

Factors Influencing Athletic Training Services in California Secondary Schools: A 5-Year Update

Christianne M. Eason, PhD, ATC*; Sarah E. Goble, ATC†; Eric G. Post, PhD, ATC‡; Robert A. Huggins, PhD, ATC*; Douglas J. Casa, PhD, ATC*; Rebecca L. Stearns, PhD, ATC*

*Korey Stringer Institute, Department of Kinesiology, College of Agriculture, Health & Natural Resources, University of Connecticut, Storrs; †Sonoma Academy, Santa Rosa, CA; ‡Sports Medicine Research, United States Olympic and Paralympic Committee, Colorado Springs

Context: California is the only state that does not regulate the athletic training profession, allowing unqualified personnel to be hired and call themselves athletic trainers (ATs). The benefits of employing a certified AT in the secondary school setting are numerous, but efforts to push regulation legislation continue to fail in California.

Objective: To describe the availability of certified ATs in California secondary schools and explore factors influencing AT employment.

Design: Cross-sectional study.

Setting: Online survey.

Patients or Other Participants: Participants from 1538 California secondary schools.

Main Outcome Measure(s): Officials from member schools completed the 2022–2023 California Interscholastic Federation Participation Census. Participants provided information specific to enrollment, sport participation, access to automated external defibrillators, and whether the school had ATs on staff. The AT's certification status was independently verified. Enrollment data specific to ethnicity, race, and percentage of students eligible for

free meals were obtained through the California Department of Education Statistics.

Results: More than half (51.6%) of California secondary schools did not employ a certified AT, and 8.3% employed unqualified personnel as ATs. Nearly half (43%) of student-athlete participants were enrolled at schools with no certified AT. Schools that employed certified ATs had a lower proportion of students eligible to receive free and reduced-price meals. The average percentage of Hispanic or Latino students was greater in schools with no certified AT and schools that employed unqualified personnel as ATs than schools that employed certified ATs.

Conclusions: Data indicate that, in a 5-year period, access to athletic training services in California secondary schools has not improved. Large gaps in access to athletic training services and clear socioeconomic and racial and ethnic disparities exist. Efforts to educate stakeholders on the importance of athletic training regulation in California should continue.

Key Words: health disparity, socioeconomic status, access to health care

Key Points

- While California has the second largest number of participants in high school sports in the country, nearly half are enrolled at schools that do not employ certified athletic trainers.
- Certified athletic trainers in California were more likely to be employed by public schools with larger enrollment and with fewer students eligible for free and reduced-priced meals.
- Implementing licensure legislation in California will help eliminate unqualified professionals from being hired as athletic trainers, which is an important factor in improving the health and safety of California secondary school athletes.

At its core, regulation of health care professions is meant to ensure the highest quality care is provided to the public. Regulation controls what health care professionals can do by establishing a scope of practice created through the application of evidence-based professional standards of practice. These standards of practice dictate the training and education that a health care professional must complete. Regulation also controls which services can be legally offered and the circumstances in which those services may be provided to patients. Without regulation, no legal way exists to assure quality health care is delivered to patients. In the United States, health care professions are regulated primarily by

individual states, and state regulations are designed to protect the public from harm by unqualified practitioners. Currently, California is the only state without any regulation for athletic trainers (ATs). Recognized by the American Medical Association, the Health Resources Services Administration, and the Department of Health and Human Services as an allied health profession, ATs are educated and trained to prevent, examine, diagnose, treat, and rehabilitate emergent, acute, or chronic injuries and medical conditions.

Legislation to add licensure regulation for ATs in California has been introduced nearly a dozen times and has passed through the state's assembly on multiple occasions. Each time

a bill has reached the Governor's desk, it has been vetoed. Governor Schwarzenegger was the first to veto a bill to add regulation for ATs in California and did so 3 times. In the veto message of AB1647, Governor Schwarzenegger wrote, "... there is no evidence that regulating the use of the term 'certified AT' poses any threat to the public health and safety."¹ In 2015, California Governor Jerry Brown vetoed a bill that would have made it unlawful and an unfair business practice for any person to use the title of AT, unless he or she had received certification from the Board of Certification (BOC) and had completed specific educational requirements, after previously vetoing a similar bill in 2014. In his veto message, Governor Brown wrote:

[T]his bill would make it illegal for any person to use the title of "athletic trainer" unless that person goes to college, gets a bachelor's degree, and meets various other certification requirements. These conditions impose unnecessary burdens on ATs without sufficient evidence that they are really needed.²

Nearly 8 million student-athletes participate in sport at the secondary school level annually, with nearly 800 000 of those participants in California.³ California has the second highest number of student-athlete participants, behind only Texas.³ Researchers have consistently demonstrated the benefits of athletic training services for secondary school athletes, including but not limited to reduced injury rates and improved post-concussion management.⁴⁻⁶ Additionally, schools employing certified ATs are more likely to have emergency health and safety best practices in place, such as venue-specific emergency action plans, automated external defibrillators (AEDs), and heat-illness policies, which all mitigate the risk of catastrophic events and sudden death in sport.⁷⁻⁹ Despite these clear benefits and best practice recommendations, authors of a 2019 study found that more than half (54.6%) of California secondary schools did not employ ATs (47.6%) or employed a noncertified individual in the role of AT (7.0%).¹⁰ Without the legal stipulation that individuals hired as ATs must be certified by the BOC and graduate from a Commission on Accreditation of Athletic Training Education-accredited college program with a degree in athletic training, any person could represent themselves as an AT in the state of California.

