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University educators' perceptions of academic adjustments following a concussion for student-athletes and non-student-athletes

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ABSTRACT

Objective: To identify (1) university educators' perceptions of academic adjustments (AA), and (2) if teaching experience correlated with AA perceptions following concussion. **Participants:** Two hundred twenty educators. **Methods:** University educators were invited to complete a survey containing four subsections; this manuscript focuses on AA following concussion. Objective 1 was descriptive; we conducted Spearman's rho correlations between years of teaching experience and AA perceptions to address objective 2. **Results:** Educators were moderately familiar with AA but were not confident in their knowledge about AA following concussion. Participants who provided AA following concussion most often allowed excused absences and extra time for exams/assignments. There were no significant relationships between teaching experience and perceptions of AA. **Conclusions:** University educators largely feel unprepared to provide or recommend AA following concussion but had favorable AA perceptions following concussion. Standardized policies or referral sites within the university system may be warranted to improve post-concussion AA.

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KEYWORDS

College; mild traumatic brain injury; professor; teachers

Introduction

Concussions are a significant public health concern.¹ From a study conducted in 2015, authors recorded 52,802 concussion encounters among athletes in a five-year span at the collegiate level estimating an annual average of 10,560.² However, concussion is more common in non-athletes than athletes, with approximately 1 in 75 college students experiencing concussion.³ With reports of lifetime concussion history in college students ranging from 16%⁴ to 28%,⁵ many students may have a history of previous or multiple concussions, putting them at greater risk for academic dysfunction during recovery.⁶ While most concussion literature focuses on sport-related concussions, proper concussion management for all college/university students must be considered.⁷

While academic adjustments and accommodations may not be necessary for every patient following concussion, concussions can influence the learning process⁸ and 20 to 30% of patients experience persistent symptoms.⁹ After a concussion is diagnosed, clinicians often instruct patients to reduce symptom inducing cognitive activity, which may include school work. The goal of recovery in the early stages is to support the student within the classroom in a way that allows academic requirements to be completed while not increasing symptoms or overstraining cognitive functions.¹⁰ Academic adjustments following concussion vary for each student.

Therefore, carefully constructed individualized adjustments may be required.¹¹ Signs and symptoms experienced by the student should dictate the design and implementation of academic adjustments.¹⁰ McGrath¹⁰ outlines several potential and "reasonable" adjustments for students following concussion including excused absences, deadline extensions for exams or other homework, staging of exams, permission to wear sunglasses within the classroom, use of a notetaker, and many others. The rationale for these adjustments could range from diminished cognitive function (i.e., impairments in memory, information processing, attention, etc.), light or noise sensitivity, or greater need for rest to allow for a potential gradual approach to academic completion to lessen potential symptom exacerbation. Furthermore, healing from a concussion while attempting to complete academic demands may add additional stress and emotional distress.¹⁰

Academics are a large portion of a collegiate student-athletes' and non-student-athletes' life, and concussions may affect the learning process.^{8,12} Procedures for seeking and obtaining academic adjustments vary by institution; however, it is common for students to advocate for academic adjustments directly with instructors. How an educator's past experiences or knowledge of concussion may influence this process following a student's concussion is unknown. University educators' years of teaching experience may

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provide more opportunities to have past experiences with academic adjustments following concussion and thus may influence their perception. Conversely, the culture surrounding concussion has changed within recent years bringing this injury to the forefront of the media and laypeople's attention. This may indicate that those with fewer years of teaching experience may have more favorable perceptions of academic adjustments following concussion. Authority of academic adjustment enforcement or allowance is usually at the discretion of the course instructor or in conjunction with student services departments. Thus, it is important to understand educators' familiarity of academic adjustments following concussion to determine how to improve the return to the classroom/learn processes for university students, including how years of experience may shape these perceptions.

Our research questions were (1) how do university educators perceive academic adjustments following concussion including those who have specifically interacted with student-athletes, non-student-athletes, or those that have not dealt with any student following a concussion, and (2) is there a relationship between years of experience as a university educator and perception of academic adjustments for student-athletes, non-student-athletes, or those that have not dealt with any student following a concussion. Research question 1 is descriptive in nature and therefore hypotheses are not warranted. For research question 2, we hypothesized university educators with greater years of experience would have better perceptions of academic adjustments following concussion for all interaction groups.

