

# Access to Athletic Trainer Services in California Secondary Schools

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**Context:** California is currently the only state that does not regulate who can and cannot call themselves athletic trainers (ATs). Therefore, previous national or state-specific investigations may not have provided an accurate representation of AT availability at the secondary school level in California. Similarly, it is unknown whether the factors that influence AT availability in California, such as socioeconomic status, are similar to or different from those identified in previous studies.

**Objective:** To describe the availability of ATs certified by the Board of Certification in California secondary schools and to examine potential factors influencing access to AT services in California secondary schools.

**Design:** Cross-sectional study.

**Setting:** Online survey.

**Patients or Other Participants:** Representatives of 1270 California high schools.

**Main Outcome Measure(s):** Officials from member schools completed the 2017–2018 California Interscholastic Federation Participation Census. Respondents provided information regarding school type, student and student-athlete enrollment, whether the school had ATs on staff, and whether the ATs were

certified by the Board of Certification. The socioeconomic status of public and charter schools was determined using the percentage of students eligible for free or reduced-price lunch.

**Results:** More than half (54.6%) of schools reported that they either did not employ ATs (47.6%) or employed unqualified health personnel (UHP) in the role of AT (7.0%). Nearly 30% of student-athletes in California participated in athletics at a school that did not employ ATs ( $n = 191\,626$ , 28.9%) and 8% of student-athletes participated at a school that employed UHP in the role of AT ( $n = 54\,361$ , 8.2%). Schools that reported employing ATs had a lower proportion of students eligible for free or reduced-price lunch than schools that did not employ ATs and schools that employed UHP (both  $P$  values  $< .001$ ).

**Conclusions:** With ongoing legislative efforts to obtain regulation of ATs in California, secondary school administrators are encouraged to hire ATs with the proper certification to enhance the patient care provided to student-athletes and improve health outcomes.

**Key Words:** appropriate medical coverage, health care access, socioeconomic status

## Key Points

- Fewer than half of all California high schools used the services of a Board of Certification–certified athletic trainer (AT).
- Whereas California had the second-largest number of participants in high school athletics, nearly 40% of student-athletes participated in athletics at schools that either did not employ ATs or employed unqualified health personnel in the role of AT.
- Athletic trainers in California were more likely to be employed at large public schools with fewer students eligible for the free and reduced-price lunch program.
- Athletic trainers in California and nationwide can continue to promote the athletic training profession to parents and school administrators by presenting objective data on the services ATs provide and the value associated with having a qualified health care professional to care for their children and students.
- Ultimately, implementing licensure for ATs in California may be the most important factor in improving the health and safety of California high school athletes because it would promote the expertise of ATs in providing health care for these athletes and result in replacing unqualified health personnel with certified ATs.

An estimated 12 million student-athletes between the ages of 5 and 22 years sustain a sport-related injury annually, leading to an estimated 20 million missed days of school and generating approximately \$33 billion in injury-related medical costs.<sup>1</sup> Overall, nearly 8 million student-athletes participate in high school athletics,

which makes availability and access to athletic trainer (AT) services at the US secondary school level vital to ensuring prompt and appropriate medical care.<sup>2</sup> Researchers<sup>3–7</sup> have indicated that access to ATs at the secondary school level results in a variety of positive health outcomes, including reduced injury rates and improved recognition and

management of various sport-related injuries, such as acute musculoskeletal injuries, recurrent injuries, and concussions. In addition to positive health outcomes, secondary schools with ATs are more likely to have emergency action plans, heat-illness policies, and automated external defibrillators, all of which greatly reduce the risk of catastrophic injury and death among student-athletes.<sup>8,9</sup>

The proportion of secondary schools reported to employ ATs varies widely among sources, based on factors such as the specific state examined, the level of access to the AT (full versus part time), the type of school (private versus public), school size, and school socioeconomic status (SES).<sup>7,10–12</sup> For example, in a nationwide survey of US public high schools, Pryor et al<sup>10</sup> reported that 70% of surveyed schools used AT services but only 37% of schools had a full-time AT. Similarly, in a recent study, Post et al<sup>12</sup> found that 95% of high schools in Wisconsin provided access to AT services, but ATs were on site for an average of only 12 hours per week. Additionally, access to AT services in that study varied widely based on the school's SES, with affluent schools having greater access to AT services. In another recent study, Johnson et al<sup>9</sup> reported that 50% of high schools in Oregon employed ATs, highlighting the wide range of AT service availability among states.

