
Do Certified Athletic Trainers Make a Difference in High School Athletic Healthcare?

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Introduction

Participation in high school sports has risen sharply in recent years from 6 million student-athletes in 1996¹ to 7.2 million in 2006.² With increased participation comes an increased risk for injury. It has been estimated that as many as half of high school athletes sustain some type of injury during their season.³ As sports grow in popularity and associated injury rates become better understood, it is becoming apparent that additional considerations must be given to health and safety issues associated with participation in high school sports.

In 1998 the American Medical Association addressed this issue when it passed Resolution H-470.995 Athletic (Sports) Medicine encouraging schools with sports programs to hire a certified athletic trainer to coordinate healthcare for athletes. Since this time other organizations including the American Academy of Family Physicians, the National Collegiate Athletic Association, and the National School Board Association, have made similar recommendations.^{4,5,6} However, do certified athletic trainers

(ATCs) really make a difference in medical care provided in the high school setting? Up to this point the data collected have been anecdotal and sporadic, but recently standards for medical care in the high school setting were established by an inter-association task force representing seventeen professional organizations in the Appropriate Medical Care for Secondary School-aged Athletes (AMCSSA) Consensus Statement⁷ and Monograph⁸. Since the athletic trainer is often the point of first contact for injured and ill high school athletes, the relationship of the athletic trainer to the medical care in place in a high school is one worth thorough investigation. It is vital to determine if ATCs indeed affect the health care of athletes in the high school setting. This paper seeks to answer that question and present a new survey tool for the assessment of health care by athletic trainers at the high school setting based on the AMCSSA standards.

Methods

The 132-item Appropriate Medical Care Assessment Tool (AMCAT) was designed for this study to assess the comprehensive healthcare provided by a high school athletics program. The survey included 119-items designed to assess medical care based on the recommendations of the AMCSSA Consensus Statement and Monograph with the remaining items assessing athletic training services and demographic information. Internal consistency for the AMCAT was strong ($r=.89$).

After pilot-testing, the AMCAT was mailed to athletic directors at all 263 high schools in South Carolina. Non-

respondent schools were contacted multiple times via mail, email, phone calls, and personal contact. The Appropriate Care Index (ACI) score from AMCAT provided a quantitative measure of medical care by a high school and served as dependent variable. ACI score was determined based on a school's response to items relating to AMCSSA guidelines. Most items utilized a 4-point scale and were scored 3, 2, 1, or 0. Scores from the items for each point of the AMCSSA Consensus Statement were averaged to form an ACI score ranging from 0 (lowest) to 1 (highest). The ACI score was used in this survey as the overall "grade" for each high school regarding the quality of health care provided by that institution. It served as the "bottom line" that was used for averaging and comparison of each school to another. The statistical software package SPSS version 12.0 was used to calculate descriptive statistics and test associations between variables using one-way ANOVA's and tests for multiple comparisons.

Results

AMCAT Respondents

Sixty-three percent of South Carolina high schools responded to the AMCAT survey. Response rates were higher from public schools (72%) than private schools (39%). Larger schools (SCHSL 4A, 3A, 2A) responded in greater numbers than smaller schools (SCHSL 1A and SCISA), though the sample had representation from of all types of schools. All regions of the state were represented in the sample with nearly half of respondent schools being located in a small town and nearly equal numbers of the remainder reported being located in "a

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Figure 1. Source of ATC's as reported by high schools responding to AMCAT.

