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Secondary School Athletic Coaches' Perceptions and Knowledge of the Athletic Training Profession

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Context: Coaches play a role in streamlining care, especially by directing student-athletes in need of further medical attention to the athletic trainer (AT). The AT-coach relationship holds great potential for incorporating collaborative care, and yet, little is known about coaches' perceptions and knowledge of ATs.

Objective: To investigate coaches' perceptions of athletic training and their knowledge regarding the roles and responsibilities of ATs in secondary schools.

Design: Concurrent mixed-methods study.

Setting: Cross-sectional online questionnaire.

Patients or Other Participants: Secondary school athletic coaches from 10 sports with the highest participation rates during the 2017–2018 season (n = 1097). Most respondents were male (n = 795, 72.4%), and their average age was 44.7 ± 11.4 years.

Main Outcome Measure(s): Participants completed a web-based questionnaire containing demographics and quantitative measures assessing their perceived value and knowledge of ATs, as well as open-ended questions. Descriptive statistics summarized the demographic data. Counts and percentage responses for quantitative measures were reported. Open-ended responses were analyzed using the general inductive approach.

Results: Approximately 93% of respondents considered an AT a trusted source of medical information and a key member of the sports medicine team. Most respondents selected *injury prevention* (98.9%), *first aid and wound care* (97%), *therapeutic interventions* (89.9%), and *emergency care* (85.8%) as skills ATs are qualified to perform. Forty-six percent of respondents were willing to coach without an AT employed. Coaches trusted ATs as part of the "athletic team" and as gatekeepers, referring student-athletes for advanced care when warranted. Regarding the AT role, coaches emphasized the treatment of minor injuries and the idea of "coverage versus care."

Conclusions: Secondary school coaches valued the athletic training profession and were knowledgeable regarding various roles and responsibilities ATs frequently perform. However, they may view ATs as luxuries instead of necessities, as evidenced by the fact that just under half of responding coaches were willing to coach without an AT employed at the school.

Key Words: survey research, medical professionals, high school

Key Points

- Aspects of the athletic trainer role that were emphasized by coaches included the provision of immediate care, treatment of "minor" injuries, and referral of student-athletes to appropriate medical professionals when warranted.
- Coaches described the importance of having an athletic trainer on site and available to provide coverage and often described the athletic trainer as part of their team, raising questions of medical autonomy in the secondary school setting.
- Regardless of whether they currently worked with an athletic trainer, secondary school coaches indicated that athletic trainers were valuable to student health and safety, and yet, nearly 50% indicated they would coach at a school that did not employ an athletic trainer.

Secondary school athletic coaches are integral members of the health care team. Although most of these coaches do not have a degree in a health care field, they are often the first to witness an injury or emergency, especially if the school does not employ an on-site medical professional, such as an athletic trainer (AT), or if the AT is off-site or unavailable. When an AT is employed, however, the AT-coach relationship holds great potential for providing collaborative and streamlined care for student-athletes. The dynamics of the AT-coach relationship have been highlighted in original research articles,[1,2] as well as in nonempirical work,[3] with emphasis placed on the importance of effective communication,[1,3] a commitment to the athletic program,[3] and professional knowledge and integrity.[3] Coaches and ATs must work synchronously to optimize the quality, efficiency, and effectiveness of the care provided. Coaches play a key role in not only directing student-athletes to the AT[3] but also in encouraging student-athletes to seek that care, as well as adhering to ATs' recommendations regarding participation status and restrictions. For an athletic health care team to function optimally, coaches must be aware of the AT role and understand the AT's qualifications. They must also recognize and value the AT as a key member of the health care team to work collaboratively toward a common goal—prioritizing the health and safety of student-athletes.

Coaches' roles change drastically when schools do not employ ATs. They are responsible for not only coaching and team success but also being aware of and knowledgeable about proper procedures for responding to an injury or emergency because no medical professional is available. Researchers[4] of a recent study reported that 25% of public and 64% of private secondary schools without an AT employed did not provide any type of medical service for games or competitions. This finding is concerning, as most coaches lack formal medical training.

The presence of an AT may yield numerous benefits for coaches, including faster return-to-play timelines for injured athletes and the ability to dedicate their time to coaching and team success, a benefit also acknowledged by athletic directors,[5] as well as risk minimization. Therefore, coaches can be allies for the employment of ATs and advocates in the secondary school system if they recognize this value. The AT removes potential liability from the school district and coaches,[6] who would otherwise be the first in charge to coordinate care and respond to emergencies. The benefits of a strong AT-coach relationship are not one sided, however. Coaches play a large role in streamlining care, recognizing injurious situations when they occur, and directing student-athletes in need of further medical attention to the AT. To fulfill this role effectively or be an advocate, coaches need to have a firm understanding of the AT role, the benefits ATs provide to student-athletes and the athletic program, and the value of an on-site medical professional.

Despite earlier investigations of coaches' knowledge of first aid[7–9] and emergency care,[7] their perceptions and knowledge of athletic training, which may influence the AT-coach relationship, are not well understood. Therefore, the purpose of our study was to explore secondary school coaches' perceptions of the athletic training profession and evaluate their level of knowledge regarding ATs' qualifications and responsibilities. The following research questions guided our investigation: (1) What were coaches' perceptions of the value and effect of an AT on physical activity and sports safety? (2) What did coaches perceive to be the role and responsibility of the AT?