Several challenges to hiring ATs have been identified, including budget and financial concerns, rural locale, lack of community medical clinics nearby, and misconceptions about the role of an AT that led to a belief that coaches with first-aid training can provide medical care.^{11,12} Clear health disparities have also been identified in regard to the employment of ATs in the secondary school setting. Public schools with fewer students eligible for free or reduced-price lunch have greater access to athletic training services, and county economic tier classification strongly predicts access to athletic training services.^{10,13,14}

Given ongoing efforts to address regulation legislation in California, a better understanding of factors that may influence the hiring of certified ATs and noncertified, unqualified personnel could help provide evidence that regulation is needed. Currently, it is unclear how factors such as geographic region, enrollment, race, ethnicity, number of sports, and student-athletes influence athletic training services. Therefore, the primary purpose of this study was to provide an update on the employment of certified ATs and unqualified personnel employed as ATs in California secondary schools and to

examine factors that may influence athletic training employment. We hypothesized that most schools would not have access to a certified AT. Additionally, we hypothesized that schools with certified ATs would be significantly different than both schools with unqualified personnel and schools without ATs in the following areas: school type (public versus private), student enrollment, number of student-athletes, number of sports, access to AEDs, race and ethnicity, and eligibility for free and reduced-price meals.

METHODS

Participants

Data for this study were accessed through the publicly available 2022–2023 California Interscholastic Federation (CIF) Participation Census (<https://www.cifstate.org/coaches-admin/census/index>). The CIF is comprised of 10 sections and is the governing body for secondary school sports in California. Athletic directors from the 1609 member schools were invited to complete the annual Participation Census with 1538 schools completing all aspects of the census relevant to this project (response rate = 95.6%). Of note, the CIF requires annual completion of the census to maintain membership, and if membership is suspended, it can only be reinstated with the completion of the census.

Instruments

Officials from CIF member schools completed the census for the 2022–2023 school year. Questions included information specific to school name, city, school type (public, private, or charter), total student enrollment, boy/girl enrollment, total athletic participation, boy/girl athletic participation, total sports teams, boy/girl sports team, number of AEDs athletics has access to, and whether an AT was employed on staff. The research team manually added County-District-School (CDS) codes by matching school name and city with the California Department of Education Statistics (CDES) school directory (<https://www.cde.ca.gov/schooldirectory/>). To confirm the certification status of each individual employed as an AT, 1 member of the author team (SEG) accessed each school website to obtain the name of the individual hired as an AT. If no name was provided on the website, the school was contacted and asked to provide a name. Certification status was verified using the BOC's publicly accessible website (<https://bocatc.org/athletic-trainers/certification-verification/basic-online-verification/basic-online-verification-overview>). The BOC website allows for basic online verification by entering first and last name. If it was found that an individual employed as an AT did not have a current BOC certification, it was noted and coded as *not certified* in the data file. Not certified was defined as anyone who was reported to be in the role of AT without certification, suspended certification, or expired certification. If we were not able to confirm certification status or identify a name of an individual, it was coded as *unknown*.

Data specific to percentage of students eligible for free meals and race or ethnicity were downloaded from the CDES website (<https://www.cde.ca.gov/ds/>). The CDES provides access to annual enrollment data which present information about students who are eligible for free or reduced-price meals and disaggregated race and ethnicity data in California public K–12 schools. Eligibility determinations for free and reduced-price meals are based on a family's household income or by direct certification.

Households with income at or below the federal income levels may be eligible, whereas direct certification uses information provided by assistance programs. For a household of 1, the annual eligibility to receive free and reduced-price meals is \$18 954.00 (\$365 weekly), adding \$6682 (\$129 weekly) for each additional family member. In California, charter schools are public and operate independent of some school district and state regulations; therefore, free and reduced-price meals and race and ethnicity data were available from the CDES for both public and charter schools. Data from the CDES website were merged with the CIF database using CDS codes.

Statistical Analysis

Data were analyzed using SPSS statistical software (version 29; IBM Corporation). Data were summarized using means, standard deviations, frequencies, and percentages. To evaluate differences among CIF section and school type based on AT employment (no AT, certified AT, not certified AT, or unknown), a χ^2 test of independence was executed. To determine effect size, we examined η^2 using Cohen's definition: small $\eta^2 = 0.01$, medium $\eta^2 = 0.06$, and large $\eta^2 = 0.14$.¹⁵ One-way analyses of variance (ANOVAs) were also conducted to compare differences in enrollment (total, boy, and girl), athletic participation (total, boy, and girl), number of sports teams (total, boy, and girl), number of AEDs, percentage of students eligible for free meals, and race or ethnicity based on AT employment (no AT, certified AT, and unqualified personnel hired as AT). Post hoc Scheffé tests were used to determine differences between groups for all ANOVAs. The 2-sided α level a priori was set at .05. Assumptions of normality were determined by visual inspection of histograms and by the calculation of skewness and kurtosis values for all continuous variables in the sample.

