COLLEGE OF EDUCATION & HUMAN SCIENCES

Returning to learn in higher education: How to effectively facilitate communication across university stakeholders to support students after concussion

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Speaker Disclosure

I have no relevant financial disclosures or conflicts of interest to report.

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Lecture Objectives

- Concussion & return-to-learn
- Addressing the gap in the literature
  - ***Study 1***: University student experiences
  - ***Study 2***: Delphi procedure
  - ***Study 3****:* Feasibility, acceptability & appropriateness
- Additional factors at the university-level

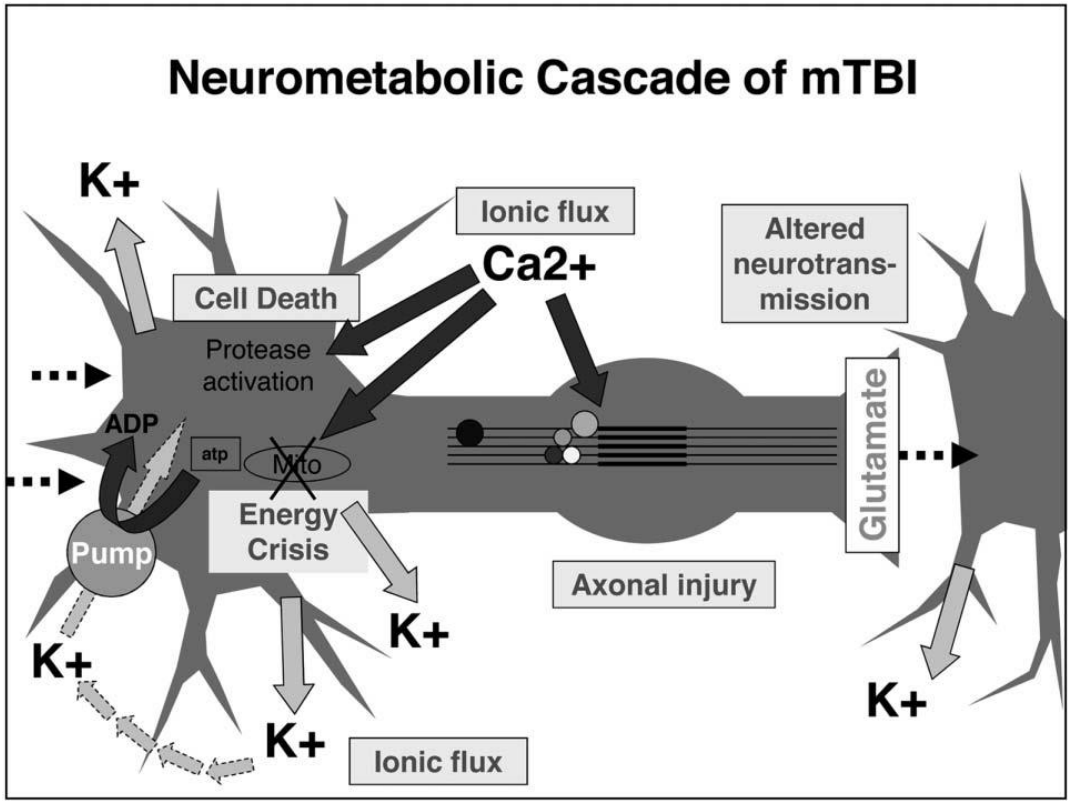
Fort Lewis College Land Acknowledgement

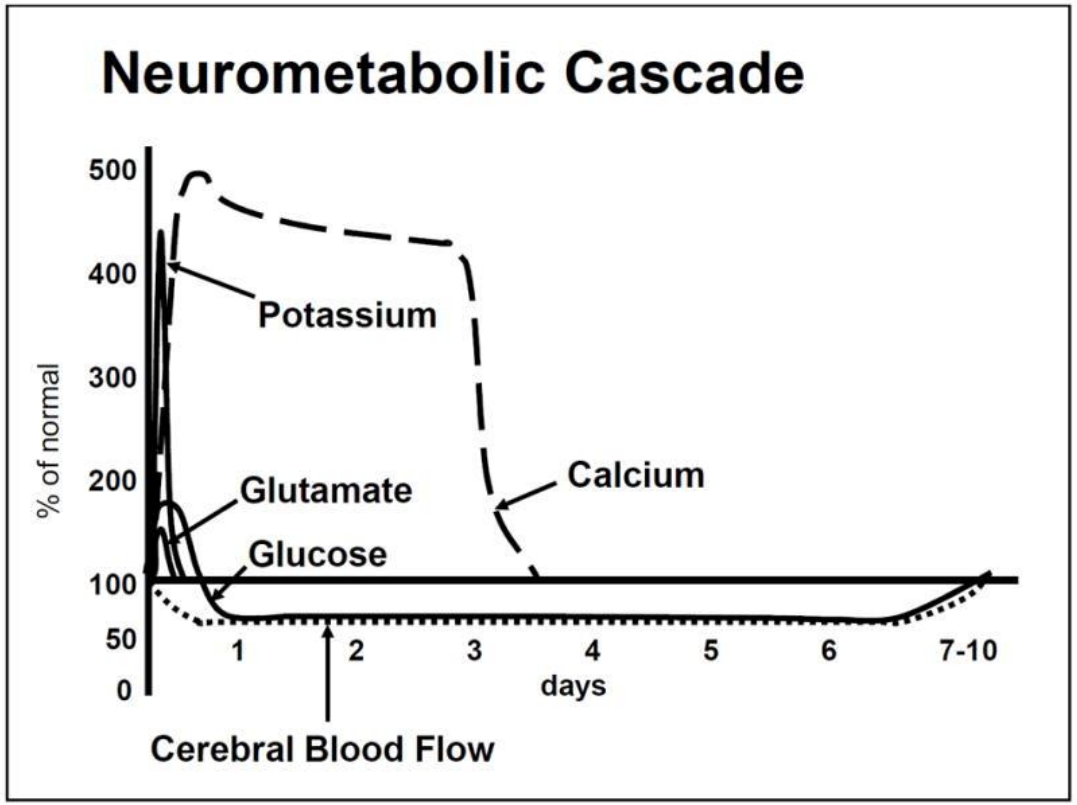
"We acknowledge the land that Fort Lewis College is situated upon is the ancestral land and territory of the Nuuchiu (Ute) people who were forcibly removed by the United States Government.