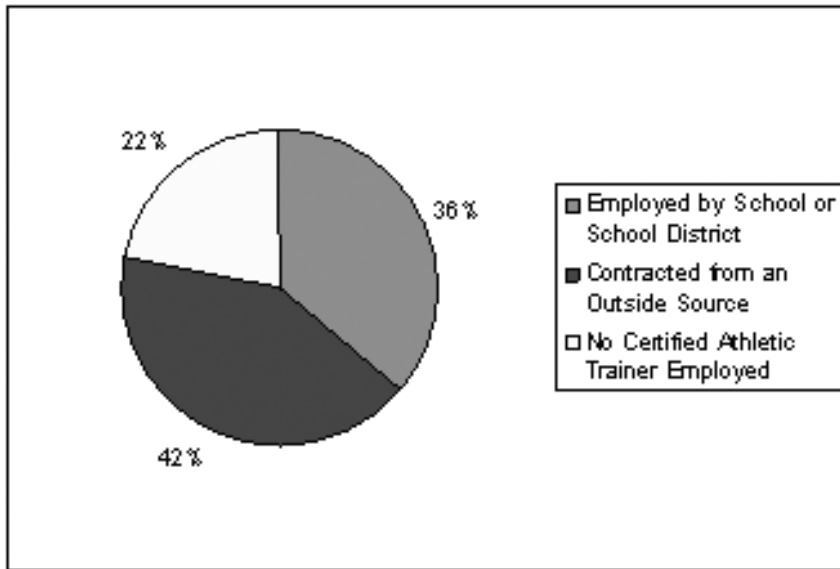
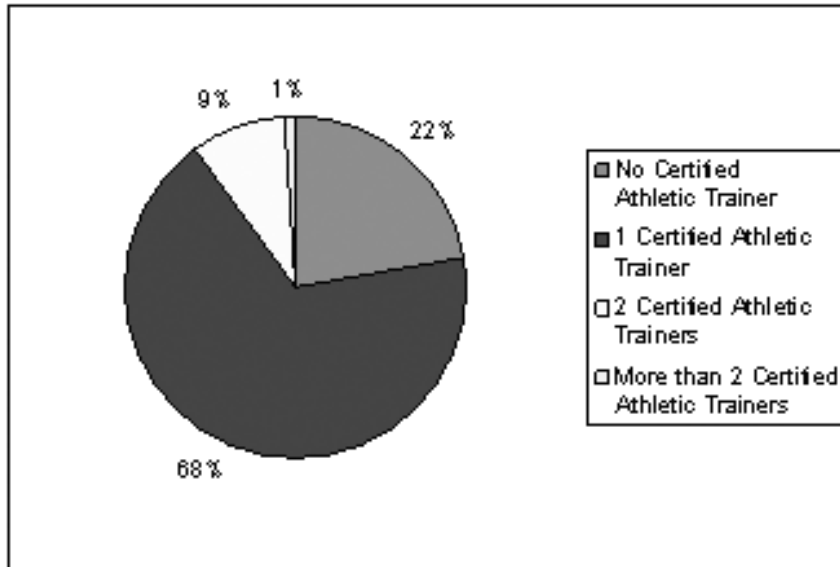


Figure 2. Number of ATC's providing services for a high school as reported by high schools responding to the AMCAT.



city", "the country", or "the suburbs". Almost all schools reported being located within 20 miles of a medical facility. The sample consisted of approximately equal numbers of schools in regard to the percent of students qualifying for the free or reduced lunch program. Most surveys were completed by athletic directors (54%) or certified athletic trainers (38%).

Frequency of Athletic Trainers in SC Schools

Over three-quarters of schools reported having an ATC. Certified athletic trainers were found to be more frequently contracted from an outside source than employed directly by the school or school district (see Figure 1). Over two-thirds of schools reported having one certified athletic trainer though few schools reported having more than one

ATC (see Figure 2).

Mean Appropriate Care Index (ACI) Scores

In this study, the mean ACI score for South Carolina high schools was .58 ranging from a low of .15 to a high of .94. High schools in South Carolina with an ATC reported statically significant higher scores (0.61) than those without an ATC (0.49)($P = .0001$). Furthermore, schools wherein an ATC was employed directly by the school reported higher scores (0.68) than those contracted from an outside source (0.56)($P = .0001$) though the schools with an ATC contracted from an outside source still scored higher than schools with no ATC (0.49)($P = .0009$). ACI scores reported by schools with 2 or more certified athletic trainers was higher (0.69) than those with only a single ATC (0.60)($P = .034$).

Discussion

Most high schools have team physicians. While team physicians are often present at varsity football games and other important sporting events associated with the high school, they are simply not able to be present for the vast majority of practices and sports for most other sports. Additionally, the type of comprehensive medical care recommended by the AMCSSA task force goes far beyond merely event coverage to include injury prevention strategies, on-site injury evaluation and treatment, rehabilitation, psychosocial and nutritional counseling, and administrative duties. As recommended by the AMA in 1998, the ATC is the ideal medical professional to coordinate such a comprehensive healthcare delivery system. Yet, many schools in South Carolina go without the services of an ATC, and many others lack full-time, school-employed ATC's. The results of this study provide measurable and objective evidence demonstrating that the presence of ATC services, particularly those provided by a school-employed ATC's, are associated with higher levels of medical care. Such statistically significant data could be the impetus for

Table 1. Significant differences in ACI score means between levels of athletic training services.