Methods

This study used a cross-sectional, Web-based survey to examine the perceptions of academic adjustments among educators at a university. With permission, a previously established survey entitled *Beliefs, Attitudes, and Knowledge of Pediatric Athletes with Concussions* (BAKPAC)^{13,14} was modified for use in the university/college setting (BAKPAC-UNIV). The initial BAKPAC survey was a part of a large initiative designed to examine the beliefs, attitudes, and familiarity of concussion management for pediatric student-athletes among various members of the concussion management team. Members previously surveyed included athletic trainers,^{13,14} physicians,^{15,16} physician assistants,¹⁷ school nurses,^{18,19} secondary school superintendents,²⁰ secondary school principals,²⁰ secondary school coaches,²¹ secondary school counselors,²² secondary school teachers,²³ and administrators.²⁴ Each version of the BAKPAC survey was slightly tailored to the targeted group of participants, and the BAKPAC-UNIV was modified to include four subsections: concussion knowledge, collaboration with health care providers and university personnel, academic adjustments, and demographics. This article focuses on the items from the academic adjustments subsection (42 items; sample item: "How familiar are you with academic adjustments?"), and includes results from the demographic subsection (13 possible items; sample item: "What is your age?"). Items were answered in a variety of item structures including multiple choice, Likert-scale responses, binary items, and open-ended items.

Face and content validity of the BAKPAC survey has been previously described.^{13,14} However, due to the need to slightly modify some of the survey items for university educators, face and content validity of the BAKPAC-UNIV was re-assessed by a panel of five researchers. All members of the panel have expertise in the area of concussion and also serve as educators in the university setting. Following re-assessment of face and content validity, the BAKPAC-UNIV was found to be a valid instrument. Additionally, we separated items to delineate academic adjustment perceptions for student-athletes, non-student-athletes, or no interactions with either student- and non-student-athletes following a concussion.

Participants

Email addresses for educators were solicited through a faculty and lecturer listserv from one university in the south-east United States. Approximately 2,545 university educators, including faculty and lecturers, were invited to participate in this study. Participants must have provided instruction at the university within the past five years. No additional exclusion criteria were applied. This study was approved by the local University Institutional Review board. Because this was a Web-based survey, participants provided voluntary consent by clicking "next" to begin the survey following an informed consent page.

Procedures

The survey was hosted and distributed via the Qualtrics survey platform (Qualtrics Inc, Provo, UT). Participants were sent an email in February 2018 requesting voluntary participation in the Web-based survey; one reminder email was sent two weeks later. The survey took approximately 15-20 minutes to complete and data collection occurred over a 4-week period.

Data analysis

All data analyses were completed using SPSS Statistic Software (Version 25.0, IBM Corp., Armonk, NY). Descriptive analyses including means, frequencies, medians, and inter-quartile ranges were calculated for research question 1. Three separate analyses were conducted for research question 2 depending on interaction group: (1) university educators who had interactions with student-athletes, (2) non-student-athletes, or (3) no interactions with either group following a concussion (respondents were asked "In your role as an instructor at the [institution], have you ever had interactions with the following groups?" with response choices as outlined for the above groups). Due to dependent variables being ordinal, for each of the three groups, we conducted three separate spearman's rho correlations to determine if years of teaching experience had a relationship with AA perceptions (respondents were asked "How many years have you taught in the college/university setting? [Please enter a numeric response only]"). Spearman's rho

correlation is the non-parametric statistic used with ordinal variables that determines the strength of two variables. Perceptions included items related to concussion affecting school performance, eligibility for special considerations under the American with Disabilities Act, attention and focus on concussion, and the instructor’s role in implementing academic adjustments (alpha < 0.05).

Results

In total, 264 individuals accessed the survey for an access rate of 10.4% (n=264/2,545). Four individuals had not instructed in the past five years and 5 individuals did not answer any item, leaving an inclusion rate of 96.2% (n=255/264). A sample of 220 respondents completed the survey in its entirety for a completion rate of 86.3% (n=220/255). To align with survey best practices (e.g., the use of logic to ensure participants only received survey items that were relevant to them; for example, respondents who only worked with non-student-athletes following a concussion only saw items related to non-student-athletes following concussion and not student-athletes following concussion) and maintain voluntary rights of participants, respondents were not required to answer every item of the survey. Therefore, the number of participants included in the results fluctuates. Participant demographic variables are included in Table 1.