We also acknowledge that this land is connected to the communal and ceremonial spaces of the **Jicarilla Abache (Apache)**, **Pueblos of New Mexico**, **Hopi Sinom (Hopi)**, and **Diné (Navajo) Nations**. It is important to acknowledge this setting because the narratives of the lands in this region have long been told from dominant perspectives, without full recognition of the original land stewards who continue to inhabit and connect with this land.

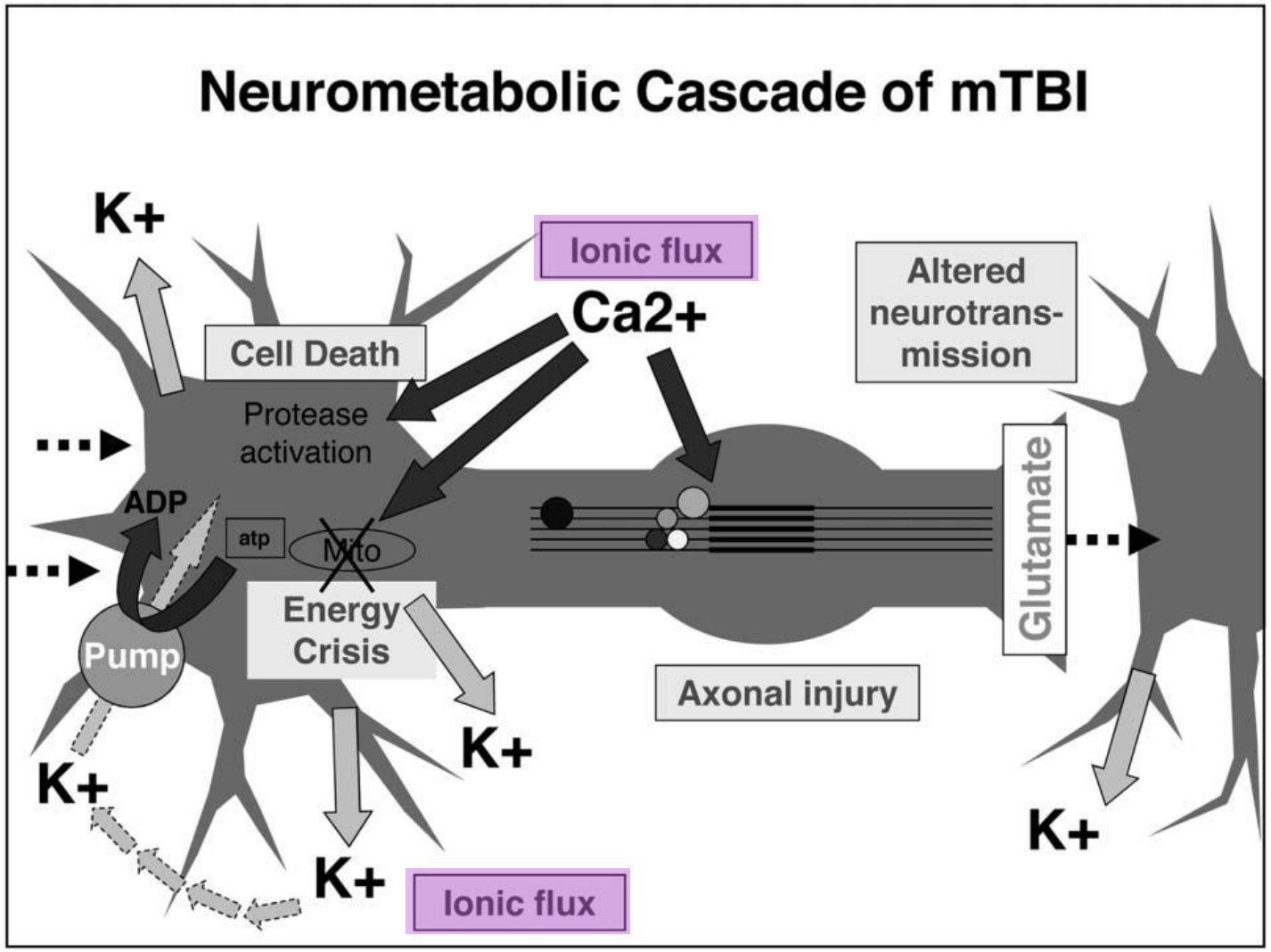
Thank you for your attention and respect in acknowledging this important legacy."

