



ACSM Information On...

Selecting and Effectively Using Hydration for Fitness

Water is the most essential component of the human body as it provides an important role in the function of cells. Important functions of water include transportation of nutrients, elimination of waste products, regulation and maintenance of body temperature through sweating, maintenance of blood circulation and pressure, lubrication of joints and body tissues, and facilitation of digestion. More than half of the human body is composed of water, and it is impossible to sustain life without it.

A COMPLETE PHYSICAL ACTIVITY PROGRAM

A well-rounded physical activity program includes aerobic exercise and strength training exercise, but not necessarily in the same session. This blend helps maintain or improve cardiorespiratory and muscular fitness and overall health and function. Regular physical activity will provide more health benefits than sporadic, high intensity workouts, so choose exercises you are likely to enjoy and that you can incorporate into your schedule.

ACSM's physical activity recommendations for healthy adults, updated in 2011, recommend at least 30 minutes of moderate-intensity physical activity (working hard enough to break a sweat, but still able to carry on a conversation) five days per week, or 20 minutes of more vigorous activity three days per week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation.

Examples of typical aerobic exercises are:

- Walking
- Running
- Stair climbing
- Cycling
- Rowing
- Cross country skiing
- Swimming.

In addition, strength training should be performed a minimum of two days each week, with 8-12 repetitions of 8-10 different exercises that target all major muscle groups. This type of training can be accomplished using body weight, resistance bands, free weights, medicine balls or weight machines.

WATER LOSS

Exercise produces an elevation in body temperature, which depends on the intensity and duration of exercise, environmental conditions, clothing worn, and metabolic rate. In order to get rid of the excess heat, your body secretes sweat, which is primarily composed of water and electrolytes such as sodium. The evaporation of sweat is the primary mechanism of heat loss during exercise.

Exercise can lead to substantial water and electrolyte loss from sweat leading to dehydration and, in cases of excessive fluid intake, hyponatremia (low sodium in the blood). However, considerable variability exists from person to person with regard to sweat loss. Therefore, the fluid and electrolyte requirements needed for the athlete are variable from person to person as well. If water and electrolytes are not replaced from these losses, the athlete will have a decrease in performance and perhaps an adverse effect on his or her overall health.

FLUID BALANCE

Thirst is a signal that your body is headed toward dehydration. Therefore, it is

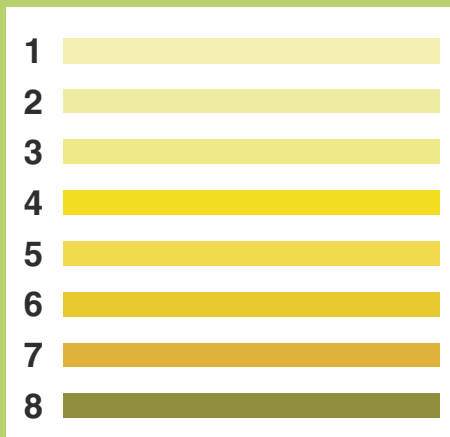
important to drink before you feel thirsty and to drink throughout the day. Thirst is not a good indicator of hydration and should not be used to monitor hydration status.

One way to check your hydration status is to weigh yourself before and after exercise. The before-exercise measurement is best as a nude weight first thing in the morning after urinating. Comparing your body weight before and after exercise can be used to estimate your sweat loss and your fluid requirements. Any weight loss is likely from fluid loss, so drinking enough to replenish these losses will maintain hydration. The table below shows us that over a one percent loss in body weight indicates dehydration and over five percent indicates serious dehydration. These fluid losses need to be replaced.

% Body Weight Change

Well Hydrated	-1 to +1%
Minimal Dehydration	-1 to -3%
Significant Dehydration	-3 to -5%
Serious Dehydration >	-5%

Another way to check hydration status is the urine color test. A large amount of light-colored urine means you are well hydrated. The darker the color, the more dehydrated you are.



DEHYDRATION

Dehydration is the loss of fluids and salts essential to maintain normal body function. Dehydration occurs when the body loses more fluids than it takes in. Dehydration can lead to:

- Muscle fatigue
- Loss of coordination
- Inability to regulate body temperature
- Heat illness (e.g., cramps, heat exhaustion, heat stroke)
- Decreased energy and athletic performance

Moderate caffeine intake does not affect hydration status or urine output. However, alcohol will increase your urine output and decrease hydration.

