SPORTS AND EXERCISE MEDICINE

Openventio PUBLISHERS

ISSN 2379-6391 Open Journal http://dx.doi.org/10.17140/SEMOJ-3-e003

Editorial

*Corresponding author
Benito J. Velasquez, DA, LAT, ATC
Program Director/Chair
Athletic Training Department
School of Allied Health
Lincoln Memorial University
6965 Cumberland Gap Parkway
Harrogate, TN 37752, USA
Tel. 423-869-6908; 601 543-2002
Fax. 423-869-6846
E-mail: Benito.Velasquez@LMUnet.edu

Volume 3 : Issue 3
Article Ref. #: 1000SEMOJ3e003

Article History
Received: July 25th, 2017
Accepted: July 25th, 2017
Published: July 26th, 2017

Citation
Velasquez BJ. Monitoring of core body temperature during exertional heat illnesses emergencies. *Sport Exerc Med Open J*. 2017; 3(3): e1-e2. doi: 10.17140/SEMOJ-3-e003

Monitoring of Core Body Temperature During Exertional Heat Illnesses Emergencies

Benito J. Velasquez, DA, LAT, ATC*

Athletic Training Department, School of Allied Health, Lincoln Memorial University, 6965 Cumberland Gap Parkway, Harrogate, TN 37752, USA

This editorial is to promote the use of rectal thermometer devices during an exertional heat illnesses (EHI) emergency. With today's technology, there are hand-held electronic monitors in the market, that allow the athletic trainer on the field, to insert the probe end, and continually monitor the core body temperature while cooling efforts are attempted, and emergency medical services (EMS) is activated. Standard glass thermometers are useful, but a digital readout would be constant. Time is an issue, seconds count. The athletic trainer is taught to recognize the signs and symptoms of EHI, which may include syncope, profuse sweating, irritability, confusion, dizziness, loss of balance.[1-7] Unfortunately, these signs and symptoms may also present themselves with head trauma/concussion.[1-5] The ONLY confirmation of an EHI is the elevated core body temperature of >40 °C (>104 °F).[1] Oral, tympanic, axillary or temporal methods of taking the temperature using external thermometers are not as reliable as the rectal thermometer in assessing elevated core body temperature.[3] During a suspected EHI, the athletic trainer should remove the athlete from direct sunlight and seek a cooler, shaded area or go indoors to an air-conditioned room.[1-5] The athlete's core body temperature needs to be assessed, and this would include removal of clothing and equipment to not only cool the body, but to gain access to the rectal area.[4-7] This can be done on the field or once you have moved the athlete indoors. Time is of the essences, the sooner you can establish a core body temperature readings, the sooner you have an EHI diagnosis and can begin (cooling) treatment and activate EMS.[1,5] Cooling via cold-water immersion up to the neck is the most effective way to treat an athlete with EHI, and having the (rectal) core body temperature monitoring device inserted, the athletic trainer can continue to monitor the core body temperature. Your goal is to lower core body temperature to <38 °C (<102 °F) and this should be done within 30 minutes of the athlete collapsing.[1-5] Precautions should be taken not to overcool the body, and monitoring the core body temperature throughout the EHI event, should prevent this.[1] If an immersion tub is not available, partial-body immersion using small tubs or pools can be used in addition to wet ice towels over the entire body. Using a hand-held monitor can continue even after EMS has arrived and is transporting the athlete to the hospital emergency room (ER).

In my opinion (based solely on personal conversations), we have athletic trainers that do not feel comfortable administering a rectal thermometer to a patient. According to a published letter from S. Raab, PhD, athletic trainer certified (ATC), in May 2014, to the editors of National Athletic Trainers' Association (NATA) News,8 he gave reasons why we should not be doing rectal temperatures during an EHI. His rationale included his being uncomfortable treating an underage minor of the opposite gender. In addition, he cited other reasons including letting ER personnel perform this function. This generated a rebuttal letter from KC. Miller, PhD, ATC, et al published in the July NATA News, Letter to the Editor.[9] It should be noted that Miller et al are leaders in EHI research. In their Letter to the Editor, they discussed point by point their response to the Raab's letter. Their views were backed by scientific evidence as to WHY, during an EHI incident, we should be monitoring core body temperature using a rectal thermometer.[1,8] In my opinion, I agree with Miller et al, and in an EHI incident, time is of the essence, seconds count and you need to access the effectiveness of your cooling treatment during the incident, up to arrival of EMS and during transport.

Over the past 4 years, there have been NATA position statements, educational recom

ISSN 2379-6391 http://dx.doi.org/10.17140/SEMOJ-3-e003

mendations and articles written discussing the use of rectal thermometers during an EHIs emergencies. Given these past articles and an official NATA position statement, it is in the best interest of monitoring the core body temperature throughout the EHI incident, from the initial diagnosis to the arrival at the Emergency Care facility.