METHODS

To obtain data from a diverse sample of secondary school coaches, we used a cross-sectional research design, collecting quantitative and qualitative data concurrently via an online questionnaire. This research protocol was approved by the University of Connecticut Institutional Review Board.

Procedures

A 2-pronged approach was used to recruit participants. Due to the many athletic coaches employed in the secondary school setting, we developed criteria to limit the number of contacts needed for questionnaire distribution while still recruiting a diverse sample. First, the primary researcher (A.P.L.) performed a cursory search of each state's high school athletic or activities association website and identified those with a public directory of school personnel (including coaches). This process resulted in the identification of 13 states (Alabama, Arizona, Illinois, Kentucky, Minnesota, Ohio, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Wisconsin, Wyoming). To reduce the population even further, contact information was obtained for the varsity head coach(es) of the 10 sports with the greatest number of participants nationally. To identify these sports, we used the 2017–2018 High School Athletics Participation Survey.[10] Based on this survey, contact information was obtained for girls' and boys' team coaches (when applicable) for the following sports: baseball, basketball, cross-country, football, soccer, softball, swimming and diving, tennis, track and field, and volleyball. This was purposeful to promote consistency across the states included. Most schools offered some or all contact information for coaches of these sports.

The second recruitment strategy involved the use of preexisting coach contacts that were gathered from a University of Connecticut Institutional Review Board–approved research initiative. Contacts obtained via this method represented 4 states (Arizona, Illinois, Oklahoma, Oregon). Duplicate contacts in Arizona and Illinois across both recruitment strategies were identified before distribution to eliminate multiple receipts of the questionnaire.

The primary researcher created and managed a database via Google Sheets in which contact information (first name, last name, email address) for coaches was stored. When pertinent information was missing from the directory, we cross-referenced the state association's website with individual school websites and transferred any missing information. After database completion, we obtained 36 319 email addresses from both recruitment strategies. An email invitation with the Qualtrics survey link was sent to all contacts in April 2019, with reminder emails on May 7, 2019, and May 21, 2019, to increase participation.

Questionnaire Development and Validity

Two members of the research team developed the questionnaire in conjunction with the National Athletic Trainers' Association (NATA) Marketing & PR Department. Questionnaire content was derived from the researchers' experience working clinically as ATs in secondary schools, specifically the interactions they had with members of the coaching staff. The questionnaire was composed of 3 sections: (1) demographics, (2) quantitative measures assessing the coaches' perceived value of athletic training and knowledge of the roles and responsibilities of ATs, and (3) open-ended questions allowing the coaches to expand on their perceptions and understanding.

Although we had experience in and were familiar with the secondary school athletic training setting, none of the research team members had experience coaching at this level. As a result, to improve the quality of the questionnaire, we shared a content validity tool with 2 high school coaches and asked them to review the questionnaire for clarity, relevance, and importance with respect to the predetermined purpose and research aims.[11] This process required the reviewers to grade each questionnaire item on a 4-point Likert scale from 1 (*not clear*, *not relevant*, and *not important*) to 4 (*very clear*, *very relevant*, and *very important*). All suggestions to improve item clarity were incorporated, and any items that were scored as a 1 or 2 by both reviewers in the relevance or importance category or both were removed from the questionnaire.

Item-level and scale-level content validity indices (CVIs) were calculated using the relevancy scores provided by the reviewers.[12] Item-level CVI scores were computed by dividing the number of reviewers who rated the item as *highly relevant* or *quite relevant* by the total number of reviewers.[12] We then determined the scale-level CVI score by adding the item-level CVI scores and dividing that number by the total number of items in the questionnaire.[12] After the review process, an electronic version of the finalized questionnaire was created through Qualtrics. As a final step before sending the questionnaire to all contacts in our database, a member of the research team completed the survey to ensure correct survey logic.

Data Analysis

Descriptive statistics for demographic data were calculated using Excel (version 16.29; Microsoft Corp). Counts and percentage responses for quantitative measures were obtained through the "Report" feature on the Qualtrics platform. To compare responses between coaches who were currently working with an AT and those who were not, we performed cross-tabulation analyses in SPSS (version 26; IBM Corp) for perception- and knowledge-related items. In addition to the perceptions of our sample as a whole, we also assessed differences in perceptions and knowledge based on various independent variables, including whether or not (1) the respondent personally knew an AT, (2) the school the respondent coached at employed an AT, and (3) the respondent participated in athletics at the high school or collegiate level through Mann-Whitney U tests (Kolmogorov-Smirnov values were $<.001$ for all variables). Effect sizes were calculated by dividing the Z-score by the square root of the sample size (n = 1097). The interpretation of effect sizes was as follows: $r = 0.1$ (*small effect*), $r = 0.3$ (*medium effect*), or $r = 0.5$ (*large effect*). The α level of significance for all comparisons was set at $P < .05$.

