Tactical Nutrition and Wellness Services

Research and data show that being dehydrated can negatively impact our mental and physical health. Dehydration can increase our stress levels, increase our anxiety, negatively impact our ability to think clearly and make good decisions, and can even impact our short-term memory. Physically-dehydration causes dizziness, headaches, and causes us to lose strength and stamina. These consequences directly impact our first responders in the most negative way possible. A simple drop in 2% of body weight (very common occurrences) can result in a dehydrated firefighter which can lead to worse decision making and a drastic increase in perception of effort. Firefighters are at an elevated risk of dehydration due to not only the physical exertion that is displayed on calls, but also due to heavy clothing and heat from fires. Studies show that the sweat loss on calls can be closely compared to the sweat loss from athletes. The question becomes, why do we perform sweat tests on athletes but not on our first responders? The answer is, WE SHOULD be testing the sweat sodium concentrations and volume loss of our first responders and then making easy and practical recommendations to get you rehydrated.

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Sweat Sodium Testing and Recommendations

We perform sweat sodium tests for first responders because WHAT you rehydrate with is important and should be customized based on what you are sweating out. We know that sodium is the #1 electrolyte associated with muscle cramps, muscle tears, and dehydration of first responders. I have tested firefighters who lost 8 lbs. during a 3-hour call but only lost 400mg of sodium. Proper hydration protocols would indicate that this firefighter needs water with very little electrolytes from a replenishment standpoint. However, another firefighter on the same call lost 2 lbs. but lost 9,000mg of sodium. On the surface, it might appear that the firefighter that lost 8 lbs. would be at higher risk of dehydration but the reality is that the firefighter that lost only 2 lbs. with 9,000mg of sodium could be at a greater risk of dehydration and would require a substantial amount of electrolyte supplementation in order to rehydrate. If you do not test, you cannot know. Knowing volume and sodium loss will allow our firefighters to know exactly what they should be replenishing with to properly recover and get ready and prepared for the next call.

Logistics and Testing Details

We will handle all sweat testing logistics including pre/post training weights, labeled water bottles, sweat patches, and volume tracking during training.
The process itself is very non-invasive and includes a sweat patch being placed on the forearm of the first responder. Once the patch is saturated (sometimes within the first 15 minutes) the patch is removed and placed in a vial to be tested after training. The tactical dietitian will continue to track and monitor the intake of fluids during the training.
Based on the weight fluctuation and analyzing the sweat sodium, each first responder will get a report (see last page) that indicates:

1. Fluid loss during a typical training or service call
2. Electrolyte/sodium loss during a typical training or service call
3. Recommendation of fluid and electrolyte replenishment once back to the station
4. Personalized notes from a tactical dietitian on the proper way to replenish fluids/electrolytes

The goal is for every first responder to know and have an awareness of what they are sweating from both a volume standpoint and sodium/electrolyte standpoint. By knowing this information, they will more accurately be able to replenish and ingest the proper fluids and electrolytes to prevent dehydration which reduces the risk of both physical and mental obstacles for the firefighters and provides a great service for our first responders.

See sample page below

Cost: $180.00 per firefighter

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MX3 Sweat sodium test

JM

1610 mg/L Very High Sodium

Monday, 25 September 2023 8:26 AM

Measured by: Bryan Snyder

Sweat sodium concentration can range from 250 mg/L to 3000 mg/L. Your result indicates that you have a *much higher than average* sweat sodium concentration.

Notes

BEFORE EXERCISE	DURING EXERCISE	AFTER EXERCISE
Ingestion of a moderately concentrated (800-1000 mg/L) sodium drink or supplement the night before and ~1 hour before exercise may improve your starting hydration status by increasing plasma volume.	Due to your high sweat sodium concentration you may be at a greater risk of nausea and cramping during exercise. To replace sodium losses, assist with hydration and maintain performance, ingest a moderately concentrated (700-1100 mg/L) sodium drink or supplement during exercise.	To assist in recovery after exercise, you should ingest a highly concentrated (1200-1500 mg/L) sodium drink or supplement, especially if you have a high sweat rate or have exercised for a long duration.
Gatorade (Endurance) Concentration: 873 mg/L Sodium 218 mg Calories 65 Volume 250 mL	**Gatorade (Endurance)** Concentration: 873 mg/L Sodium 218 mg Calories 65 Volume 250 mL	**The Right Stuff (1.5L Water)** Concentration: 1187 mg/L Sodium 1780 mg Calories 0 Volume 1500 mL
DripDrop ORS (30 g/L) Concentration: 990 mg/L Sodium 990 mg Calories 105 Volume 1000 mL	**DripDrop ORS (30 g/L)** Concentration: 990 mg/L Sodium 990 mg Calories 105 Volume 1000 mL	**DripDrop ORS (40 g/L)** Concentration: 1320 mg/L Sodium 1320 mg Calories 140 Volume 1000 mL
KODA (2 Tablet/L) Concentration: 860 mg/L	**KODA (2 Tablet/L)** Concentration: 860 mg/L	**KODA (3 Tablet/L)** Concentration: 1290 mg/L