Regarding the uncomfortable nature of this topic, how do we solve this dilemma? First we need to discuss some common facts: Exertional heat illnesses can be prevented and if accurately diagnosed, effectively treated. Lives can be saved. Second, time is of the essence, the athlete needs to be properly assessed and a core body temperature needs to be taken. Third, once EHI is confirmed, the athlete needs to be cooled immediately. Fourth, cooling cannot wait for EMS to arrive, minutes count. As Adams noted, "cool first, transport second; the clock is ticking".[2] Immediate measures need to be taken to immerse in a cooling tub or a modified method (tarp) of cooling immersion so the core body temperature can be reduced.[10] Again, the effectiveness of any cooling that is done during an EHI is a rectal thermometer reading throughout the emergency. According to the NATA Position Statement on exertional heat illness, the use of a rectal thermometer should be utilized on any suspected EHI emergency.[1] In further review of the literature, Mazerolle et al,[4] Casa etal,[3] and Stearns et al,[11] all documented employing the use of rectal thermometers and obtaining readings to monitor core body temperature in EHI emergencies. Based on this review of literature, we need to make rectal thermometers or electronic hand-held rectal thermometers a part of our medical kits. In addition, a review of your institutional emergency action plan needs to address the issue of EHIs and use of rectal thermometers or electronic hand-held monitoring devices. Lastly, and this should be at the front of your process, as education should occur BEFORE an EHI incident. Education of parents, school administrators, school boards and athletes needs to be done on why this procedure is necessary, why it can be life-saving and how important it is to monitor the core body temperature throughout the EHI incident. We also need to educate ourselves, so we are comfortable with the administration of thermometers, either hand-held electronic devices or just old fashion glass thermometers.[1,5] We need to educate, so we can remove the stigma of inserting a diagnostic probe into the rectal region.

CONFLICTS OF INTEREST

The author acknowledges there is no conflict of interest.

REFERENCES

1. Casa, DJ, DeMartini JK, Csillan D, et al. National athletic trainers' association position statement: Exertional heat illness. *J Athl Train*. 2015: 50(9): 986-401. doi: 10.4085/1062-6050-50.9.07

2. Adams WM, Hosokawa Y, Casa DJ. The timing of exertional heat stroke survival starts prior to collapse. *Curr Sports Med Rep*. 2015: 14(4): 273-274. doi: 10.1249/JSR.0000000000000166

3. Casa DJ, Armstrong L, Kenny GP, O'Connor FG, Huggins RA. Sideline and event management: Exertional heat stroke: New concepts regarding cause and care. *Curr Sports Med Rep*. 2012; 11(3): 115-123. doi: 10.1249/JSR.0b013e31825615cc

4. Mazerolle SM, Ruiz RC, Casa DJ, et al. Evidence-based practice and the recognition and treatment of exertional heat stroke, Part I: A perspective from the athletic training educator. *J Athl Train*. 2011: 46(5): 523-532. doi: 10.4085/1062-6050-46.5.523

5. Mazerolle SM, Pinkus DE, Casa DJ, et al. Evidence-based medicine and the recognition and treatment of exertional heat stroke, Part II: A perspective from the clinical athletic trainer. *J Athl Train*. 2011: 46(5): 533-542. doi: 10.4085/1062-6050-46.5.533

6. Miller KC, Swartz EE, Long BC. Cold-water immersion for hyperthermic humans wearing American football uniforms. *J Athl Train*. 2015: 50(8): 792-799. doi: 10.4085/1062-6050-46.5.533

7. Miller KC, Long BC, Edwards J. Necessity of removing American football uniforms from humans with hyperthermia before coldwater immersion. *J Athl Train*. 2015: 50(12): 1240-1246. doi: 10.4085/1062-6050-51.1.05

8. Raab S. Letter to the Editor. NATA News. May 10, 2014.

9. Miller, KC, Lopez RM, Yeargin SW, McDermott BR, Casa DJ. Rebuttal Letter to the Editor, NATA News. July 10, 2014.

10. Wells H. Method using tarp to cool person with heat stoke is effective. Health: February 23, 2017. Web site. https://medicalxpress. com/news/2017-02-method-tarp-cool-person-effective.html. Accessed July 24, 2017.

11. Stearns RL, Casa DJ, O'Connor FG, Lopez RM. A tale of two heat strokes: A comparative case study. *Current Sports Medicine Reports*. 2016: 15(2): 94-97. doi: 10.1249/JSR.0000000000000244