

# Practice Beliefs of Team Physicians Regarding the Recognition and Treatment of Exertional Heat Stroke

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## ABSTRACT

The National Athletic Trainers' Association and the American College of Sports Medicine each have a position statement for exertional heat illnesses that outlines proper assessment of core body temperature via rectal thermometry ( $T_{re}$ ) and treatment via rapid cooling by cold water immersion (CWI). The purpose of this basic inductive research study was to investigate team physicians' practice beliefs regarding the recognition and immediate treatment of EHS and the ways to increase and promote the use of best practices within the athletic training profession. Many of the participants recognized that in their role as a team physician, they were responsible for promoting best practices, which they believed were  $T_{re}$  and CWI. However, they did not believe it was their professional responsibility to provide educational training for either skill to athletic trainers, but rather that the 2 parties must work together to develop appropriate patient care policies.

Numerous articles, anecdotal and empirical, have been published over the past decade regarding sudden death in sport. One condition in particular, exertional heat stroke (EHS), has garnered both media and research attention as many high school and collegiate football players continue to die as a result

of EHS.<sup>1-3</sup> The National Center for Catastrophic Injury Research (NCCIR) estimates that EHS is the leading cause of death during the hot and humid months of July and August and is among the top 3 leading causes of death in athletics, regardless of the time of year.<sup>1,3</sup> The NCCIR retains records for only high school and collegiate sport deaths, so the data may be higher when other organized sporting events are considered. In addition, the past 5 years have been the deadliest for EHS, despite a positive prognosis for EHS when a proper diagnosis and treatment occur.<sup>1,3</sup>

A key component in preventing death from EHS is securing an accurate body temperature assessment because it allows for an accurate diagnosis. This diagnosis then directs proper management (immediate and aggressive cooling) and care after the illness, including return to sport.<sup>4-6</sup> In 2002, the National Athletic Trainers' Association (NATA) released a position statement on exertional heat illnesses,<sup>4</sup> which outlines proper assessment and treatment methods. The document strongly recommends assessing body temperature via rectal thermometry ( $T_{re}$ ) and rapid cooling by cold water immersion (CWI) for the assessment and treatment of EHS, respectively.<sup>4</sup> In addition, the American College of Sports Medicine (ACSM) produced a similar document<sup>5</sup> that corroborates the NATA's position statement regarding the use of  $T_{re}$  and CWI for the diagnosis and treatment for EHS, respectively. These same recommendations are echoed in the NATA's position statement on preventing sudden death in sport.<sup>6</sup>

The recommendations of the NATA and ACSM<sup>4-6</sup> are well supported in the literature, with multiple studies and systematic reviews having confirmed their use and efficacy.<sup>3,7-12</sup> Rectal temperature assessment not only provides the clinician with an estimate of body temperature that is imperative for diagnosis but also

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allows for the monitoring of cooling during CWI, as well as aiding in the development of a protocol for return to play, duty, or work. Furthermore, using both rectal  $T_{re}$  and CWI in collaboration has been documented as being highly effective in managing EHS.<sup>13,14</sup>

Despite recommendations and endorsements by the NATA and ACSM,<sup>4,6</sup> athletic deaths due to EHS are still occurring.<sup>1,3</sup> Many plausible explanations exist, including failure to recognize the signs and symptoms of the condition, failure to provide immediate and rapid cooling, and failure to have appropriate medical care on site. These failures may occur especially in cases where a high school does not employ an athletic trainer, and then in an emergency, the care of the athlete is left to the coach or parent.<sup>2,15</sup> For instance, examine the controversial case in Kentucky of a high school football player who died from EHS—his death may have been attributed in part to his coach, as well as to the lack of adequate medical coverage.<sup>16</sup> Many high schools leave the care of athletes in the hands of the coach,<sup>17</sup> despite the recommendations of the NATA to employ an athletic trainer and provide appropriate medical coverage.<sup>18</sup>

