times 80\%$$

In words, you subtract your age from 220 and then multiply by 80%. Let's run through this for an 18 year-old woman.

First subtract 18 from 220 which gives us 202. Multiplying 202 by 80 and dividing by one hundred (to get 80%) gives us 161.6 which we can round to 162.

7. Using the four steps given in requirement 4, do a regular exercise program at least four times a week for three months. For each exercise period, maintain the minimum heart rate determined in requirement 6 for a period of at least 20 minutes. Keep a chart of the following:

- a. Type of warm-up exercises performed
- b. Type of aerobic exercises performed
- c. How long aerobic exercises were performed
- d. Type of calisthenics performed

If you are over the age of 35, you should have a medical examination (including a stress test) before starting any exercise program.

The warm-up should last for two or three minutes, and should be something easy like stretches.

Choose an exercise that you enjoy, as this will make it a lot easier to stick with it. Any activity that raises your heart rate above the rate determined in requirement 6 for at least 20 minutes will do. Suggestions include cross-country skiing, swimming, running, and jogging. You can also skate or ride a bicycle, but be careful that you are exercising the whole time and not just "coasting". It is also possible to get your heart rate up by walking, but you will have to walk vigorously, and it may take a little while to get your heart rate up to the minimum. Don't start counting the 20 minutes until the heart rate reaches the target.