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Athletic Trainers' Roles and Responsibilities Regarding Academic Adjustments as Part of the Concussion-Management Process in the Secondary School Setting

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Context: Athletic trainers (ATs) play a vital role in managing the care of student-athletes after a sport-related concussion, yet little is known about their specific involvement in the implementation of academic adjustments as part of the concussion-management plan.

Objective: To explore ATs' perceived roles and responsibilities regarding the implementation of academic adjustments for concussed student-athletes.

Design: Qualitative study.

Setting: Individual telephone interviews.

Patients or Other Participants: Sixteen ATs employed in the secondary school setting (8 women, 8 men; age = 39.6 ± 7.9 years; athletic training experience = 15.1 ± 5.6 years), representing 12 states, were interviewed.

Data Collection and Analysis: One telephone interview was conducted with each participant. After the interviews were transcribed, the data were analyzed and coded into themes and categories, which were determined via consensus of a 4-person research team. To decrease researcher bias, triangulation occurred through participant member checking, the inclusion of multiple researchers, and an internal auditor.

Results: Several categories related to participants' perceptions regarding their roles and responsibilities within the academic-adjustments process emerged from data analysis: (1) understanding of academic adjustments, (2) perceptions of their roles in academic adjustments, (3) initiation of academic adjustments, (4) facilitation of academic adjustments, and (5) lack of a role in the academic-adjustments process. Although most ATs perceived that they had a role in the initiation and facilitation of academic adjustments for concussed student-athletes, some reported they did not want a role in the process. Regardless, participants frequently suggested the need for further education.

Conclusions: These findings highlight that ATs either wanted to be involved in the implementation of academic adjustments but felt further education was needed or they did not want to be involved because they felt that it was not in their area of expertise. To create a cohesive concussion-management team, it is vital that ATs understand their individual and collaborative roles in the secondary school setting.

Key Words: mild traumatic brain injuries, return to learn, adolescents, professional responsibility, academic accommodation

Key Points

- Athletic trainers understood the importance of managing the academic concerns of a patient after concussion; however, they did not feel properly educated in this area.
- Athletic trainers had mixed feelings regarding their perceived roles in the academic management of student-athletes with concussions.
- The roles of each member of the concussion-management team must be established within the concussion-management plan or policy.

Athletic trainers (ATs) often play an integral role in the management of sport-related concussions in secondary school student-athletes. The focus of the ATs' involvement has historically been the sideline assessment and daily management of the concussed patient, with most of the attention on return to play. Athletic trainers commonly supervise student-athletes throughout return-to-play protocols once they can complete a full day of school with no adjustments[1] and work collaboratively with the directing physician to make return-to-play decisions. Furthermore, ATs have a role in the comprehensive health care of student-athletes,[2] which can include injury prevention, safety concerns, and returning to sport and activity.

With respect to concussion management, emphasis has recently been placed on the academic consequences of concussion, cognitive rest, and managing a return-to-school protocol.[3–5] Although these aspects of concussion management are newer in the global scheme of the care provided to a concussed student-athlete, ATs employed in the secondary school setting reported[6] that nearly 50% of the concussed patients they managed required some form of academic adjustments to safely return to the classroom. Academic adjustments generally consist of informal,

temporary alterations to a student's school day to help minimize cognitive overload while still allowing the concussed adolescent to fulfill his or her role as a student.[4] Numerous academic adjustments are available, such as partial school days, rest breaks, and decreased homework and test expectations,[7] but academic adjustments must be prescribed based on the concussed student-athlete's symptoms and monitored regularly. Additionally, it is also important that clinicians are familiar with more formal types of academic accommodations (eg, 504 plans) and modifications (eg, individualized education plans [IEPs]) in case the student-athlete continues to experience concussive symptoms several weeks postinjury.[4] The need for cognitive rest and academic adjustments has been well documented,[4] yet little information is available regarding ATs' perceptions and understanding of academic adjustments[6] or their roles in the implementation process.[8,9]