Academic adjustments following concussion perceptions

Overall, university educators were not confident in their knowledge about academic adjustments specific to their institution following a concussion (n = 233; median 1.00/4.00, interquartile range [IRQ]=1.00–2.00) and minimally confident in their ability to implement appropriate adjustments for a student with a concussion (n = 233; median = 2.00/4.00, IQR = 1.00–3.00). University educators were also moderately familiar with academic adjustments

(n = 222; median = 3.00/4.00, IQR = 2–3). Of those who had interactions with student-athletes with concussions, 64.5% (n = 20/31) reported personally encountering a situation where a student-athlete following a concussion experienced a decrease in school and/or academic performance as a direct result of a symptomatic concussion. Of those who had interactions with non-student-athletes with concussions, 67.1% (n = 47/70) reported observing a decrease in school and/or academic performance as a direct result of a symptomatic concussion. In order to implement academic adjustments following concussion, university educators most frequently reported they would need a note from a disability resource professional (62.4%, n = 159/255), followed by a note from a health care provider (48.6%, n = 124/255) and a note from a representative from the Dean of students (28.6%, n = 73/255).

For university educators who had provided a student-athlete with academic adjustments following a concussion (67.7%, n = 21/31), they most frequently provided excused absences (85.7%, n = 18/21) and extra time for assignments (85.7%, n = 18/21), followed by extra time for tests (52.4%, n = 11/21), and provided make-up tests (38.1%, n = 8/21; Figure 1). For university educators who

Table 1. Participant demographics (n = 255).

Age (mean ± standard deviation)	49.6 ± 11.2
Gender (n, %)	
Males	122, 47.8%
Females	98, 38.4%
Missing	35, 13.7%
Interactions with Groups Following a Concussion (n, %)	
Student-athletes only	7, 2.7%
Non-student-athletes only	50, 19.6%
Both student-athletes and non-student-athletes	28, 11.0%
No interactions with any groups	156, 61.2%
Missing	14, 5.5%
Years of Teaching experience (n, %)	
0–2 years	10, 3.9%
3–5 years	23, 9.0%
6–10 years	42, 16.5%
11–15 years	40, 15.7%
16–20 years	27, 10.6%
21+ years	78, 30.6%
Missing	35, 13.7%

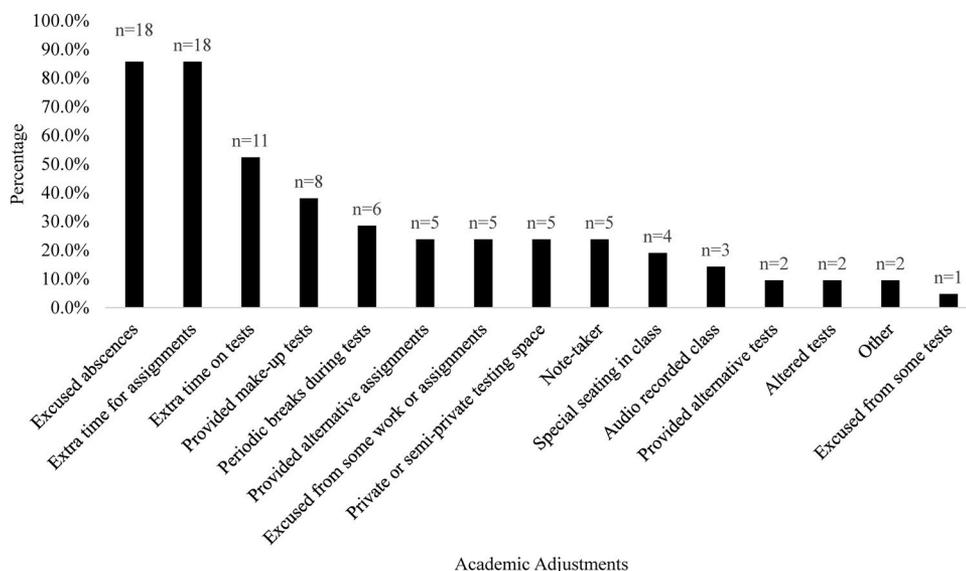


Figure 1. Frequencies of academic adjustments provided to student-athletes with concussion.