We used a general inductive approach[13] to analyze open-ended responses. This approach allowed us to condense large amounts of data into more meaningful and consumable themes. Before we began the qualitative data analysis, the lead author reviewed and cleaned the data. This process involved reviewing responses and deleting any that were obviously pulled from the NATA website or other public definitions of athletic training or ATs. Minor grammatical errors were also corrected in the data-cleaning process. The analysis consisted of 4 major steps: (1) an immersive period that involved reading the open-ended responses to gain a better understanding of the data, (2) using the study's aims to identify words or phrases in participants' responses that could provide answers to the research questions, (3) combining similar words or phrases into overarching categories, and (4) finding meaning in and defining categories to identify the emerging themes in the data. During the qualitative data analysis, quantitative data (counts, percentages, and descriptive statistics) were reviewed and integrated into the qualitative data to further support emerging themes regarding coaches' perceptions and knowledge of the athletic training profession—a process in line with concurrent mixed methods.[14]

To reduce bias in the analysis process, we used multiple-analyst triangulation.[15] Steps 1 through 3 were conducted individually by 2 members of the research team; 1 member had 5 years and the other had 8 years of experience conducting qualitative research. Then the 2 researchers discussed their overall impressions of the data via phone until an agreement was reached on the organization and presentation of participants' perceptions. Open-ended responses that warranted clarification were not included in the analysis because we were unable to follow up with participants due to the study design. Notably, in these cases, the participant's complete responses were not removed from the analysis; instead, only the single response lacking clarity was removed. Triangulation of the quantitative and qualitative data served as a second credibility strategy. A mixed-methods approach and method triangulation[16] allowed us to confirm the key findings through multiple data sources to strengthen our understanding of the coaches' perceptions and knowledge of athletic training.

RESULTS

The CVI Results

Individual-item CVI scores ranged from 0.50 to 1.00. The overall content validity of the questionnaire was 0.82, which indicates acceptable content validity according to scale developers.[12]

Participant Demographics

Of 36 319 survey invitations sent via email, 704 were invalid (failed email addresses or bounce backs). Of the 35 615 coaches who received the questionnaire, 1422 started it and 1097 completed it, yielding a 3% (1097/35 615) response rate and 77% (1097/1422) completion rate. Although the response rate was lower than anticipated, we obtained representation from all targeted states (Table 1) and a representative sample based on geographic region (Northeast, Southeast, Midwest, Southwest, and West). Most respondents were male (n = 795, 72.4%). The average age of respondents was 44.7 $\pm$ 11.4 years (n = 1093, median = 45 years, range = 21–78 years), and they had served an average of 13.3 $\pm$ 10.1 years in their role at the time of the survey. We intended to collect data on years of experience in their coaching role, yet respondents may have referenced years in their position of employment outside coaching, as many coaches in this setting have an additional job as their primary source of income. A more detailed summary of demographics is in Table 2.

Perceived Value and Effect of ATs

Coaches specifically described how they believed student-athletes trusted the ATs, how the ATs were valued as a member of the "athletic team," and how coaches trusted that the ATs would refer student-athletes to appropriate health care professionals when warranted. Coaches described the trust they perceived student-athletes had in their ATs and explained that student-athletes felt comfortable talking to ATs about injuries because they trusted them. Quantitative measures that were used to assess coaches' perceived value of athletic training and support this idea of trust are outlined in Table 3. When coaches were asked directly about the value of an AT, approximately 94% responded that ATs were *very* to *extremely valuable* to student-athlete health and safety.

Table 1. Respondents by State

State (Residential)	No. of Respondents
Alabama	68
Arizona	59
Georgia	2
Idaho	1
Illinois	162
Indiana	2
Kentucky	110
Maryland	1
Massachusetts	1
Minnesota	61
North Carolina	2
Ohio	300
Oklahoma	8
Oregon	1
Rhode Island	20
South Carolina	64
South Dakota	35
Tennessee	86
Utah	35
West Virginia	1
Wisconsin	69
Wyoming	9
Total	1097

This table indicates coaches' residential locations at the time of the survey, not necessarily where they were employed. For example, a coach may have lived in 1 state and been employed in another. However, we assumed that all respondents were employed in at least 1 of the targeted states at the time of survey completion.

Table 2. Respondent Demographics (N = 1097)

Characteristic	No. of Respondents (%)
Sex	
Male	795 (72.5)
Female	300 (27.3)
Prefer not to answer	2 (0.2)
Education	
High school diploma	41 (3.7)
Associate's	24 (2.2)
Bachelor's	363 (33.2)
Master's	586 (53.4)
Doctorate	29 (2.6)
Other	54 (4.9)
Medical certification(s)?	
Yes	239 (21.8)
No	858 (78.2)
Personally know an athletic trainer?	
Yes	868 (79.1)
No	229 (20.9)
Participated in athletics (high school or college)?	
Yes	1067 (97.3)
No	30 (2.7)
Does the high school you currently coach at employ an athletic trainer?	
Yes	922 (84.1)
No	175 (15.9)

More than 90% selected *athletic trainer* as a trusted source of medical information.

