

3. HYDRATION

3.1 Importance of Fluids

Proper hydration is important for all athletes to:

1. Replace water lost as a result of sweating
2. Avoid marked decreases in performance that result from dehydration
3. Help maintain core body temperature within acceptable limits during exercise

3.2 Effects of Dehydration on Performance

Dehydration negatively affects performance and is associated with premature fatigue. This is particularly the case for prolonged aerobic exercises such as distance running or cycling, but athletes competing in team sports or events of short duration can also be affected by dehydration.

Ironically, dehydration reduces the capacity of the digestive system to absorb water. Athletes should not wait until they are dehydrated before they drink, as this slows rehydration and causes gastric cramping.

3.3 Feeling Thirsty and Dehydration Level

It is well established that the sensation of thirst is not a good indicator of an individual's level of dehydration. When thirst manifests itself, approximately 2% of body mass has already been lost. Consequently, one cannot gauge dehydration by referring to the sensation of thirst. Therefore during exercise, it is important to drink on a schedule rather than according to thirst.

If thirst were the only point of reference used for determining fluid needs following profuse sweating, re-establishing optimum hydration could take 24 to 48 hours.

3.4 Drinking Fluids before Activity

Athletes should drink plenty of fluid every day, particularly before a practice session or competition. Athletes who are well hydrated have the following characteristics:

1. Sweating that starts sooner and is more abundant
2. An enhanced rate of absorption of the fluids consumed during exercise

In practical terms, this means drinking 1.5–2.5 cups (400–600 mL) of fluid 2 to 3 hours before exercise. This allows time for excess fluid to be excreted as urine before the exercise starts.

To ensure complete hydration, consuming 0.5–1.5 cups (150–350 mL) of fluid about 15 minutes before exercise is recommended.

3.5 Drinking Fluids during Activity

Amount of Fluids to Drink

Athletes should drink enough fluid to maintain fluid balance throughout the exercise. The amount of fluid an individual can tolerate during exercise varies from one person to another, but usually ranges between 10 and 15 mL per kg of body weight per hour. In other words, as the following table suggests, a 60 kg person can absorb between 600 and 900 mL of fluid in an hour, a 70 kg person between 700 and 1050 mL, etc.

Body weight (kg)	Approximate quantity of fluid absorbed by the body in one hour (mL)	
	from ...	to ...
30	300	450
40	400	600
50	500	750
60	600	900
70	700	1050
80	800	1200
90	900	1350

Rather than drinking large amounts of fluid at one go, it is better to drink 0.5–1.5 cups (150–350 mL) of fluid every 15 to 20 minutes, or as much as one can tolerate without feeling any discomfort.

Athletes rarely consume enough fluid to maximize the absorption capacity of the digestive system or to balance fluid losses. Increased fluid intake during exercise will improve fluid balance for most athletes.

Precautions

To encourage athletes to drink plenty of fluids, have them bring several bottles or containers of water or sport drinks. For reasons of good hygiene, do not allow them to share bottles or containers with other people.

Sport Drinks

Sport drinks containing carbohydrate are recommended for activities lasting more than 60 minutes without interruption. Several studies suggest an improvement in performance as a result of drinking sport drinks, which promote optimal performance by providing both fluids and carbohydrates.

When exercise lasts less than one hour, consuming a sport drink will probably not improve performance significantly. In this circumstance, drinking water should be adequate unless it is hot and humid, in which case a sport drink is recommended.

Strategy for Encouraging Hydration in Children

Recent studies show that children's consumption of fluids is increased when drinks contain carbohydrates (40–80 grams per litre) and a little sodium. It is suggested that the coach encourage this type of drink rather than plain water to ensure that children take in enough fluids when they exercise in hot weather.

3.6 Rehydration after Activity

After an exercise where sweating has been profuse, it is extremely important to replace fluid. This sensation of thirst is not a good gauge. Consequently, forced hydration is often necessary.

It is possible to estimate how much fluid an individual has lost during exercise by weighing before and after the activity. The difference in kg represents the amount of fluid lost, in litres, since one litre of water weighs one kg. For each kg of body weight lost, at least 1.0 litre of fluid plus an extra 0.5 litre should be consumed. It is important to drink more than one litre per kg of body weight lost to account for urinary losses.

The colour and amount of urine are an easy way for athletes to monitor their dehydration level. Scanty, dark urine signals a need for more fluid, in which case athletes should force themselves to drink more fluids. Plenty of clear-coloured urine usually indicates adequate hydration.