

## Recovery

No matter what type of athlete (e.g. casual, weekend warrior, to professional), rehydration with fluids and electrolytes is the most important and first-line dietary aspect for optimal training recovery (defined as recovery between work-outs or competition) (Bishop, Jones, & Woods, 2008). Maughan and Shirreffs noted that restoring euhydration was key in the training recovery process (as cited in Bishop et al., 2008). Actually rehydration is also equally important for immediate and short-term recovery, as defined in Bishop et al. (2008).

Murray (2007) noted that even a 2% reduction in body mass due to loss of fluids (mostly sweating) from activity can significantly start to impact physical performance. Although this amount may seem like a lot, Murray (2007) noted that it is not uncommon especially for athletes, military, and any sort of labor intensive work when you take the environment into consideration as well (hot humid environments). It is possible to lose anywhere from 400ml per hour to over 2L per hour of sweat during intense activity, so one should try to maintain euhydration at all times (Murray, 2007). Murray (2007) and Montain and Coyle (as cited in Murray, 2007) noted that dehydration as early as -1% (of body mass) through -4% negatively impacts cardiovascular and thermoregulatory functions. Plasma and stroke volume are reduced, heart rate is increased, and cardiac output is decreased (Rehr, 2001). A sense of fatigue is also related to increased body temperatures that are not attenuated due to dehydration as well as negative effects on muscle metabolism (Cheuvront et al. as cited in Murray, 2007; Rehr, 2001).

Along with water loss from sweating, one loses valuable electrolytes such as sodium (potentially considerable loss; typical concentration in sweat is 20-80 mmol/L), potassium (loss to a lesser degree; typical extracellular concentration is about 10mmol/L), and small amounts of calcium, magnesium, bicarbonate, phosphate, and sulphate (Rehr, 2001). It is important to include some sodium (700 to 1200 mg/L recommended in the fluids or food) to stimulate fluid intake, help with multiple transportable carbohydrates and water absorption, maintain homeostasis, and avoid hyponatraemia (Costa et al., 2013; Jeukendrup, 2013; Jeukendrup, 2014). Exogenous carbohydrates are important to consider for exercise (especially with increasing intensity) bouts greater than 1 hour (Jeukendrup, 2014). Because different exogenous carbohydrates metabolize along different paths, sodium levels are important to carbohydrates' (such as glucose) absorption that are attenuated by the sodium-dependent transporter, SGLT1, which reaches saturation at around 60g/hr (Jeukendrup, 2014).

Although there are many factors to consider including the type of athlete and activity when planning for dietary aspects of recovery, proper hydration should be at the top of the list.

## References

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