

# Implementing Health and Safety Policy Changes at the High School Level From a Leadership Perspective

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**Context:** Although consensus statements and recommendations from professional organizations aim to reduce the incidence of injury or sudden death in sport, nothing is mandated at the high school level. This allows states the freedom to create and implement individual policies. An example of a recommended policy is heat acclimatization. Despite its efficacy in reducing sudden death related to heat stroke, very few states follow the recommended guidelines.

**Objective:** To retroactively examine why and how 3 states were able to facilitate the successful creation and adoption of heat-acclimatization guidelines.

**Design:** Qualitative study.

**Setting:** High school athletic associations in Arkansas, Georgia, and New Jersey.

**Patients or Other Participants:** Eight men and 3 women (n = 11; 6 athletic trainers; 2 members of high school athletic associations; 2 parents; 1 physician) participated. Participant recruitment ceased when data saturation was reached.

**Data Collection and Analysis:** All phone interviews were digitally recorded and transcribed verbatim. A grounded-theory

approach guided analysis and multiple analysts and peer review were used to establish credibility.

**Results:** Each state had a different catalyst to change (student-athlete death, empirical data, proactivity). Recommendations from national governing bodies guided the policy creation. Once the decision to implement change was made, the states displayed 2 similarities: shared leadership and open communication between medical professionals and members of the high school athletic association helped overcome barriers.

**Conclusions:** The initiating factor that spurred the change varied, yet shared leadership and communication fundamentally allowed for successful adoption of the policy. Our participants were influenced by the recommendations from national governing bodies, which align with the institutional change theory. As more states begin to examine and improve their health and safety policies, this information could serve as a valuable resource for athletic trainers in other states and for future health and safety initiatives.

**Key Words:** heat acclimatization, institutional theory, shared authority

## Key Points

- Shared authority and leadership contributed positively to the states' ability to implement heat-acclimatization guidelines.
- Athletic trainers positively influenced state policies by using established guidelines and maintaining open communication with other key stakeholders.

Every year, high school athletes die or are seriously injured while participating in sports. The National Center for Catastrophic Sports Injury Research has tracked these incidents since 1982.<sup>1</sup> The center classifies all catastrophic injuries into 3 categories: fatalities, nonfatal injuries, and serious injuries. *Nonfatal injuries* are those that are serious and result in a “permanent severe functional disability,” and *serious injuries* are those that are still serious but result in “no permanent functional disability.”<sup>1</sup> The numbers of fatalities and nonfatal and serious injuries fluctuate from year to year. The most common causes of death are cardiac arrest, head injuries, exertional heat stroke, exertional sickling, and cervical spine injuries.<sup>1,2</sup> By implementing several recommended policies, the incidence of sudden death in sport could be reduced, especially in the high school setting.<sup>1,2</sup> Although these policies will not

prevent all cases of sudden death in sport, they will certainly reduce the risk.

Appropriate medical coverage, emergency action plans, automated external defibrillator availability, heat acclimatization, and appropriate concussion evaluation and return-to-play guidelines are all policies designed to reduce the risk of sudden death in sport for high school athletes.<sup>2</sup> Data from the National Center for Catastrophic Sports Injury Research suggest there are many more fatalities, serious injuries, and nonserious injuries at the secondary school level than at the collegiate level.<sup>1</sup> Although the actual sport (ie, football, basketball, etc) is the same at the collegiate level, competition level, training, number of athletes, and medical coverage can be very different compared with the secondary school level. Additionally, unlike the collegiate level, where a national governing body can create and

implement rules, for high schools, all policies must be created and implemented at the state level. Consensus statements and recommendations<sup>2</sup> are developed by professional organizations, but each state is afforded the freedom to create, implement, and adapt policies, as it deems necessary. This means that no uniform policy governs any of the states regarding any of the conditions discussed previously.

Many policies, such as appropriate medical coverage, require funding, which could be cited as a barrier to implementation; however, heat acclimatization for the prevention of exertional heat stroke can be implemented with little to no additional cost to the school districts. As stated previously, exertional heat stroke is consistently among the top causes of death in sport.<sup>2,3</sup> In fact, current data suggest that cases of exertional heat stroke are increasing.<sup>3</sup> In 2009, the National Athletic Trainers' Association (NATA) issued a consensus statement, "Preseason Heat-Acclimatization Guidelines for Secondary School Athletics,"<sup>4</sup> which outlines recommended guidelines for proper heat acclimatization in secondary school athletes to help reduce the occurrence of heat injuries. Since the publication of these recommended guidelines, only 14 states have adopted policies that adhere to these guidelines.<sup>5</sup> In addition to these 14 states, 12 more are currently working to improve their current policies; however, 22 states have guidelines that do not adhere to the national recommendations, and 2 states have no guidelines at all.<sup>5</sup> Anecdotal evidence suggests that many health and safety policies in sport are developed in response to death or catastrophic injury.<sup>6-8</sup> For the purpose of this study, we selected 3 states because of their current heat-acclimatization policies. Arkansas, Georgia, and New Jersey have all recently created or updated guidelines regarding exertional heat stroke. Arkansas passed legislation as well as policies in the Arkansas Activity Association in June 2012.<sup>5</sup> Georgia also passed policies in the state athletic association in March 2012.<sup>5</sup> New Jersey's was the first high school athletic association in the nation to adopt the heat-acclimatization policies, in May 2011.<sup>5</sup> The individual experiences of each state's change process, as well as successes and failures, cannot be viewed in isolation, however, because other factors in the state and professional interactions could also play a role in the change process. Additionally, existing theories regarding organizational change and leadership may provide further insight into these phenomena. *Institutional theory* explains that organizations change and become more similar for 3 reasons: mimetic, normative, and coercive isomorphism.<sup>9,10</sup> Organizations change to align themselves with other successful organizations they compare themselves with, because of the reputations and expertise of those who develop professional standards and the general membership of the organizations, or because of policies from state or national organizations.<sup>9,10</sup>

As more states begin to examine and improve their current health and safety policies, more data regarding successful changes are needed. This information could serve as a valuable resource for other states and for future health and safety initiatives. The purpose of our study was to retroactively examine why and how 3 states facilitated the successful creation and adoption of high school sports safety policies. Specifically, the following research questions guided the data collection and analysis:

1. What contributed to the decision to implement health and safety policies regarding student-athletes at the high school level?
2. How did the states of Arkansas, Georgia, and New Jersey successfully implement their health and safety policies?
3. How did they overcome any barriers to this implementation?
4. What resources were needed to create and implement the health and safety policies at the high school level?