Few investigators have addressed the role of the AT regarding concussion-related academic adjustments in student-athletes. According to Weber et al,[9] fewer than 15% of secondary school nurses indicated that ATs should be involved in the academic support team for concussed student-athletes. However, Williams et al[6] noted that 95.8% of ATs employed in the secondary school setting believed they should be included as part of the academic support team for concussed student-athletes. Although this study provided some initial information regarding ATs and their use of and roles in academic adjustments, the nature of the survey instrument limited the ability of respondents to provide additional details regarding the academic-adjustments process, or lack of same, at their secondary schools. Furthermore, the current preparation of entry-level ATs emphasizes education only on return-to-play criteria for patients after a concussion.[10] It is unclear if ATs are being educated on the importance of cognitive rest as part of concussion management or the implementation of academic adjustments to assist concussed student-athletes as they return to school. Therefore, the purpose of our study was to explore ATs' perceptions and understanding of academic adjustments as they relate to the individual's specific role in the implementation process for secondary school student-athletes suffering from a sport-related concussion.

METHODS

Design

We conducted this qualitative investigation using a social constructivist paradigm with the aim of ascertaining the ATs' perceptions and understanding of academic adjustments as a part of the concussion-management plan for student-athletes in the secondary school setting. Additionally, the consensual qualitative research (CQR) tradition, which has been established in athletic training research,[11–14] was used to guide the methods of this study. Consensual qualitative research is a rigorous method that requires constant multiple-analyst triangulation throughout the process of data analysis to ensure that multiple perspectives are considered and to establish overall representativeness of the data.[15,16] In particular, this study was designed to be an inductive interpretation of what these individuals believe or have experienced to be important concepts, principles, or ideas regarding academic adjustments based on their experiences in clinical practice. Ultimately, our goal was to identify emergent themes and patterns from these shared experiences to enhance the understanding and use of academic adjustments within clinical practice among ATs. The research team comprised 4 ATs with various levels of experience (ie, 2 novice, 1 experienced, 1 expert) with the CQR data-analysis process. It is beneficial to include novice and expert reviewers throughout the data-analysis process.[11] A fifth AT, who was also familiar with qualitative research, served as the auditor. The auditor is responsible for reviewing the phases of data analysis to ensure that multiple views have been considered by the research team, thereby enhancing the trustworthiness of the data.[15,16]

Participants

Athletic trainers who participated in a previous investigation[6] that assessed beliefs, attitudes, and knowledge of academic adjustments were invited to participate in this study. Criterion-based sampling was one of the sampling methods used for this study. The predetermined criteria for participant selection were that each AT was required to (a) be certified by the Board of Certification, (b) have completed the Beliefs, Attitudes, and Knowledge of Pediatric Athletes with Concussions survey,[6] and (c) have a minimum of 5 years' athletic training experience in the secondary school setting at the time of data collection. Additionally, a random purposeful-sampling method was used to select participants; individuals were invited to join this study via random selection from a list of 414 participants of the previous study.[6]

We confirmed data saturation of the interview protocol after 16 ATs (8 women, 8 men; age = 39.6 ± 7.9 years; athletic training experience = 15.1 ± 5.6 years) had been interviewed. Demographics of the participants are listed in Table 1, including pseudonyms to protect participants' identities. All participants gave written informed consent via e-mail as well as oral consent to have the interview recorded, and the study was approved by the A.T. Still University Institutional Review Board.

Instrumentation

Before the interview protocol was developed, 2 of the researchers (C.W.B., T.V.M.) held teleconference stakeholder meetings with 3 ATs who met the inclusion criteria but were not included as participants in this investigation. The purpose of these meetings was to gain an understanding of the questions stakeholders believed were important to answer. Feedback from the stakeholders guided the development of the interview protocol. The final, semi-structured interview protocol consisted of 12 open-response questions pertaining to participants' perceptions and experiences with academic adjustments for student-athletes after sport-related concussion (Table 2). By asking these questions, the emergent design allowed the interviewer the flexibility to ask for further clarification and pursue potential topics that we had not previously considered. Before data collection, this interview protocol was pilot tested with 1 AT who met the inclusion criteria but was not a participant during data collection. Based on feedback from the participant during pilot testing, we reworded or