RESULTS

California school characteristics can be found in Table 1. Of the 1538 schools included in the analysis, 65.9% ($n = 1014$) were public, 51.6% ($n = 794$) of the schools did not employ an AT, and 8.3% ($n = 128$) employed unqualified personnel as an AT.

The relationship between school type and AT employment was significant, χ^2 (6, $N = 1538$) = 119.116, $P < .001$, as public schools proportionately employed more certified ATs than both private and charter schools. Public schools proportionately hired more unqualified personnel as ATs than private and charter schools. The relationship between CIF section and AT employment was significant, χ^2 (27, $N = 1538$) = 345.742, $P < .001$. The San Francisco, Central, Central Coast, San Diego, and Southern sections proportionately employed more certified ATs than the other sections. Sac-Joaquin, Central, and Southern sections hired proportionately more unqualified personnel as ATs than all other CIF sections. Athletic trainer employment observed frequencies based on CIF section and school type can be found in Table 2. Figure 1 presents AT employment by school type, and Figure 2 presents AT employment based on CIF section.

Comparisons among California schools based on AT employment and effect sizes can be found in Table 3. In total, schools with no AT or unqualified personnel hired as an AT accounted for 338 771 (43%) athletic participants and 23 271 (46%) sports teams. The average total student enrollment was greater at

Table 1. California School Characteristics (N = 1538)

Characteristic	Value
School type, No. (%)	
Charter	164 (10.7)
Private	360 (23.4)
Public	1014 (65.9)
Student enrollment	
Total, No. (%)	1 755 159 (100)
Mean \pm SD	1141 \pm 931
Boys, No. (%)	896 470 (51.1)
Mean \pm SD	585 \pm 457
Girls, No. (%)	858 689 (48.9)
Mean \pm SD	558 \pm 517
Athlete participation	
Total, No. (%)	796 621 (100)
Mean \pm SD	521 \pm 374
Boys, No. (%)	443 522 (55.7)
Mean \pm SD	290 \pm 218
Girls, No. (%)	353 099 (44.3)
Mean \pm SD	231 \pm 170
Sports teams	
Total, No. (%)	51 087 (100)
Mean \pm SD	34 \pm 25
Boys, No. (%)	26 734 (52.3)
Mean \pm SD	18 \pm 18
Girls, No. (%)	24 339 (47.6)
Mean \pm SD	16 \pm 10
Students eligible for free meals, % (mean \pm SD) ^a	52.0 \pm 24
AT employment, No. (%)	
Certified AT	603 (39.2)
No AT	794 (51.6)
Unqualified personnel	128 (8.3)
Unknown	13 (0.8)
Athletic department access to AEDs, mean \pm SD	2.9 \pm 1.9

Abbreviations: AEDs, automated external defibrillators; AT, athletic trainer.

^a Includes only public and charter schools ($N = 1178$).

schools that employed certified ATs (1552 \pm 830) and at schools that employed unqualified personnel as ATs (1692 \pm 1309) than schools with no ATs (740 \pm 720; $P < .001$). Average student-athlete participation was higher at schools that employed certified ATs (757 \pm 343) than schools with unqualified personnel hired as ATs (664 \pm 328) and schools with no AT (321 \pm 275; $P < .001$). The average number of AEDs accessible to athletics was greater at schools that employed certified ATs (4 \pm 2) and at schools that employed unqualified personnel as ATs (3 \pm 2) than schools with no ATs (2 \pm 1; $P < .001$). The percentage of students eligible to receive free meals was lower at schools that employed certified ATs (44.5% \pm 22.8%) than schools with unqualified personnel hired as ATs (52.8% \pm 21.2%) and schools with no AT (57.9% \pm 22.8%; $P < .001$).

Comparisons among California school race and ethnicity data based on AT employment and effect sizes can be found in Table 4. The average percentage of Hispanic or Latino student enrollment was greater at schools that did not employ certified ATs (58.6 \pm 27.9) and schools that employed unqualified personnel as ATs (61.7 \pm 26.2) than schools with certified ATs (52.6 \pm 26.3; $P < .001$). The average percentage of African American student enrollment was greater at schools that did not employ certified ATs (5.3 \pm 9.3) than schools with certified ATs (3.9 \pm 4.5; $P = .006$). No statistically significant difference was found in the average percentage of White student enrollment at schools based on AT employment ($F_{3,1144} = 2.34$, $P = .072$).