## METHODS

### Design

We used a retrospective case-study design with document analysis and semistructured phone interviews plus follow-up questioning.<sup>11</sup> The semistructured nature of the phone interview allowed for follow-up and discourse during each interview but provided consistency across participants. Our goal was to holistically examine how states successfully implemented health and safety policy changes. Collecting artifacts such as news articles and media reports allowed us to triangulate the accounts of the participants; document analysis occurred in conjunction with the interviews. Case studies are used to gain a holistic and in-depth perspective of a specific, bounded experience, especially when little is known regarding the topic.<sup>11</sup> Additionally, this approach allowed us to analyze the entire experience without losing context or removing it from the environment in which it occurred.<sup>12,13</sup>

A retrospective analysis ensured that the states we selected had already successfully implemented the changes. Additionally, it gave the participants time to reflect on their experiences. In this case, each state's process of creating and implementing the health and safety policy changes, specifically heat acclimatization for high school sports, served as a common experience shared among participants.

### Participant Sampling

We chose 3 states for this case study based on their recent successful implementation of similar health and safety policies, various geographic locations, and our contacts in the states, as a form of convenience sampling.<sup>11,14</sup> For the purposes of this study, *successful implementation* was operationally defined as passage by the high school athletic association, implementation statewide, and adherence to the recommended heat-acclimatization guidelines.<sup>4</sup> Specifically, Arkansas was chosen because of professional contacts and a geographic location in the southern midwest region. Georgia was chosen because of its professional contacts and southeast geographic location. New Jersey was chosen because it was the first state to adopt guidelines that mirrored those established by the NATA<sup>5</sup> and is in the northeast.

Participant sampling began with a professional contact who had knowledge of the changes in all 3 states. The main gatekeeper had personal and professional relationships with key members in each state, which were important for us to gain access to the participants and for them to be willing to be involved. The lead gatekeeper led us to a gatekeeper in each specific state. These state gatekeepers helped facilitate initial contacts with key constituents in the state's high

**Table 1. Participant Overview**

Pseudonym	State	Sex	Role
Andrew	New Jersey	Male	Athletic trainer
Bill	Not available	Male	Athletic trainer
Dan	Arkansas	Male	Athletic trainer
Ed	Georgia	Male	Athletic trainer
Jack	Georgia	Male	High school athletic association member
John	Georgia	Male	Athletic trainer
Ken	New Jersey	Male	Physician
Lauren	New Jersey	Female	Athletic trainer
Lenny	Arkansas	Male	High school athletic association member
Sally	Arkansas	Female	Parent
Sue	Arkansas	Female	Parent

school athletic association as well as the medical and science advisory board. This criterion was purposeful<sup>14</sup> as these individuals had in-depth working knowledge of the processes that occurred and were key influencers in the processes. Snowball sampling ensued, as through the conversations we then recruited other constituents who were identified by the current participants as being important stakeholders or influencers.<sup>11,13</sup> The use of multiple recruitment strategies, including criterion, convenience, gatekeeper, and snowball sampling, allowed us to gain the perspectives of many of the key influencers of the change process, thereby providing a holistic perspective.<sup>13</sup> Data saturation occurred with our initial sample of participants and guided participant recruitment.

### Participants

Eight men and 3 women (n = 11; 6 athletic trainers, 2 members of high school athletic associations, 2 parents, and 1 physician) participated. Georgia and New Jersey were each represented by 3 participants and Arkansas by 4 participants; our final participant was the initial gatekeeper. An overview of the participants and their pseudonyms is given in Table 1.

### Data-Collection Procedures

Initial recruitment occurred online and via e-mail contacts and began once institutional review board approval was obtained from the host institution. After the participant consented, by returning the consent form directly to the researchers, a phone interview was scheduled at the participant's convenience. Phone interviews followed a semistructured format (Table 2), drawing from current literature regarding organizational change<sup>9,10</sup> as well as athletic training research regarding sudden death in sport and emergency procedures.<sup>3-5</sup> Three content-area experts in qualitative methodology, organizational change and culture, and sudden death in sport reviewed both interview guides (Table 2) for clarity and accuracy. Only minor changes for flow and verbiage were needed. For consistency, the primary researcher (K.D.P.) conducted all interviews. Each phone interview lasted approximately 45 to 60 minutes and was digitally recorded and transcribed verbatim by an outside company. The primary researcher then reviewed these transcripts for accuracy.

**Table 2. Interview Guide**

Interview Guide
1. Can you describe your current policies for heat acclimatization in high school athletes?
2. Can you please discuss what factors influenced the decision for [New Jersey, Georgia, Arkansas] to implement changes to the existing heat-acclimatization policies?
3. In your opinion, how did [New Jersey, Georgia, Arkansas] decide what new policies or updates to existing policies should include?
4. Please detail the change process. How did the state implement the new heat-acclimatization policies?
a. What were the key steps that you followed?
b. What resources contributed to the success of the change?
c. Were there any resources that were lacking but could have aided in the change process?
5. Could you describe your role in the change process?
6. Who were the other influential people in the change process?
a. Can you discuss why they were important in the change?
7. What barriers did the state encounter during the change process?
a. Did the state have resistance to the new policies being developed?
b. Can you discuss what steps were necessary to overcome the barriers and/or resistance encountered during the change process?
8. Once the policy was approved, how was the information disseminated to all the appropriate individuals influenced by the policy changes and developments (eg, coaches, athletic directors, athletic trainers and other medical personnel, parents, media)?
9. Can you discuss how the policies are enforced?
10. Are you aware of any penalties or consequences for not complying with the policies implemented by [New Jersey, Georgia, Arkansas]?
11. If someone from another state asked you for advice on undertaking a similar change, what would you tell him or her?
12. Reflecting back on the policy change, is there anything you would change or any information that you wish you knew at the start of the process that you do now?
13. Do you plan to make any further changes within the state regarding athlete health and safety?
a. Probe: If so, how do you think this experience will affect you?
14. Would you like to discuss anything else regarding the policy changes that occurred regarding the health and safety of high school student-athletes?