Table 1. Participant Demographics

Participant Pseudonym	Sex	Years' Experience as Athletic Trainer	Highest Degree Earned	Employment Model	Type of School	Teaching Role?
Amanda	Female	10	Master's	Direct	Private independent	No
Bill	Male	7	Master's	Direct	Public	Yes
David	Male	13	Master's	Direct	Private parochial	No
Elizabeth	Female	14	Master's	Direct	Public	Yes
Hannah	Female	15	Bachelor's	Direct	Public	No
Jamie	Female	23	Master's	Outreach	Public	No
Jessica	Female	20	Master's	Direct	Private nonparochial	No
Joe	Male	15	Master's	Outreach	Public with charter	No
Linda	Female	8	Master's	Outreach	Public	No
Michael	Male	9	Master's	Direct	Public	No
Paul	Male	20	Master's	Direct	Independent boarding school	Yes
Rebecca	Female	11	Master's	Direct	Public	No
Robert	Male	27	Master's	Direct	Private parochial	Yes
Suzie	Female	18	Bachelor's	Direct	Public	Yes
Tom	Male	13	Bachelor's	Outreach	Public	No
William	Male	18	Bachelor's	Outreach	Public	No

modified 2 interview questions to ensure clarity and understanding.

Procedures

One investigator (M.C.K.) e-mailed the potential participants after identifying individuals who met the inclusion criteria. An e-mail invitation was initially sent to 15 randomly selected individuals from the recruitment list. If individuals did not respond within 1 week, a follow-up invitation was sent. If the participant still did not respond, he or she was marked as nonresponsive and was not contacted again. This process was continued until data saturation was achieved. In total, 100 ATs employed in the secondary school setting received an invitation e-mail. Five individuals indicated they did not wish to participate, and 8 e-mails were bounced back to the sender. Once a response indicating consent to participate was received, the participant was asked to complete a brief demographic questionnaire, and a telephone interview was scheduled. Due to the dispersed geographic locations of the participants, individual telephone interviews were deemed the most suitable method for data collection. Each interview lasted 30 to 45 minutes. Phone interviews began in August 2014 and continued until data saturation was achieved in November 2014.

Once an interview was completed, a professional transcription company (www.dictate2us.com; Dictate2Us, London, UK) transcribed the audio file. Proper names, places, and identifying material were deleted from each transcript to protect the participant's anonymity. The transcript was then sent to the participant as a means of enhancing trustworthiness. Member checks allowed the participant to provide any additions or clarifications as well as to make corrections to the transcript.[17] However, participants were provided with a clear instruction that the information in the transcript could not be deleted or altered in any way.

Data Analysis and Management

The data were analyzed in 4 progressive stages: (a) identifying initial code domains, (b) extracting core ideas from each code domain, (c) cross-analysis of multiple participant interviews via development of categories, and (d) establishing the frequency of data presented in the determined categories.[15,16] Once several interviews had been transcribed, the research team met to determine initial code domains. The domains were used to group data on similar topics.[15,16] Once the initial domains were developed and agreed upon, each research team member individually coded the same 7 transcripts and placed the data in a domain as they saw fit. The research team then reconvened to discuss our coding decisions until a consensus was reached about the placement of the transcribed information. At this point, a consensus version of the domains was used to code all participant transcriptions.[15,16] Next, the

Table 2. Interview Protocol[a]

1. To begin, tell me about your background as an athletic trainer.
2. Please describe a typical day for you at the secondary school?
3. Describe a typical scenario of your concussion management procedures from the time a student-athlete sustains a sport-related concussion to full participation clearance/return-to-play.
4. Please describe what academic adjustments mean to you?
5. Please discuss the academic adjustments policies and procedures, if any, that are established at your secondary school?
6. Please provide me with an example of a patient encounter you've had where a student-athlete you were providing care for received academic adjustments following a sport-related concussion?
7. Please discuss any challenges you may have experiences with the concussion management and care of a student-athlete who has received academic adjustments following a sport-related concussion?
8. What do you believe an athletic trainer's role should be regarding the implementation of academic adjustments?
9. Please discuss what factors, if any, you believe would influence the successful implementation of academic adjustments at the secondary school for student-athletes following sport-related concussion.
10. What strategies do you feel would be useful for enhancing academic adjustments as part of concussion management and care?
11. What resources do you feel are/would be useful for enhancing the awareness of academic adjustments in the field of athletic training?
12. Is there anything else you would like to add about academic adjustments or your own personal experiences on the topic?

[a] Reproduced in its original form.