Enhancing palatability of a fluid will help to encourage fluid consumption. This can be done with proper flavoring, proper salt (sodium) content and drinking a cold beverage (15-21 degrees Celsius).

SPORTS BEVERAGES

Carbohydrates within a sports beverage help to replenish your sugar (glycogen) stores and electrolytes help to accelerate rehydration. Sports beverages for use during prolonged exercise should generally contain four to eight percent carbohydrate, 20-30 meq/L of sodium, and 2-5 meq/L of potassium. The need for carbohydrates and electrolytes within sports beverages increases with prolonged activity.

Carbohydrate consumption helps to sustain and improve exercise performance during high-intensity exercise longer than one hour as well as lower-intensity exercise for longer periods. You should ingest one-half to one liter of a sports drink each hour to maintain hydration. Also, sports drinks should not exceed a carbohydrate concentration of eight percent.

HYDRATION BEFORE EXERCISE

Check your hydration status before exercise because there is a wide variability in fluid needs for each person.

- Drink 16-20 fluid ounces of water or sports beverage at least four hours before exercise.
- Drink 8-12 fluid ounces of water 10-15 minutes before exercise.

Consuming a beverage with sodium (salt) and/or small meal helps to stimulate thirst and retain fluids.

HYDRATION DURING EXERCISE

- Drink 3-8 fluid ounces of water every 15-20 minutes when exercising for less than 60 minutes.
 - Drink 3-8 fluid ounces of a sports beverage (5-8 percent carbohydrate with electrolytes) every 15-20 minutes when exercising greater than 60 minutes.
- Do not drink more than one quart/hour during exercise.

HYDRATION GUIDELINES AFTER EXERCISE

Obtain your body weight and check your urine to estimate your fluid losses. The goal is to correct your losses within two hours after exercise.

- Drink 20-24 fluid ounces of water or sports beverage for every one pound lost

OVERHYDRATION

Overhydration, also called water intoxication, is a condition where the body contains too much water. This can result in behavioral changes, confusion, drowsiness, nausea/vomiting, weight gain, muscle cramps, weakness/paralysis and risk of death.

In general, overhydration is treated by limiting your fluid intake and increasing the salt (sodium) that you consume. If overhydration is suspected, you should see your doctor for appropriate lab tests and treatment. You should not consume more than one liter per hour of fluid.

STAYING ACTIVE PAYS OFF!

Those who are physically active tend to live longer, healthier lives. Research shows that moderate physical activity – such as 30 minutes a day of brisk walking – significantly contributes to longevity. Even a person with risk factors like high blood pressure, diabetes or even a smoking habit can gain real benefits from incorporating regular physical activity into their daily life.

As many dieters have found, exercise can help you stay on a diet and lose weight. What's more – regular exercise can help lower blood pressure, control blood sugar, improve cholesterol levels and build stronger, denser bones.

THE FIRST STEP

Before you begin an exercise program, take a fitness test, or substantially increase your level of activity, make sure to answer the following questions. This physical activity readiness questionnaire (PAR-Q) will help determine if you're ready to begin an exercise routine or program.

- Has your doctor ever said that you have a heart condition or that you should participate in physical activity only as recommended by a doctor?
- Do you feel pain in your chest during physical activity?
- In the past month, have you had chest pain when you were not doing physical activity?
- Do you lose your balance from dizziness? Do you ever lose consciousness?
- Do you have a bone or joint problem that could be made worse by a change in your physical activity?
- Is your doctor currently prescribing drugs for your blood pressure or a heart condition?
- Do you know of any reason you should not participate in physical activity?

If you answered yes to one or more questions, if you are over 40 years of age and have recently been inactive, or if you are concerned about your health, consult a physician before taking a fitness test or substantially increasing your physical activity. If you answered no to each question, then it's likely that you can safely begin exercising.

PRIOR TO EXERCISE

Prior to beginning any exercise program, including the activities depicted in this brochure, individuals should seek medical evaluation and clearance to engage in activity. Not all exercise programs are suitable for everyone, and some programs may result in injury. Activities should be carried out at a pace that is comfortable for the user. Users should discontinue participation in any exercise activity that causes pain or discomfort. In such event, medical consultation should be immediately obtained.



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