A lack of medical coverage may be only part of the problem regarding sudden death and EHS. In some cases, the emergency care provider, usually an athletic trainer, may not be prepared to appropriately manage EHS. It has been shown that less than 20% of athletic trainers use  $T_{re}$  assessment as a means to assess body temperature, and only half use CWI for treating the condition when EHS is suspected.<sup>19</sup> This disconnect between recommended practices and actual clinical practice has been associated with educational training. In the existing literature,<sup>19,20</sup> athletic trainers have reported limited exposure to the recommended practices and formalized training in EHS skill sets. Often, athletic trainers are only verbally instructed to use  $T_{re}$  assessment for diagnosis and to rapidly cool the athlete via CWI but were not afforded the opportunity to practice those skills.<sup>20-22</sup> Along with the lack of formalized training, some athletic trainers also may have misconceptions regarding the effectiveness and cost of both methods.<sup>19,20</sup> In combination, the factors previously discussed result in some athletic trainers not implementing the recommended practices set forth by the current evidence-based medicine.<sup>19</sup>

If an athletic trainer is on site, he or she will be the first medical professional to assess an athlete with EHS.

The athletic trainer is an integral component of the sports medicine team and works under the supervision of a licensed physician. These two medical professionals work cooperatively to manage and provide optimal care for athletes and other physically active adults. The team physician, as established by the 5 major sports medicine organizations, must have an MD or a DO degree, as well as possess a special proficiency in the care of musculoskeletal injuries and medical conditions encountered in sports. In addition, to earn the title of a team physician, the physician must possess formal training in sports medicine, must be a member in one of the associated medical societies, must have a fundamental understanding of emergency care, and must also be trained in first aid and cardiopulmonary resuscitation. More information regarding the responsibilities and training related to the role of the team physician can be accessed on the American Academy of Orthopedic Surgeons Web site (<http://www.aaos.org/>). State licensure acts require athletic trainers to work under the direction of a physician who, during their medical training, gained experiences with  $T_{re}$ . It is ultimately the team physician's responsibility to make medical decisions that affect athletes' safe participation. Some authorities have suggested that an athletic trainer's decision to use the skills of  $T_{re}$  and CWI are related to his or her emergency action plans and standing orders, which are developed in conjunction with a licensed physician who serves as the institution's (collegiate or high school) team physician.<sup>19</sup> Hypothetically, the physician's practice beliefs can influence the athletic trainer's use of these practices clinically.

Previous research revealed that within sports medicine teams, physicians strongly encourage athletic trainers to use the most current evidence-based medicine.<sup>19</sup> Therefore, the purpose of this research study was to investigate team physicians' practice beliefs regarding the recognition and immediate treatment of EHS. Specifically, the following question guided our investigation: How does the team physician view his or her role in relation to the sports medicine team when it comes to the assessment and treatment of EHS?

## METHOD

### Participant Selection and Recruitment

After approval was obtained from the institutional review board, participants were recruited purposefully

TABLE 1

## Study Participant Background

PARTICIPANT <sup>a</sup>	GENDER	AGE (y)	STATE	NO. OF YEARS		SETTING	CREDENTIAL
				BOARD CERTIFIED	SPECIALIZING IN SPORTS MEDICINE		
Nick	M	38	TN	10	10	College D1	CAQSM
Derek	M	52	AL	22	21	College, high school, recreational	N/A
Bud	M	46	MI	12	12	Professional, college, high school	ATC, CAQSM
Colby	M	39	PA	7	6	High school, marathons, road races	N/A
Keri	F	35	MA	7	6	College D1	CAQSM
Kane	M	46	NC	10	6	Military	CAQSM
Tate	M	41	IN	13	12	College, Olympic, high school	CSCS, FACSM
Clark	M	44	TX	3.5	3	NASA astronauts, marathon participants	N/A
Andrew	M	63	MN	33	23	College, high school	CAQSM
Will	M	50	NC	20	15	College	CAQSM
Danry	M	43	MD	15	11	College, military	N/A
Brooke	F	37	WI	7	2	College, high school	MPH
Ceci	F	42	MA	12	3	College	N/A
Summary	10 M, 3 F	44±4	11 states	13±9	10±8		

Abbreviations: D1, Division I; CAQSM, Certification of Added Qualification in Sports Medicine; ATC, certified athletic trainer; N/A, unknown; CSCS, certified strength and conditioning specialist; FACSM, Fellow of the American College of Sports Medicine; MPH, master of public health.

