

# **The Availability of Athletic Trainers in Secondary Schools: Implications for the Recognition and Management of Sport-Related Concussions**

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## **1) Background**

- a) Estimate 340K SRCs in high schools each year
- b) Concerns that a substantial number of SRCs may go unreported and premature return to sport
- c) Having licensed medical professionals available to adolescent athletes who have sustained a SRC is cited as:
  - i) integral to the prompt identification and evaluation of the injury
  - ii) necessary to provide appropriate evidenced based managed care
  - iii) important to insure that the athlete not be allowed to return to play prematurely

## **2) Assess AT Availability in WI High Schools**

- a) WATA research grant – Survey of ATs and AD's @ all WI high schools
- b) Results
  - i) > 95% schools had access to an AT
  - ii) Availability and services performed varied considerably (0.5 to 70 hrs. per week!)
  - iii) School enrollment was not correlated with AT availability
  - iv) Analysis to Compare SES and AT availability (Post et al. *J Ath Train* 2018)
    - (1) High SES correlated with higher AT access
    - (2) Low SES associated with lower AT access

## **3) Compare the SRC incidence, Post-injury Management in Schools With LoAT, MidAT or HiAT.**

- a) NATA research grant
  - i) Aim 1: Compare the incidence of SRCs between AT levels
  - ii) Aim 2: Compare post-SRC management practices for each AT level
  - iii) Aim 3: Prospectively assess health outcomes (SRC symptoms, depression and HRQoL in subjects with SRCs.
- b) Research plan
  - i) Sample of 30 WI high schools
  - ii) Prospectively enroll 2000+ athletes
  - iii) Subjects provide baseline demographics, previous SRC Hx and health assessments (symptoms, depression HRQoL)
  - iv) ATs record all AE and the onset of SRCs
- c) Results
  - i) The incidence of reported SRCs was lower for the LoAT schools (2.4%) compared to the MidAT (5.6%) and HiAT (7.0%).
  - ii) Elapsed time until first AT interaction was longer for LoAT schools compared to MidAT school and HiAT schools
  - iii) Post SRC interactions were significantly different between each group

- iv) Athletes at LoAT schools were less likely to undergo a return to play protocol (50.0%) compared to MidAT or HiAT athletes.
- v) Days out greater for MidAT and HiAT compared to LoAT schools
- d) Discussion
  - i) The level of AT availability influences the reported incidence of SRCs and post SRC management activities.
  - ii) Unreported or mismanaged SRCs pose a significant burden to the short and long term health of adolescent athletes.

#### **4) Clinical Relevance and Public Health Impact**

- a) SES and AT availability both impact the likelihood the 181,500 WI high school sport participants will have SRCs appropriately identified and managed.
- b) SRCs only account for 20% of all injuries sustained by high school athletes
- c) Likely that AT availability also impacts other common injuries (Ankle sprains, knee and shoulder injuries etc.) sustained by high school athletes
- d) Economics - Third party payers (state and private) stand to benefit from increased AT access

#### **5) Citations**

- Broglia SP, Cantu RC, Gioia GA, et al. National athletic trainers' association position statement: Management of sport concussion. *J Athl Train*. 2014;49(2):245-265. doi:10.4085/1062-6050-49.1.07
- McCrea M, Hammeke T, Olsen G, Leo P, Guskiewicz K. Unreported concussion in high school football players: implications for prevention. *Clin J Sport Med*. 2004;14(1):13-17
- McCrory P, Meeuwisse W, Dvorak J, Aubry M, Bailes J, Broglia S, Cantu RC, Cassidy D, Echemendia RJ, Castellani RJ, Davis GA. Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, Oct. 2016. *Br J Sports Med*. 2017;51(11):838-47.
- McGuine TA, Pfaller AY, Post EG, Hetzel SJ, Brooks A & Broglia SP. The influence of athletic trainers on the incidence and management of concussions in high school athletes. *J Ath Train*. 2018; 53(11):1017-1024
- 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 Ath Train* 2018 doi: 10.4085/1062-6050-440-17

## School and Community Socioeconomic Status and Access to Athletic Trainer Services in Wisconsin Secondary Schools

Citation: 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. *Journal of athletic training*. *J Ath Train* 2018 doi: 10.4085/1062-6050-440-17

**Context:** Secondary schools have made significant progress in providing athletic trainer (AT) coverage to their student-athletes, but the levels of access at schools with ATs may vary widely. Socioeconomic disparities in medical coverage and access have been noted in other health care fields, but such disparities in the level of access to AT services have not been thoroughly examined.