Coaches also indicated that ATs were a trusted member of the athletic team. When requested to explain the role of an AT, 1 coach responded, "[An AT is] a member of the athletic team who assists in keeping our athletes healthy through education, injury prevention, and injury treatment." Notably, many coaches described the AT as a valuable member of the coaching staff or as a coach. Most coaches (93.2%) indicated that an AT was a key member of the sports medicine team, followed closely by the coach (87.1%) and team physician (61.6%). Coaches in our sample indicated that they trusted the AT would refer student-athletes to appropriate medical professionals when warranted, suggesting the role of the AT was that of a gatekeeper. The timely medical attention provided by ATs was valued by our sample, as most participants indicated that employing an AT at a high school *definitely* (55.5%) or *probably* (27.3%) reduced liability. Quotes from participants highlighting the perceived value and effect of an AT can be found in Table 4.

Perceived Roles and Responsibilities of ATs

The employment of ATs in secondary schools was identified as a top sports safety measure by 52.3% of responding coaches. When describing the role of the AT, they specifically discussed how ATs were available to provide care immediately when needed. Among the comments from coaches were "[An AT] help[s] get players immediate care, gives parents and coaches resources to use," "It allows me, the coach, immediate access to a professional to care for an injury," and "They attend to the athlete's immediate needs, which I believe prevents further injury and/or permanent injury." Coaches in our sample clearly recognized that an AT was available to provide immediate care to student-athletes, and this finding was supported by our quantitative results. When asked to select the tasks ATs were qualified to perform, those that required or included an immediate presence or response ranked highest: *first aid and wound care* (97%), *emergency care* (85.8%), and *make return-to-play decisions* (71.7%).

Coaches also mentioned they could focus on their role knowing that another person was available to handle injuries. As 1 coach stated, "If a situation arises, the athletic trainer is there quickly and provides care to the athlete immediately. If she was not there, a coach would have to provide that care and that could be questionable." The perception that ATs were available to provide immediate care, which frees coaches to focus on their role, is supported by our quantitative results that showed only 16.3% identified a coach as a trusted source of medical information.

Responding coaches consistently referred to an AT's ability to treat minor injuries. When asked about the role of an AT, 1 coach wrote, "[An AT] keeps them [student-athletes] ready and prepared to compete. Treats minor injuries before they become a major injury." Although the coaches expressed the value of an AT in providing immediate care to athletes with minor injuries, they also discussed their belief that it was the AT's responsibility to be physically present at games and practices, emphasizing the "coverage" component of the AT role. One coach noted, "The job responsibilities of an athletic trainer [are] to be at all sports contests as [much as] possible; be available during school hours; to do immediate 'evaluation and first aid' when an athlete has an accident." Additional quotes highlighting the perceived roles and responsibilities of ATs are provided in Table 5.

Table 3. Cross-Tabulation of Survey Responses for Select Questions

Question	Response	No. of Respondents[a] (%)
Who do you consider to be a trusted source of medical information? Check all that apply.	Physician	1063 (96.9)
	Athletic trainer	1023 (93.3)
	Nurse	955 (87.1)
	Emergency medical technician	941 (85.8)
	Physician assistant	853 (77.8)
	Chiropractor	367 (33.5)
	Strength and conditioning coach	250 (22.8)
	Coach	179 (16.3)
	Athletic director	140 (12.8)
	Parent	119 (10.8)
	Principal	60 (5.5)
Of the following items, which do you consider to be the top 3 important sports safety measures? Please select only 3.	Injury-prevention programs	674 (61.4)
	Athletic trainer employed at the school	574 (52.3)
	Preparticipation physical examinations	557 (50.8)
	Emergency action plans	452 (41.2)
	Medical professional present at practices and competitions	355 (32.4)
	Protective equipment (eg, helmet, shoulder pads)	265 (24.2)
	Medical professional available for students during school hours	122 (11.1)
	Practice and game modifications based on environmental conditions	112 (10.2)
	Weather monitoring	56 (5.1)
	Identification of physical hazards on sport fields	47 (4.3)
	Athletic director present at sport events	29 (2.6)
	Referee for competitions	20 (1.8)
	Individual designated to provide water to athletes	14 (1.3)
	Game and competition security	9 (0.8)
	Supplements to enhance performance	5 (0.5)
Do you believe employing an athletic trainer at a high school reduces liability?	Definitely yes	609 (55.5)
	Probably yes	299 (27.3)
	Might or might not	139 (12.7)
	Probably not	38 (3.5)
	Definitely not	12 (1.0)
Who do you consider to be key members of your sports medicine team? Please select all that apply.	Athletic trainer	1022 (93.2)
	Coach	955 (87.1)
	Team physician	676 (61.6)
	Athlete	653 (59.5)
	Parent	574 (52.3)
	Athletic director	481 (43.8)
	School nurse	478 (43.6)
	Other	48 (4.4)
How satisfied are you with the medical care provided to your student-athletes by the athletic trainer?[b]	Extremely satisfied	564 (61.2)
	Moderately satisfied	237 (25.7)
	Slightly satisfied	63 (6.8)
	Neither satisfied nor dissatisfied	23 (2.5)
	Slightly dissatisfied	21 (2.3)
	Moderately dissatisfied	8 (0.9)
	Extremely dissatisfied	6 (0.7)
Please indicate the level to which you agree or disagree with the following statement: "I am willing to coach at a school that does not employ an athletic trainer."	Strongly agree	94 (8.6)
	Agree	216 (19.7)
	Somewhat agree	192 (17.5)
	Neither agree nor disagree	162 (14.8)
	Somewhat disagree	150 (13.7)
	Disagree	165 (15.0)
	Strongly disagree	118 (10.8)
In your opinion, what are athletic trainers qualified to do? Check all that apply.	Injury prevention (eg, taping, equipment fitting, education)	1085 (98.9)
	First aid and wound care	1064 (97.0)
	Therapeutic interventions (eg, rehabbing an injury)	986 (89.9)
	Emergency care	941 (85.8)
	Clinical diagnosis (eg, injury evaluations)	791 (72.1)
	Make return-to-play decisions	787 (71.7)
	Strength and conditioning and maximizing performance	604 (55.1)
	Diagnose eating disorders or mental health problems	234 (21.3)
	Administrative tasks (eg, bill insurance companies)	154 (14.0)
	Other	35 (3.2)
In your opinion, how valuable is an athletic trainer to the health and safety of student-athletes?	Extremely valuable	781 (71.2)
	Very valuable	251 (22.9)
	Moderately valuable	53 (4.8)
	Slightly valuable	12 (1.1)
	Not at all valuable	0 (0.0)