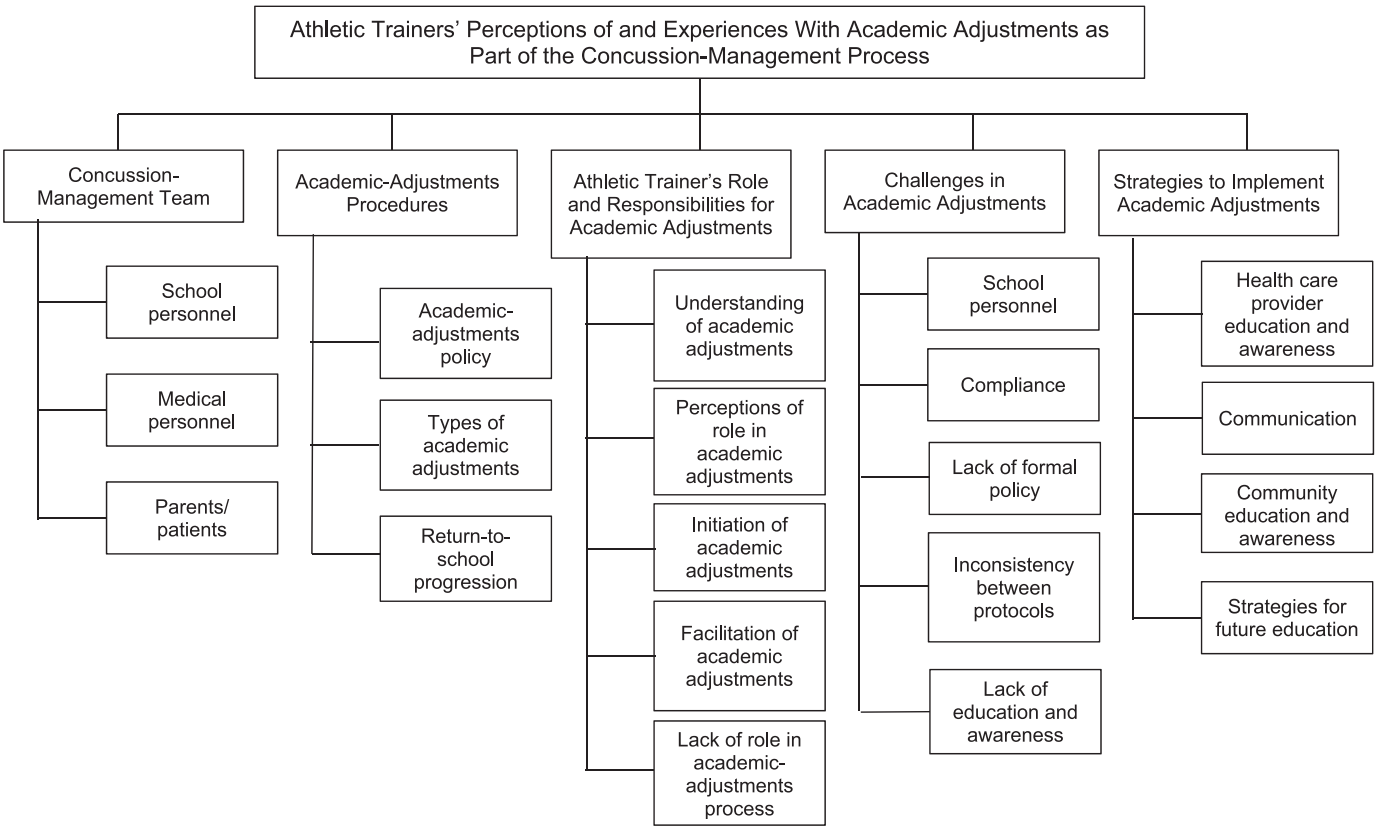

Figure. Conceptual framework of themes and categories.

remaining 9 transcripts were coded according to the consensus domains. At a minimum, 2 research members coded each of the remaining transcripts to ensure consistency. Finally, we performed cross-analysis to determine relationships, similarities, and differences that emerged from the individual interviews. From this information, categories were formed and modified as we became more involved with the data. Frequency counting for each category allowed us to identify how often the category was applied throughout the entire sample, providing for a sense of representativeness.[16] Frequency was divided into 4 components for each category: (1) general, (2) typical, (3) variant, or (4) rare. Within this qualitative investigation, a category was considered *general* if it applied to at least 15 participant cases, *typical* if it applied to 8 or more cases, *variant* if it applied to less than 8 cases, or *rare* if the data related to only 2 or 3 participant cases.[16] Throughout each phase of data analysis, the domains were reassessed to ensure that the overall representativeness of the data was maintained. After each phase, the research team confirmed that the domains appropriately captured the data; therefore, no domains were added to the initial consensus version.