California is the only state in the United States that does not regulate who can and cannot call themselves ATs, regardless of the presence or absence of appropriate education and certification requirements. In particular, California does not require certification from the Board of Certification (BOC), which is the nonprofit credentialing organization that establishes the standards of practice and continuing education requirements for ATs. Therefore, any person can represent himself or herself as an AT and practice within the state, with no oversight mechanisms for investigating, revoking, or maintaining credentials. This is especially concerning considering that California has the second-largest number of high school athletics participants in the nation.<sup>2</sup> Given the absence of regulation, previous national and state-specific investigations may not have provided an accurate representation of the availability of AT services at the secondary school level in California. Similarly, it is unknown whether the factors that influence AT availability in California are similar to or different from those identified in national and state-specific studies. Therefore, the primary purpose of our study was to describe the availability of BOC-certified ATs in California secondary schools. We hypothesized that most schools would not have access to on-site AT services. The secondary purpose of our study was to examine factors that may influence access to AT services in California secondary schools. We hypothesized that schools with access to ATs would be more likely to be public, have higher total student and student-athlete enrollment, and have fewer students eligible for free or reduced-price lunch.

## METHODS

### Participants

Data for this study were accessed through the publicly available 2017–2018 California Interscholastic Federation (CIF) Participation Census (<https://www.cifstate.org/coaches-admin/census/index>). The CIF is the governing

**Table 1. The 2017–2018 California Interscholastic Federation Participation Census Questions Regarding Athletic Trainer Availability and Response Options<sup>a</sup>**

Question	Response Option
Do you have an athletic trainer on staff?	None
	1–10 h/wk
	11–20 h/wk
	21–30 h/wk
	31–40 h/wk
Is your Athletic Trainer ATC Certified? <sup>b</sup>	Full-time, year-round
	Yes
	No
	Don't know

Abbreviation: ATC, certified athletic trainer.

<sup>a</sup> The survey questions are reproduced in their original format (<https://www.cifstate.org/coaches-admin/census/index>).

<sup>b</sup> In this article, we use the term *BOC* rather than the term *ATC* to indicate the formal name of the organization that certifies athletic trainers.

body for high school sports in California, and athletic directors from the 1606 member schools of the CIF were invited to complete the annual participation census. A total of 1287 schools responded to the census, with 1270 schools fully completing all aspects of the census relevant to this project (response rate = 79.1%). Institutional review board approval for this study was not required, as all data analyzed are publicly available at the school level.

### Instruments

Officials from the CIF member schools completed the participation census survey for the 2017–2018 school year. The survey included questions about school name, city, school type (charter, private, or public), total student enrollment, number of students participating in athletics, whether the school had ATs on staff and for how many hours per week, and whether the AT was BOC certified (Table 1). In this article, we use the term *BOC* rather than *certified athletic trainer (ATC)*, which was used in the survey, to indicate the formal name of the organization that certifies ATs. Charter schools in California are public schools that operate independent of certain existing school district and state regulations. Survey responses were used to classify schools as employing an AT; not employing an AT; or employing noncertified, unqualified health personnel (UHP) in the role of AT. *Unqualified health personnel* was defined as anyone who was reported to be in the role of AT without BOC certification or with unknown BOC certification status and therefore was not a certified AT. It was not possible to determine if UHP had any formal or informal training in any health care–related fields. On the survey, AT weekly availability was a categorical variable with 6 levels (*none, 1–10 h/wk, 11–20 h/wk, 21–30 h/wk, 31–40 h/wk, full-time year-round*). The SES of each school was estimated by using the percentage of students eligible for free or reduced-price lunch (%Free) at that school for the 2017–2018 school year, which was accessed through the California Department of Education Web site (<https://www.cde.ca.gov/ds/sd/sd/files.asp>). These data were available only for public and charter schools (N = 979) and were merged with the CIF Participation Census survey data using school names and locations.