<sup>a</sup> Pseudonyms were used for all participants.

using criterion sampling, followed by convenience and snowball sampling techniques.<sup>14,23,24</sup> At the onset, the authors established criteria for inclusion<sup>23</sup> based on the purpose of the study. The specific criterion included team physicians who were currently working with athletes serving as “team physician,” who had at least 3 years of full-time work experience beyond their medical residency, and who had a family medicine or internal medicine specialization.

Two weeks prior to the 57th Annual ACSM Meeting in 2010, a recruitment letter was posted on the American Medical Society of Sports Medicine’s (AMSSM) electronic mailing list, which outlined the inclusionary criteria and instructed those who were interested to contact the researchers. Individuals interested in participating e-mailed the primary researcher, who coordinated a focus group during the conference. To increase participation, individuals were also recruited through referrals and recommendations from participants and team physicians acquainted with the

researchers. All participants completed a demographic sheet, informed consent form, and a brief survey prior to data collection sessions.

### Participants

In total, 13 team physicians (10 male, 3 female) with a mean age of 44±4 years and with 10±8 years of sports medicine-specific experience participated in the focus group sessions and telephone interviews. The participants represented 11 states. Table 1 summarizes the backgrounds of participants, using pseudonyms.

### Instrument

We developed a brief background questionnaire and interview guide (Table 2) to address our research agenda. The background questionnaire included 16 open-ended questions that sought to gain information regarding the educational background of the physician and his or her prior experiences with EHS. The semistructured interview guide included 10 open-ended questions that fo-

TABLE 2

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**Study Participant Interview Guide**


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1. What is your professional opinion of using rectal thermometry ( $T_{re}$ ) assessment during an exertional heat stroke (EHS) evaluation?
  2. What is your professional opinion of using cold water immersion (CWI) as treatment for EHS?
  3. As outlined in your policy and procedures manual, how do you and your sports medicine team recognize a suspected EHS? (What factors and clinical findings are used to diagnose the condition?)
    - a. What influenced the development of these policies?
  4. What steps, in your opinion, are necessary to encourage the use of  $T_{re}$  and CWI among physicians, emergency medical technicians, and athletic trainers?
  5. What factors influence the decision to use  $T_{re}$ ?
  6. Why do physicians, athletic trainers, emergency medical technicians, and other health care professionals skip  $T_{re}$  and cool immediately?
  7. How can we encourage the use of  $T_{re}$ ?
  8. What factors influence the decision to use CWI?
  9. What do physicians, athletic trainers, emergency medical technicians, and other health care professionals use to cool instead of CWI?
  10. How can we encourage the use of CWI?
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cused on the physician's clinical practices of EHS, reasons for such practices, and professional relationships with the team's athletic trainer. We developed both documents with a group of researchers that included athletic training educators ( $n = 2$ ) who had previous research experience with qualitative methods and EHS and graduate students ( $n = 3$ ) in athletic training. Prior to data collection, 2 team physicians with 15 years of clinical experience reviewed the questionnaire and interview guide for clarity, interpretability, and flow and also reviewed the questionnaire and interview guide. Only minor grammatical changes were made to the document after the physicians' review.

