



Wrestling hyperthermia and dehydration

The US Centers for Disease Control and Prevention (CDC) recently reported the deaths of 3 college-age men who had tried to lose weight rapidly to meet their wrestling weight classification using methods prohibited by the national organization that oversees competition at this level.¹ This article summarizes the cases and alerts physicians to the dangers of rapid weight loss and intentional dehydration in this sport.

The first wrestler was a 19-year-old man who weighed 233 lb* before the wrestling season. During the first 10 weeks of training he lost 23 lb, but 2 days before a tournament he was still 15 lb too heavy for his weight class. He restricted food and fluid intake and began to exercise vigorously in a hot environment wearing a vapour-impermeable suit under a cotton warm-up suit. He lost 9 lb in 8.5 hours. After resting for about 2 hours, he resumed exercising but experienced extreme fatigue after an hour and became uncommunicative. Cardiorespiratory arrest occurred and he could not be resuscitated. Sodium and urea nitrogen levels in vitreous humour obtained at autopsy 7 hours after death were at the upper limits of normal.

In the second case a 22-year-old man who had weighed 178 lb before the wrestling season tried to lose weight rapidly to compete in a tournament in the 153-lb class. He lost 21 lb over 10 weeks, 8 lb of which were lost in the 3 days before the tournament. The day before the tournament he began exercising using the same method as in case 1. After an hour he complained of shortness of breath and drank some water. He continued exercising and after about 2 hours had lost 3.5 lb. He drank some more water, rested for 30 minutes and resumed exercising. Almost immediately he reported feeling unwell. Despite efforts to cool him, he became unresponsive, and cardiorespiratory

*In this article weights have been left in pounds because the reports were from the US.

arrest occurred. His rectal temperature at the time of death was 42°C. Antemortem blood levels were elevated for sodium, urea nitrogen and creatinine; the serum myoglobin level was over 5000 (normally 0–110) µg/L. The cause of death was reported as hyperthermia.

The third wrestler was trying to lose 6 lb in 3 hours in order to compete in the 153-lb class the next day. He had already dropped from his preseason weight of 180 lb to 159 lb in 13 weeks, 11 lb of which had been lost in the previous 3 days. As in the other 2 cases, cardiorespiratory arrest occurred after about 2 hours of vigorous exercise in a vapour-impermeable suit in a hot environment. Sodium and urea nitrogen levels in vitreous humour 4 hours after death were elevated; the urine myoglobin level was 4280 (normally 0–45) µg/L. Rhabdomyolysis was reported as the cause of death.

Many coaches and wrestlers believe that wrestlers should compete in a weight class lower than their preseason weight to gain a competitive edge.² In addition to dieting, many wrestlers try to lose weight rapidly through vigorous exercise, fluid restriction and sweating. Some also use diuretics, laxatives and self-induced vomiting.

Among collegiate wrestlers in the US, the mean difference between preseason and competitive weights is 16 lb,³ or about 10% of their total body weight.⁴ The 3 cases summarized here emphasize the dangers of rapid weight loss and intentional dehydration in this sport. Coaches and physicians should work together to determine appropriate weights for competition and to set rates and limits of allowable weight loss for each wrestler. — JH

References

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