**Table 2. School Characteristics (N = 1270)**

Characteristic	Value
School type, No. (%)	
Charter	123 (9.7)
Private	291 (22.9)
Public	856 (67.4)
Student enrollment	
Total, No. (%)	1 532 371 (100)
Mean $\pm$ SD	1207 $\pm$ 912.0
Student-athlete enrollment	
No. (%)	662 949 (100)
Mean $\pm$ SD	522 $\pm$ 345.7
Students eligible for free or reduced-price lunch, % (mean $\pm$ SD) <sup>a</sup>	58.6 $\pm$ 25.1
Athletic trainer employment, No. (%)	
Athletic trainer	
1–10 h/wk	75 (5.9)
11–20 h/wk	99 (7.8)
21–30 h/wk	124 (9.8)
31–40 h/wk	112 (8.8)
Full-time, year-round	166 (13.1)
No athletic trainer	605 (47.6)
Unqualified health personnel	89 (7.0)

<sup>a</sup> Includes only public and charter schools (N = 979).

### Statistical Analysis

Data were summarized using means, standard deviations, frequencies, and percentages. One-way analyses of variance (ANOVAs) were calculated to compare differences in total student enrollment, total student-athlete enrollment, and %Free based on school AT services (employing an AT, not employing an AT, or employing UHP). A 1-way ANOVA was also conducted to examine potential differences in %Free for the categories of AT weekly availability among only the schools employing ATs. Post hoc least significant difference tests were used to determine differences between specific category pairs for all ANOVAs.

Assumptions of normality were determined via visual inspection of histograms and the calculation of skewness and kurtosis values for all continuous variables in the overall sample and separately based on school AT services. We set the 2-sided  $\alpha$  level a priori at .05. All analyses were performed using R statistical software (R Foundation for Statistical Computing, Vienna, Austria).

### RESULTS

A descriptive summary of schools is provided in Table 2. Most (n = 856, 67.4%) of the 1270 schools included in the analysis were classified as public. More than half (n = 694, 54.6%) of the schools reported that they either did not employ ATs (n = 605, 47.6%) or employed UHP in the role of AT (n = 89, 7.0%). Among schools that did report employing ATs (n = 576, 45.4%), the proportion of ATs was distributed roughly evenly across the 5 categories of hours-per-week and full-time, year-round availability. Only 166 schools reported employing a full-time year-round AT, which represented just 13.1% of all schools and 28.8% of schools that provided some level of AT services in the state.

Comparisons among schools based on AT employment are presented in Table 3. A total of 89 schools (7.0%) had UHP in the role of AT. In total, roughly 1 in 3 (n = 191 626, 28.9%) of all student-athletes in California participated in athletics at schools that did not employ ATs. Nearly 40% of student-athletes in California participated in athletics at a school that either did not employ ATs or employed UHP in the role of AT (n = 245 987, 37.1%). Schools that employed ATs were more likely to be public (50.6%) and less likely to be charter (8.9%) than schools that did not employ ATs (40.8% of public schools, 87.8% of charter schools;  $P < .001$ ). The average total student enrollment was greater at schools that employed ATs (1608.9  $\pm$  862.5) and schools with UHP in the role of AT (1532.7  $\pm$  927.6) than schools without ATs (775.5  $\pm$  746.9;  $P < .001$ ). Average student-athlete enrollment was greater at schools that employed ATs (723.9  $\pm$  309.4) than at schools without ATs (316.7  $\pm$

**Table 3. Comparison of Schools Based on Athletic Trainer Employment**

Characteristic	Athletic Trainer (n = 576)	No Athletic Trainer (n = 605)	Unqualified Health Personnel (n = 89)	P Value
School type, No. (%)				<.001
Charter (n = 123)	11 (8.9)	108 (87.8)	4 (3.3)	
Private (n = 291)	132 (45.4)	148 (50.8)	11 (3.8)	
Public (n = 856)	433 (50.6)	349 (40.8)	74 (8.6)	
Student enrollment				
Total, No.	926 752	469 205	136 414	NA
Mean $\pm$ SD	1608.9 $\pm$ 862.5 <sup>a</sup>	775.5 $\pm$ 746.9 <sup>a,b</sup>	1532.7 $\pm$ 927.6 <sup>b</sup>	<.001
Student-athlete enrollment				
Total, No.	416 962	191 626	54 361	NA
Mean $\pm$ SD	723.9 $\pm$ 309.4 <sup>a,c</sup>	316.7 $\pm$ 256.5 <sup>a,b</sup>	610.8 $\pm$ 284.9 <sup>b,c</sup>	<.001
Students eligible for free or reduced-price lunch, % (mean $\pm$ SD) <sup>d</sup>	50.2 $\pm$ 25.7 <sup>a,c</sup>	66.2 $\pm$ 21.9 <sup>a</sup>	61.0 $\pm$ 24.4 <sup>c</sup>	<.001