#### Data Collection

The interview sessions followed a semistructured format to allow the researchers to ask follow-up questions of the participants to acquire a more elaborate response or further insights. The use of a semistructured format is considered a form of naturalistic inquiry, which is necessary when the researchers are not seeking normative responses but rather the participant's honest opinion and experiences.<sup>25</sup> The researchers purposefully selected 2 separate methods for data collection: focus group sessions and telephone interviews. This was done to help secure the credibility of the findings (methodological triangulation) and to take advantage of each method's strengths as a form of data collection. Focus group sessions have been shown to enhance the richness of the data generated, as an inherent design of focus group sessions is to stimulate further discussion among the

participants. Ultimately, this can highlight and confirm the overall findings of the study.<sup>24</sup> Despite the advantages related to the interactions among the participants, some members can dominate the discussion or persuade other members to conform to the thoughts generated; therefore, we also conducted telephone interviews. All interview sessions were digitally recorded and were transcribed verbatim for subsequent data analysis.

During each interview session, a 2-member research team was used during data collection; one member served as the moderator (S.M.) and the other was the field note taker (L.M.). The moderator was an athletic trainer, as well as an experienced qualitative researcher with more than 7 years of experience with qualitative methodology. The note taker was charged with capturing the interview environment<sup>23</sup> and commonalities that arose during discussions, and also was responsible for adding rigor to the data analysis by confirming or refuting emergent themes.<sup>23,24</sup>

Prior to data collection, the researchers hoped to include 3 to 4 team physicians in each session; however, due to scheduling conflicts and previous engagements, some of the interested participants were not available to attend the predetermined focus group sessions. Those who were unable to attend were asked to participate in the telephone interviews at a later date and time. A total of 3 focus groups were conducted prior to the phone interviews ( $n = 7$ ). Each session involved at least 2 participants to make the process manageable, to allow the participants to feel at ease, to increase the likelihood of discussion, and to maintain participation.

Each focus group lasted approximately 45 minutes. To confirm the focus group findings and to add to the data collected, 6 individual telephone interviews, each lasting approximately 30 minutes, were conducted.

### Establishing Credibility

Beyond methodological triangulation, several strategies were used to establish credibility and dependability of the findings, including participant checks, peer review, and multiple-analyst triangulation. Participant checks reduced the possibility of misinterpretation of the findings and the meanings derived from the participants' experiences and thoughts.<sup>24,26</sup> All participants had the opportunity to review the transcripts taken during the focus group or telephone interview and make any changes to ensure accuracy. A second method involved a peer reviewer. A researcher with previous experience in both the content of the research project and focus group methodology reviewed data collection procedures, data management, and data analysis to ensure that a systematic approach was maintained throughout the process.<sup>24</sup> Multiple-analyst triangulation<sup>24,27</sup> added rigor to the research and enhanced the trustworthiness of the emergent themes. This triangulation included a 4-member research team (3 researchers [D.C., S.M., L.M.] and 1 peer reviewer [K.P.]) that independently evaluated the data using open coding and content-analysis procedures. After emerging themes were ascertained, the 3 researchers compared findings and, when necessary, negotiated the findings until agreement was reached. They then shared the agreed-on findings with the peer reviewer to finalize data analysis.

### Data Analysis

Interview transcripts were analyzed inductively, borrowing from a grounded theory model, as described by Strauss and Corbin<sup>28,29</sup> and others.<sup>23,27</sup> Three researchers, including 1 graduate student (L.M.) in athletic training and 2 athletic training educators (D.C., S.M.), independently performed this analysis to ensure rigor and trustworthiness of the data. Initial analysis involved open coding, where single sentences or thoughts related to the research purpose were identified. These codes were combined into conceptual categories, which were assigned throughout the transcripts, and were continually updated and organized and eventually combined (axial coding). The categories, which were continually updated and evaluated, were examined to better under-

stand the key emerging themes (selective coding). In the end, only the use of terminology to describe the final themes was negotiated, not the data contained within them. All members of the data analysis team were in agreement of the final theme presentation.