Concussion & Return-to-Learn



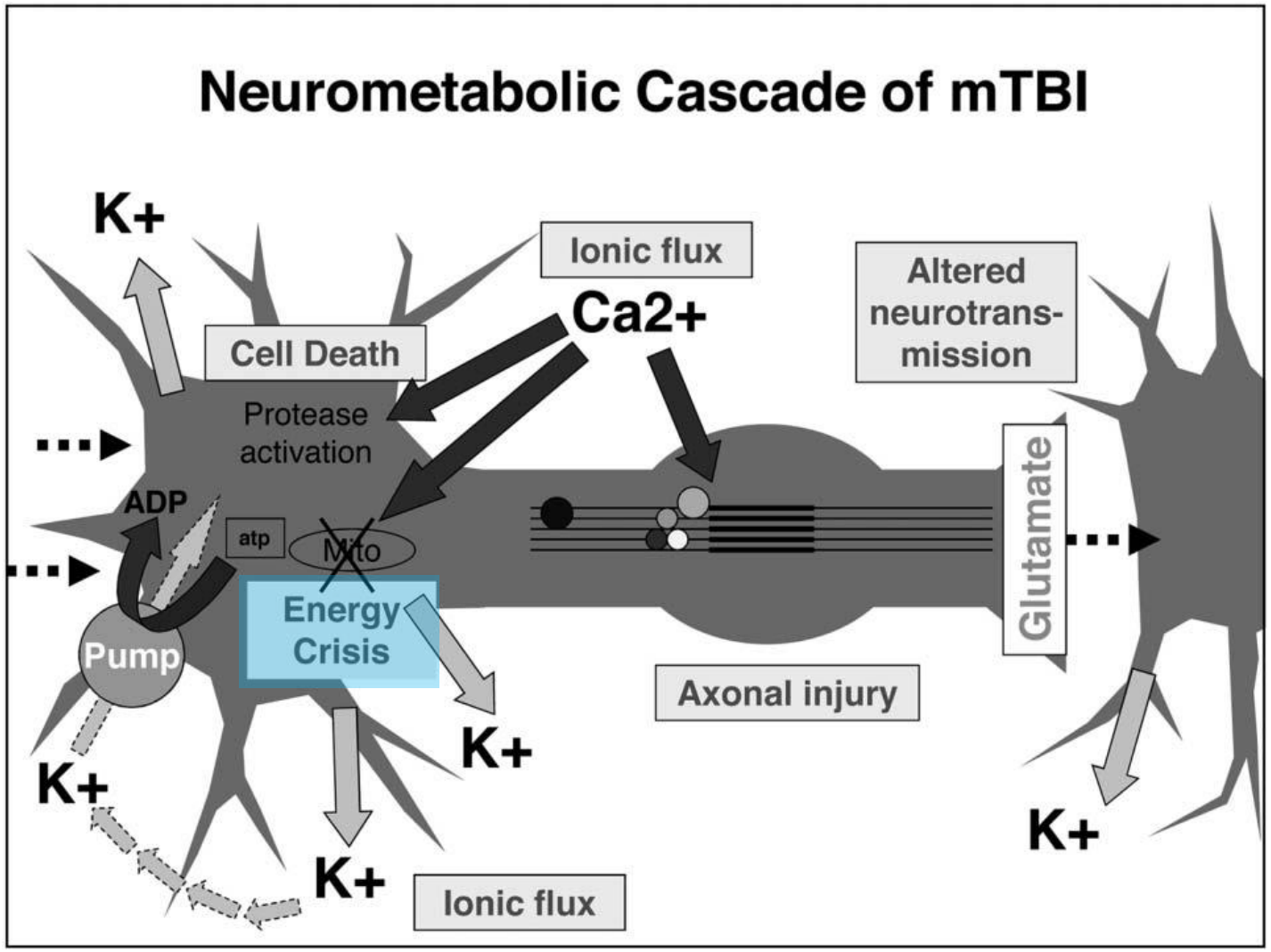


(Giza & Hovda, 2014)



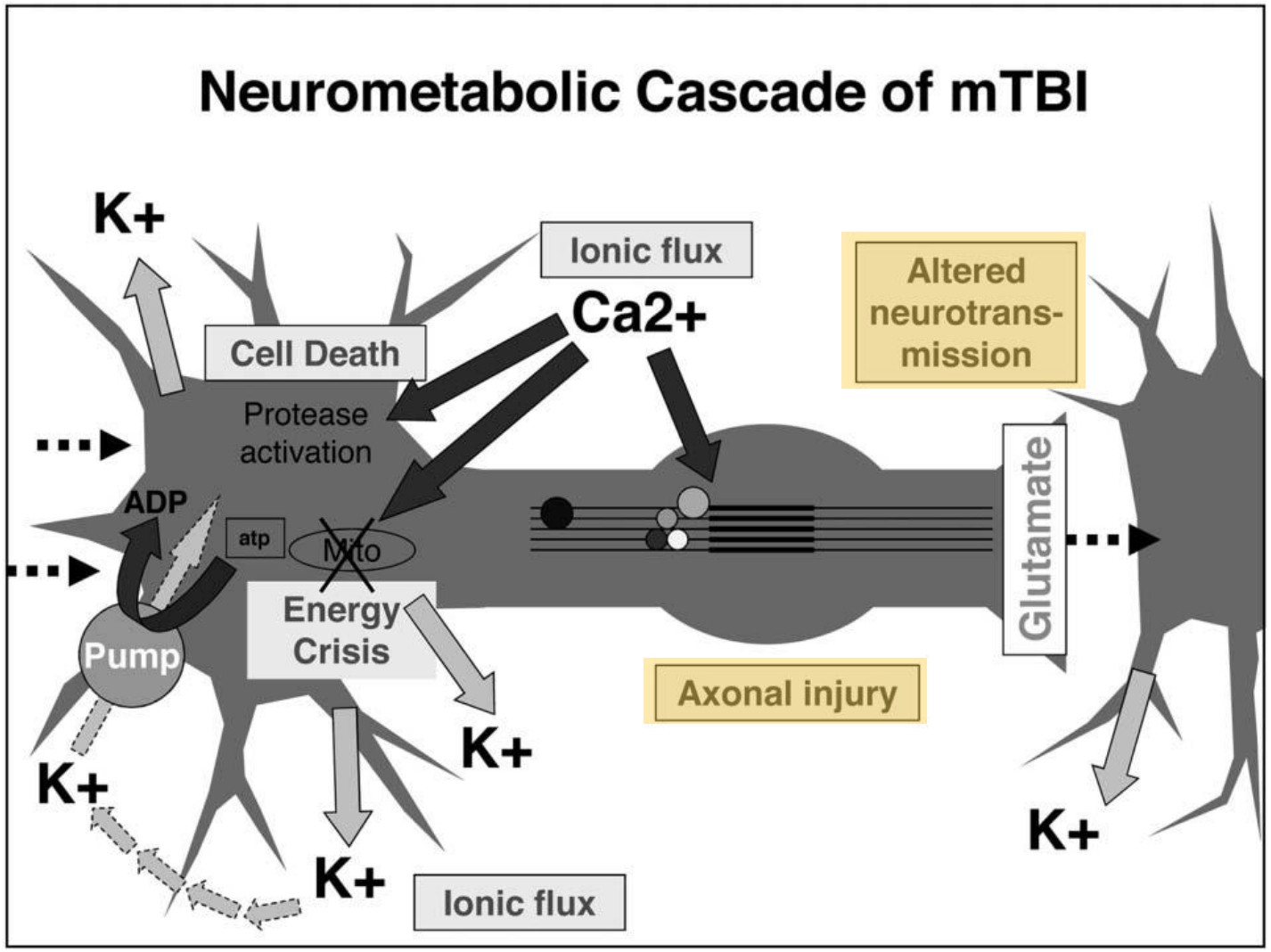
(Giza & Hovda, 2014)