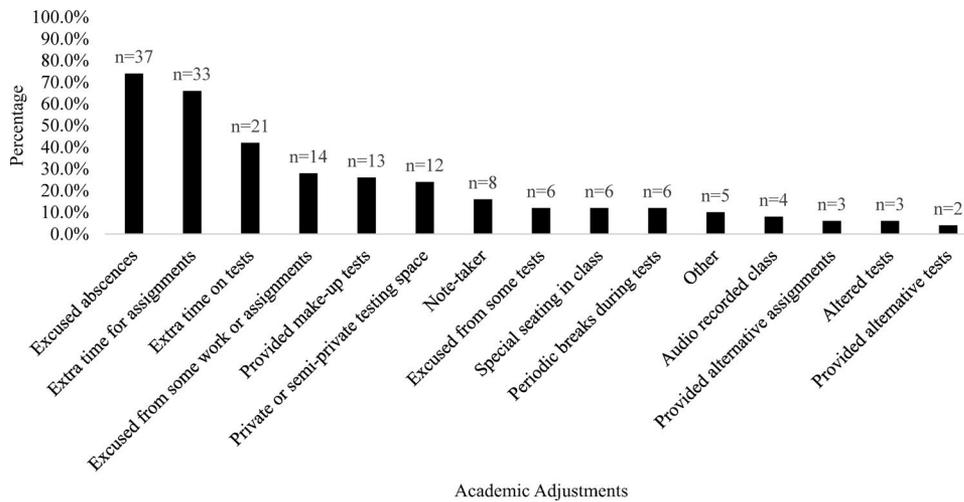


Figure 2. Frequencies of academic adjustments provided to non-student-athletes with concussion.

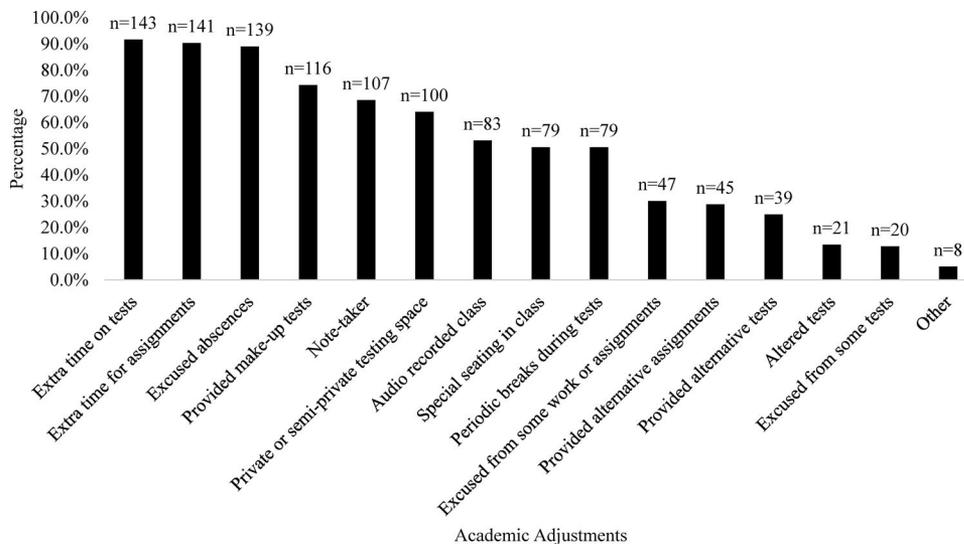


Figure 3. Frequencies of academic adjustments believed needed by university educators who did not have interactions with student- or non-student-athletes.

had provided a non-student-athlete with academic adjustments following a concussion (71.4%, $n = 50/70$), they most frequently provided excused absences (74.0%, $n = 37/50$), then extra time for assignments (66.0%, $n = 33/50$), and extra time on tests (42.0%, $n = 21/50$; Figure 2). For university educators that had not interacted with either a student- or non-student-athlete, they believed extra time on tests should be most frequently provided (91.7%, $n = 143/156$), then extra time for assignments (90.4%, $n = 141/156$), and excused absences (89.1%, $n = 139/156$; Figure 3).

Years of experiences

Table 2 includes means, standard deviations, medians, IQR, and number of participants for academic adjustment perception items separated by interaction with student-athletes, non-student-athletes, or neither group following a concussion. The average years of teaching experience for university

educators was 17.18 ± 10.91 years (median = 15 years, IQR = 8–25 years). Overall, there was no significant relationships between years of teaching experience and agreement that: concussions can affect school performance for student-athletes ($r^s = -0.109$, $p = .585$; $n = 30$), that student-athletes with concussions are eligible for special considerations under the Americans with Disabilities Act ($r^s = 0.289$, $p = .121$; $n = 30$), that there is too much attention and focus on concussion in sports for student-athletes ($r^s = 0.282$, $p = .131$; $n = 30$), and that instructors have a role in implementing academic adjustments for student-athletes who have sustained a concussion ($r^s = -0.131$, $p = .490$; $n = 30$).