Along with participant member checks, trustworthiness of the data was ensured via multiple-analyst triangulation and the inclusion of an auditor. Multiple-analyst triangulation is an inherent component of CQR, as it requires consensus from all members of the research team during each phase of data analysis.[15,16] Similarly, the CQR approach also inherently controls for research bias from the interviewer as well as all team members because it requires consensus throughout all phases. The use of an auditor also ensured trustworthiness. The role of the auditor was to review the data that emerged from each phase of data analysis to ensure that the research team had removed bias and that the findings appropriately represented the data collected.

RESULTS

The findings presented here are a part of a larger study pertaining to ATs' familiarity and experiences with academic adjustments (Figure). Five categories of data emerged regarding ATs' roles and responsibilities pertaining to academic adjustments for student-athletes after a sport-related concussion. These categories were (1) ATs' understanding of academic adjustments, (2) ATs' perceptions of their roles in academic adjustments, (3) initiation of academic adjustments, (4) facilitation of academic adjustments, and (5) lack of a role in the academic-adjustments process. The frequency of participant cases per category is displayed in Table 3.

Athletic Trainers' Understanding of Academic Adjustments

Generally, the participants understood why the implementation of academic adjustments was important and were familiar with the temporary academic adjustments that can be requested.

Jessica mentioned:

> Academic adjustments mean that you don't return the child to complete academics until their brain is ready.

Table 3. Frequency of Cases for Athletic Trainer's Roles and Responsibilities

Category	Frequency	Number of Participant Cases
Athletic trainers' understanding of academic adjustments	General	16
Athletic trainers' perceptions of their role in academic adjustments	General	16
Initiates academic adjustments	Typical	11
Facilitates academic-adjustments procedures	Typical	10
Lack of role in academic-adjustments process	Typical	8

> All academics consists of is the stimulation of the brain, and if we return them without gradually accommodating them, then we're going to see prolonged symptoms and possible long-term repercussions with short-term memory and/or some other manifestation of continued brain injury.

Joe echoed the importance of academic adjustments, explaining:

> I think overall [academic adjustments] are a good thing because, when you have a student-athlete that has a bona fide injury and is having problems, they need to know they are not going to be set back because of the injury.

However, participants were less familiar with more formal academic accommodations and modifications and indicated that these formal adjustments were rarely used in their specific settings. In a rare case, Rebecca described her familiarity with more formal adjustments:

> I do know in talking with our [school] counselors that, should something be an issue, especially if we're extending into 3, 4, 5, or even 6 weeks of healing time, they will have meetings with [the student and parents] to discuss the implementation of IEPs and 504 plans.

Similarly, Amanda commented, "I guess I can't speak about 504 plans and IEPs because I've never worked in a public school setting that would require those."

Athletic Trainers' Perceptions of Their Roles in Academic Adjustments

Participants described some of the difficulties in managing academic adjustments for concussed student-athletes as well as the inconsistencies with what they believed the roles of an AT should be throughout this process. Robert discussed how full-time versus outreach employment might affect the AT's involvement in academic adjustments and noted

> I believe [ATs] should be at the forefront of this, especially if they're in a full-time setting because no one in the [secondary] school setting understands the injury better than the athletic trainer. I know that some schools will use a school nurse, but the school nurse doesn't necessarily have the background in athletics, and since the majority of injuries you're going to see are athletic related, I do not feel that the school nurse is best suited to be at the head of this. If an [AT] is coming into the building late in the day, then I think that might change things a little bit because they may not have the rapport with the teachers and the [school] counselors. If [an AT] is on a full-time basis, they should be the person in charge. Plus, they probably have the best relationship with the doctor and can serve as a liaison between the doctor and the school staff.