### Follow-Up Questions

- Describe how your leadership style helped to overcome challenges encountered during the process of creating changes in the state?
  - How would you describe your leadership style?
  - Why do you believe you or others perceived that you played such an integral role in the change process?
- What personal skills or personal behaviors did you find to be most helpful in implementing this change?
- Do you believe the change process was the result of a team of people working together?
- In what way did you facilitate teamwork during the change process?
- In what way did you share responsibility with others during the change process?
- What do you think allowed the changes to be successfully adopted in the state (ie, what made the environment open to change)?
  - What made this time different?

**Table 3. Data-Analysis Process**

Question	Open Coding			Selective Coding		Axial Coding	
	Answer (Single Thought)	Initial Category	Initial Category	Initial Category	Related Category	Related Category	Major Theme/Category
How did you overcome the barriers you encountered?	"We let [coaches] address the ... you know, all the football coaches in the state."	Other coaches	Had other coaches speak with coaches			Shared authority/ leadership was used to overcome barriers	Shared authority/ leadership was used to overcome barriers
	"We'd put committees together to look at this research."	Committees	Organized committees to help develop the new guidelines	Shared authority/ leadership			
	"Our whole objective was that we felt like it had to be a team approach, a global approach if you will."	Team approach	Used a team approach when developing and implementing the guidelines				

We conducted follow-up questioning with our participants after the initial analysis was completed. This allowed us to verify our findings and expand upon themes that emerged, including the development of shared leadership. In addition to the phone interviews, data were collected through analysis of documents, Web sites, handbooks, and other materials as another form of data triangulation. The primary researcher conducted all searches before the initial interviews to help guide the conversations. This process also continued throughout data collection based on participant recommendations. These materials offered another perspective of the process of change through their documentation of the change process and the resulting policy.

### Data Analysis

All phone-interview transcripts and documents were analyzed following open-coding techniques borrowed from the grounded-theory method.<sup>11,15</sup> The initial step was to review the data for understanding and to provide context. A fundamental component of the open-coding procedures was described as *memoing*, in which field notes are written to help code and categorize the developing themes. We used this technique to help guide data analysis and ensure that the dominant themes were identified. Initial coding occurred both during the interviews and during the initial phase of analysis, after all interviews were completed. After initial coding was completed, codes were assigned to the data. These codes were combined into categories (selective coding) and later into themes (axial coding) based on the research questions stated above. A description of the data-analysis process and coding is provided in Table 3.

### Trustworthiness and Credibility

Data trustworthiness and credibility were ensured in several ways. The first method was multiple data-source triangulation.<sup>11,14</sup> The use of multiple states, phone interviews, follow-up questioning, and document analysis added credibility to the data. By interviewing members of the high school athletic association and the medical and science advisory boards, we hoped to obtain multiple perspectives of the process. Participant verification was conducted with follow-up questioning of participants after the data were analyzed, confirming the themes that emerged. Additionally, multiple researchers analyzed the data. Each researcher independently analyzed the data as described earlier, and then the researchers met to discuss the findings and agree on the final themes. Finally, a peer reviewer appraised the data and results. The peer reviewer was the qualitative researcher described previously, who was otherwise uninvolved with data collection, and was called on to ensure accuracy, credibility, and trustworthiness of the data.<sup>12,14</sup>

### RESULTS

Results are presented in 3 stages that help answer the 4 research questions previously stated: catalyst to change, policy decision, the change process, and barriers. Additional quotes from participants are listed in Table 4 to support each theme.



## Catalyst for Change

Analysis of the data revealed that the catalyst to implementing the policy was different for each state (death, research, and forethought). In Arkansas, the process for change was stimulated by the death of a high school-aged athlete from exertional heat stroke. Three teenagers suffered exertional heat strokes and were in the same hospital during the same time period.<sup>16</sup> Two of the athletes survived their heat stroke, although each spent weeks in the hospital and suffered from kidney failure.<sup>16</sup> Unfortunately, 1 athlete passed away from complications of exertional heat stroke.<sup>16,17</sup> These events gained the attention of the media, including the Public Broadcasting Service,<sup>18</sup> which posted a letter from the parents of one athlete, who recalled their experiences in the hospital and asked for changes to prevent this from happening to someone else's son.<sup>19</sup> Dan specifically described the influence of these events on the change process, as shown in Table 4. When asked about the implementation of policies related to exertional heat illnesses, Sally, an individual close to the events in Arkansas, stated, "I think that's why Arkansas took it so seriously... because we had an athlete die." Sue also commented, "Unfortunately, tragedies make people listen." All 4 Arkansas participants mimicked Sally's thoughts and were convinced that the player's death and 2 other serious injuries in the secondary school setting were the necessary facilitators for change in Arkansas.

