

# Salt, Sweat and Stride: Understanding Exercise-associated Hyponatremia in Marathon Runners

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## Introduction

Marathon running is a pursuit that demands not only physical endurance but also a deep understanding of the body's complex responses to prolonged exertion. As runners push their limits over 26.2 miles, they are exposed to various challenges, one of which is Exercise-Associated Hyponatremia (EAH). EAH is a potentially life-threatening condition characterized by low blood sodium levels resulting from excessive fluid intake during endurance events. In this article, we will delve into the intricate relationship between salt, sweat and stride to better comprehend the causes, symptoms, prevention and management of EAH among marathon runners. Sodium, a crucial electrolyte, plays a pivotal role in maintaining the body's fluid balance, nerve function and muscle contraction. During prolonged exercise like marathon running, individuals experience increased sweat production, leading to the loss of both water and sodium. Sweat is hypotonic, meaning it has a lower concentration of sodium compared to blood. As runners continue to sweat, the sodium concentration in the blood becomes more concentrated [1,2].

## Description

Marathon runners are often bombarded with the importance of staying hydrated during races, but the key lies in striking a delicate balance between fluid intake and sodium replenishment. Hydration is undoubtedly crucial, but blindly consuming large quantities of water without addressing sodium loss can pave the way for EAH. Runners should be aware of their individual sweat rates and sodium losses, as these can vary significantly from person to person. Sweating is the body's natural cooling mechanism and while it is essential to maintain a stable body temperature during a marathon, overhydrating can tip the scales toward hyponatremia [3].

**Symptoms of EAH:** Recognizing the symptoms of EAH is paramount for both runners and event organizers. Early signs may include nausea, headache, confusion and swelling. As the condition progresses, more severe symptoms such as seizures, coma and, in extreme cases, death may occur. It is crucial to distinguish between the symptoms of dehydration and hyponatremia, as both conditions can manifest similarly. Dehydration is characterized by dark urine, dry mouth and excessive thirst, while hyponatremia often presents with a bloated or swollen appearance, confusion and, notably, a clear or pale urine color [4].

**Prevention strategies:** Preventing EAH involves a multifaceted approach that considers both individual and environmental factors. One of the primary strategies is to educate runners about the dangers of over hydration and encourage them to adopt a personalized hydration plan. Monitoring environmental conditions is also crucial. In hot and humid climates, runners

may sweat more, increasing their sodium loss. Adjusting fluid intake based on weather conditions is essential to maintain a healthy balance. Furthermore, sports drinks containing electrolytes can be a valuable tool in preventing EAH. These drinks not only provide the necessary fluids but also help replenish lost sodium. However, it's essential to strike a balance, as excessive reliance on sports drinks can lead to the opposite problem of too much sodium. Race organizers play a pivotal role in prevention by providing accurate information about hydration, offering electrolyte-rich fluids at aid stations and discouraging excessive fluid intake through public announcements and educational materials. In the unfortunate event that a runner develops symptoms of EAH, prompt and appropriate action is crucial. Immediate medical attention is required and the runner should be transported to a medical facility for evaluation and treatment. In the field, if medical personnel suspect EAH, intravenous administration of hypertonic saline may be necessary to raise blood sodium levels. However, preventing severe cases of EAH is the ultimate goal, highlighting the importance of proactive prevention strategies [5].

## Conclusion

Marathon running is a test of both physical and mental resilience. Understanding the delicate balance between salt, sweat and stride is essential for preventing exercise-associated hyponatremia among runners. As the popularity of marathons continues to rise, it becomes increasingly vital for runners, coaches and event organizers to prioritize education and awareness surrounding this potentially life-threatening condition. By embracing a holistic approach to hydration, incorporating individualized plans and fostering a culture of safety, the running community can stride forward with confidence, minimizing the risks associated with EAH and ensuring that every marathon remains a celebration of achievement and well-being.

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## Conflict of Interest

There are no conflicts of interest by author.

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