Jessica highlighted the importance of safely returning student-athletes to academics by stating

> I think that [ATs] have a significant role to play because we understand the injury and we understand the process of returning [to activity]. In my mind, returning to academics is more important than returning to the field. I don't care if they get back to the field, they'll eventually get back there, but returning them safely to the classroom is more of a concern.

However, some participants debated an AT's involvement in the implementation of academic adjustments. Elizabeth told us, "I think a lot of athletic trainers do not feel they have a role in the return-to-learn process, and the majority of us practice in settings where it's a student-athlete, not just an athlete."

Hannah remarked:

> I'm not the professional on curriculum, and that has been my argument from the beginning. That is not what I went to school for, but what I can do is translate between the 2 parties. I think if you were in a situation where a [school] counselor wanted to make modifications but did not understand what the [concussion] symptoms meant, the athletic trainer would be key to that scenario. However, I don't think going to a teacher and suggesting that they modify their test style is in the purview of an athletic trainer.

Rebecca also commented on the value of the AT as a liaison among involved parties:

> I think we need to be the first communicator and another resource to evaluate how the student-athlete is doing on a daily basis. We are looking for different things than an educator is and sometimes the student-athlete will share more with [an AT] than an educator. In my opinion, definitely being the first communicator if not the continual communicator is our role.

Initiation of Academic Adjustments

The ATs noted their primary role in the initiation of academic adjustments after a concussive injury to a student-athlete. This role included the initial prescription of broad,

temporary academic adjustments and communicating with team members about an injury that had occurred.

Robert stated, "We give [the student-athletes] some very broad academic adjustments until we hear back from the doctor. The doctor may come up with more specific adjustments at that time."

Bill discussed:

> Our protocol is, if someone does get diagnosed with a head injury, I'll meet with the guidance staff and the school nurse, and we'll establish a plan for that particular student. It's highly individualized because athletes may react differently to head injuries, so their needs are going to be drastically different from case to case.

Jamie described:

> [Athletic trainers] have a temporary adjustment note that we will send out to our nurse and our guidance counselors because it may be a few days before the student-athlete can see the physician. They'll accept this note for up to 1 week, which gets them out of gym class and allows them to postpone any tests. Then the physician will prescribe very specific recommendations at the student's appointment.

Facilitation of Academic Adjustments

The participants identified the ability to successfully facilitate the implementation of academic adjustments as based on 3 primary methods: education of families and team members, supporting recommendations prescribed by physicians, and daily management of the injury itself. To help educate team members, Jamie mentioned, "[W]e did a PowerPoint in-service for our entire school district focused on educating the educator about concussions."

Robert commented, "We've been trying to just reinforce what the doctor is doing and try to take more of an advisory role to let the athlete know we're there for questions, concerns, and communication."

Amanda stated:

> [The athlete] would check in with me daily to touch base about his symptoms and where he was at in recovery. At the same time, we would also have a brief discussion about how his schoolwork was going, and I was then able to provide that feedback to his teachers. This let them know where he was at in recovery, how he was doing, and where he was still having difficulties.

Lack of a Role in the Academic Adjustments Process

Some participants also described the lack of a role in the implementation of academic adjustments and attributed this to several reasons: physician prescription of the academic adjustments, their employment model not allowing continual involvement, and being perceived as less qualified by other members of the concussion-management team. Hannah said, "I'm not on that committee because I'm not here during the school day." Rebecca addressed the importance of physician prescription and explained, "We communicate to the counselor that something is going on, but for the adjustments to have weight behind them, we have to have a doctor's note." Elizabeth acknowledged the separation of responsibilities and noted, "I monitor symptoms and return to play, while the nurse and guidance counselor are monitoring symptoms and return to learn." Similarly, David remarked:

> We are very fortunate here that we have a Dean of Students that takes on [academic adjustments], so for my role, I touch base with the student daily just to see how they are feeling, how they are doing, and if anything has changed, But other than that, the academic-adjustments process all goes through our Dean of Students Office.