Sudden death initially appeared to be an indirect facilitator for the state of Georgia; however, according to our participants' descriptions, the main initiator appears to have been data collected on sudden death in sport. Two athletes passed away from exertional heat stroke during the summer of 2011, just before the new guidelines were implemented.<sup>20,22</sup> When the deaths occurred, 3-year research studies<sup>21,23–25</sup> examining heat illness at the secondary school level was being conducted, which our participants described as the main catalyst for policy change and implementation. Unlike the Arkansas participants, the Georgia participants described the desire to create scientifically sound, state-specific policies based on data collection, a process that began 2 years before the deaths. John explained that although there were deaths, they occurred in the third year of a research project aimed at collecting data to create guidelines. In a media article<sup>20</sup> covering the deaths, a representative from the Georgia High School Association was quoted as supporting the current policies, which had been developed after a player's death in 2006. These policies stated that all schools must develop their own guidelines for practicing in the heat and recommended use of the heat index or wet-bulb globe temperature.<sup>20</sup> John noted that once the data collection was completed, a decision would be made as to whether to update the current policies. Jack described the realization that the old policy was inadequate (Table 4). With these data, the researchers were able to analyze not only all the environmental data but also the injury incidences, including exertional heat illnesses, in comparison with environmental data and practice times.<sup>22–25</sup> Additionally, the actual number of heat illnesses in Georgia was persuasive. Having hard evidence and data spurred Georgia to make policy changes to protect the student-athlete.

New Jersey, on the other hand, was much more proactive about implementing the policy, as it was the

first state to do so. Andrew explained that although the state did not have any documented serious heat illnesses, anecdotally, the state knew heat illnesses were occurring. A search of the media found no documented deaths from exertional heat stroke in recent years. Lauren also noted that even though the state knew there were no high-profile deaths, it wanted to be proactive and create a policy to protect student-athletes. In addition, Andrew observed that New Jersey was concerned with litigation, as the national policies were now public. He went on to explain the process and influence that potential litigation had on the creation of policies (Table 4).

As discussed, the catalyst was very different for each state; however, the concept of protecting the student-athlete from injury was the overarching reason all 3 states chose to implement the heat-acclimatization policies. Participants from each state cited the importance of creating policies to keep the student-athletes safe. For example, a member of the high school athletic association in Arkansas, Lenny, said, "You want to try to make sure that you keep your students safe." Therefore, although the specific catalyst and driver for change in each state was different, the overarching goal of protecting student-athletes was apparent.

## Policy Selection

The catalyst for change was different for each state, yet the policies selected and subsequently implemented were very similar.<sup>26–28</sup> Recommended practices as outlined by such organizations as the National Athletic Trainers' Association, the American College of Sports Medicine, and the National Collegiate Athletic Association guided policy selection and development. Each state's sports medicine advisory committee recommended policies to the leadership of the high school athletics association that were based on the NATA's consensus statement, "Preseason Heat-Acclimatization Guidelines for Secondary School Athletics."<sup>4</sup>

Georgia was unique in that it had data from research studies<sup>21,23–25</sup> to help guide policy development. After starting with the national guidelines, our participants described looking at the data to make state-specific modifications. This was particularly important for the addition of wet-bulb globe temperature modifications and practice duration. Lauren, however, explained that New Jersey did not modify the guidelines. She stated, "We said, you know what, if we're going to implement these, we should be implementing [them] exactly the way they're written in the National Athletic Trainers' Association and then we went and did that." Ken, from New Jersey, also reinforced the influence of national guidelines when he commented, "Once the national federation adopts a policy that you know we can adopt, we can change our policy [to match] the national federation's policy." Our participants also based their policies on other published guidelines and current research, including that from the Korey Stringer Institute.<sup>5</sup> More quotes describing the influence of the other published materials are presented in Table 4. These guidelines helped when questions arose and gave credibility to the policy. As shown, the states relied heavily on the existing guidelines created by national governing bodies.

