DEHYDRATION 101

What is dehydration?
Dehydration is a decrease in body fluid from a normally hydrated, or euhydrated, state. Exercise-induced dehydration can occur if your clients
• Don’t take in enough fluid before or during exercise
• Lose too much fluid from sweating during exercise

Why does it matter?
Dehydration can make your clients’ workouts seem harder and be less effective.

Dehydration increases physiological strain and perceived effort during physical activity and may impair exercise performance. Just a 2% loss in body weight due to inadequate fluid intake or sweating can impair aerobic or endurance exercise performance, especially in a hot environment. What’s more, if your clients’ exercise performance is regularly impaired by dehydration they may not be able to achieve their overall physical activity goals.

Teach your clients to watch for these symptoms of dehydration.
• Thirst, fatigue, weakness
• Headache, irritability, dizziness
• Reduced mental alertness
• Impaired vision and muscle control

Getting enough?
The simplest way to determine whether your clients are getting enough fluid is to have them monitor their urine colour and amount. A large volume of light-coloured urine indicates hydration is sufficient. A small volume of dark-coloured urine may indicate the need to drink more fluid.

Dehydration can happen in cold temperatures too. This is primarily because of:
• Higher sweat losses due to warm clothing or equipment
• Inadequate fluid intake because the urge to drink cool fluids is reduced in the cold
• Inadequate fluid intake because exercisers want to avoid removing clothing to urinate

Are your clients drinking enough fluid?
It is well known that adequate hydration is vital for optimal exercise performance, yet studies show athletes often don’t drink enough fluid to support their level of physical activity. This may hold true for many exercisers, including your clients.

Making sure that your clients are drinking enough fluid is a simple and effective way to support their physical activity goals. This resource provides an overview of the current scientific consensus on hydration and physical activity, as well as some effective tips on how to address the topic with your clients.
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Fluid intake recommendations are based on science and include beverage and food sources.

About 20% of our fluid intake comes from the food we eat, while 80% comes from the beverages we drink (including water, juice, milk, coffee, etc). That means drinking beverages is key to meeting our fluid needs. The Adequate Intakes (AI) for fluid are based on scientific evidence and include recommendations for how much fluid we need to drink as beverages. Recommendations vary according to age and gender and should meet the fluid needs of most individuals.3

Adequate Intakes for fluid (19 years and older)

- **Women** need to drink 2.2 L (approximately 9 cups*) of fluid per day.
- **Pregnant women** need 2.3 L (approximately 10 cups*) per day.
- **Men** need to drink 3 L (approximately 13 cups*) of fluid per day.

Highly active men and women and/or those who sweat a lot may need even more.

*1 cup = 250 mL

Cool drinks make it easier to drink enough

Studies show that cool drinks are more satisfying to the palate and thus encourage exercisers to drink before, during and after physical activity.4 The sodium in and flavour of certain beverages (e.g., sports drinks and chocolate milk) also encourage drinking during or after endurance activities.3

Are your clients drinking enough fluid to balance their sweat loss?

- Fluid requirements for an individual can double or even triple due to sweat losses during physical activity.3
- The amount of fluid lost in sweat can vary a lot (from 0.3 to 2.4 L/hour), depending on the intensity and duration of activity, environment, individual sweat rate, fitness level, gender and age.1,3
- Different people have different sweat rates, which means there can be no “one size fits all” rehydration plan.
- Each individual will typically have a consistent sweat rate during specific activities and under certain conditions, so a personalized hydration plan can be developed.4

How much fluid do your clients need?

- The best place to start is to encourage your clients to meet their Adequate Intakes for fluid from beverages.
- For average exercisers, meeting the Adequate Intake **plus** drinking a bit extra before, during and after physical activity will likely provide enough fluid for adequate hydration.
- Those involved in intense training programs or endurance activities should seek the advice of a Registered Dietitian or certified fitness professional with knowledge and experience in designing personal hydration plans.
Clear up some common misconceptions for your clients.

<table>
<thead>
<tr>
<th>MISCONCEPTION</th>
<th>REALITY</th>
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<tbody>
<tr>
<td>We need to drink 8 cups of water every day.</td>
<td>All beverages count towards fluid intake, including water, milk, 100% juice, coffee and tea, AND we need more than 8 cups (the Adequate Intakes for fluid from beverages are 9-10 cups for women, 13 cups for men and even more for active individuals).³</td>
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<td>Beverages containing caffeine don’t count towards fluid intake because they dehydrate you.</td>
<td>A moderate caffeine intake (less than 180 mg/day) from beverages, including coffee and tea, is unlikely to increase daily urine output or cause dehydration.⁴ An average cup of coffee has around 135 mg of caffeine.⁶</td>
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<td>Sports drinks and energy drinks are similar and can be used interchangeably.</td>
<td>Sports drinks and energy drinks were each designed for a different purpose:</td>
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<td>• Sports drinks typically contain 6-8% carbohydrates and are designed for rehydrating and refuelling during an endurance activity or intense stop-and-go activities lasting more than 60 minutes.¹⁴</td>
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<td>• Energy drinks contain caffeine or other stimulants and are meant to revive mental alertness in people having difficulty staying awake. These drinks usually contain more carbohydrates than is recognized to be beneficial when consumed during physical activity.⁷</td>
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What should your clients drink during their workouts?