Table 2. California Athletic Training Employment Based on CIF Section and School Type

	No AT, No. (%)	AT, No. (%)	Unqualified Personnel, No. (%)
School type			
Charter (n = 164) ^{a,b}	143 (87.2)	15 (9.1)	4 (2.4)
Private (n = 360) ^{a,b}	206 (57.2)	132 (36.7)	18 (5.0)
Public (n = 1014)	445 (43.9)	456 (45.0)	106 (10.5)
CIF section			
Northern ^{c,d}	53 (89.8)	4 (6.8)	1 (1.7)
North Coast ^{c,d}	93 (54.4)	64 (37.4)	14 (8.2)
San Francisco ^c	3 (23.1)	10 (76.9)	0 (0.0)
Oakland ^{c,d}	26 (100)	0 (0.0)	0 (0.0)
Sac-Joaquin ^d	130 (72.6)	29 (16.2)	19 (10.6)
Central Coast ^c	85 (54.5)	65 (41.7)	4 (2.6)
Central	53 (41.7)	50 (39.4)	24 (18.9)
San Diego ^c	37 (29.1)	81 (63.8)	3 (2.4)
Southern	189 (34.9)	289 (53.3)	61 (11.3)
Los Angeles ^{c,d}	125 (90.6)	11 (8.0)	2 (1.4)

Abbreviations: AT, athletic trainer; CIF, California Interscholastic Federation.

^a Proportionally fewer certified ATs than public schools.

^b Proportionally fewer unqualified personnel as ATs than public schools.

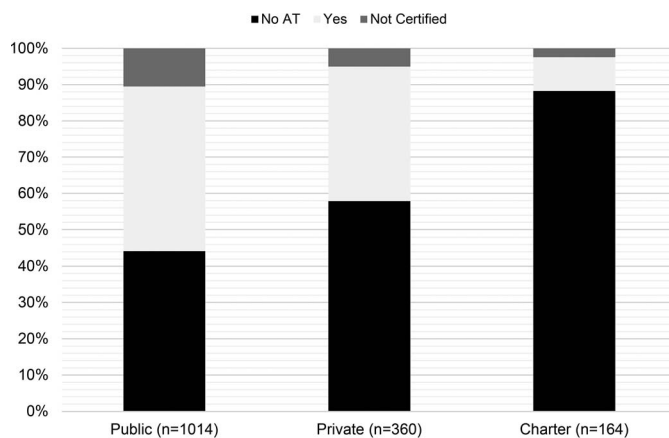
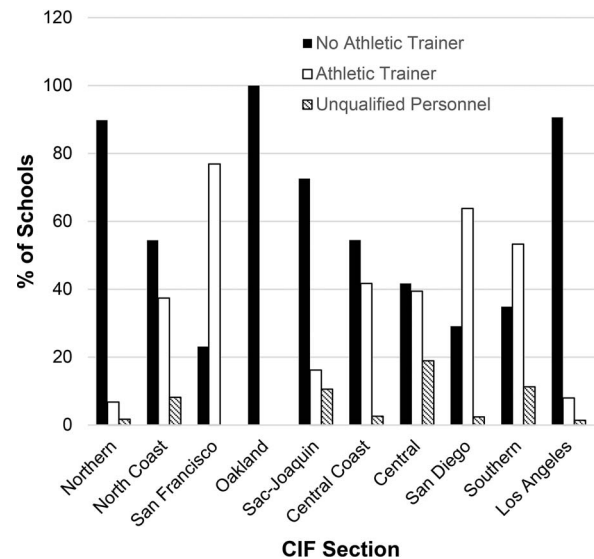
^c Proportionally fewer unqualified personnel as ATs than Sac-Joaquin, Central, and Southern CIF sections.

^d Proportionally fewer certified ATs than San Francisco, Central, Central Coast, San Diego, and Southern CIF sections.

DISCUSSION

Our results reveal that only 39% of California schools employed a certified AT and that the employment of a certified AT was highly variable based on school type, school size, geographic location, race or ethnicity, and socioeconomic status. In this study, we provide an update to data that were reported in 2019.¹⁰

In 2019, Post et al reported that 47.6% of California secondary schools did not employ a certified AT, and 7.0% employed unqualified personnel as ATs.¹⁰ Our results indicate that, in the 2022–2023 academic year, 51.6% of California secondary schools did not employ a certified AT, and 8.3% employed unqualified personnel as ATs. The Athletic Training Locations and Services (ATLAS) project found that 34% of schools in the United States with athletics had no access to athletic training services.¹⁶ Our data show nearly 60% of California schools

**Figure 1. California athletic trainer (AT) services based on school type.****Figure 2. California athletic trainer services by California Interscholastic Federation (CIF) Section.**

have no access to certified ATs, which is particularly troubling given California has the second largest number of student-athlete participants.³ Of the 796 621 student-athlete participants accounted for by the schools in our analysis, nearly 3 out of every 7 (42.5%) participated at schools that did not employ a certified AT (no AT or unqualified personnel hired as an AT). These numbers represent a decrease in access to certified ATs in the last 5 years. Differences in the percentage of schools that employed unqualified personnel as ATs could represent an increase or could be attributed to differences in methodologies. Post et al relied on data provided in the CIF census to determine BOC certification status of individuals employed as ATs, whereas we independently verified the BOC certification status of every individual employed as an AT.¹⁰ Because no regulation of the athletic training profession in California exists, nothing can preclude an unqualified person from being hired as an AT, and data in the CIF census rely on administrators completing the survey to know the difference.