**Table 4. Additional Quotations to Support Themes Continued on Next Page**

Theme	Quotation
Catalyst to change	<p>“It was something that our state association had been working towards ever since the NATA [National Athletic Trainers’ Association] position statement had come out, but at that time High School Coaches’ Association, the arts activities, nobody was willing to do change. They acknowledged it, they saw it, but they saw it as athletic trainers meddling again and so once we had the high-profile incidents where we had 3 kids within 1 week collapse, 2 football players, 1 basketball player . . . it really made our state look bad. We’ve had a legislative task force on athletic training in secondary school settings for going on our 10th year, and so we’ve been already trying to move towards those changes but were meeting opposition from people. But once all that happened in 2011, finally everybody came to the table, and it’s like: ‘What do we have to do?’” [Dan]</p>
	<p>“I think, unfortunately, tragedies make people listen. And I think that’s what really helped Arkansas get through the changes. You know, would it have been as easy without a tragedy? I don’t know because I tried 18 years ago and then I talked to people in between, and I could never get it beyond our local school district.” [Sue]</p>
	<p>“They [the state of Georgia] actually had 2 kids in the summer of 2011, they had 2 kids pass away and 1 was ruled cardiac, but I think it stemmed from heat. So they had 2 kids die, 1 was in Florida in practice. . . .That’s when our study was ongoing. We had a study going on 2 years before that. So the study we had was a 3-year-long study. And that was the final year of the study. So what was happening was the Georgia High School Association was kind of waiting on us to get some data out so they can implement new guidelines based on hard data instead of just kind of throwing out guidelines.” [John]</p>
	<p>“They’ve got 30 high schools around the state with state-of-the-art equipment and they have [athletic] trainers that are taking readings every 15 minutes, starting before practice until after practice, and then they keep up with any heat-related issues that come up during practice,” [representative] said. ‘When that study is over, we’ll have hard and fast data that will maybe cause us to change our policy,’ he said.”<sup>20,21</sup></p>
	<p>“We took a step which we thought was a pretty good step, but we determined that it really wasn’t nearly adequate enough, where we said every one of the schools had to establish, had to buy into a heat policy from a recognized national organization. It could be from a national [athletic] trainers’ organization, it could be from one of the military branches, or whatever. But we left it up to the local school district to make its own policy with the understanding that the schools in the north Georgia mountains are in a whole different setup than the schools in the swamps of deep-south Georgia. What we found was that it was a little bit inadequate because it gave people some latitude that they were kind of taking advantage of. So then we decided [that] what we really need to do was to determine an actual factual research-based policy.” [Jack]</p>
	<p>“The 1 piece of information that resonated most with the football subcommittee and the full Board of Control was the fact that Georgia had the most heat-related fatalities since 1990. Most of the policy makers had been aware that some fatalities had occurred but had lost track of the actual numbers even though they all agreed that 1 was too many. The research project revealed important, empirical data about a number of variables that were involved in creating danger situations for student-athletes. The Board of Control believed that data and were willing to step forward to make changes.” [Jack]</p>
	<p>“Their [leader, Jack] was very interested in making an evidence-based policy rather than just responding to public opinion. And you know we both came under, he more than I, but there’s a lot of pressure from media, particularly in 2010 or ‘11, when we had a death, and you know the Georgia High School Association stood strong, and said: ‘We’re in a 3-year study, we’re going to collect the 3 years of data, and then we’re going to make policy changes.’” [Ed]</p>
	<p>“We didn’t have anything documented. But I can tell you that I received [tele]phone calls from people saying that you know listen we had [to] send a kid to the ER [emergency room] today and it was things like that were really just never documented but we knew that problems were out there.” [Andrew]</p>
	<p>“I also sat on that committee with [Andrew, our other participant from New Jersey who was a high school athletic trainer and served on the Sports Medicine Advisory Committee], and they just wanted to be proactive about it, let’s get it out there, let’s keep the kids protected, that’s the job of our medical advisory committee.” [Lauren]</p>
	<p>“We spoke to quite a few attorneys from across the country and they all said the same thing, which is, now that there are national guidelines, if an athlete goes down with a catastrophic injury, we’re going to approach 2 people. One is the state association, and we’re going to say: ‘There are national guidelines out there, why didn’t you follow them? You’re going to be held accountable.’ And the second group we’re going [to] approach is the school district, with the same question. So what I told my state association was: ‘Listen, if you pass these guidelines, it washes your hands liability-wise because you’re doing what you should do. Now it’s up to the school district.’ And all the administrators looked at each other, and they said: ‘You know what, you’re right. We don’t need this problem.’” [Andrew]</p>
<p>“All of our coaches, that’s a common theme when you get coaches together, they had this haunting fear that they were going to lose a kid in August. That’s what you hear a lot, and so I think before we even did this policy, our coaches were more aware than ever before about the problems that were involved.” [Jack]</p>	
Policy selection	<p>“We started with the National Athletic Trainers’ Association [consensus] statement on [preseason heat-acclimatization guidelines for secondary school athletics]<sup>4</sup> . . . and the National Collegiate Athletic Association policy, and we started . . . with that as our baseline, and then we worked to find some good areas [to start with].” [Ed]</p>

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**Table 4. Continued From Previous Page**

Theme	Quotation
Change process	“We had, pretty early on had, of course, looked through research and had found that the Korey Stringer Institute was the . . . leader in this field, so we . . . went through and looked at their recommendations and research, and that’s what we based it of off.” [Lenny]
	“Whenever there were questions with the [state organization] they could always fall on, well we got this from the National Athletic Trainers’ Association, it’s a national guideline. It’s not something that we just developed in the back room of our own little association.” [Andrew]
	“Coaches are coaches, and . . . they don’t want to be told what to do . . . They are ‘football coaches and nobody tells them what to do’ and ‘we do what we do’ and you know even the coaches . . . were pro-athletic trainer and things like that. . . . You know they would come in and say: ‘You know yes, I’m going listen to my athletic trainer, and I’m going to do what they, you know, advise me to do. But I do not want a policy that handcuffs me in what I can and can’t do.’ . . . They kept seeing it as if they were going to be handcuffed [being told] how they could run their practices, when they could have their practices, you know stuff like that.” [Dan]
	“It has to be a team approach for a statewide implementation. Even if you are trying to make changes just within your school, clinic, our [or] wherever you are employed, it is best to have individuals that can help you. Just having other opinions, thoughts, [and] ways of doing things, helps you see answers to obstacles that as an individual you might not see. Sometimes you cannot see the trees for the forest in front of you.” [Dan]
	“You have to get the leaders in those areas together. People that can make a decision and people that can get the message to their people or to their entity about the importance of the matter and why we have to do it this way in a practical manner.” [Lenny]
	“We’d put committees together to look at this research, and you know of course with people having schools and schedules and people all over the state, we had to do this over like a 5-, 6-month period. . . . And that was, you know where we kind of got everybody on board, all the different groups that are affected within the schools, and provided research and talked about how we can make this work the best, most practical way. That’s one of the things you forget about, is that piece of it, whenever we had the different committees of coaches, officials, principals, superintendents, parents, groups coming in to get their buy-in.” [Lenny]
	“I really feel like that maybe compared to some other states that are looking at this, we tried to balance the sports concerns and medical concerns . . . so what we tried to do was something [that] was medically sound and at the same time was athletically practical, and I think that’s what we’ve been able to come up with.” [Jack]
	“No one ever likes to be ‘told’ what to do. I’ve found that it’s much easier to get what you want by being a teacher presenting facts, listening to the concerns of your audience then spinning it by having the audience believe it’s their idea.” [Andrew]
	“We took our football subcommittee off our Board of Control over to the University of Georgia to see the results of the study . . . so we had administrators and coaches and athletic directors all involved and going out there and hearing this.” [Jack]
	“There is no resistance, just logistics. Like I said, you know we wanted to hit the main groups, the schools, coaches, parents, students, and medical personnel, just logistics of trying to work through and get in touch with. You know the proper folks in the medical field help us broadcast our message and our concerns.” [Lenny]

**Change Process**

Once the decision to implement change was made and the policies to be adopted had been agreed upon, the states displayed several similarities: barriers, using shared authority/leadership, and open communication. These features were discussed openly between the sports medicine advisory committee and the leadership of the high school athletic association as a means of facilitating the change and overcoming those barriers.