Variable	Level	N	Mean (SD)	Level	N	Mean (SD)	Mean Difference	Std. Error	F/t Statistic	P	Confidence Interval Lower	Upper
Presence of ATC		165							F=22.6	.0001		
	Have an ATC	128	.61 (.15)	Have no ATC	37	.49 (.13)	.12860	.02696	t=4.77	.0001	.7537	.018184
Employer of ATC		165							F=26.026	.0001		
	School Employed	59	.68(.13)	Outside Source	69	.56(.14)	.12126	.02386		.0001	.0741	.1684
	School Employed	59	.68(.13)	No ATC	37	.49(.13)	.19397	.02822		.0001	.1383	.2497
	Outside Source	69	.56(.14)	No ATC	37	.49(.13)	.07271	.02742		.009	.0186	.1269
Number of ATC's		165							F=9.757	.0001		
	No ATC	37	.49(.13)	1 ATC	111	.60(.15)	-.11673	.02709		.0001	-.1702	-.0632
	NO ATC	37	.49(.13)	2 or More ATC's	17	.69(.14)	-.20086	.04368		.0001	-.2871	-.1146
	1 ATC	111	.60(.15)	2 or More ATC's	17	.69(.14)	.11673	.02709		.034	-.1617	-.0066

decision makers, such as school administrators and legislators, to commit funds to improve medical care for high school athletics by hiring an ATC. To the authors' knowledge, this is the first objective documentation in the medical literature of the effect ATCs have on athletic health care in the high school setting.

Over ten years ago Buxton⁹ examined the medical coverage provided by Hawaiian high schools and identified inequity in the standard of care between public and private schools. As a result of the recognition of this failure of the public schools to meet the standard of care set by the private schools, the Hawaiian legislature approved funding to provide ATC's to all public high schools in Hawaii. Similarly, the results of our study show significant differences in the medical care provided to athletes in South Carolina based on the accessibility to athletic training services. These data identify an inequity in the provision of medical care for high school athletics in South Carolina. Our data indicate that schools with athletic training services, particularly

from a school-employed athletic trainer, provide significantly higher levels of medical care for their athletes than those without athletic training services. This finding puts schools without ATCs at potential litigation risk, as the responsibility of school districts to provide medical care for their students who become injured while participating in school activities is well founded in the law.¹⁰ Several lawsuits have proven costly to school districts that were shown to fail to provide appropriate care to injured athletes. Such inadequacies played a key role in the 1986 court decision, *Thompson vs. Seattle Public Schools District* in which, an athlete was awarded \$6.3 million for damages sustained as a result of the school not providing appropriate medical care that resulted in serious injury.^{9,11} More recently a high school football player reached a \$12 million settlement with the Anacortes School District in the State of Washington after the player experienced complications resulting from a head injury. The suit claimed the district failed to use reasonable policies and procedures for head injury management,

and that the coaches were not adequately trained to provide medical care.¹²

State and local athletic administrators may be concerned over the increased cost of employed ATCs in all high schools, but some data exist which demonstrate that ATCs may actually reduce the overall cost to school districts. Almost certainly the cost to the parents of athletes will decline due to the provision of rehabilitation at no cost to the athlete as opposed to fee-for-service physical therapists. Direct costs to schools may also be reduced with athletic training services. One study showed after the addition of ATCs to their high schools, one Florida school district saw a 68% decrease in the number of athletic insurance claims filed over a five year period in the 1990's (13). Obviously, a decrease in claims should lead to a decrease in premiums, resulting in savings to the school district.

Conclusion

Despite recognition of the common occurrence of injuries in high school ath-

letics, the insufficient and often inappropriate medical care provided when an injury occurs, and more than 35 years of recommendations from researchers, many schools remain without the services of a certified athletic trainer. Currently, only Hawaii has required all public high schools to employ an ATC and provided the funding to do so. In 1998 the American Medical Association's (AMA) Council on Scientific Affairs reported to the AMA House of Delegates concerning a resolution to place an ATC in all secondary schools. The report called for scientific assessment of the impact of certified athletic trainers on the prevention, treatment, and rehabilitation of sports injuries, the risk factors for high school sports injuries, and the effectiveness of athletic training methods and modalities, as well as research to address whether certification and state regulation affect injury occurrences and outcomes. This study, based on the recommendations of the Appropriate Medical Care for Secondary School-aged Athletics Consensus Statement and Monograph provides for such an assessment. Based on the results of this study it is recommended that all high schools employ an ATC to coordinate comprehensive medical care for athletes. The data also indicate that the ATC should be directly employed by the school and additional ATC positions at schools with a single ATC should be considered. The team physicians of South Carolina, as well as all physicians, should support efforts to provide a high standard of care to the athletes of this state and encourage the hiring of ATCs in their local high school. In addition, we challenge the team physicians of other states to apply the AMCAT to assess the provision of athletic health care to their respective states.

