

# **RECOMMENDATIONS FOR HYDRATION STRATEGIES IN FOOTBALL**

## **Dehydration**

Dehydration as low as 1-2% of bodyweight can impair both exercise performance and mental functioning (Table 1); both of which are crucial components of football. Dehydration greater than 3% has the potential to be extremely dangerous (Table 1) and therefore measures should be implemented to reduce this amount of mass loss.

**Table 1:** The effects of varying degrees of dehydration

<b>% Bodyweight Lost</b>	<b>Effects</b>
2	Reduced temperature control Increased sub-maximal heart rate Onset of decreased skilled performance
3	10 % decrease in high intensity muscular endurance
4-6	Reduced hand-eye co-ordination
6+	Reduced blood volume Increased respiratory rate Nausea and confusion
10+	Heat stroke and fainting Exhaustion

## **Hydration and Football**

Research has shown that athletes commonly become dehydrated during training and competition; therefore, maintaining a normal level of hydration is vital when aiming to optimise performance and avoid health problems. It is generally assumed that consuming adequate volumes of fluid at regular intervals during exercise easily prevents dehydration; however, in football it may be difficult to achieve such aims due to the stop and go nature of the sport.

**Due to the interaction of various factors including weather, clothing and player individualisation, it is difficult to recommend specific hydration regimes due to the variation in sweat rates that exists. However, it must be acknowledged that thirst is not a good enough indicator to prevent dehydration as player's can already be 2% dehydrated by the time that they become thirsty; therefore the following recommendations are advised for fluid intake during football games and training.**

## **Recommendations**

### ***Hydration before Exercise***

The aim of prehydration is to start the physical activity in a normal hydration state. If sufficient beverages are consumed with meals and enough recovery has elapsed since the last exercise session (8–12 hours), then the person should already be close to being hydrated. However, if the person has suffered substantial fluid deficits and has not had adequate time or fluid/electrolyte volumes to re-establish normal levels, then an aggressive prehydration strategy may be required; ensuring that any previously incurred fluid-electrolyte deficits are corrected prior to initiating exercise.

**When hydrating prior to exercise the individual should slowly drink approximately 500 ml of a water and sports drink mixture (i.e., High5 Energy source or similar sports drink) at least 4 hours before the exercise task. If the individual does not produce urine, or the urine is dark or highly concentrated, they should slowly drink more of the same beverage (i.e., another 250 ml of same drink) about 2 hours before the event.** By hydrating several hours prior to exercise there is sufficient time for urine output to return towards normal before starting the event. Consuming small amounts of salted snacks or sodium-containing foods at meals will help to stimulate thirst and retain the consumed fluids.

### ***Hydration during Exercise***

The goal of drinking during exercise is to prevent excessive dehydration (>2% bodyweight loss) to avoid compromised exercise performance. The amount and rate of fluid replacement depends upon the individual sweating rate, exercise duration, and opportunities to drink.

It is difficult to recommend a specific fluid and electrolyte replacement schedule because of differences between matches (e.g., intensity, duration, clothing), weather conditions, and other factors (e.g., training status) influencing a person's sweating rate. **Therefore, it is recommended that individuals should monitor body weight changes during training/competition to estimate their sweat losses during a particular exercise task with respect to the weather conditions.** This allows for customised fluid replacement protocols to be developed for each person's particular needs. **However, this may not always be practical; therefore, consumption of approximately 150 ml of a sports drink (i.e. a non-carbonated carbohydrate and protein drink such as High5 Energy source 4:1) is recommended every 15 min.** At half time small amounts of salted snacks or sodium-containing foods will help to stimulate thirst and retain the consumed fluids.

### *Hydration following Exercise*

After exercise, the goal is to fully replace any fluid deficits. The aggressiveness to be taken depends on the speed that the rehydration must be accomplished and the size of the fluid-electrolyte deficit. If recovery time and opportunities permit, consumption of normal meals and snacks with a sufficient volume of plain water will restore normal levels, provided that the food contains sufficient salt to replace sweat losses. If dehydration is substantial, with relatively short recovery periods (i.e., less than 12 hours), then more aggressive rehydration strategies may be warranted. **Players should aim to replace 50% of their bodyweight losses within 2 hours of finishing the game using a 2 litre 50:50 combination of water and electrolytes consumed in small amounts to enhance fluid retention.**

## **PRACTICAL GUIDELINES FOR HYDRATION IN FOOTBALL**

<b>Timing</b>	<b>Hydration Strategy</b>
Pre-exercise	<p><b>If hydrated (i.e. Urine pale 5 hours before exercise).</b></p> <p>Slowly drink 500 ml of non-carbonated sports drink (i.e. High5 Energy source 4:1) 4 hours before exercise.</p> <p><b>If dehydrated (i.e. Urine coloured 5 hours before exercise).</b></p> <p>As above but drink an additional 250 ml of same drink 2 hours before exercise.</p>
During exercise	<p>150 ml of non-carbonated carbohydrate-electrolyte (and protein if possible) containing sports drink (i.e. High5 Energy source 4:1) consumed every 15 min.</p> <p>AND</p> <p>Small selection of salt containing snacks at half time (i.e., salted nuts, pretzels etc)</p>
Post-exercise	<p>Slowly drink 2 litres of non-carbonated sports drink (i.e. High5 4:1 Energy source, High5 protein recovery) within 2 hours of finishing exercise.</p> <p>AND</p> <p>Aim to eat a meal containing carbohydrate and sodium within 3 hours of finishing exercise, consume water with this meal.</p>

**It is important to try and personalise hydration strategies dependant upon usual hydration patterns before, during, and after exercise of differing durations in a variety of environmental conditions. Therefore, these recommendations are proposed as a general guideline only.**

**Players should be weighed, after having been dried down, before and after exercise; with the results determining the hydration strategies to be used to prevent such mass losses.**

**FOR MORE INFORMATION VISIT THE WEBSITE OR CONTACT THE EMAIL ADDRESS BELOW**

**MAIL@SCIENTIFIC-FOOTBALL.COM**

The information contained in this sheet is for general information purposes only. The information is provided by [www.scientific-football.com](http://www.scientific-football.com) and while we endeavour to keep the information up to date and correct, we make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the website or the information, products, services, or related graphics contained on the document for any purpose. Any reliance you place on such information is therefore strictly at your own risk.

**[www.scientific-football.com](http://www.scientific-football.com)**