**Barriers.** Our participants described both actual and perceived possible resistance to change, particularly from coaches. The high school athletic association representative from Georgia, Jack, recalled, “I’m certain that there was some grumbling going on about having to change the way we’ve been doing business for some time at football practice.” Confusion and resistance to change also occurred in New Jersey. Andrew, the athletic trainer from New Jersey, described the first year:

Well, it was actually mixed feelings. But I think it was just chaos that first year, for them [coaches] trying to understand what’s going on and..once they [the coaches] understood it, trying to accept it.

Because most members of the state high school athletic associations were coaches or former coaches, this resistance could have seriously affected the outcome. If coaches within the organizations had opposed the policy, it would not have been implemented. Although some resistance to the policy appeared, our participants did not acknowledge it as preventing them from creating or implementing the heat-acclimatization guidelines in their state. They went on to describe how they overcame or preemptively reduced resistance using shared authority/leadership and open communication.

**Shared Authority/Leadership.** All of our participants spoke about teamwork and consistently used “we” and “our” during their discussions of the change process, which

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highlighted the concept of shared authority and leadership style. Participants described sharing authority and leadership with medical professionals and the other members of the high school athletic association. They acknowledged that the process was made possible by teamwork. Lauren, from New Jersey, stated, "For change to be successful, everyone has to buy into the program and understand the rationale behind the change."

Our participants highlighted the importance of placing the right people in roles where they could succeed as leaders and empower others to assist in the change process. When asked about his leadership style, Lenny, from Arkansas, explained that his style in this process consisted of bringing experts and leaders from various professions and organizations together to discuss, design, and implement the appropriate policies. He also noted, "Well, our whole objective was that we felt like it had to be a team approach, a global approach if you will."

Jack, from Georgia, observed that by having multiple people involved in the writing of the policy, they were able to incorporate the needs of all stakeholders and create a very practical policy. Georgia also used the team approach: as the sports medicine advisory committee and those who conducted the research study described their meeting with the high school athletic association, John commented, "We made it very important that it was not as much of a scolding and yelling at you for doing the wrong stuff as it was 'This is, more generally, this is what we should be doing.'" Andrew, from New Jersey, shared a similar perspective when explaining some of the personal skills needed to help facilitate the change.

Overall, this shared authority/leadership was a major contributing factor to the successful policy implementation in these 3 states. *Shared authority/leadership* was operationally defined as power and leadership responsibility given to members who would not normally have it based on their predefined roles within the organization. This definition materialized from the experiences of our participants, as they frequently used the words *we*, *us*, and *together*.

**Open Communication.** The importance of communication emerged in regard to policy implementation, specifically to maintaining open communication among all stakeholders during the change process. *Open communication* encompassed communicating directly with those affected by the change. In Georgia, for example, when the data from the 3-year studies<sup>23-25</sup> were being presented, members of the executive board all attended a meeting to hear the results, which ensured that everyone understood the results.

In New Jersey, identifying a figurehead as a means to promote open communication was effective during the change process. Andrew, one of our participants from New Jersey, was the "go-to" person for questions on policy creation, development, and implementation: If a coach had a question, the coach contacted him directly, "and I explained anything I needed to explain to [him/her]." He reflected, "I think by doing that... doing it that way, it became less formal, less strict, because now they're speaking to someone and it became a very informal conversation."

Open communication was helpful in reducing resistance to policy implementation. When asked about communica-

tion and how that positively influenced the change process, John explained what worked well in Georgia:

I think where we really did a good job... is getting all the different influences that can have an effect on student safety, in regards to heat illness, trying to get everyone in the loop. I think is what we did best.

In addition to sharing authority and leadership responsibilities, ensuring that all stakeholders were informed was an important aspect of each state's change process.

## DISCUSSION

Data from the National Center for Catastrophic Sport Injury Research have demonstrated the consistency in death and serious injuries in sport throughout the years, thereby illustrating the need for policies and guidelines to ensure athlete safety.<sup>1</sup> The data may be attributed to many factors, including increased participation at the secondary school level or increased accessibility to medical staff and national policies and guidelines at the collegiate level. At the high school level, the creation and implementation of policies must occur at the individual state level.

### Catalyst for Change

Student-athlete death, ongoing research, and forethought were identified as initial catalysts to change; however, the desire to protect student-athletes surfaced as the shared catalyst for change. The 2 states that had documented recent heat-stroke deaths appear to have been, at least partially, driven by external forces, whereas internal forces primarily drove New Jersey. In Georgia, there was a blend of external and internal forces: the state was already in the middle of a research study aimed at gathering data to create a policy when 2 student-athletes died.

With the major push toward evidence-based practice in health care, obtaining data specific to one's population, as was done in Georgia, can help establish research-driven policies. More data-driven policies can be developed as researchers continue to focus on injuries and death at the high school level. Although we cannot attribute recent policy changes in Connecticut or North Carolina<sup>5</sup> to research, both states also have universities that focus research on health and safety in the high school setting.

The institutional theory of change would suggest that policy makers be concerned with maintaining legitimacy through mimicking the actions of organizations they deem successful.<sup>9,10</sup> For high school athletics, this could be the National Collegiate Athletic Association or other states that may be considered powerhouses in specific sports. Often, leaders in high school athletics programs want to mimic collegiate athletics programs because of the prestige or perceived legitimacy. We did find it interesting that few of our participants mentioned the National Collegiate Athletic Association's implementation of similar guidelines<sup>29</sup> for all colleges and universities in 2003 when asked about influences, a finding that is in direct contrast to the institutional theory of change.<sup>10</sup> Other states, including Arizona, Florida, North Carolina, and Texas, also updated their policies around the same time as Georgia and Arkansas.<sup>5</sup> Despite the geographic proximity of these states, and the professional relationships that may exist



among athletic training, coaching, and administration professionals, none of our participants appeared to be concerned with guidelines that neighboring states were following or influenced by other states' decisions, which is contradictory to mimetic isomorphism.<sup>10</sup> One explanation could be that states are often not in direct competition with each other. Rivalries in high school athletics are within states, unlike in the collegiate atmosphere, which typically stimulates competition across state and conference boundaries.