DISCUSSION

Currently, an initial course of both physical and cognitive rest is recommended after concussion.[3,5,18] Given the primary role of an adolescent as a student, recent management efforts have addressed ways to safely return students to cognitive activity.[3,19,20] Health care providers within the secondary school setting must recognize that up to 80% of student-athletes diagnosed with a concussion may suffer from increased severity or number (or both) of symptoms during the first 2 weeks of returning to school.[21] Because these symptoms can significantly affect academic performance, interventions may be necessary to offset the effect of the injury on school-related responsibilities.[4,22–24] Thus, the goal of implementing temporary academic adjustments, or formal accommodations when warranted, is to minimize the possibility of cognitive overload by balancing cognitive rest and cognitive activity for the recovering student-athlete.

Although the recommendations for cognitive rest and academic adjustments are included in current best-practices documents,[3,18] how this should be done and who should be involved are not as clear. The AT provides an interesting perspective to the recovery of a student-athlete with a concussion due to his or her presence in the secondary school and frequent patient interactions. Until recently, the primary role of an AT has focused on the return-to-play aspects of concussion management, with less attention being placed on returning the student-athlete to the classroom. Nevertheless, due to their frequent interactions with the patient and the objective assessment data collected before and after the concussion, ATs may be able to provide insight into aspects of the return-to-school portion of concussion recovery that had not previously been identified.[5]

Our findings revealed inconsistencies regarding the role ATs perceive they should have, with some feeling strongly that ATs should have a role, whereas others had opposing views, citing scope-of-practice concerns. However, involvement in the academic-adjustments process varied among participants and was influenced by the secondary school infrastructure, their understanding of academic adjustments, and their perceptions of their current role in the secondary school.

Understanding of Academic Adjustments

Participants generally understood the importance of and need for academic adjustments as part of the concussion-

recovery process and were familiar with informal, temporary adjustments that are typically implemented immediately postconcussion. Yet participants had minimal understanding of formal academic accommodations, including 504 plans and IEPs. These findings parallel previously reported results[6] that ATs were minimally familiar with academic adjustments.

Athletic trainers should be educated in the management of cognitive rest, academic adjustments, and academic concerns after concussion. Currently, the educational competencies for professional athletic training programs include "identify the signs, symptoms, interventions and, when appropriate, the return-to-participation criteria for... brain injury including concussion..."[10] Although it is unclear how each educational program instructs students in the content for this competency, it is likely that specific information regarding the academic management of concussion, including incorporating academic adjustments, is not taught in entry-level athletic training programs.

Perceived Role in Academic Adjustments

Despite understanding the importance of academic adjustments, the ATs disagreed on their specific role. Our participants generally agreed that they should be involved, in some capacity, in the implementation of academic adjustments for student-athletes. This finding is consistent with that of Williams et al,[6] who reported that 96% of ATs felt they should have a role in implementing academic adjustments. The same authors observed that the ATs' level of familiarity with academic adjustments was suboptimal, but their willingness and urgency to be involved signified that ATs were prepared to collaborate with other members of the concussion-management team.[6] However, among our ATs, ideas were inconsistent about what their specific role should be.

In contrast, a minority of participants felt ATs should not play a role in managing academic adjustments. Reasons provided included the AT not being an expert on curricular topics and concerns that participation in managing academics falls outside of the AT's scope of practice. These feelings may be predicated on a lack of awareness or education provided to ATs on the use of cognitive rest as part of the concussion-management process. Furthermore, although all state concussion laws have provisions regarding return to play, very few address return-to-school protocols, and a minimal number of states require that return-to-school guidelines be provided as part of the concussion information disseminated to athletes.[25]

Initiation of Academic Adjustments

Few participants perceived that ATs should not be a part of the academic-adjustments process, and most described an AT's role as vital. Specifically, participants perceived that ATs should play a role in both the initiation and facilitation of academic adjustments for a concussed student-athlete. As advocates for injured student-athletes, ATs often serve as the liaison between athletic department personnel and school personnel, as well as among other health care providers. Our participants noted that they typically had 2 main roles within the initiation of the academic-adjustments process. They described the implementation of broad, temporary adjustments that are initially suggested by the AT for the student-athlete before seeing the physician for more specific recommendations. They also described their responsibility to convey to all members of the concussion-management team that an injury had occurred and the symptoms the student-athlete was experiencing. These 2 roles are in line with those described by other authors[6,7] who have identified benefits that ATs can provide to the academic-adjustments process.