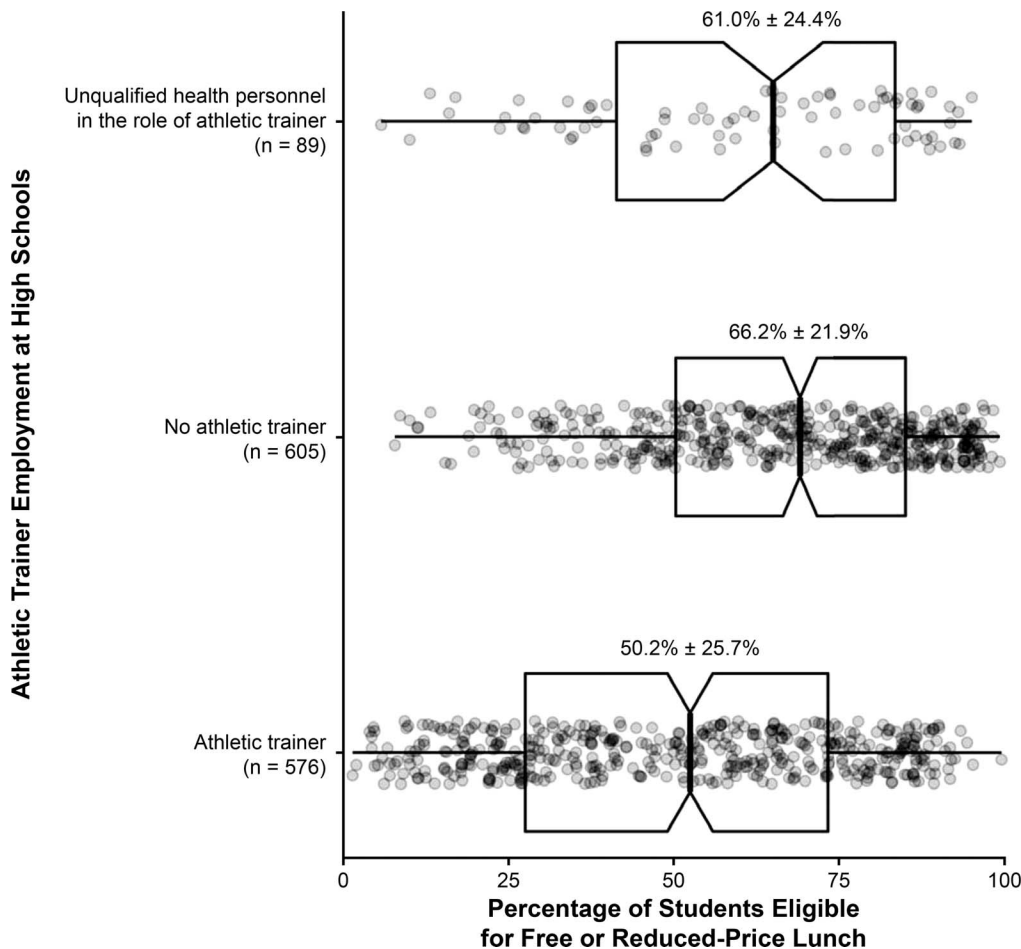
Abbreviation: NA, not applicable.

<sup>a</sup> Difference between athletic trainer and no athletic trainer ( $P < .001$ ).

<sup>b</sup> Difference between no athletic trainer and unqualified health personnel ( $P < .001$ ).

<sup>c</sup> Difference between athletic trainer and unqualified health personnel ( $P < .001$ ).

<sup>d</sup> Includes only public and charter schools (N = 979).



**Figure 1.** Notched box-plot comparison of the proportion of students eligible for a free or reduced-price lunch based on athletic trainer employment at California high schools. The boxes represent the interquartile range; the lines, the medians; the notches, the 95% confidence intervals of the medians; the whiskers, the ranges within 1.5× interquartile range of the upper or lower quartile; and the circles, the individual data points for each school. Means ± standard deviations are presented above each box.