[a] Except where indicated, the total no. of respondents was 1097.
[b] No. of respondents was 922 for this question.

Table 4. Participant Quotes in Support of the Perceived Value and Effect of an Athletic Trainer (AT)

Topic	Supporting Quote
1. Trust from student-athletes	"They [student-athletes] feel more comfortable having someone around they know and trust for injuries."
	"The kids are confident in him [the athletic trainer] and trust him."
	"Our students trust our [athletic] trainers and are very comfortable interacting with them."
	"The students trust her and have seen the results when they do what she asks them to do."
	"She's always on hand and very involved in prevention and treatment of injuries. She is very thorough and patient and our athletes trust her."
	"An athletic trainer is usually the most trusted sports medical professional in the building."
	"The AT is another trusted adult in the building... whom students can seek [out] for medical, social, and mental health issues."
	"They [ATs] are a trusted adult who can be sought out by the students in case they feel their physical, social, and mental health is at risk."
2. Part of the "athletic team"	"The athletic trainer is a coach who helps make sure that practices, games, and all events are maintained in a safe, protected environment. The athletic trainer works with the different sports teams in both the prevention and treatment of all injuries."
	"[The AT is a] valuable member of the coaching staff."
	"[The AT is a] a critical member of my coaching staff. They are there to help prevent and treat injuries that happen and then they put a plan together to get the injured athlete back on the field/court."
3. Gatekeeper	"[Having an AT] helps identify potential injuries and refers them to proper physician."
	"Having an athletic trainer is important for the student-athlete to receive proper treatment and care to help diagnose injuries. Working with the coach, it helps to get the athlete back to participating by receiving the right diagnosis, treatment, and rehabilitation of the injury. She constantly provides them with information on injury prevention, nutrition, good habits. She also is great at diagnosing injuries and referring students to professionals when the situation exceeds her knowledge."
	"They [ATs] are a good resource for information, they deal with injuries if and when they take place, they work with informing parents and referrals to doctors when needed."
	"[An AT] evaluates and treats injuries. Refers them to physician care when needed [and] does a great job with this, which in turn saves athletes and their families the time and cost of medical attention."

The Role of Coaches' Individual Histories and Experiences

Coaches' perceptions of ATs were influenced by their individual experiences, including whether they worked with an AT, whether they personally knew an AT other than as a colleague, and whether they participated in high school or collegiate athletics.

Responses from coaches working with or without an AT at the time of survey completion are compared in Table 6. Most replies were similar for the 2 groups. For example, 91.4% of coaches working without an AT believed that ATs were trusted sources of medical information, compared with 93.6% of coaches working with an AT. Coaches working with an AT had slightly higher perceptions of the value of an AT pertaining to student-athlete health and safety (group 1 [high school employed AT] mean rank = 537.36, group 2 [high school did not employ AT] mean rank = 610.30; $U = 69\ 947.5$, $P = .001$, $r = .106$), but the largest discrepancy was in participants' willingness to coach at a school that did not employ an AT. Overall, 38.9% (n = 359) of coaches currently working with an AT were willing, to some extent, to work at a school that did not employ an AT versus 81.7% of coaches who were working without an AT. This difference was statistically significant (group 1 mean rank = 601.65, group 2 mean rank = 271.60; $U = 32\ 129.5$, $P < .001$, $r = .386$): respondents who worked with ATs demonstrated a greater level of disagreement with "I am willing to coach at a school that does not employ an athletic trainer."

Coaches' pre-existing relationships with ATs also had a small effect on their overall perceptions of the athletic training profession. Individuals who personally knew an AT disagreed more with "I am willing to coach at a school that does not employ an athletic trainer" than respondents who did not personally know an AT (group 1 [coach knew AT] mean rank = 564.7, group 2 [coach did not know AT] mean rank = 489.5; $U = 85\ 759.5$, $P = .001$, $r = .098$). Additionally, coaches who personally knew an AT valued the role of the AT in enhancing student-athlete health and safety more than coaches who did not personally know an AT (group 1 mean rank = 520.16, group 2 mean rank = 658.30; $U = 74\ 357$, $P < .001$, $r = .224$).