Unfortunately, it has been reported[26] that return-to-activity and return-to-school progressions are often managed independently rather than cohesively. Current literature[5,18,27] emphasized that student-athletes should be able to fully return to the classroom environment before a return-to-activity progression is initiated. This multifaceted progression highlights the importance of establishing a concussion-management team that includes both key health care professionals and school personnel. As the onsite, school-affiliated health care professionals, the AT and school nurse are ideally positioned to initiate the academic-adjustments process for concussed student-athletes. Therefore, these health care providers must communicate effectively to ensure that a concussed student-athlete is receiving appropriate academic adjustments to promote a proper return-to-school progression.

Facilitation of Academic Adjustments

Participants also typically noted having a role in the facilitation of academic adjustments related to the education of the family and team members, as well as daily management of the injury itself. In particular, ATs can serve as an excellent resource to educate team members about the concussion-management protocol.[6] Although some participants in the current study provided educational presentations to students and personnel at their schools, other ATs may not have the opportunity or time to provide education on concussion themselves. However, because the failure to report a concussion is believed to be connected to a lack of education regarding the nature and severity of the injury,[28,29] it is vital that student-athletes, parents, school personnel, and concussion team members are properly educated on recognizing and managing concussion. Therefore, ATs should be familiar with the numerous concussion-education programs available that are geared toward specific stakeholder groups.[30–32] It is also important that ATs be familiar with state law and their organization's concussion policy regarding concussion education because these differ by state.[30]

Participants described their role in facilitating academic adjustments in the daily management of the patient with a concussion. Due to the multifaceted nature of concussion management and the need for individualized patient care plans, the AT is ideally positioned to serve as the primary communicator to keep all concussion-management team members well informed of a patient's progress. Yet if the AT is employed via an outreach model and is not present at the secondary school during the day, the AT and school nurse must foster a strong collaborative relationship as school-affiliated health care professionals to ensure efficient and effective concussion management and care.

Regardless of the infrastructure of the concussion-management team, continuous communication among all members is necessary to ensure that the concussed

adolescent is safely returned to the classroom before returning to physical activity.[7] Additionally, adjunct assessments (eg, symptom checklists, computerized neurocognitive tests) should be used to help guide the implementation of appropriate academic adjustments as the concussed student-athlete progresses during concussion recovery. The use of neurocognitive and symptom-assessment data can help the AT note deficits and therefore communicate to the concussion-management team areas in which certain academic adjustments might be useful. Furthermore, periodic reassessment not only allows health care providers to track resolution of the patient's subjective symptoms but is also useful for the patient and his or her parents to more clearly understand ongoing difficulties throughout the recovery process.[7] Thus, although ATs may not be responsible for the actual facilitation of academic adjustments for concussed student-athletes, they should be involved throughout recovery to help keep members of the concussion-management team informed of assessment scores, any prolonged symptoms, and the patient's overall clinical presentation.

LIMITATIONS

The participants in this study were selected from a convenience sample of ATs who had completed a previous study[6] assessing their familiarity with academic adjustments, provided their contact information to be invited to participate in additional studies, and were randomly recruited. However, although they had participated in the previous investigation, we did not compare their survey responses with their qualitative responses due to the anonymity of the datasets. Additionally, our findings only highlight ATs' perceptions and experiences with academic adjustments for concussed student-athletes. Because best-practice guidelines recommend an interdisciplinary concussion-management team, other stakeholders' perceptions and experiences must also be assessed. Therefore, further research is needed to determine the knowledge levels of others who are involved in the concussion-management team and their roles in the process.

CONCLUSIONS

As best practices for cognitive rest and return-to-school progressions continue to evolve, it is important for ATs to have a strong understanding of the academic adjustments available for concussed student-athletes. Although the ATs in this study disagreed on their perceived level of involvement in the academic-adjustments process, most participants believed that as members of the concussion-management team, they should have some role regarding the initiation and facilitation of academic adjustments. Athletic trainers may not directly facilitate academic adjustments for a concussed student-athlete, but they should communicate with all members of the concussion-management team regarding the patient's clinical presentation and progress. Furthermore, ATs should be familiar with the available concussion-education programs targeted at various pediatric stakeholders and should review available resources and recommendations to assist the concussion-management team in safely returning a concussed student-athlete to the classroom.

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