Like previous researchers, we found that schools with larger enrollment and public schools were more likely than private schools to employ a certified AT.^{10,16,17} The average enrollment of California schools that employed certified ATs was more than double the average enrollment of schools with no AT. In a nationwide survey of secondary schools, 69% of public schools employed certified ATs in some capacity compared with 55% of private schools.¹⁶ In our study, 45% of public schools, 36.7% of private schools, and only 9.1% of charter schools employed a certified AT. While the reason for the disparity between public and private schools is unclear, budget constraints have been identified as a barrier to hiring ATs in the secondary school setting.¹¹ In the United States, public schools receive funding from local (taxes), federal, and state funding. Private schools do not receive federal funding and receive funds from tuition, endowments, fundraisers, or other sources of funding. In California, the largest source of funding for public schools is an allotment from the state General Fund and local property revenue, equaling approximately \$21 962 per student in 2023.¹⁸ The California Constitution prohibits the state from funding private schools, and available data suggest 1 in 3 students attending a private school in the state receive some type of tuition discount, generally based on financial

Table 3. Comparison of California Schools Based on Athletic Trainer (AT) Employment

Characteristic	No AT (n = 794)	AT (n = 603)	Unqualified Personnel (n = 128)	ANOVA P Value	ANOVA η^2
Student enrollment					
Total, No.	587 476	935 693	216 575		
Mean \pm SD	740 \pm 720 ^{a,b}	1552 \pm 830	1692 \pm 1309	<.001	0.201
Boys, No.	299 457	483 623	105 435		
Mean \pm SD	377 \pm 370 ^{a,b}	802 \pm 433	824 \pm 438	<.001	0.218
Girls, No.	288 019	452 070	111 140		
Mean \pm SD	363 \pm 354 ^{a,b}	750 \pm 415	868 \pm 1045	<.001	0.157
Athlete participation					
Total, No.	253 791	451 773	84 980		
Mean \pm SD	321 \pm 275 ^{a,b}	757 \pm 343	664 \pm 328	<.001	0.317
Boys, No.	139 739	253 364	46 930		
Mean \pm SD	176 \pm 154 ^{a,b}	424 \pm 214	367 \pm 183	<.001	0.298
Girls, No.	114 052	198 409	38 050		
Mean \pm SD	144 \pm 125 ^{a,b}	332 \pm 161	297 \pm 152	<.001	0.287
Sports teams					
Total, No.	18 099	27 457	5172		
Mean \pm SD	24 \pm 21 ^{a,b}	47 \pm 24	41 \pm 17	<.001	0.196
Boys, No.	9477	14 452	2609		
Mean \pm SD	13 \pm 16 ^{a,b}	25 \pm 20	21 \pm 9	<.001	0.100
Girls, No.	8622	12 991	2563		
Mean \pm SD	11 \pm 8 ^{a,b}	22 \pm 10	20 \pm 9	<.001	0.248
Students eligible for free meals, % (mean \pm SD) ^c	57.9 \pm 22.8 ^{a,b}	44.5 \pm 22.8	52.8 \pm 21.2 ^a	<.001	0.075
Athletic department access to AEDs, mean \pm SD	2 \pm 1 ^{a,b}	4 \pm 2	3 \pm 2	<.001	0.095

Abbreviations: AEDs, automated external defibrillators; ANOVA, analysis of variance.

^a Difference between ATs.

^b Difference between unqualified personnel.

^c Includes only public and charter schools (N = 1178).

need. The federal and state funding that public schools receive may affect budget decisions to hire certified ATs, though this would need to be examined further.

Superintendents, who are the top executives in school districts and make decisions related to budget spending, generally have a positive view of certified ATs and recognize their role in providing immediate care and preventing injury.¹⁹ They do, however, cite cost as a prohibitive factor in employing ATs.¹⁹ Despite recognizing the value of certified ATs, some superintendents rely on other medical providers such as school nurses or emergency medical services to provide medical care to student-athletes.¹⁹ Previous researchers have shown that emergency medical technicians perceive that certified ATs better understand equipment removal and extremity splinting and demonstrate poor knowledge regarding the management of exertional heat stroke.^{20,21} Medical training for health care professionals varies; therefore, relying on other health care

professionals to provide care to student-athletes is a potentially dangerous situation and reemphasizes the importance of regulation to set standards of practice.