Lastly, coaches' experience participating in athletics at the high school or collegiate levels had a small effect on their overall perceptions. Individuals who participated in high school or collegiate athletics perceived the value of the AT on student-athlete health and safety to be higher than respondents who did not participate in athletics at either level (group 1 [participated in high school or collegiate athletics] mean rank = 545.45, group 2 [did not participate in high school or collegiate athletics] mean rank = 675.42; $U = 12\ 212.5$, $P = .005$, $r = .084$).

DISCUSSION

In the secondary school setting, coaches likely interact the most with student-athletes and serve an important role on the health care team. If a student-athlete is injured, coaches often witness the incident, and a collaborative coach-AT relationship can be beneficial in terms of health outcomes. Due to coaches' unique roles in the health care team, it was important to better understand their perceptions of ATs. Our findings demonstrate that overall, secondary school coaches valued the AT role and were

Table 5. Participant Quotes in Support of the Perceived Role and Responsibility of an Athletic Trainer (AT)

Topic	Supporting Quote
1. Treatment of minor injuries	"He [our AT] helps them [student-athletes] treat minor day-to-day injuries and helps them understand the importance of preventative care."
	"[An AT is] someone who prevents and treats minor injuries and rehabilitates athletes."
	"[An AT] provides guidance on minor injuries and help[s] to overcome them."
2. Coverage versus care	"[An AT should] be present at practices/games as requested."
	"[An AT is a] full-time employee [who is] required to be at every practice and match."
	"[An AT should] be at every home event, start to finish of the event, for all teams participating."
	"[An AT should] be at practices for football and as many games as others have that are not conflicting with football."

knowledgeable about ATs' responsibilities in providing medical care to student-athletes.

Value

Most coaches considered an AT *extremely valuable* or *very valuable* to the health and safety of student-athletes. Interestingly, perceived value was slightly influenced by whether the respondent personally knew an AT, worked alongside an AT, or participated in high school or collegiate athletics. Having a pre-existing relationship with an AT, regardless of capacity (personal, professional, early years), brought first-hand exposure to the coaches in our sample and influenced their perceptions of the athletic training profession in a positive way. Coaches also indicated they trusted the ATs they worked with as valuable sources of medical information and viewed the role of an AT as a top sport safety measure. Interestingly, aside from athletic directors,[17] secondary school coaches had the highest percentage of respondents indicating that ATs were a trusted source of medical information and a top sport safety measure compared with state legislators[18] and principals.[19] The higher numbers from coach and athletic director groups may reflect the level of interaction these individuals have with ATs. Coaches, in particular, frequently interact with ATs and can improve their knowledge base by witnessing firsthand what ATs do. This idea of trusting the AT was also apparent in our qualitative data. Coaches noted that it was clear to them that student-athletes trusted the ATs.

Table 6. Response Comparison for Coaches Working With or Without an Athletic Trainer (AT)

Question	Response	No. of Coaches (%) Currently Working With an AT[a]	Currently Working Without an AT[b]
Please indicate the level to which you agree or disagree with the following statement: "I am willing to coach at a school that does not employ an athletic trainer."	Strongly agree	46 (5.0)	48 (27.4)
	Agree	144 (15.6)	72 (41.1)
	Somewhat agree	169 (18.3)	23 (13.2)
	Neither agree nor disagree	139 (15.1)	23 (13.2)
	Somewhat disagree	148 (16.1)	2 (1.1)
	Disagree	159 (17.2)	6 (3.4)
	Strongly disagree	117 (12.7)	1 (0.6)
In your opinion, how valuable is an athletic trainer to the health and safety of student-athletes?	Extremely valuable	674 (73.1)	107 (61.1)
	Very valuable	204 (22.1)	47 (26.9)
	Moderately valuable	35 (3.8)	18 (10.3)
	Slightly valuable	9 (1.0)	3 (1.7)
	Not at all valuable	0 (0.0)	0 (0.0)
Of the following items, which do you consider to be the top 3 important sports safety measures? Please select only 3. (Looked specifically at whether *AT employed at the school* was selected.)	AT considered a top safety measure	504 (54.7)	70 (40.0)
	AT not considered a top safety measure	418 (45.3)	105 (60.0)
Of the following items, which do you consider to be the top 3 important sports safety measures? Please select only 3. (Looked specifically at whether *medical professional present at practices and competitions* was selected.)	Medical professional present was considered a top safety measure	299 (32.4)	56 (32.0)
	Medical professional present was not considered a top safety measure	623 (67.6)	119 (68.0)
Who do you consider to be a trusted source of medical information? Check all that apply. (Looked specifically at whether *athletic trainer* was selected.)	AT is a trusted source of medical information	863 (93.6)	160 (91.4)
	AT is not a trusted source of medical information	59 (6.4)	15 (8.6)

[a] Total n = 922 (84%).
[b] Total n = 175 (16%).