Another interesting finding was that the sports medicine advisory committee or sports medicine researchers in each state initiated the change. In addition, this group of health care professionals was rather small, indicating that a few individuals can influence change in their state. As health care providers, athletic trainers are charged with protecting and maintaining the well-being of the student-athlete, so this finding is not surprising. Moreover, several of our participants were parents, who, like athletic trainers, want to protect the well-being of their children. Together, parents, coaches, athletic trainers, and others involved in high school state associations must recognize the need to protect the student-athlete by implementing appropriate and recommended policies. We encourage more athletic trainers to take active roles in their high school athletic associations to help initiate positive change.

Media reports can often have significant influence on policy development and in some cases on educational programming. For example, athletic training educators are frequently influenced by "hot" topics in the media when developing curricula around the topic of sudden death in sport.<sup>30</sup> The National Football League has recently made significant changes to its concussion policies,<sup>31</sup> which may be attributed to the surge in research, former players' litigation, and media coverage related to sport-related concussions. This attention has heavily influenced athletic training educators to spend more time on the topic in the classroom.<sup>30</sup> The notion of media influence on policy change did not appear to be a factor for our sample population, as it was rarely mentioned when our participants were asked what influenced the decision to update or create policies. However, we cannot ignore the fact that our participants had to have learned of the cases of catastrophic injury or death from somewhere. This is particularly true for our health care professionals, as none were directly involved in the care of the injured athletes.

The reactive response to tragedy is not uncommon in sports medicine. For example, the National Collegiate Athletic Association mandated sickle cell testing for all Division 1 athletes in response to a lawsuit after the death of Rice University athlete Dale Lloyd from exertional sickling.<sup>6</sup> The same reactive response was also seen at the state level. In Washington, concussion law was implemented and named after Zachary Lystadt, a high school student-athlete who suffered a catastrophic brain injury after sustaining a concussion and returning to play the same day.<sup>7,8</sup> Our results indicated that death can stimulate a state's assessment of its health and safety policies and can positively influence the decision to change; however, as illustrated by New Jersey, proactivity can also foster change.

## Policy Selection

In each state, using existing guidelines that had been established and accepted by national governing bodies primarily assisted the policy development. The NATA consensus statement on preseason heat acclimatization for the secondary school athlete<sup>4</sup> was the most commonly used document, which was not a surprise, as we chose the states to study because they met the guidelines established by the NATA. The members of professional organizations, such as the NATA, strove to make their policies match those of their governing body, not only because it was the established best practice within the organization but also to maintain legitimacy, supporting both coercive and normative isomorphism.<sup>10</sup> This motivation reinforces the findings from a study of change within a Canadian youth sport organization as well as one regarding health care changes.<sup>32,33</sup> In the Canadian youth sport organization study, the organizations fell more in line with what was recommended by the national organization,<sup>32</sup> as our states did.

## Change Process

Previous authors<sup>34</sup> showed that budget is often a barrier to optimal athletic health care in the high school setting. Because the guidelines did not place an additional financial burden on the schools, we were not surprised that coaches' resistance to change was the only barrier noted by our participants. This barrier, however, was described as minimal, mostly because of the shared authority and leadership between the medical professionals and the coaches or administrators within the high school athletic association and the use of open communication.

**Barriers.** Resistance to change was encountered in high school football coaches, mainly because the established guidelines affect football more than other sports owing to its equipment-intensive nature. It is likely that the coaches may have lacked training or knowledge regarding these established policies, as previous researchers<sup>35</sup> demonstrated a lack of understanding regarding exertional heat illness; however, because we did not specifically study these coaches, we cannot say for certain. It is possible that the secondary school coach has become institutionalized to the way football practices have historically been managed and, therefore, may resist change, as it can interfere with the coach's perception of *normative isomorphism*, or the process of adhering to what is considered normal or acceptable by a profession.<sup>10</sup>

**Shared Authority/Leadership.** Each of the 3 states we studied had an established and respected sports medicine advisory committee composed of athletic trainers, physicians, and other health care professionals, who are a subset of the athletic association and are responsible for creating recommendations for the health and safety of student-athletes. We first encourage high school athletic associations without sports medicine advisory committees to establish them, as they appear to be valuable resources during the creation and implementation of health and safety policies.

Although each state had a sports medicine advisory committee, one interesting finding was the diversity of our participants. As shown in Table 1, parents, administrators, and medical professionals all participated in the change

process. Many held no official leadership role in their state athletic association. Those who did also credited the work of others with the success of implementing the heat-acclimatization guidelines. This finding supports both the theory of transformational leadership and the theory of shared leadership. *Shared leadership* diverges from the traditional perspective of a single person who leads a group of individuals toward a common goal or vision; rather, it is seen as a collective effort, whereby leadership resides with a group of individuals.<sup>36–38</sup> Shared leadership commonly occurs when there is no set or assigned leader, as defined by titles or roles,<sup>39,40</sup> but may also occur naturally based on the setting. In shared leadership, at least 2 individuals work together to help move the organization toward a common goal.<sup>39,40</sup> Based on the task at hand, leaders emerge from the organization's membership as determined by their expertise, knowledge, and previous experiences.<sup>39</sup> Additionally, this form of leadership has been shown to be useful when many different groups or organizations come together to work toward a common cause,<sup>39</sup> as was the case with our diverse group of participants. This is particularly important when pursuing health and safety changes in high school athletics, as our participants discussed the need for multiple professions to work together to create practical yet medically sound policies.