256.5;  $P < .001$ ) and schools with UHP ( $610.8 \pm 284.9$ ;  $P < .001$ ).

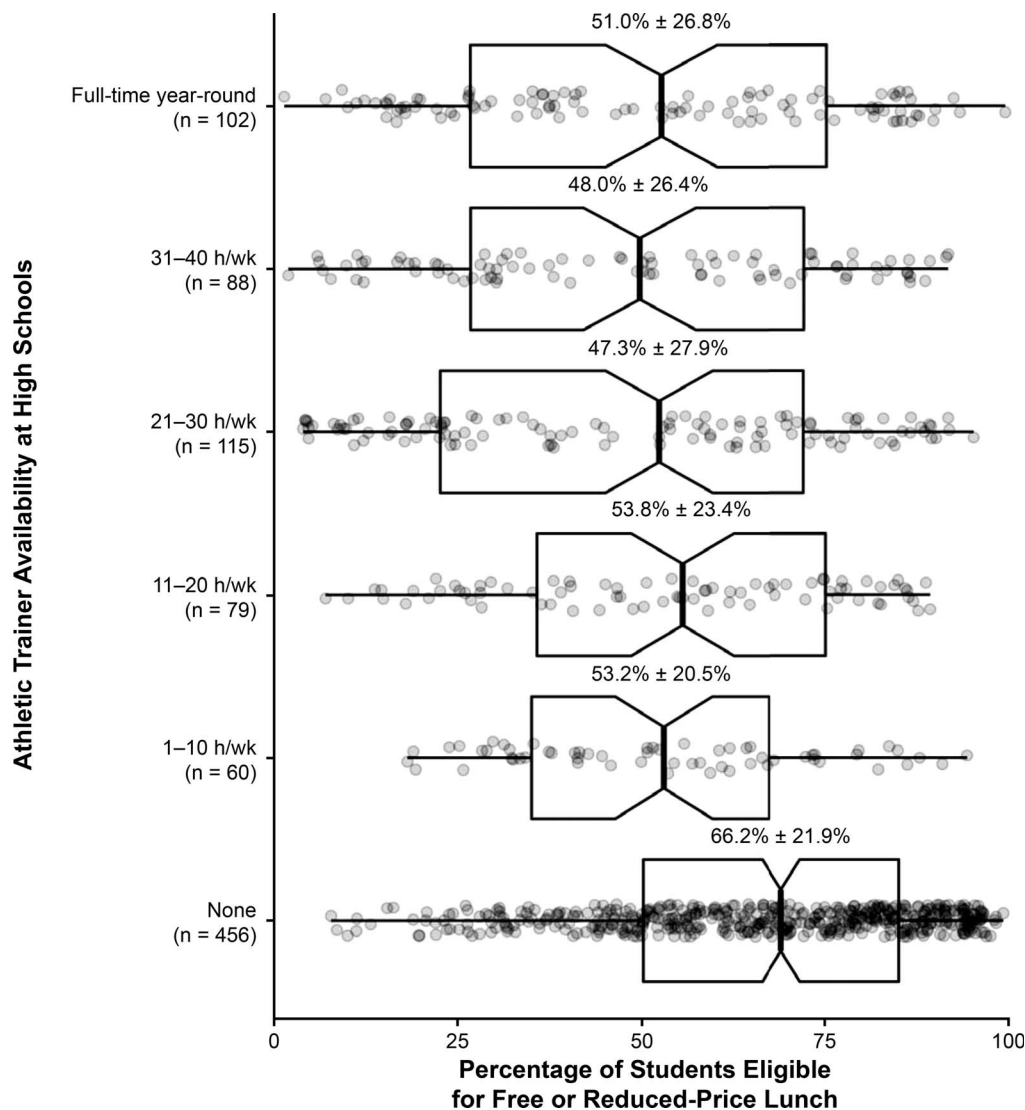
Schools that employed ATs ( $50.2\% \pm 25.7\%$ ) had a lower %Free than schools that did not employ ATs ( $66.2\% \pm 21.9\%$ ;  $P < .001$ ) and schools that employed UHP ( $61.0\% \pm 24.4\%$ ;  $P < .001$ ; Figure 1). Schools that did not employ ATs had a greater %Free than all categories of weekly AT availability (none =  $66.2\% \pm 21.9\%$ ; 1–10 h/wk =  $53.2\% \pm 20.5\%$ ; 11–20 h/wk =  $53.8\% \pm 23.4\%$ ; 21–30 h/wk =  $47.3\% \pm 27.9\%$ ; 31–40 h/wk =  $48.0\% \pm 26.4\%$ ; full-time, year-round =  $51.0\% \pm 26.8\%$ ;  $P < .001$ ), but we observed no differences in %Free among the various categories of weekly AT availability ( $P > .05$ ; Figure 2).