Previous researchers[20] illustrated that ATs also believed trust was an important characteristic of the profession. Specifically, head ATs in the Division III setting discussed the importance of being trustworthy when handling confidential information and when developing relationships with student-athletes.[20] The Board of Certification Code of Professional Responsibility[21] also highlighted the establishment of trust as a patient care responsibility. Given their discussion of the level of trust student-athletes have for ATs, this appears to be a value shared by coaches and ATs.

We also focus on the coaches' acknowledgment of the importance of trust between student-athletes and ATs. In a 2014 editorial published by the National Federation of State High School Associations, the author commented that the relationship between ATs and coaches should be based on trust and an understanding that each is working toward the same outcome.[3] Overall, the importance of trust as a foundational component of the AT-coach and AT-athlete relationships was evident. It is likely because of this trust that coaches viewed ATs as key sources of medical information and a part of the team. Based on our results, coaches do trust ATs and therefore may advocate for their employment in the secondary school setting, which could lead to beneficial health-related outcomes for student-athletes.

Most of our participants indicated they considered the AT a key member of the sports medicine team. This finding was evident in our qualitative data as well, as many coaches described the AT as being part of their team. The idea of an AT being viewed as a member of the sports team could be positive and suggest the trust coaches have in ATs, yet this topic should be further explored. The NATA has consistently advocated for a medical model of health care delivery, in which ATs make decisions for patient health, first and foremost, without fear of repercussions from the athletic department.[22] According to Garland,[23] data shared at the 2019 NATA Symposium in Las Vegas, Nevada,[23] showed that 30% of college and university ATs felt pressure from nonmedical personnel on medical decisions, and more than half (or 17.4% of total population) reported pressure from an administrator or coach to make medical decisions that were not in the student-athlete's best interest. Although these data were specific to the collegiate setting, they highlight the possibility that coaches may feel they can persuade ATs to make medical decisions. Given that secondary school coaches indicated they saw ATs as part of their team, questions about reporting structure and hierarchy within an athletic department arise.

Notably, coaches in our sample viewed an AT employed at a secondary school as a top sports safety measure, second only to injury-prevention programs. Coaches seemed to value the presence of an AT, although they described the importance of having an AT on site and available rather than the value of the medical care provided. Despite these relatively positive findings, about 46% of all respondents indicated that they would be willing, to some extent, to coach at a school that did not employ an AT. This willingness was greater for coaches who did not personally know an AT (small effect) and for coaches who worked at a school that did not employ an AT (medium effect). Preexisting relationships with an AT, either through one's personal or professional life, exposed coaches to the role, value, and responsibility of the AT position, which may make it difficult for these coaches to imagine working without one. Regardless, coaches' willingness to work at schools without an AT is worrisome for multiple reasons. Because state athletic associations are allowed to dictate policies at the secondary school level,[24] required coaching education and training are inconsistent. Without a national mandate or standard, not all coaches are trained or certified in life-saving measures such as cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) use. Researchers[25] showed that the number of Chicago schools with a CPR-certified coach available at practice decreased by 23.8% from 2003 to 2017. This decreased availability potentially puts athletes at greater risk for injury or death, as prompt and appropriate responses to sudden cardiac arrest are known to improve outcomes.[26] Specifically, 89% of student-athletes who suffered an exercise-related sudden cardiac arrest survived when the event was witnessed and CPR and AED application occurred quickly.[26] Without proper training for coaches, negative outcomes from sudden cardiac arrest may result due to inappropriate responses, especially if a medical professional is not present.

Furthermore, previous investigators observed that coaches lacked the necessary knowledge, skills, and training to adequately perform the role of a health care provider, particularly as it pertains to the signs and symptoms of exertional heat stroke[2] and first aid,[9] as well as the use of CPR and AEDs.[7] Researchers have also demonstrated that coaches were not aware of current best practice guidelines. In 2015, youth sport coaches lacked knowledge of and appropriate behaviors with respect to the guidelines set forth by the NATA and National Weather Service regarding lightning safety.[27] Authors[28] also found that high school coaches were unfamiliar with the signs and symptoms of concussion. Interestingly, coaches who had access to ATs managed athletes with concussions more consistently.[28] Nonetheless, medical care for athletes, beyond basic wound care skills obtained from qualified first aid courses, should not be expected of coaches. Medical care should be provided by recognized health care professionals, and coaches cannot fill that role. For these reasons, among others, a coach should never be solely responsible for the health and safety of student-athletes[29] but rather should work collaboratively with members of the athletic health care team to deliver quality care.[30] In the future, we should work to better understand the motivating factors behind coaches' willingness to coach at schools that do not employ an AT.

When dichotomizing these results based on whether a coach worked at a school where an AT was currently employed, we determined that both groups believed an AT was valuable to the health and safety of student-athletes and a trusted source of medical information. However, coaches working at schools with ATs demonstrated greater perceived value of ATs than coaches who did not work alongside an AT at the time of survey completion. Firsthand exposure to the roles, responsibilities, and value of the AT is a plausible explanation for this result. The overall perceived value of ATs across our sample is noteworthy, however. Despite not working at a school where an AT is employed, coaches recognized the AT's value in promoting student-athlete well-being. This finding may indicate that coaches employed in schools not using

the medical services of an AT could be potential advocates for their hiring. Unfortunately, many of those coaches also indicated they would be willing to work at schools that do not employ an AT. We suggest that these coaches and school districts could benefit from education on the importance of having an AT present on their campuses to enhance their ability to advocate for our profession.