Our participants shared the process of creating the policy among medical professionals and coaches and administrators, which reduced resistance. Many described their leadership style as adaptive and often addressing the needs of their audience or subordinates based on the task at hand. This informal assessment of their leadership style indicates a transformational leadership style. *Transformational leadership* is characterized as “appealing to the ideals and values of subordinates”<sup>9(p303)</sup> and can help a group work collectively toward a common goal: in this case, policy development and implementation. Additionally, in transformational leadership, leaders emerge because they are passionate about a specific topic or mission.<sup>41</sup> By using these common goals and values, the leaders are able to facilitate the change.<sup>9</sup> Our participants served as role models for change, as they firmly believed in the health and safety of the high school–aged student-athlete, and this enabled them to spearhead change with little resistance. Previous investigators<sup>42</sup> have shown that transformational leadership is common in athletic training, as head athletic trainers and other leaders in the athletic training profession use this style. This observation supports the findings of Aarons and Sommerfeld,<sup>43</sup> who examined leadership during the implementation of evidence-based practices within a nursing community. Transformational leadership styles were more evident in those groups that implemented the evidence-based practice initiative,<sup>44</sup> which created more innovation and positive feelings toward the practices.<sup>43</sup> This finding echoed the suggestions by Luzinski,<sup>44</sup> who recommended using transformational leadership when navigating change in the nursing field.<sup>3</sup> Such a suggestion is important to note because the health and safety policies that are being advocated for the secondary school are a direct implementation of evidence-based practice within the athletic training and sports medicine community.

**Open Communication.** Effective leadership is often associated with open, clear communication.<sup>42</sup> De Vries et al<sup>45</sup> found that effective, specific, open communication was

the biggest factor in leaders' perceived performance and satisfaction. Our findings indicate that the leaders of these organizations used open communication, which helped facilitate the change. Neufeld et al<sup>46</sup> also found that transformational leadership and open communication increased confidence in the leader, as well as improving the leader's perceived performance. Because communication is an integral skill for health care professionals, especially athletic trainers, we are not surprised to see that communication was a positive attribute used to lessen resistance to change. We contend that any state high school athletic association looking to change existing policies or adopt new policies should be open throughout the process and allow ample time for questions and discussion.

## PRACTICAL APPLICATIONS

Sports medicine professionals who wish to initiate change within their state high school athletic association must involve coaches and administrators and foster the working professional relationship. Although many of our health care professionals had an idea of a policy they wanted implemented, the involvement and input of the coaches and administrators were what helped the policies to be adopted. Additionally, for states to create medically sound, evidence-based policies, administrators from high school athletic associations must involve medical professionals. Along with this shared leadership and authority, open communication is also necessary to reduce resistance. This open communication must occur in professional meetings and group discussions about the specifics of the guidelines under consideration. We also suggest that medical professionals and researchers focusing on health and safety in high school sports work with the high school athletic associations in their states to create state-specific guidelines. However, the need for a national governing body at the secondary school level is apparent because of the individuality allowed within each state. Additionally, because of some of the unique challenges of working in the secondary school setting, such as budget, medical coverage, and competitiveness, we suggest establishing policies specific to the secondary school, especially considering the reliance upon them by our participants as a model for acceptable guidelines. Because our participants seemed to rely heavily on the nationally established guidelines created specifically for the secondary school setting,<sup>4</sup> we suggest that the NATA develop more secondary school–specific guidelines, such as the NATA position statement on preventing sudden death in the secondary school setting.<sup>47</sup> Furthermore, we recommend that states planning to update or create policies refer to existing guidelines, as they are not only a great resource but also add legitimacy to the state organization.

## LIMITATIONS AND FUTURE RESEARCH

We acknowledge several limitations to the current study. We retrospectively studied only 3 states that had already adopted heat-acclimatization guidelines. At the beginning of the investigation, very few states had implemented similar guidelines. Now that more states have implemented guidelines, future researchers should expand the current study to include more states. The elapsed time between the development and implementation of these policies and

when we interviewed the participants was meant to allow time for reflection, but specific details of the experience may have been forgotten. Future researchers should focus on states that are currently developing and trying to implement health and safety policies, as their stakeholders' current perceptions and experiences may serve as other perspectives to enhance those gained from the retrospective view of stakeholders in states that were able to implement the desired policy. Additionally, future authors should compare our results with the influences and factors needed for states to create other health and safety policies, such as concussion legislation.

Studying states that do not wish to change existing health and safety policies may give better insight into the catalysts (or lack thereof). The small number of states we investigated is itself a limitation, as we cannot speculate whether our results would apply among states that have not adopted heat-acclimatization guidelines. We purposefully chose our 3 states for their adoption of heat-acclimatization guidelines that meet those recommended by the NATA.<sup>4</sup> Because of this targeted sample, future investigators should also focus attention on the development and implementation of policies established to reduce other injuries or illnesses in sport. Also, state athletic organizations that have not been able to pass health and safety policy changes or whose policy changes do not follow or meet existing national standards should be studied to gain different perspectives on the barriers encountered and resources used. Because our small, targeted sample focused on those in leadership positions during the change process, gaining a more global perspective from each state through the use of quantitative surveys may offer more insight from those involved and affected, including coaches, medical staff, parents, and administrators. We also did not study the specific leadership styles of our participants, such as transformational leadership. Future researchers may consider examining the specific leadership styles of those in high school athletic associations and on sports medicine advisory committees as their particular state is creating or implementing policies to gain an accurate understanding of the leadership style used at the time.

## CONCLUSIONS

Although we specifically studied the creation and implementation of heat-acclimatization guidelines at the secondary school level, we hope this information serves as a resource for other states beginning to implement health and safety policies. Athletic training and sports medicine is a unique field in that health care is being provided but within the context of sport. When examining health and safety policy implementation within a high school athletic association, one must reference both the health care and sport literature. Our findings mirror the institutional theory of change, particularly normative and coercive isomorphism.<sup>10</sup> We recommend that each state's high school athletics association form a sports medicine advisory committee to assist in the development and implementation of health and safety policies. If state organizations and medical professionals come together to realize the catalysts for change to keep the secondary school student-athlete safe; use existing resources and nationally established

guidelines as templates; and work together using shared leadership and open communication, then establishing more appropriate policies in the secondary school athletic setting is possible.

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