### RESULTS

This study examined the assessment and treatment of EHS from the perspective of sports medicine physicians. One main theme emerged to explain the viewpoint of the physicians regarding best practices and EHS, which was a belief that the physician serves in a supervisory role. This role is one that promotes the use of evidence-based practice as it relates to EHS. This theme further manifests itself into 2 subthemes: the professional relationships between the team physician and the athletic trainer, and policy development and implementation regarding EHS. These themes, which are presented below and are supported with direct quotes from participants (using pseudonyms), are reflections of both the universal relationship between the 2 medical care providers and how they navigate the medical care decisions regarding EHS.

#### Supervisory Role of the Physician

*Professional Relationships.* The theme—supervisory role of the physician—is a materialization of 2 subthemes, which includes the relationship between the team physicians and athletic trainers, as well as their practice beliefs that support evidence-based practice in terms of EHS recognition and management. The relationship, as described by this cohort of participants, was amicable, goal-orientated, and professional. When describing the relationship between the physician and athletic trainer, Will stated:

The team physicians are usually the directors or the people who are mostly involved with policy development and implementing policies [for example, EHS]. So we work closely with our athletic trainers to ensure what we think is the best management and treatment program. It's a group effort [between both medical care providers].

Derek explained the relationship at his university by stating:

For me, I said [to my staff] "You need to get a rectal temperature." I was in a position to direct them [to use the appropriate methods]. They [the athletic trainers] didn't work for me, they worked with me [to provide care

to our athletes], so it [really] was all in the thoughts about what's best for the athlete.

The physicians described the supervisory role as a combination of policy development and implementation, along with supervision of the athletic trainers. In addition, they thought it was their responsibility to endorse best practices, but they did not think it was their professional responsibility to provide the educational training for  $T_{re}$  and CWI to promote their use.

*Policy Development and Implementation.* The group also discussed the importance of securing a body temperature assessment in the evaluation of EHS. This finding emerged as a result of the conversations surrounding policy development and implementation. Furthermore, participants felt that the athletic trainer, who is often the first to respond and care for the potential patient, must receive training in  $T_{re}$  and CWI. Ceci agreed that the use of  $T_{re}$  should be encouraged within the athletic training profession. She stated:

I think you have to remind them [athletic trainers] of the standard of care. Oftentimes, the athletic trainer is the first contact as far as the medical professional with the athlete and so it's necessary to do it [ $T_{re}$ ]. It's the standard of care, so it's part of the job description. If that's what you suspect, then  $T_{re}$  needs to be done and then a cold water tub needs to be readily available to cool [the athlete]. You have to push the fact that it's [the] standard of care across the board. And the athletic trainer, as the first medical professional there [on scene], is responsible for carrying that out.

During a separate individual interview, Brooke echoed the same views as Ceci:

I certainly feel that we, as a sports medicine staff [member], should make it happen [facilitating use of  $T_{re}$  and CWI]. If we sat down with our athletic training staff and said we feel that this is important, that this should be a well-defined policy, that this is what we do. There's no reason why we couldn't do that with a heat-related illness.

Danny discussed the knowledge of the athletic trainers with whom he interacts and the importance of obtaining the athlete's body temperature:

I tell them that it's [ $T_{re}$ ] the easiest and most accurate way we can get a core temperature. They [athletic trainers] already knew that oral temperature and temporal temperatures...were not accurate. One of our obligations is to try and make the diagnosis, and  $T_{re}$  is a pretty important piece of information that can help [them] make a

diagnosis, especially when collapse can be related to other things [conditions].

Bud and Colby, members of the same focus group, agreed it is the team physician's role to require the use of both  $T_{re}$  and CWI as part of the standing orders and be a part of the emergency action plan procedures. They also pointed out that it is not their role to teach the athletic trainer the proper use of the devices, as this should be part of an athletic trainer's previous educational experiences. Bud stated:

We're in charge of the protocol...but if they're [athletic trainers] still not comfortable doing that, I don't see that as a responsibility of the team physician. That should be [part of] their undergraduate training.

In an individual interview, Ceci, agreed that it is important for the sports medicine professional to implement what is considered the standard of care or recommended practices. She stated:

That's the standard of care [ $T_{re}$ ] for diagnosis of EHS. A certified athletic trainer or physician is responsible for sticking to the standards of care. It is the recommendation [for a reason].