**Objective:** To determine if (1) access to AT services or (2) the level of access (AT hours per week and athletes per AT hour) differed based on the socioeconomic characteristics of secondary schools.

**Design:** Cross-sectional study.

**Setting:** Mailed and e-mailed surveys.

**Patients or Other Participants:** High school athletic directors and ATs from 402 Wisconsin high schools.

**Main Outcome Measure(s):** Respondents provided information as to whether their school used the services of an AT and the number of hours per week that their school had an AT on-site. The number of athletes per AT hour was calculated by dividing the total number of athletes at the school by the number of hours of AT coverage per week. The socioeconomic status of each school was determined using the percentage of students with free or reduced-cost lunch and the county median household income (MHI).

**Results:** Schools without an AT on-site were in lower MHI counties ( $P < .001$ ) and had more students eligible for a free or reduced-cost lunch ( $P < .001$ ). Lower levels of AT access (fewer hours of AT access per week and more athletes per AT hour) were observed at schools in the lowest third of the county MHI and with the highest third of students eligible for a free or reduced-cost lunch ( $P < .001$ ).

**Conclusions:** Socioeconomic disparities were present in access to AT services. Schools located in counties with higher SES had greater access to ATs while schools located in counties with lower SES had less access to AT's. New models are needed to focus on providing a high level of AT access for all student-athletes, regardless of socioeconomic status.

## The Impact of Athletic Trainers on the Reported Incidence and Management of Sports Related Concussion Injuries in High School Athletes

Citation: 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 Ath Train*. 2018; 53(11):1017-1024

**Background:** Sport Related Concussion (SRC) injuries are a major concern for athletes, parents, school personnel and health care professionals in Wisconsin. In some, but not all high schools, the Athletic Trainer (AT) has the primary responsibility to identify and manage an SRC. However, it has been demonstrated that the availability and services performed by ATs in Wisconsin high schools varies a great deal. The lack of uniform AT availability for the 181,500 Wisconsin high school sport participants increases the likelihood that some SRCs sustained by these athletes are not adequately identified and managed.

**Purpose:** To determine how the availability of an AT affects the reporting and management of SRCs in high schools.

**Subjects:** N = 2,459 (female = 37.5%, age  $16.1 \pm 1.2$  yrs.) interscholastic athletes from 31 high schools categorized as either Low availability (LoAT), Mid availability (MidAT) or High availability (HiAT) served as study participants. ATs recorded the incidence, onset characteristics and days lost from to sport for each SRC sustained by the subjects. ATs also recorded the post SRC management activities (hours until the first AT interaction, number of post SRC interactions, utilization of return to play protocols, contact with parent and coaches and days out from sport) through return to sport. The incidence of SRC reporting between AT categories was examined with a multivariate Cox-PH model. Fisher's Exact tests were used to determine if post-concussion management differed based on AT availability.

**Results:** The incidence of reported SRCs was lower for the LoAT schools (2.4%) compared to the MidAT (5.6%, HR = 2.59,  $p = 0.043$ ) and HiAT (7.0%, HR = 3.33,  $p = 0.002$ ) schools. The median time before the first AT interaction was longer for LoAT schools (24.0 hours) compared to MidAT school (0.5 hours; post-hoc  $p = 0.012$ ) and HiAT schools (0.2 hours, post-hoc  $p = 0.023$ ). The number of Post SRC interactions were significantly different in all groups (LoAT = 2 interactions, MidAT = 3, and HiAT = 4; all post hoc  $p < 0.05$ ). Days lost were greater for MidAT and HiAT (both 14 days lost) schools compared to LoAT schools (11.5 days lost, post-hoc  $p = 0.231$  and  $p = 0.029$ , respectively). Athletes at LoAT schools were less likely to undergo a return to play protocol (50.0%) compared to MidAT (SRCs 93.6%, post-hoc  $p = 0.001$ ) or HiAT athletes (100%, post-hoc  $p < 0.001$ ).

**Conclusion:** This study demonstrates that the level of AT availability influences the reported incidence of SRCs and post SRC management activities. This data is important since unreported or mismanaged SRCs pose a significant burden to the short and long term health of adolescent athletes.