Despite school administrators and coaches identifying AT employment as a top safety measure, they often do not have a thorough understanding of the training and education that certified ATs receive.^{19,22–25} Budget concerns may explain why more private and charter schools in California do not employ ATs, and limited understanding of certified ATs' education may help explain the hiring of unqualified personnel as ATs in California public schools. In California, if an administrator values an AT but does not recognize the difference between an individual with BOC certification and one without, nothing precludes them from hiring an unqualified person. Additionally, previous researchers have found that secondary school principals often rely on a decentralized hiring process, meaning they depend on others to determine hiring criteria for ATs.²²

Table 4. Athletic Training Employment by California School Race and Ethnicity Percentage

	No AT	AT	Unqualified Personnel	ANOVA P Value	ANOVA η^2
Race or ethnicity %, mean \pm SD ^b					
Hispanic or Latino	58.6 \pm 27.9 ^a	52.6 \pm 26.3	61.7 \pm 26.2 ^a	<.001	0.016
White	20.5 \pm 22.8	23.8 \pm 19.1	21.3 \pm 20.2	.072	0.006
Asian	5.8 \pm 11.1 ^a	10.6 \pm 14.9	5.9 \pm 10.6 ^a	<.001	0.037
African American	5.3 \pm 9.3 ^a	3.9 \pm 4.5	4.2 \pm 4.3	.006	0.011
2 or more races	3.3 \pm 3.6 ^a	4.3 \pm 3.4	3.1 \pm 3.1 ^a	<.001	0.025
Filipino	1.9 \pm 3.8 ^a	2.6 \pm 3.6	1.9 \pm 2.7	.008	0.010
American Indian or Alaska Native	1.5 \pm 6.2 ^a	0.4 \pm 0.8	0.6 \pm 1.3	<.001	0.017
Pacific Islander	0.4 \pm 0.7	0.4 \pm 0.5	0.4 \pm 0.5	.893	0.001

Abbreviations: ANOVA, analysis of variance; AT, athletic trainer.

^a Difference between ATs.

^b Includes only public and charter schools (N = 1178).

Therefore, some school administrators may be relying on outreach providers to ensure individuals hired as ATs are qualified for the job. This may also help explain why the Central and Southern CIF sections not only had proportionally more certified ATs than other sections, they also had proportionally more unqualified personnel hired as ATs.

Most troubling is our data that highlight socioeconomic and racial and ethnic differences in California schools in terms of certified AT employment. Socioeconomic status and race and ethnicity are 2 major social determinants of health, and disparities in the top 10 leading causes of death in the United States have been linked to both.²⁶ California schools that employed certified ATs had on average 13.4% fewer students eligible for free meals than schools with no AT and 8.3% fewer than schools with unqualified personnel employed as ATs. Certified ATs providing care to low socioeconomic student-athletes can assist patients and their families to navigate the health care system and ultimately mitigate many barriers to health care, and secondary school coaches have identified certified ATs as the gatekeepers to advanced medical care when needed.^{25,27} Ours is not the first study to report lower percentage of free-meal eligibility in schools that employ certified ATs, highlighting that school socioeconomic status is directly related to athletic training services in public schools.^{10,13,28,29} Individuals of lower socioeconomic status have higher rates of being underinsured or uninsured and show higher rates of numerous negative health conditions, potentially increasing the need for student-athletes in these communities to have access to certified ATs.²⁶

Clear racial and ethnic health inequities also exist specific to access to quality care in the United States.²⁶ Our findings reveal the Hispanic or Latino average student enrollment in California schools that employed certified ATs was 6% lower than schools with no AT and 9.1% lower than schools that employed unqualified personnel as ATs. Previous researchers have shown that White children are more likely to have a usual source of care and receive preventative care and are less likely to receive delayed care than Latino children.³⁰ We also found the average African American student enrollment was higher in schools with no certified ATs, troubling given data highlighting disparities in concussion knowledge and symptom reporting among African American student-athletes.^{31,32} Additionally, African American students with access to an AT were more likely to recognize the signs and symptoms of concussion, further highlighting disparities that can occur when a student-athlete has no access to a certified AT.³¹ A national study found that populations who identified as White had less access to athletic training services, though this was not the case among our sample of California schools.¹³ While we did not observe differences in average percentage of White student enrollment based on athletic training services, this could be unique to California, given its high Hispanic or Latino population. Limited or no access to athletic training services in communities of low socioeconomic status and those with higher rates of Hispanic or Latino and African American populations could be contributing to health inequities.

Researchers have consistently shown that stakeholder perceptions of certified ATs are affected by their past interactions with ATs and whether they work at schools that employ ATs.^{19,22,24,25} In California, where more than half of the schools do not employ ATs and more than 8% employ unqualified personnel as ATs, it is likely these experiences are shaping the perception of the profession and influencing potentially

valuable supporters of regulation legislation. Perceptions of the profession by those who work at schools with unqualified personnel employed as ATs are likely influenced by those individuals. The lack of certified ATs in California secondary schools may perpetuate the notion that they are not needed, which ultimately would appear to disproportionately affect communities already experiencing great health disparities.