Secondly, there were also no significant relationships between years of teaching experience and agreement that concussions can affect school performance for non-student-athletes ($r^s = -0.168$, $p = .171$; $n = 68$), that non-student-athletes with concussions are eligible for special considerations under the Americans with Disabilities Act ($r^s = 0.029$, $p = .817$; $n = 66$), the perception that there is too much attention and

Table 2. University educators' perceptions of academic adjustments.

Item	Educators Who Indicated Interaction with Student-Athletes				Educators Who Indicated Interaction with Non-Student-Athletes				Educators Who Indicated Interaction with Neither Group			
	n	Mean ± Standard Deviation	Median	Interquartile Range (IQR)	n	Mean ± Standard Deviation	Median	IQR	n	Mean ± Standard Deviation	Median	IQR
Concussions can affect school performance for student-athletes/non-student-athletes	34	3.91 ± 0.29	4.00	4.00–4.00	70	3.81 ± 0.39	4.00	4.00–4.00	144	3.82 ± 0.39	4.00	4.00–4.00
Student-athletes/Non-student-athletes/People with concussions are eligible for special considerations under the Americans With Disabilities Act	34	3.38 ± 0.65	3.00	3.00–4.00	68	3.29 ± 0.72	3.00	3.00–4.00	142	2.96 ± 0.76	3.00	2.00–4.00
Currently, there is too much attention and focus on concussion in sports for student-athletes/non-student-athletes	34	1.29 ± 0.46	1.00	1.00–2.00	70	1.46 ± 0.65	1.00	1.00–2.00	143	1.45 ± 0.68	1.00	1.00–2.00
An instructor has a role in implementing academic adjustments for student-athletes/non-student-athletes/people who have sustained a concussion	34	3.71 ± 0.46	4.00	3.00–4.00	71	3.37 ± 0.66	3.00	3.00–4.00	144	3.34 ± 0.62	3.00	3.00–4.00

Items rated on a Likert-Scale (1 = Strongly disagree – 4 = Strongly agree).

focus on concussion in sports for non-student-athletes ($r^s = 0.154, p = .210; n = 68$), and that instructors have a role in implementing academic adjustments for non-student-athletes who have sustained a concussion ($r^s = -0.101, p = .407; n = 69$).

Lastly, for university educators who had no interactions with student- or non-student-athletes following a concussion, there was also no significant relationships between years of teaching experience and agreement that concussions can affect school performance ($r^s = 0.030, p = .719; n = 143$), that people with concussions are eligible for special considerations under the Americans with Disabilities Act ($r^s = 0.009, p = .918; n = 141$), that there is too much attention and focus on concussion in sports ($r^s = -0.005, p = .952; n = 142$), and that instructors have a role in implementing academic adjustments for people who have sustained a concussion ($r^s = 0.011, p = .985; n = 143$).

Discussion

Results from our study indicate a lack of perceived knowledge and confidence in university educators' knowledge regarding academic adjustments following concussion. Regardless of academic adjustments provided to a student-athlete or non-student-athlete or what should be provided, university educators from our sample indicated that excused absences and extra time on assignments and tests were most frequently provided or should be provided. Lastly, years of experience was not related to the educator's perceptions of concussion and academic adjustments items, indicating a similarity in these beliefs.

Numerous signs and symptoms may be experienced following a concussion.²⁵ Researchers have demonstrated that few preschool, kindergarten, elementary, middle school, secondary school, vocational school, tribal school, and college teachers are highly knowledgeable and confident in their knowledge of concussion symptoms^{26–28} and often draw from their own experiences in building their knowledge.²⁹ Similarly, few secondary teachers are even moderately knowledgeable and confident in their knowledge of academic support services for a student following concussion.²⁷ It may be unrealistic for university educators to understand definitions of a concussion, various signs and symptoms, or even management aside from academic adjustments. However, Dreer, et al²⁶ found that preschool, kindergarten, elementary, high school, college teachers, and teaching assistants noted they specifically believed they needed more concussion information. And academic adjustment familiarity has increased following quality improvement educational initiatives regarding return-to-learn following concussion when administered to faculty.³⁰ When secondary school educators were formally educated about concussions, they had more familiarity with academic adjustments and recommended those adjustments more often.^{23,31} Given that almost 65% and 67% of university educators in our sample who had interactions with a concussed student-athlete and non-student-athlete respectively reported previously encountering students experiencing academic problems following

concussion, it is likely that university educators may similarly feel the need for training or resources to be prepared to work with such students and understand academic effects and adjustments.