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Figure 3. Mean ACI score by employer of a high school's certified athletic trainer.

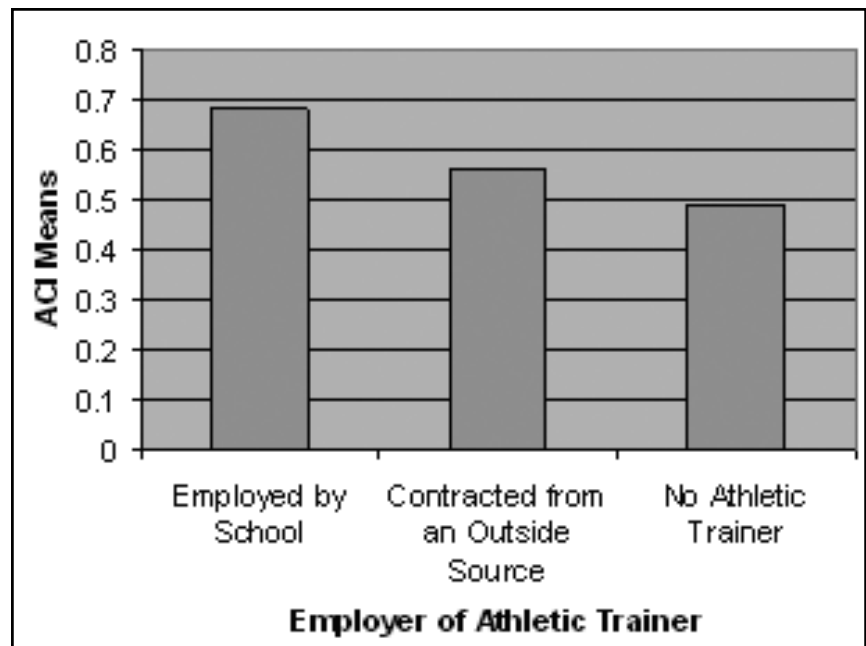
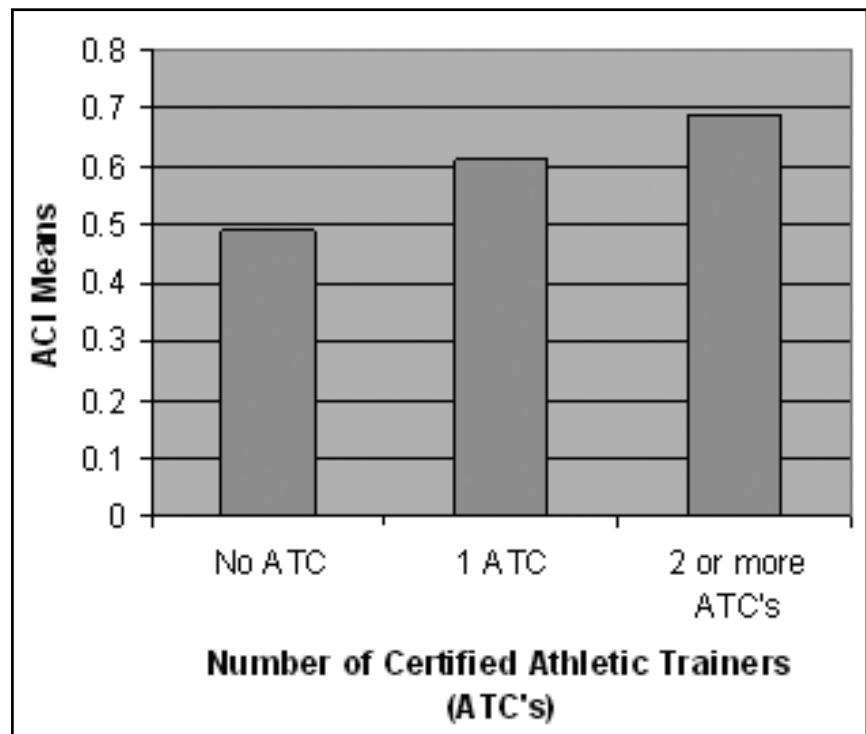


Figure 4. Mean ACI by number of certified athletic trainer's per school.



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