Will, in an individual interview, had a similar opinion:

I think the ultimate management of these patients, of a heat stroke victim, is going to fall to the physician and the athletic trainers. [The athletic trainers] are obviously the first line of defense oftentimes with the management. [Exertional] heat stroke should be managed by a physician and I think because of that, we have an obligation to help [the athletic trainer] in how to recognize it [EHS] and how to properly initiate treatment.

The role of the team physician is to uphold the standard care, as recommended by the governing sports medicine agencies (ie, ACSM, NATA), by those health care professionals they directly supervise. Some physicians recognized that, although initial educational training was not in their scope of practice, review of policies and procedures was critical. Several mentioned conducting a formal review meeting to discuss the policies and procedures of the institution prior to the start of the season for all employed athletic trainers, physicians, and staff. The purpose of these sessions was to make certain that all members of the sports medicine staff are educated on proper procedures to ensure optimal care for the injured athlete in a timely manner. Nick discussed educational sessions held at the beginning of each preseason for his staff and students about

the use of  $T_{re}$  and CWI, among other school policies, for emergency care. He said, “We have a didactic day set up for our certified staff, graduate assistants, and then with our students.” This implementation has allowed for all members of the team to be aware of the policies and be comfortable with their responsibilities and roles, and it has provided continuing education with the skill sets to help improve competence.

## DISCUSSION

The impetus to this study is, in part, the number of deaths that continue to occur as a result of EHS, despite the increase in prevention efforts by both scholars and clinicians. A failure to recognize and cool an athlete with EHS is often a contributing factor in the individual’s death; therefore, several studies have examined an athletic trainer’s knowledge base regarding best practices and EHS, as athletic trainers are often the first to respond to a case of EHS.<sup>17,18</sup> Unfortunately, knowledge of best practices does not always equate to implementation in clinical practice.<sup>21</sup> However, missing from the literature is the perspective of the team physician, who often works together with the athletic trainer to establish emergency plans and treatment protocols.

This study attempted to gain a better understanding of the team physician’s outlook on the athletic trainer’s role within the recognition and treatment of EHS. Our results indicate that although team physicians are in support of the use of  $T_{re}$  and CWI by emergency care professionals, including athletic trainers, they do not believe physicians should provide the medical training to those they supervise. However, the team physicians recognized that they should be an advocate for best practices, while annually providing time to evaluate, review, and update policies related to the care of athletes. The results also demonstrated that physicians recognize that strategies must be in place to promote the use of best practices, especially in the case of EHS, which is a life-threatening condition.

### Professional Relationships

The team physician and the athletic trainer are integral parts of the sports medicine team and must work together closely to provide optimal treatment for athletes. Previous research has highlighted the importance of a mindful, respectful relationship and open communication among health care practitioners prior to emergencies, as this helps improve the quality of care for the

patient.<sup>30-33</sup> Although the literature has evaluated the nurse–physician relationship,<sup>30-32</sup> the findings are transferrable to the athletic trainer–team physician relationship, as communication and teamwork are necessary to promote optimal care. This relationship is necessary regardless of the clinical setting and is critical for emergency preparedness and the development of policies and procedures related to emergency care.

In collaboration, the NATA, ACSM, and the AMSSM urge team physicians to establish a chain of command, which defines the roles and responsibilities of those involved with emergency response, as well as establish policies, including care for athletes experiencing EHS. The results from this study demonstrate that although team physicians accept responsibility for enforcement of treatment protocols, which include evidence-based practice for EHS, they do not feel responsible for educating athletic trainers on how to properly perform  $T_{re}$  and CWI. Team physicians believe these skills are fundamental to gaining an accurate diagnosis and corresponding treatment, which is dictated by best practices, and therefore should be taught during the educational preparation of athletic trainers.