## DISCUSSION

The most important findings of our study were that more than half of secondary schools in California either did not employ a certified AT or employed UHP in the role of AT and that the availability of certified ATs was highly variable based on school type, size, and SES. To our knowledge, we are the first to examine the availability of AT services at the secondary school level in California. Salzman et al<sup>13</sup> reported that 76% of schools in 1 large high school district in California did not provide ATs for practices and 45% did not provide ATs for home games,

similar to the low rates of overall availability that we observed. Researchers<sup>8–10,12,14</sup> have attempted to determine the availability of ATs in secondary schools using national samples or in specific states, such as Arizona, Oregon, South Carolina, and Wisconsin. Varied estimates of AT service availability were observed in these studies, with between 50% and 95% of secondary schools reporting they employed ATs in some manner.<sup>8–10,12,14</sup> Our results suggested that California fell in the lower end of this range, with fewer than half of schools reporting they employed ATs and only 13% of schools reporting they employed a full-time, year-round AT.

Athletic trainer availability in California appeared to be in the lower end of the range of previous estimates, which is especially concerning because California is the most populous state in the nation and has the second-largest number of high school athletes, behind only Texas.<sup>2</sup> According to the 2017–2018 National Federation of State High School Associations High School Athletics Participation Survey,<sup>2</sup> California had 819 625 student-athletes, accounting for 10% of all high school student-athletes nationwide. Of the 662 949 student-athletes accounted for by the schools in our study, roughly 1 in 3 (28.9%) participated at schools that did not employ ATs. California's unique position as the only state that does not provide



**Figure 2.** Notched box-plot comparison of the proportion of students eligible for a free or reduced-price lunch based on athletic trainer availability at California high schools. The boxes represent the interquartile range; the lines, the medians; the notches, the 95% confidence intervals of the medians; the whiskers, the ranges within 1.5× interquartile range of the upper or lower quartile; and the circles, the individual data points for each school. Means ± standard deviations are presented above each box.

regulatory oversight of ATs further complicates our findings, with 7.0% of all schools in this study voluntarily self-reporting that the person employed to provide care for athletes was either not certified or had unknown certification status. Therefore, nearly 2 of every 5 student-athletes (37.1%) in California may be participating at schools that either do not employ ATs or employ UHP in the role of AT.

The absence of qualified health personnel in California high schools may perpetuate the perception that qualified health personnel are not necessary or that ATs are not qualified health personnel. Researchers<sup>15</sup> have shown the influence of experiences with ATs on the perceptions of their skills, knowledge, and job requirements. In a survey of parents of athletes in Michigan, Weitzel et al<sup>15</sup> found that the parents of athletes who had personal experience with ATs for their own injuries, as well as their children's injuries, had a greater understanding of the role and expertise of ATs in the prevention, clinical evaluation, treatment, and rehabilitation of injuries. This influence may be limited, as 72% of the surveyed parents had no

experience with ATs for their own injuries and 21% had no experience with ATs at all.<sup>15</sup> Ninety-five percent of parents reported that, after taking the survey, they would or already do send their children to an AT, further highlighting the importance of having knowledge about the role of the AT in the high school setting.<sup>15</sup>

Given that California has no regulations or standards for education or certification requirements for individuals to identify as ATs, the experiences of parents with UHP may undermine their perceptions of the specific skills, training, and expertise that ATs hold as health care professionals.<sup>16,17</sup> Although it is not uncommon for secondary schools to provide medical care through health care professionals other than ATs, Aukerman et al<sup>18</sup> observed that 51% of North Carolina public and private schools received medical coverage from “non-licensed, non-certified sports medicine personnel” and that these personnel were not identified as ATs. Therefore, their skills or lack thereof were not associated with the profession of athletic training.<sup>18</sup> Whereas the actual effect of UHP on the perceptions of

ATs is unknown, it seems likely to contribute to the underemployment of ATs in secondary schools and can put high school athletes at risk.