Ionic Flux
may result in migraine headaches, photo and phonophobia



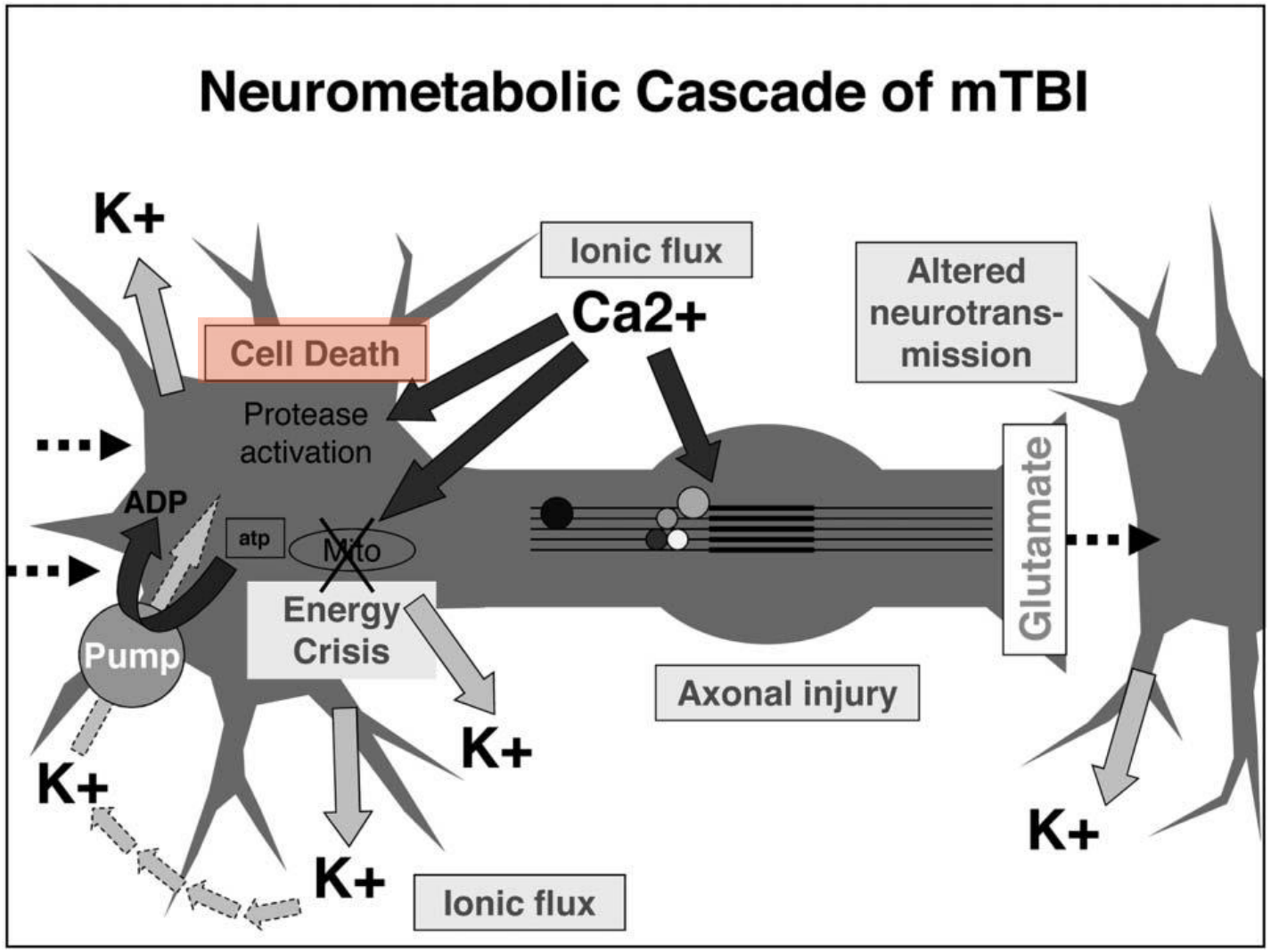
(Giza & Hovda, 2014)

Energy Crisis
may result in increased risk for secondary injury



(Giza & Hovda, 2014)

Axonal Injury & Altered Neurotransmission may result in slowed reaction time, impaired cognition, and decreased processing speeds



(Giza & Hovda, 2014)

Cell Death (protease activation, cell apoptosis, or abnormal accumulation of proteins) may result in chronic atrophy and/or persistent deficits

Post-mTBI Pathophysiology	Clinical Presentation(s)
Ionic influx	Migraine headache, sensitivity to light & noise
Energy crisis	Risk for secondary injury
Altered neurotransmission & axonal injury	Slowed reaction time, impaired cognition, & decreased processing speeds
Cell death	Persistent deficits

How do the current return-to-learn (RTL) guidelines support students who may be experiencing these symptoms after concussion?