### Policy Development

The results of this study corroborate previous research, which demonstrates that athletic trainers<sup>18</sup> and team physicians recognize that  $T_{re}$  provides the most accurate assessment of body temperature for a correct diagnosis of EHS. However, in contrast is our finding that team physicians currently implement and support the use of  $T_{re}$ , whereas athletic trainers avoid the use of  $T_{re}$  for diagnosis.<sup>19</sup> The rationale behind the use of  $T_{re}$  was due to team physicians’ previous educational training with the devices in medical school, residency, and sports medicine fellowships, which included coverage in many situations that warranted its use. The team physicians in this study also strongly believed that athletic trainers need to be prepared to use the skill set of  $T_{re}$  to make a correct diagnosis. This can be attained through their formal education, as supported in previous research.<sup>20-22,34</sup> Moreover, many of the team physicians acknowledged that both athletic trainers and team physicians need to work together to develop policies and procedures to ensure quality care for athletes—a previously identified key to a successful relationship and standard of care for athletes.<sup>35,36</sup> When more athletic trainers start using  $T_{re}$  and CWI and more team physicians encourage their

use, there is a strong likelihood of a decrease in athletic death due to EHS.

As identified by the AMSSM, the sports medicine physician is the leader of the sports medicine team and must promote collaboration among medical team members and establish policies and procedures to advocate optimal care for athletes, both for daily care and in emergency situations.<sup>37</sup> Again, teamwork among health care practitioners can help facilitate better patient care.<sup>31-33</sup> The data generated from this study demonstrate and support the perspective of the AMSSM and of the team physicians who were interviewed. The relationship between team physicians and athletic trainers is the critical link in providing optimal care for athletes. The athletic trainer is often the health care provider who coordinates care on a daily basis and implements the protocols established by the team physician,<sup>35</sup> which includes protocols for environmental conditions such as EHS. When developing these policies and procedures, the team physician should involve the athletic trainer and be receptive to his or her thoughts and input regarding protocol development because it takes a team effort to implement an emergency action plan.<sup>38,39</sup>

Although the team physicians interviewed in this study did not think it was their responsibility to teach the athletic trainer proper skill techniques, they should review policies on an annual basis, as well as rehearse the plan with all members of the sports medicine staff.<sup>38,39</sup> The policies and procedures should also reflect the most recent evidence-based medicine recommendations to ensure that optimal care is provided to athletes, as well as to meet the legal obligations of the health and medical care providers.<sup>38,39</sup> As suggested by several of the participants, annual staff meetings to discuss policies and procedures should be implemented. Both health care professionals are responsible for providing the standard of care to the patient, and providing this communication is crucial to maintaining that responsibility.

#### LIMITATIONS AND FUTURE RESEARCH

Although the aim of this study was specific to EHS, the implications of the physician's role in the sports medicine team are applicable to other conditions and protocols. Future research is needed to expand this topic to other emergency situations in sports to gain insight into the team physicians' beliefs and roles for various conditions, illnesses, and situations. In addition, the partici-

pants of this study were board-certified family physicians who also completed a sports medicine fellowship. All physicians were currently serving in the role as the team physician within the military, secondary school, or collegiate setting; therefore, the results of the study can be generalized only to team physicians with a sports medicine credential. Physicians serving in the capacity of team physician at the secondary level may not have sports medicine credentials; consequently, future studies should examine the practice beliefs of those individuals who serve in the capacity as a team physician but do not hold the credentials of a sports medicine physician.

The sample size was purposefully small, but future studies should seek to gain a large perspective from team physicians, as well as compare the responses provided based on employment setting. In addition, this group of physicians supported the use of  $T_{re}$  and CWI in the treatment of EHS; a future investigation should examine the perspective of physicians who do not believe in their use. The physicians' perspective on why the implementation of  $T_{re}$  and CWI, although indicated as best practice, is not appropriate can be helpful to increase compliance. Also, because the team physicians indicated that some of their athletic trainers might not be using the best practices related to EHS, a future study should investigate how the 2 professionals are navigating the disconnect. ■

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