Health care professionals such as athletic trainers and university health service providers are well-versed in concussion knowledge and management.^{32–34} Therefore, university health care providers may be the point person for academic adjustments and a resource for both the injured student and university instructor, since they too encounter requests for academic adjustments, have established relationships with appropriate personnel on campus to assist with academic adjustments and have a say when student-athletes return to the classroom following concussion.³⁴ While we did not conduct comparative analyses between academic perceptions of university educators for student- and non-student athletes, perceptions among the three groups did not vary based on years of experience. This is surprising given that the current culture surrounding concussions is largely focused on the athletic population. University educators should be knowledgeable and confident in academic adjustments at their employment institution regardless of the reasoning or circumstance, meaning concussion diagnosis or otherwise, that adjustments are required. Therefore, it is noteworthy that university educators in our sample perceived themselves to be moderately knowledgeable about academic adjustments at their institution, but neither knowledgeable nor confident in those academic adjustments at their institution as related to concussion. In addition, education for university educators should be provided regardless of teaching experience, as respondents in our sample with different years of teaching experience had similar academic adjustment perceptions or a lack of variation in responses. Our findings regarding years of experience and academic adjustments perceptions suggest that university educators as a whole support academic adjustments following a concussion regardless of an athletic or non-athletic injury, however that the processes in which those academic adjustments may be administered is less clear. Although university-wide concussion education is likely not feasible for all educators due to lack of resources and mandate implementation challenges, it is important for them to seek information regarding concussions and how to successfully support an individual with a concussion within the classroom when needed. In turn, it may also be useful for university health services to work in conjunction with student service departments at individual institutions to develop a compilation of resources for instructor use. For example, information regarding the return to the classroom following concussion are available from The Center for Disease Control and Prevention's "Head's Up" materials³⁵ and Get Schooled on Concussions which may be useful in compilation of resources for instructors.³⁶

University educators in our sample noted they would most frequently require a note from the disability services center, followed by a health care provider and representative from the Dean of students to implement academic adjustments for a student with a concussion. Bevilacqua, et al²⁹ found that

university faculty often require notes provided by these individuals in order to legitimize the injury and refer to the note for academic accommodation needed. Each institutional process and resources for academic adjustments, accommodations, or modifications will vary. However, it is worth noting that disability services may not be involved in the care of a student with concussion until life-long learning has been shown to be impaired.^{18,37} Therefore, less formal, academic adjustments that can be implemented quickly and flexibly are likely necessary.³⁷ Specifically at the institution in which data collection occurred, disability services plays a minimal role in academic adjustments following concussion, and thus it is rare an instructor would receive a note from this entity. Our results underscore the need for interdisciplinary concussion care and communication between student disability services, health care providers, and student services in order to provide sound care for a student with a concussion, including classroom needs. In fact, a handout to educators from the National Collegiate Athletic Association recommends an academic point person, a stepwise progression for returning-to-learn, encouragement to seek assistance from campus resources as available, but may include learning specialists and the office of disability services, along with other helpful concussion information.^{25,38,39} Other institutional resources may include student services, academic advisors, learning support centers, among others. While the recommendations from the National Collegiate Athletic Association are designed for assisting in return-to-learn for student-athletes, the information presented may be beneficial for all collegiate students. Such return-to-learn programs exist at the secondary level, but have not yet been systematically implemented or evaluated at the post-secondary level.¹¹

Similar to our findings, Dreer, et al²⁶ found that teachers in their study most often provided extra time to work on class assignments, with university educators from our sample providing excused time and allowance of additional time for tests and assignments. Additional findings from Bevilacqua, et al²⁹ found additional time on assignments and tests to have the most perceived feasibility among faculty as well. In a study of athletic trainers at the secondary school setting, the most commonly provided academic adjustments were postponed assignment due dates, rest breaks, and partial school attendance.⁴⁰ It is noteworthy that nearly 90% of university educators from our sample who had not interacted with either a student- or non-student-athlete believed that extra time on tests, extra time on assignments and excused absences should too be provided. In a recent systematic review, Purcell, et al⁴¹ found that students ages 5–18 usually returned to school within 2–5 days, therefore the need for excused absences may be short lived. Instead, adjustments addressing modification of workload to allow for moderate levels of cognitive activity during recovery may be more critical. However, all are viable academic adjustments provided to students following a concussion, and may also be supplemented with the above learning strategies.