2023 CISG Guidelines

Table 1 Return-to-learn (RTL) strategy

Step	Mental activity	Activity at each step	Goal
1	Daily activities that do not result in more than a mild exacerbation* of symptoms related to the current concussion	Typical activities during the day (eg, reading) while minimising screen time. Start with 5–15 min at a time and increase gradually.	Gradual return to typical activities
2	School activities	Homework, reading or other cognitive activities outside of the classroom.	Increase tolerance to cognitive work
3	Return to school part time	Gradual introduction of schoolwork. May need to start with a partial school day or with greater access to rest breaks during the day.	Increase academic activities
4	Return to school full time	Gradually progress in school activities until a full day can be tolerated without more than mild* symptom exacerbation.	Return to full academic activities and catch up on missed work

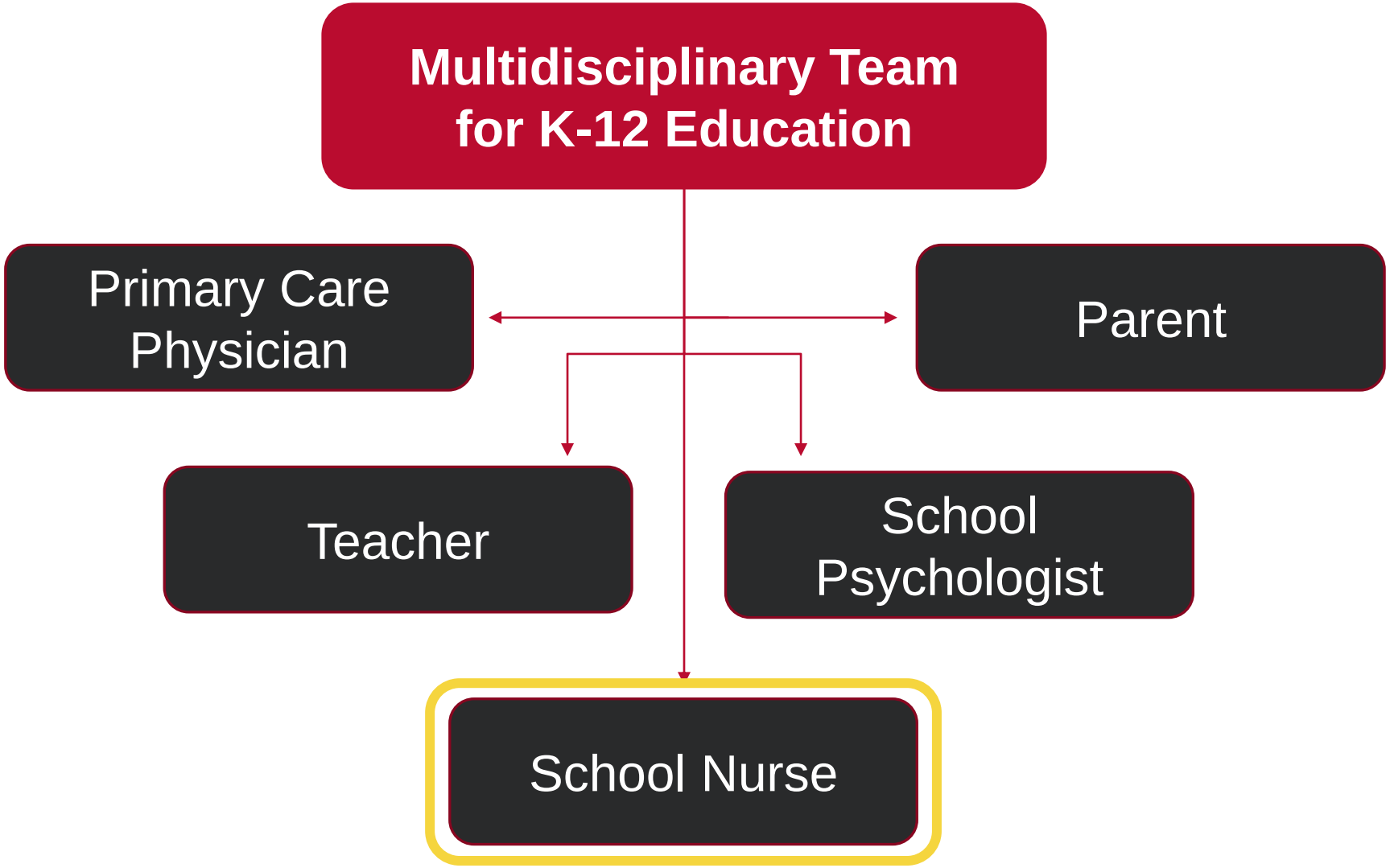
Following an initial period of relative rest (24–48 hours following an injury at Step 1), athletes can begin a gradual and incremental increase in their cognitive load. Progression through the strategy for students should be slowed when there is more than a mild and brief symptom exacerbation.
*Mild and brief exacerbation of symptoms is defined as an increase of no more than 2 points on a 0–10 point scale (with 0 representing no symptoms and 10 the worst symptoms imaginable) for less than an hour when compared with the baseline value reported prior to cognitive activity.

(Patricios et al., 2023)

2019 AMSSM Guidelines

Communication Strategies	• Obtain assent/consent to notify school personnel • Assign "point-person" to monitor student's recovery • Develop plan for potential absences
Classroom Adjustments	• Allow breaks throughout the day • Extend deadlines for assignments/exams • Assign a peer note-taker • Provide distraction-free spaces • Reduce in-class and out-of-class workload
School Environment Adjustments	• Permit headphones for noise control • Limit use of electronic devices with screens • Avoid busy areas of the school • Allow students to leave class to avoid noisy hallways/stairwells

(Harmon et al., 2019)



(Dreer et al., 2017; Halstead et al., 2013; McCrory et al. 2017)

Academic Effects after Concussion between High School & Collegiate Students

TABLE 2 | Perception of difficulty in performing academic tasks after a concussion as a function of level of schooling and age.

Academic activities[a]	High school	College	*U*	*p*	Age	
					r_s	*p*
Math	2.00 (0.85)	2.53 (0.89)	913.5	0.002	0.200	0.037
Reading	2.25 (0.89)	1.89 (0.87)	1,007.5	0.013	−0.259	0.007
Writing	2.84 (0.88)	2.72 (0.89)	1,261.5	0.530	−0.097	0.314
Engaging in computer/projector screen	2.06 (0.99)	1.68 (0.85)	1,033.0	0.026	−0.205	0.033
Pay attention to teachers	2.18 (0.91)	1.94 (0.80)	1,163.0	0.167	−0.121	0.210

Values are expressed as mean (SD).