- Plain water is sufficient during physical activities lasting 60 minutes or less.⁴
- Diluted juice or a sports drink may be better during intense exercise or when activities last longer than 60 minutes.⁴
- Diluted juice or a sports drink may also be better during exercise if it’s very hot, when wearing protective sports equipment or if your client is sweating a lot.⁴

What about after their workouts?

- Many different types of beverages can contribute to hydration after a workout, including plain water, chocolate milk and sports drinks.
- While plain water may be sufficient for many of your clients, if the workout was intense and your client will be exercising again the next day, a drink containing carbohydrates will help with recovery (e.g., chocolate milk, sports drinks, diluted juice).¹
- A beverage that contains carbohydrates and protein may also help with muscle repair.¹

Is it possible to drink too much?

For most healthy exercisers, there is little risk of drinking too much fluid. However, while rare, there is a potentially fatal condition known as hyponatremia, which is a result of a low concentration of sodium in the blood caused by an increase in total body water.⁴ Exercise-associated hyponatremia typically occurs in novice athletes or less-experienced individuals participating in physical activities lasting longer than 4 hours and who drink “plenty” of water before, during and after the endurance activity.⁴ It is therefore recommended that endurance exercisers choose beverages that contain carbohydrates and electrolytes instead of water during these very long activities.

What’s the latest word on sodium?

Sodium (salt) is an important electrolyte lost in sweat. For most exercisers, sodium is replaced by consuming foods and beverages that naturally contain sodium as part of their regular diet.⁴ Some exercisers can lose significant amounts of sodium during physical activity, especially in a hot environment, and may require a tailored sodium-replacement strategy for during and after their workouts.⁴ These individuals should consult a Registered Dietitian for guidance since excess sodium can be harmful to health.

### Muscle cramping

Both dehydration and low levels of blood sodium are associated with skeletal muscle cramping, which is more common in heavy sweaters who are also “salty sweaters”.¹⁴ These exercisers may require a personalized hydration plan that can address the problem while avoiding excess sodium.
Tips for answering client questions about hydration:

- Keep informed of new developments related to hydration and physical activity by regularly reviewing credible sources of sports nutrition information.
- Avoid giving answers that are too technical.
- Direct your clients to credible sources of information on the topic.

Practical tips for supporting your clients’ adequate fluid intake:

- Provide clients with the *Fluid: For Active Canadians* booklet and review it with them.
- Make it personal; stress how even a little dehydration can keep your clients from reaching their physical activity goals.
- Watch for signs and symptoms of dehydration and educate your clients about them.
- Track hydration habits; suggest that clients occasionally monitor their usual fluid intake to ensure they are drinking enough (use the tracking chart in the *Fluid: For Active Canadians* booklet).
- Remind your clients that following *Canada’s Food Guide* will help support their physical activity and hydration goals.
- Keep it realistic; remind your clients that they can satisfy their fluid needs by drinking a variety of beverages they normally enjoy.
- Keep it practical; help your clients set small goals and make plans to drink fluid before, during and after physical activity.
- Cue your clients to sip fluid throughout their workouts or provide breaks so they can drink – this is a great reminder and positive reinforcement of the importance of hydration.
- Be a positive role model; practise good hydration habits yourself – clients are more likely to follow your lead.

**Did you know?**

*Canada’s Food Guide* (CFG) is based on science and supports good hydration practices:

- CFG recommends drinking regularly and drinking more in hot weather or when you are very active.
- CFG also recommends that all Canadians drink 500 mL (2 cups) of fluid milk* every day to ensure adequate vitamin D intake, and milk is about 85% water.
- Eating food is also essential for maintaining normal hydration status as it encourages drinking and helps the body retain the fluid it needs.

*If you do not drink milk, drink fortified soy beverages that contain both calcium and vitamin D.

**Want more information?**

Here are other valuable and credible sources of information on nutrition and physical activity:

- Canadian Society for Exercise Physiology, [csep.ca](http://csep.ca)
- Dietitians of Canada, [dietitians.ca](http://dietitians.ca)
- Institute of Medicine, [iom.edu](http://iom.edu)
- American College of Sports Medicine, [acsm.org](http://acsm.org)
- Sport Nutrition Advisory Committee, [coach.ca](http://coach.ca)

**References:**


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