This increased risk was demonstrated in a nationwide analysis<sup>19</sup> of the presence and implementation of statewide policies related to evidence-based best practices for preventing death and catastrophic injury in secondary school athletes. In this analysis, California ranked second to last of all states, requiring implementation of only 26% of the evidence-based best practices for preventing sudden cardiac arrest, exertional heat stroke, and traumatic head injury as well as policies for emergency preparedness and appropriate health care coverage.<sup>19</sup> The best practices for health care coverage specifically include AT regulation at a state level and the presence of ATs at high school sporting events.<sup>19</sup> Despite the lack of governmental support for ATs in California, ATs in this state continue to advocate for safer sports for high school athletes and sponsored California Assembly Bill 2007, which was passed in 2016. This amendment to the Health and Safety Code provides concussion education for coaches, parents, and athletes in addition to concussion-management policies and return-to-play guidelines.<sup>20</sup> Although the successful efforts of ATs to make sports safer should bolster the public's knowledge and perceptions of ATs in California, state licensure efforts ironically continue to meet resistance.

Similar to previous investigators, we found that public schools were more likely to employ ATs than private or charter schools were. In a nationwide survey of more than 10 000 secondary schools, Pike et al<sup>11</sup> noted that 70% of public schools employed ATs in some capacity, compared with 58% of private schools. In our study, 50.6% of public schools, 45.4% of private schools, and only 8.9% of public charter schools reported employing ATs. The reason for this disparity is not completely clear, but researchers<sup>14,21,22</sup> have theorized that the difference in funding mechanisms between public and private schools may play an important role in budgetary decisions.

The absence of ATs in California charter schools is particularly worrisome, as 1 in 20 California public schools is a charter school.<sup>23</sup> This may be further influenced by the inherent differences in the structure, funding, and oversight of charter schools. Many charter schools include alternate delivery methods for instruction, including distance learning and home schooling.<sup>23,24</sup> This can influence the facilities available to students daily, including access to both athletic teams and ATs. State funding for charter schools in California occurs on a per-student basis, which can be hard to predict and slow to reconcile. For public schools, the state allocates funds according to district needs,<sup>23</sup> which may also contribute to the differences in access to ATs in charter schools. Given that charter schools are designed to operate outside of the school district, their missions and policies can be more self-directed, while still adhering to public education laws.<sup>24</sup> This growing concern will continue to put high school athletes at risk as enrollment in charter schools continues to increase.

In California, disparities in AT availability based on school type are likely complicated by the lack of licensure for ATs. We observed that schools employing ATs had roughly double the average student enrollment of schools without ATs. This finding is also in agreement with previous research, with a number of investigators<sup>7,10,11,21</sup>

reporting a consistent association between increased school size and availability of AT services. Smaller school size was associated with several factors, such as rural location and decreased financial resources, that have been repeatedly identified as barriers to employing ATs.<sup>7,11,21,25</sup>

The lack of AT availability at the secondary school level can have severe consequences. Authors of separate studies<sup>8,9</sup> in Arizona and Oregon reported that schools with ATs were more likely to follow several emergency preparedness best practices, including having an automated external defibrillator on campus, venue-specific emergency action plans, and environmental safety policies, than schools without ATs.

In our study, the AT employment status also differed based on school SES. Schools that employed ATs had a smaller %Free than schools without ATs or schools that employed UHP. In a survey of Washington state public high schools, Kroshus et al<sup>7</sup> showed that schools with ATs on staff had a smaller %Free than schools without ATs. Similarly, in a study of Wisconsin high schools, Post et al<sup>12</sup> found that schools with a smaller %Free were more likely to have ATs available on site and had more hours per week of access to AT services. Those authors demonstrated a 19% difference in mean %Free between schools with (40.8% ± 16.2%) and without (59.8% ± 16.2%) ATs,<sup>12</sup> similar to the 11% to 16% differences in %Free that we described between schools with ATs and schools with UHP or schools without ATs, respectively.