[a]*mean values of 5-point Likert scale: 1, extremely difficult; 2, somewhat difficult; 3, neither easy nor difficult; 4, somewhat easy; 5, extremely easy.*

U, results from Mann–Whitney U-tests.

r_s, *results from Spearman's rank correlation coefficient.*

(Holmes et al., 2020)

NCAA Guidelines

Concussion Safety Protocol Checklist

Below is a checklist* that will help the athletics health care administrator ensure that the member school's concussion safety protocol is compliant with the Concussion Safety Protocol Legislation. This checklist, which has been recommended by the NCAA Concussion Safety Advisory Group and prescribed by the NCAA Committee on Competitive Safeguards and Medical Aspects of Sport, provides a foundation for member school concussion safety protocols that are important to clinicians and stakeholders who manage concussion and head injury in collegiate athletes. The checklist is not intended as a clinical practice guideline or legal standard of care and should not be interpreted as such. This checklist serves as a guide and, as such, is of a general nature, consistent with the reasonable practice of the healthcare professional. Individual treatment will depend on the facts and circumstances specific to each individual case.

(Concussion Safety Protocol Management, 2022)

NCAA Guidelines

Concussion Safety Protocol Checklist (2022)
Pre-season education
Pre-participation management (baseline measures)
Recognition & diagnosis of concussion
Initial suspected concussion evaluation
Post-concussion management plan
Return-to-learn
Return-to-sport
Reducing head impact exposure

(Concussion Safety Protocol Management, 2022)

- Identification of a point-person within athletics to navigate RTL
- Identification of a multi-disciplinary team that will navigate more prolonged RTL
- Develop individualized initial plan
- Re-evaluation by MD/DO if symptoms affect classroom progress
- Modification of academic accommodates as needed
- Re-evaluation by team MD/DO and multidisciplinary team if sx persist > 2 weeks
- Engage campus resources consistent with learning specialists, ADAAA office, office of disability services

NCAA Concussion Management Compliance

TABLE 1
Mandatory Components of the NCAA Concussion Safety Protocol Checklist[a]

Component Section	No. of Components	Overall Compliance
1. Pre-Season Education	6	98.2% (383/390)
2. Pre-Participation Assessment	5	99.1% (322/325)
3. Recognition and Diagnosis of Concussion	8	97.3% (506/520)
4. Post-Concussion Management	9	92.5% (541/585)
5. Return to Play	7	98.9% (450/455)
6. Return to Learn	11	86.4% (618/715)
7. Reducing Exposure to Head Trauma	1	92.3% (60/65)
8. Administrative	2	Not analyzed

[a]For the purposes of this review, only sections 1 to 7 (N = 47) were analyzed. NCAA, National Collegiate Athletic Association.

(Buckley et al., 2017)

TABLE 4
Section 5: Return to Play[a]

Section: Return to Play	Compliance: 450/455; 98.9%
Final determination of RTP is from the team physician or medically qualified physician designee	65; 100%
SA has limited physical and cognitive activity until he/she has returned to baseline, then progresses with each step below without worsening or new symptoms:	65; 100%
Light aerobic exercise without resistance training	64; 98.4%
Sport specific exercise and activity without head impact	64; 98.4%
Noncontact practice with progressive resistance training	64; 98.4%
Unrestricted training	64; 98.4%
Return to competition	64; 98.4%

[a]RTP, return to play; SA, student-athlete.