Despite efforts to regulate the athletic training profession, legislation has continued to fall short in California. These results highlight clear disparities in access to athletic training services for secondary student-athletes and a concerning trend of hiring unqualified professionals to do the job of an AT. Regardless of the state in which they are employed, ATs can view these data as a call to action to support ongoing efforts in California to regulate the profession. Pushing for the regulation of ATs in all 50 states and the District of Columbia not only provides an opportunity to advocate for the profession; it may also help protect patients. However, it is not solely the AT's responsibility to push for regulation. It is recommended that efforts should continue to educate stakeholders, including parents and guardians and school administrators, on the importance of having access to medical care provided by certified ATs.

Limitations and Future Directions

These data are not without limitations. Data from the 2022–2023 CIF Participation Census are self-reported, and therefore, accuracy depends on input from school administrators completing the survey. Additionally, though the free-meal data from the CDES website is objective, the race and ethnicity data rely on data from the US Census, which is also self-reported. However, because the data came from publicly accessible and existing data sources, we had no control over this limitation. The high response rate in the CIF Participation Census and large sample in both databases does minimize the concern of self-reported data. Additionally, we only examined employment of a certified AT as binary, yes or no, and did not examine the employment status (full or part time) or the number of hours certified ATs worked at schools surveyed. Lastly, we did not seek to verify medical credentials beyond AT certification. During the verification process, it was revealed that some individuals hired as ATs in California high schools were individuals with expired AT certification, and we were told others were currently enrolled in athletic training programs or were retired or credentialed in other health care fields. This limitation does not affect the results and highlights the importance of regulation. Future researchers should aim to investigate barriers to hiring certified ATs in private and charter schools. Additionally, more information is needed to better understand why school administrators in California continue to hire unqualified personnel as ATs to target education and legislative efforts.

CONCLUSIONS

In the last 5 years, access to athletic training services in California secondary schools has not improved, and still, a high number of student-athletes are receiving care from unqualified personnel hired as ATs or receiving no care at all. Clear racial and ethnic and socioeconomic status disparities exist in access to certified ATs in California. Efforts to educate secondary school administrators on the training and education of certified ATs should be prioritized, and all school administrators should be encouraged to hire certified ATs.