Interestingly, we noted no differences in the level of access to an AT per week based on school SES. The only differences in %Free were between schools with and those without ATs, regardless of the number of hours per week that the AT was at the school. This might suggest that the largest financial hurdle is the initial decision to provide AT services and not in the level of employment of the AT. Previous surveys<sup>22,25</sup> of athletic directors have identified cost and school budget restrictions as the major obstacles to hiring ATs. Our results add to the existing evidence that substantial socioeconomic disparities in access to AT services for high school athletes exist, similar to the disparities that have been reported in other health care fields.<sup>26</sup> These disparities are especially concerning among adolescents in lower-SES communities, who have less access to health care services, such as routine physician services and preventive care.<sup>26</sup> The AT may be one of the only health care providers with whom these students interact and from whom they receive care or health-related education.<sup>27</sup> This is especially problematic in California, which was ranked 39th in the nation in 2018 for providing nurses in public schools, with only 1 school nurse for every 2240 public school students.<sup>28</sup>

Of particular concern is that schools with UHP in the role of AT had a greater %Free than schools with a certified AT. Given the lack of regulatory oversight of athletic training in California, schools in lower-SES communities may be electing to hire unqualified individuals to save financial resources. A lack of understanding of the AT's skill set and educational background or relying on others to provide this care may help explain why schools are hiring unqualified individuals. For example, Vandermark et al<sup>29</sup> reported that athletic directors at schools without ATs commonly elected to have emergency medical technicians or chiropractors provide care at competitions. Some athletic directors

believed that an emergency medical technician was more qualified than an AT to manage patients with concussions and life-threatening situations, whereas others thought that a coach was also qualified to manage athletic injuries.<sup>29</sup> They also observed a reliance on parents or bystanders at competitions with medical training to provide care as necessary.<sup>29</sup> School administrators appeared to recognize the presence of injury risks and the need for medical care at sporting competitions but may not have fully understood the daily needs of student-athletes participating in sports or the value of hiring a medical professional, such as an AT, with the specific education and training to provide this care. These problems are likely further exacerbated in California because of the lack of AT regulation. The absence of state oversight regarding who can and cannot call themselves ATs may lead to the misconception that anyone, health care provider or not, is qualified to provide care to high school athletes and likely perpetuates the insufficient presence of qualified health care providers that places student-athletes at risk. Researchers should investigate the effects of licensure and regulation on access to AT services in the secondary school setting. Additionally, future study is needed to explore the practices of hiring ATs in California and to evaluate the perceptions of parents and guardians regarding the care provided in California secondary schools.

Our study had several important limitations. Data from the 2017–2018 CIF Participation Census were self-reported and relied on the accurate knowledge of the officials completing the surveys for their schools. This information was assumed to be provided by the schools' athletic directors, but this was not confirmed as part of the survey. Completion of the census survey by individuals without accurate knowledge about their schools may have resulted in underreporting or overreporting of certain variables on the census compared with the more objective measure of SES provided by the California Department of Education. Given that the data for our analysis came from existing data sources, we could do little to manage this limitation. However, the large sample of schools that responded to the census and the high response rate indicated that the school officials were, for the most part, committed to participating in the census and completing the survey accurately. Finally, we were not able to assess the types of services provided by ATs at the schools. We examined the hours per week of AT availability at a school as an important variable, but increased hours per week of AT access did not necessarily indicate an increased level of care provided to student-athletes. Researchers should attempt to compare the frequencies, types, and treatment of athletic injuries among schools with ATs, without ATs, and with UHPs in California.

## CONCLUSIONS

Fewer than half of all California high schools used the services of a BOC-certified AT. In the state with the second-largest number of high school athletics participants, nearly 40% of all student-athletes participated in athletics at schools that either did not employ ATs or employed UHP in the role of AT. Athletic trainers in California were more likely to be employed at large public schools with a smaller %Free. Although legislative efforts

to require regulation of ATs in California continue, secondary school administrators are encouraged to hire ATs with the proper certification to enhance the patient care provided to student-athletes and to improve health outcomes for students participating in interscholastic sports. Athletic trainers in California and nationwide can continue to promote the athletic training profession to parents and school administrators by presenting objective data on the services ATs provide and the value associated with having qualified health care professionals care for their children and students. Ultimately, implementing licensure for ATs in California may be the most important factor in improving the health and safety of California high school athletes. State licensure would promote the expertise of ATs in providing health care for these athletes and result in replacing UHP with ATs.

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