Knowledge

The coaches in our sample did appear to be knowledgeable about the various roles and responsibilities of ATs. This finding is inconsistent with earlier literature[1] in which investigators reported that coaches had a limited understanding of ATs' qualifications, professional preparation, and experience. Those authors studied a smaller sample restricted to basketball coaches, whereas we examined a larger, more diverse sample. Additionally, these data were published more than a decade ago, and it is possible coaches have since had more exposure to ATs, which could explain improvements in their knowledge. Most of our participants stated that they worked in a school that employed an AT and personally knew an AT. Our results might have been different if our sample included more coaches employed at schools without an AT present.

Our respondents recognized many of the roles and responsibilities of ATs, including *injury prevention*, *first aid and wound care*, *therapeutic interventions*, *emergency care*, and *clinical diagnosis*. However, they were less knowledgeable regarding ATs' administrative tasks. Notably, the administrative tasks accompanying the AT role often go unseen by coaches, which may explain the lower percentage of coaches identifying the administrative component of the AT role compared with other responsibilities.

In the open-ended responses, ATs were often described as gatekeepers, which emphasizes an understanding that ATs are part of a larger sports medicine team. Referral is a key aspect of the AT role, particularly when appropriate care cannot be provided on-site, as it streamlines medical care and serves as the foundation for effective operation of the sports medicine team. Most of the referrals ATs coordinate for athletes likely result from orthopaedic injuries and general medical conditions. Furthermore, referrals for such purposes probably occur more frequently at the secondary school versus collegiate level; availability of and access to appropriate resources is more challenging in the former. In our sample, coaches' perceptions and knowledge of ATs as gatekeepers may stem from their experiences with athletes being referred to health care professionals for follow-up care. Ultimately, coaches viewed the ATs' role in the referral process as important because it prevented athletes' minor injuries from becoming major ones, thereby reducing time loss from injury.

Limitations and Future Research

We acknowledge that our response rate was low and represents a limitation of the results. However, the sample size, completion rate, and diversity of the sample help mitigate concerns related to the low response rate. Our sample may have been unintentionally skewed due to coaches' interest in or positive perceptions of the profession because most respondents worked at schools that employed an AT and were *moderately* to *extremely satisfied* with the medical services provided. Given our results, it is important to consider how positive experiences could shape perceptions. These data are valuable and highlight that perceptions of the profession could be positively shaped by exposure to and positive experiences working with ATs. Additionally, many respondents (approximately 42%) resided in Illinois and Ohio, which limited our ability to generalize the results to secondary school athletic coaches across all states. Two additional limitations of online data collection are the possibility of coaches looking up what was perceived to be the "correct" or "most appropriate" responses and the inability to follow up with coaches on any open-ended responses warranting clarification. We removed responses that were obviously copied from the NATA website or other public definitions of ATs from the data analysis to minimize the effect of outside influences and "copying." Although we purposefully sought out coaches in specific sports, we did not collect survey data on the sport(s) the respondents were coaching at the time of the survey because our research aims did not depend on the sport(s) coached. Therefore, it is possible that most respondents coached a specific sport or more high-profile sports in which ATs' involvement was greater, but we cannot draw any conclusions regarding this demographic. Lastly, based on the nature of the survey, we were unable to determine if coaches from the same secondary school participated in the study. Our findings may have been skewed positively or negatively depending on the culture of the athletic program and the number of coaches who participated.

Future researchers should explicitly document the specific sports coaches are overseeing to determine if the sport coached affects their perceptions of ATs. Similar investigations of states not represented in this study should be conducted, and it will be important to target coaches who have limited to no previous experience working with ATs to directly compare the effect of exposure on their perceptions and knowledge. Furthermore, the idea of ATs being part of the athletic team warrants additional research. Specifically, it is important to understand coaches' intentions and determine if viewing ATs as part of the athletic team suggests the ability to overrule ATs' decisions or is the product of a successful AT-coach relationship. Approaching this topic from a qualitative perspective may provide a richer understanding of coaches' perceived value of the athletic training profession.

CONCLUSIONS

Our sample of secondary school coaches appeared to value the profession and were knowledgeable about the roles of ATs and the responsibilities they are qualified to perform as part of their roles. However, 46% of respondents were willing, to some extent, to coach without an AT employed at the school, and 48% did not list an AT employed at the school as a top sport safety measure. Although coaches were knowledgeable about and valued the AT role, they may not have viewed ATs as a true "need" and were comfortable coaching without one on-site. These data are valuable when considering opportunities to educate specific stakeholders on the value of ATs to increase access to athletic training services in secondary

schools. The AT-coach relationship, potentially more than any other working relationship in the athletics setting, is mutually beneficial. Our results indicated that when coaches had experience working with and a positive working relationship with an AT, their perceptions of the profession were positively influenced. Due to the level of interaction between ATs and coaches, as well as the mutually beneficial nature of the relationship, coaches are in an optimal position to serve as advocates for AT employment in the secondary school setting.

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