REFERENCES

- Assembly Bill 1647; 2010. 2009–2010 Session (Ca).
- Assembly Bill 161; 2015. 2015–2016 Session (Ca).
- High school athletic participation survey. National Federation of State High School Associations. Accessed February 19, 2024. https://www.nfhs.org/media/7212351/2022-23_participation_survey.pdf
- Pierpoint LA, LaBella CR, Collins CL, Fields SK, Dawn Comstock R. Injuries in girls' soccer and basketball: a comparison of high schools with and without athletic trainers. *Inj Epidemiol*. 2018;5(1):29. doi:10.1186/s40621-018-0159-6
- Shanley E, Thigpen CA, Chapman CG, Thorpe J, Gilliland RG, Sease WF. Athletic trainers' effect on population health: improving access to and quality of care. *J Athl Train*. 2019;54(2):124–132. doi:10.4085/1062-6050-219-17
- McGuine TA, Pfaller AY, Post EG, Hetzel SJ, Brooks A, Broglio SP. The influence of athletic trainers on the incidence and management of concussions in high school athletes. *J Athl Train*. 2018;53(11):1017–1024. doi:10.4085/1062-6050-209-18
- Scameo-Miller SE, DiStefano LJ, Singe SM, Register-Mihalik JK, Stearns RL, Casa DJ. Emergency action plans in secondary schools: barriers, facilitators, and social determinants affecting implementation. *J Athl Train*. 2020;55(1):80–87. doi:10.4085/1062-6050-484-18
- Scameo-Miller SE, Adams WM, Coleman KA, Lopez RM. Exertional heat illness: adoption of policies and influencing contextual factors as reported by athletic administrators. *Sports Health*. 2024;16(1):58–69. doi:10.1177/19417381231155107
- McLeod TCV, Cardenas JF. Emergency preparedness of secondary school athletic programs in Arizona. *J Athl Train*. 2019;54(2):133–141. doi:10.4085/1062-6050-35-18
- Post EG, Roos KG, Rivas S, Kasamatsu TM, Bennett J. Access to athletic trainer services in California secondary schools. *J Athl Train*. 2019;54(12):1229–1236. doi:10.4085/1062-6050-268-19
- Mazerolle SM, Raso SR, Pagnotta KD, Stearns RL, Casa DJ. Athletic directors' barriers to hiring athletic trainers in high schools. *J Athl Train*. 2015;50(10):1059–1068. doi:10.4085/1062-6050-50.10.01
- Greffly T, Rivera M, Eberman L. Indiana secondary school athletic directors perceptions of athletic training services and influences on hiring athletic trainers. *J Sports Med Allied Health Sci Off J Ohio Athl Train Assoc*. 2021;6(3). doi:10.25035/jsmahs.06.03.02
- Barter EW, Rivera MJ, Post EG, Games KE, Eberman LE. Differences in access to athletic trainers in public secondary schools based on socioeconomic status. *J Athl Train*. 2023;58(2):91–96. doi:10.4085/1062-6050-0240.21
- Long A, Scifers JR, Eilbacher C. How do economic variables predict access to athletic training services? *Athl Train Sports Health Care*. 2017;9(2):64–70. doi:10.3928/19425864-20170124-01
- Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. Academic Press; 2013.
- Huggins RA, Coleman KA, Attanasio SM, et al. Athletic trainer services in the secondary school setting: the Athletic Training Locations and Services Project. *J Athl Train*. 2019;54(11):1129–1139. doi:10.4085/1062-6050-12-19
- Pike AM, Pryor RR, Vandermark LW, Mazerolle SM, Casa DJ. Athletic trainer services in public and private secondary schools. *J Athl Train*. 2017;52(1):5–11. doi:10.4085/1062-6050-51.11.15
- A.G. File No. 2023-026. Legislative Analyst's Office. Published November 2, 2023. Accessed March 25, 2024. <https://lao.ca.gov/BallotAnalysis/Initiative/2023-026#:~:text=The%20Constitution%20prohibits%20the%20state,taxes%20and%20local%20property%20taxes>
- Pike LAM, Stearns RL, Eason CM, Casa DJ. Public school district superintendents' perceptions and knowledge of the athletic training profession. *Athl Train Sports Health Care*. 2021;13(6):e432–e442. doi:10.3928/19425864-20210805-01
- Reed A, Nyland J, Richards J. Athletic trainer and emergency medical technician or paramedic opinions of each other's understanding of essential emergent football injury situation tasks. *Pediatr Emerg Care*. 2024;40(7):504–508. doi:10.1097/PEC.0000000000003083
- Hirschhorn R, DadeMatthews O, Sefton J. Exertional heat stroke knowledge and management among emergency medical service providers. *Int J Environ Res Public Health*. 2021;18(9):5016. doi:10.3390/ijerph18095016
- Pike Lacy AM, Eason CM, Stearns RL, Casa DJ. Secondary school administrators' knowledge and perceptions of the athletic training profession, part II: specific considerations for principals. *J Athl Train*. 2021;56(9):1029–1036. doi:10.4085/55-20
- Clines SH, Bacon CEW, Eason CM, Pagnotta KD, Huggins RA. Athletic directors' perceptions regarding the value of employing athletic trainers in the secondary school setting. *J Phys Educ Sports Manag*. 2019;6(1):13. doi:10.15640/jpesm.v6n1a1
- Pike Lacy AM, Eason CM, Stearns RL, Casa DJ. Secondary school administrators' knowledge and perceptions of the athletic training profession, part I: specific considerations for athletic directors. *J Athl Train*. 2021;56(9):1018–1028. doi:10.4085/54-20
- Lacy AMP, Stearns RL, Eason CM, Casa DJ. Secondary school athletic coaches' perceptions and knowledge of the athletic training profession. *J Athl Train*. 2022;58(1):18–28. doi:10.4085/1062-6050-0369.21
- Singh GK, Daus GP, Allender M, et al. Social determinants of health in the United States: addressing major health inequality trends for the nation, 1935–2016. *Int J MCH AIDS*. 2017;6(2):139–164. doi:10.21106/ijma.236
- Harris NA, Odai ML. The role of Title 1 secondary school athletic trainers in the primary and patient-centered care of low socioeconomic adolescents. *Int J Environ Res Public Health*. 2023;20(7):5411. doi:10.3390/ijerph20075411
- Post E, Winterstein AP, Hetzel SJ, Lutes B, McGuine TA. School and community socioeconomic status and access to athletic trainer services in Wisconsin secondary schools. *J Athl Train*. 2019;54(2):177–181. doi:10.4085/1062-6050-440-17
- Kroshus E, Rivara FP, Whitlock KB, Herring SA, Chrisman SPD. Disparities in athletic trainer staffing in secondary school sport: implications for concussion identification. *Clin J Sport Med*. 2017;27(6):542–547. doi:10.1097/JSM.0000000000000409
- Langellier BA, Chen J, Vargas-Bustamante A, Inkelas M, Ortega AN. Understanding health-care access and utilization disparities among Latino children in the United States. *J Child Health Care*. 2016;20(2):133–144. doi:10.1177/1367493514555587
- Wallace J, Covassin T, Moran R. Racial disparities in concussion knowledge and symptom recognition in American adolescent athletes. *J Racial Ethn Health Disparities*. 2018;5(1):221–228. doi:10.1007/s40615-017-0361-1
- Wallace J, Bretzin A, Beidler E, et al. The underreporting of concussion: differences between Black and White high school athletes likely stemming from inequities. *J Racial Ethn Health Disparities*. 2021;8(4):1079–1088. doi:10.1007/s40615-020-00864-x

Address correspondence to Christianne M. Eason, PhD, ATC, Korey Stringer Institute, Department of Kinesiology, College of Agriculture, Health & Natural Resources, University of Connecticut, 2095 Hillside Road, U-1110, Storrs, CT 06269-1110. Address email to christianne.eason@uconn.edu.