As with our findings in educators, students who experience persistent symptoms too often perceive a decrease in academic performance including grades, class attendance and study habits.⁴² Additionally, patients with mild traumatic brain injury experienced cognitive changes in which the

participants described requiring additional time to comprehend academic material, attention deficits, impairments with memory, mental and physical fatigue, and task initiation.⁴³ Even when participants registered for on-campus academic resources, participants described “an extra layer of complexity” but ultimately reported being largely supported by university educators.⁴³ In contrast, O’Brien and colleagues⁴⁴ found that student reports of the support provided by professors varied widely, from positive interactions that gave students confidence in their recovery and ability to successfully participate in class, to negative interactions in which the injury, its consequences, and academic adjustments were denied by professors. Russell, et al⁴⁵ found that high school students’ grade point average (GPA) was not lower at the end of the academic year for those with a concussion compared to matched controls. However, students experienced short-term impairments that negatively impacted their perception of classroom success. In a mixed group of high school and college students, those with a concussion indicated more academic dysfunction than those with an extremity injury while controlling for pre-injury GPA, attention-deficit/hyperactivity disorder (ADHD), and prior concussions one week after injury, a difference that persisted in females and those with previous history of concussion at one month following injury.⁶ Additionally, students experiencing a high burden of persisting symptoms reported more problems with memory, processing speed, attention and learning new information.⁵

In a sample of secondary school teachers, Kasamatsu, et al²³ found that nearly 70% of teachers had interacted with students following a concussion who had experienced a decline in academic performance. These results differed from ours in that the majority of respondents had observed a decrease in academic or school performance following a concussion for non- or student-athletes. The difference in our findings may have several explanations including class size, as instructor to student ratios may be higher in the collegiate setting, interaction hours given that university educators may not see students daily, and lack of support toward reporting concussion to university educators (whereas secondary teachers may be notified by school medical staff, parents, or as part of formal return-to-learn protocols). Other differences to highlight between secondary schools and universities are the class mechanisms such that university students usually have multiple breaks throughout the day, not usually in the classroom for a full day, have lecture and discussion-based classes, among many others. While we did not examine student perceptions of academic performance, it is noteworthy that university educators in our sample and student perceptions of academic performance may not align. This may be due to university educators not being aware of the entirety of academic performance and experiences of the student. Acknowledging this difference in perspectives may be evidence for the importance of connecting students with disability resources, student services, and health care providers to initiate discussions regarding how their injury may be affecting their academic performance and overall well-being. Regardless, that three in four university educators reported interacting with a student experiencing academic problems

post-concussion underscores the importance of connecting students to appropriate resources and providing training to educators to be able to understand student needs and implement appropriate academic adjustments.

Limitations

Limitations of this study include low response rate from one university. Responses recorded from our sample may not accurately reflect those in different geographical locations, divisions, or institutions with different resources. Additionally, while these data were collected from university educators in 2018, we believe the results are still relevant as higher education institutions may use our findings to implement academic concussion management strategies. Future studies should aim to broaden the sample and attempt to include multiple institutions across different divisions.

Conclusions

University educators play a vital role within the comprehensive concussion care for students, especially in regard to return-to-learn. Some concussion symptoms make learning difficult, and educators are pivotal for classroom success following concussion. University educators in our study self-identified a lack of knowledge and confidence for academic adjustments following concussion. In those who had provided academic adjustments, the most frequently used adjustments were excused absences and additional time for assignments and exams. Lastly, academic accommodation perceptions did not differ between years of teaching experience, however participants’ responses lacked variation. Collegiate educators and health care providers should strive for a working relationship when it comes to academic adjustments following concussion regardless if the student is an athlete or not. Educators should aim to learn which adjustments are required for particular students after a concussion, and implementation strategies. Or at a minimum understand that symptoms of a concussion may impact a students’ learning ability and exhibit a willingness to work with the student in order to achieve classroom success following a concussion, which may include academic adjustments. Academic adjustments following concussion could aid in minimizing anxiety, maximize likelihood of typical recovery timelines, and aid in whole person health care.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from The University of Georgia Institutional Review Board.

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