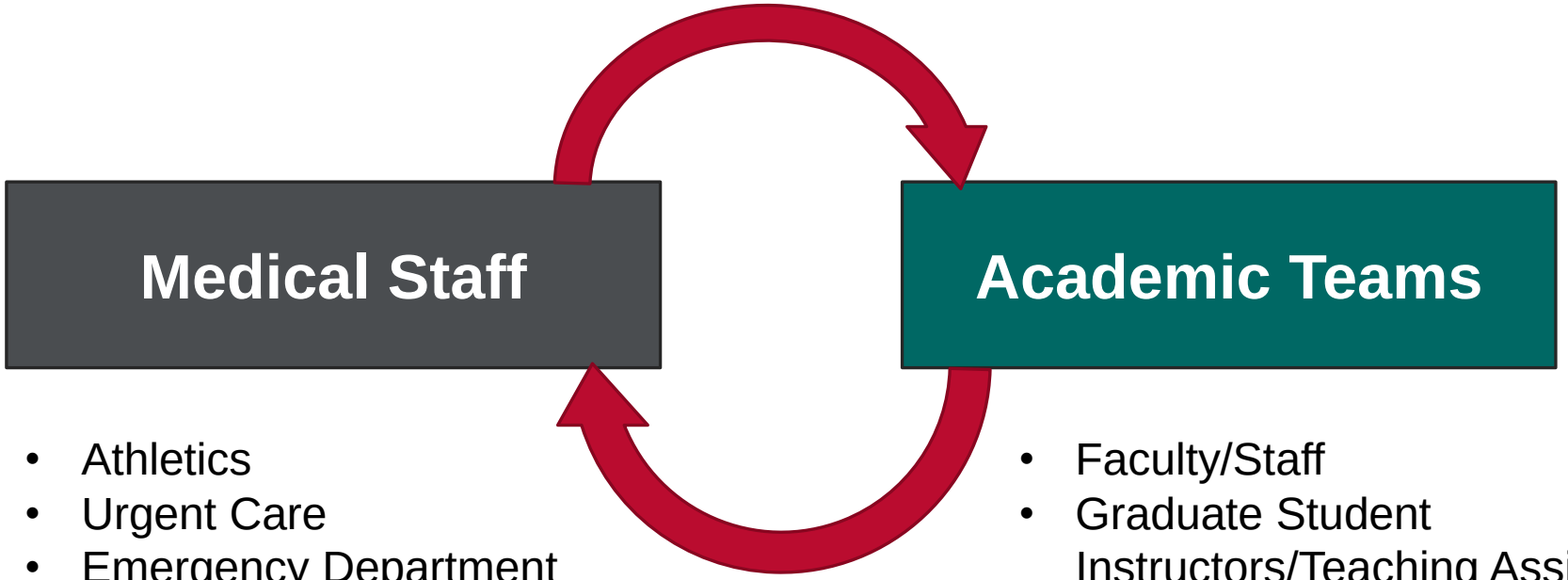
TABLE 5
Section 6: Return to Learn

Section: Return to Learn	Compliance: 618/715; 86.4%
Identification of a point person within athletics who will navigate return to learn with the student-athlete	64; 98.4%
Identification of a multidisciplinary team that will navigate more complex cases of prolonged return to learn	62; 95.3%
Compliance with ADAAA	60; 92.3%
No classroom activity on same day as concussion	61; 93.8%
Remaining at home/dorm if SA cannot tolerate light cognitive activity	53; 81.5%
Gradual return to classroom/studying as tolerated	54; 83.1%
Re-evaluation by team physician if concussion symptoms worsen with academic challenges	50; 76.9%
Modification of schedule/academic accommodations for up to two weeks, as indicated, with help from the identified point person	48; 73.8%
Re-evaluation by team physician and members of the multi-disciplinary team, as appropriate, for SA with symptoms >2 weeks	53; 81.5%
Engaging campus resources for cases that cannot be managed through schedule modification/ academic accommodations	56; 86.1%
Such campus resources must be consistent with ADAAA and include at least one of the following: Learning Specialists, Office of Disability Services, or ADAAA Office	57; 87.7%

[a]ADAAA, Americans with Disabilities Act and Amendments; SA, student-athlete.

(Buckley et al., 2017)

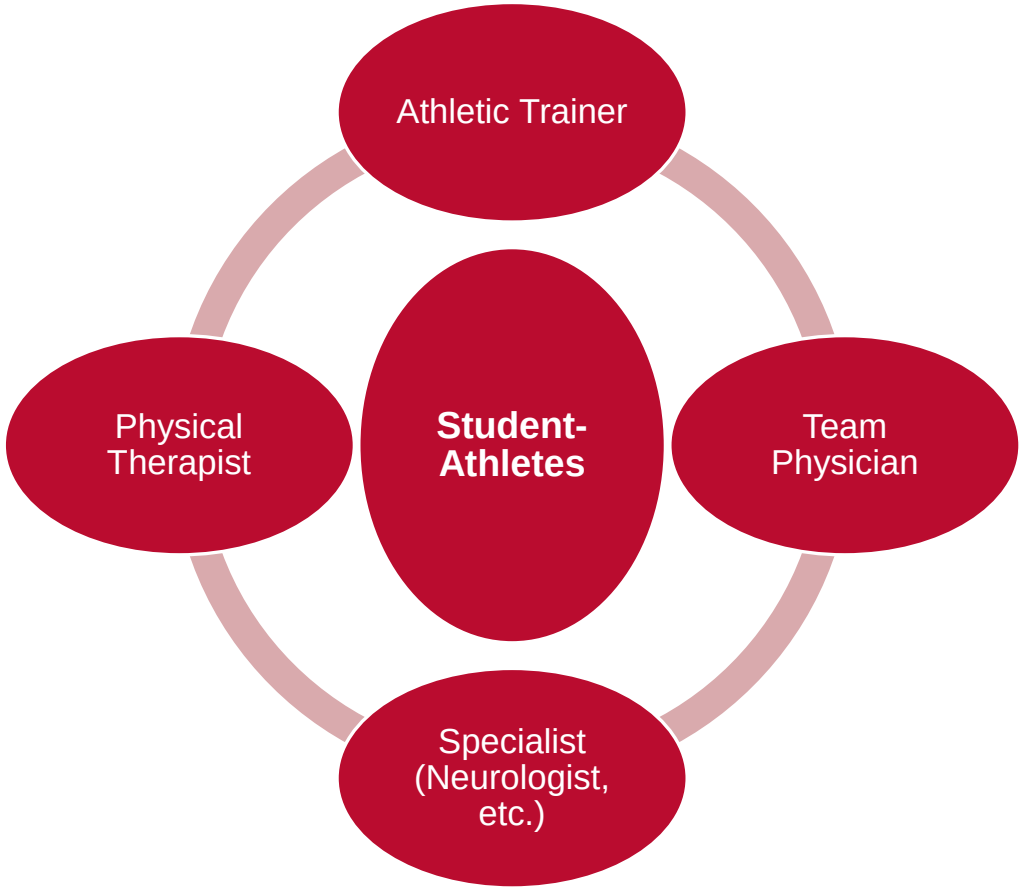
University setting: Who provides academic supports after concussion?

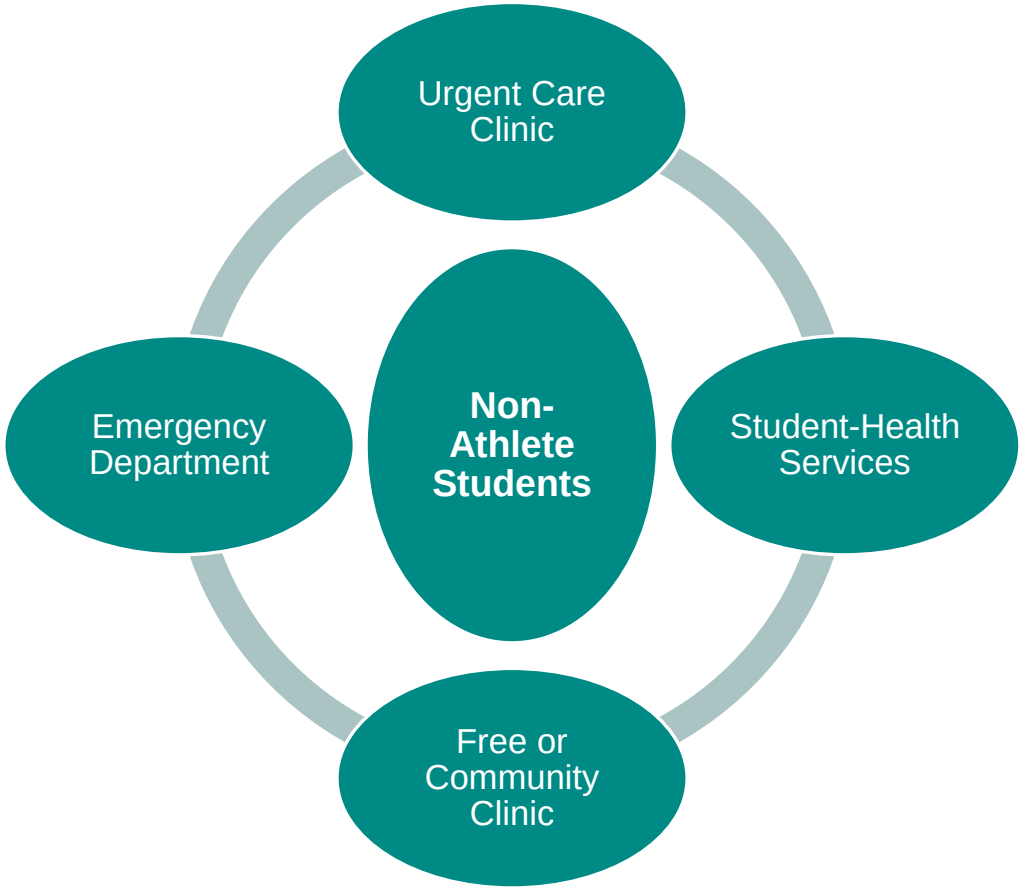


- Athletics
- Urgent Care
- Emergency Department
- University Health Services/Student Health

- Faculty/Staff
- Graduate Student Instructors/Teaching Assistants
- Academic Counselor
- Department Chair
- Services for Students with Disability

Medical Guidance





Educator Perspectives on Concussion Management in the Collegiate Classroom

Theme 1

Awareness: External knowledge of concussion & previous experiences

"…I'm sure you're familiar with the scene from The Office where Dwight gets a concussion. He ran his car into a fence and gets a concussion, jumps out of his car and throws up, and then immediately gets back in his car and starts driving. And then for the rest of the day he's a little bit off… he's not himself and his brain doesn't seem to be able to keep itself on track and focus"

Theme 2

Legitimacy: Whether a medical note was/not provided

"…the legitimacy comes from the external note, or email. I wouldn't trust my own instincts on something medical, I wouldn't have a clue. So I rely completely on the people who are the professionals."

Theme 3

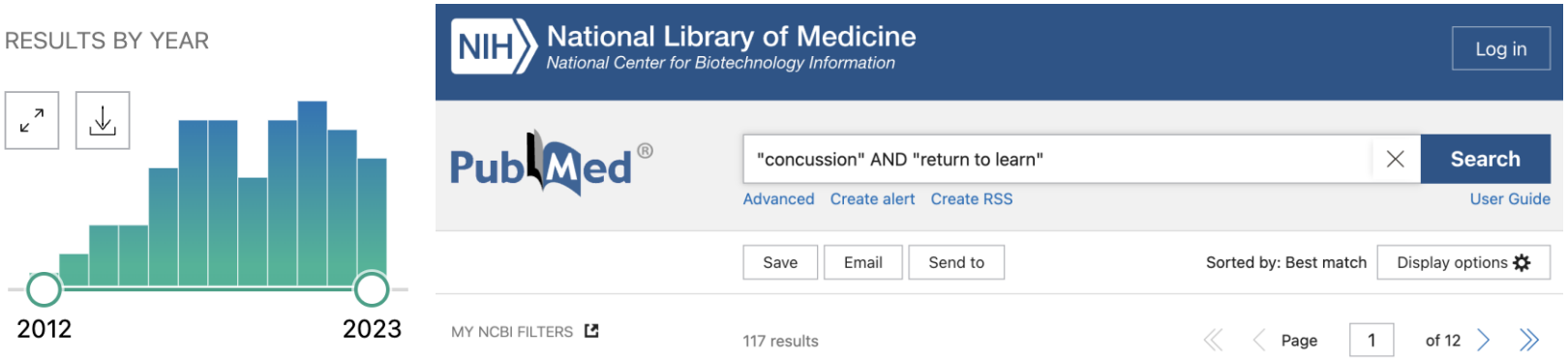
Accommodation: Feasibility of the request academic accommodation

"…The question of whether a person cares about a student (to accommodate them) is secondary to, do I, or don't I have time to deal with this."

(Bevilacqua et al., 2021)

Major Gap in Post-Concussion RTL Literature

Major Gap in Post-Concussion RTL Literature



“concussion” AND “return to learn” = <u>117 results</u>

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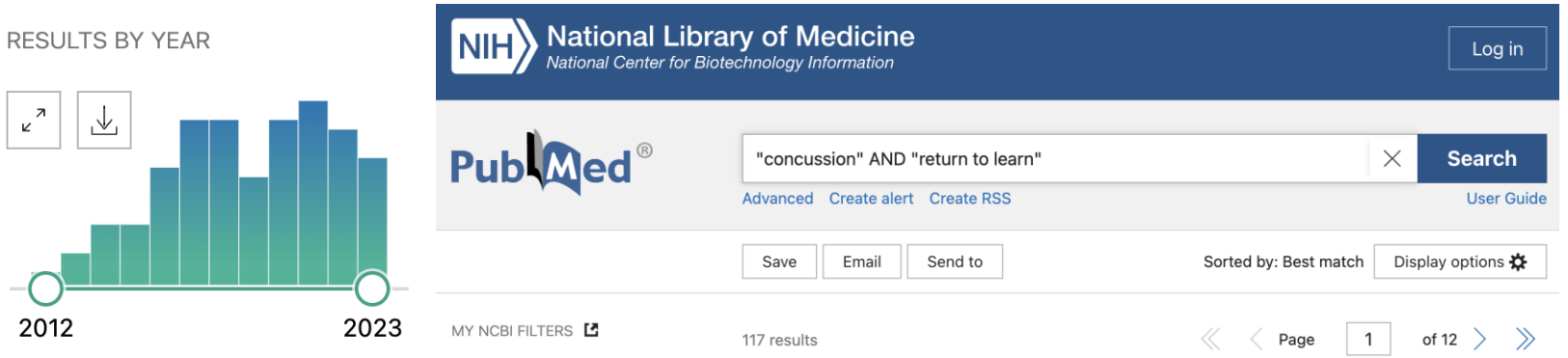
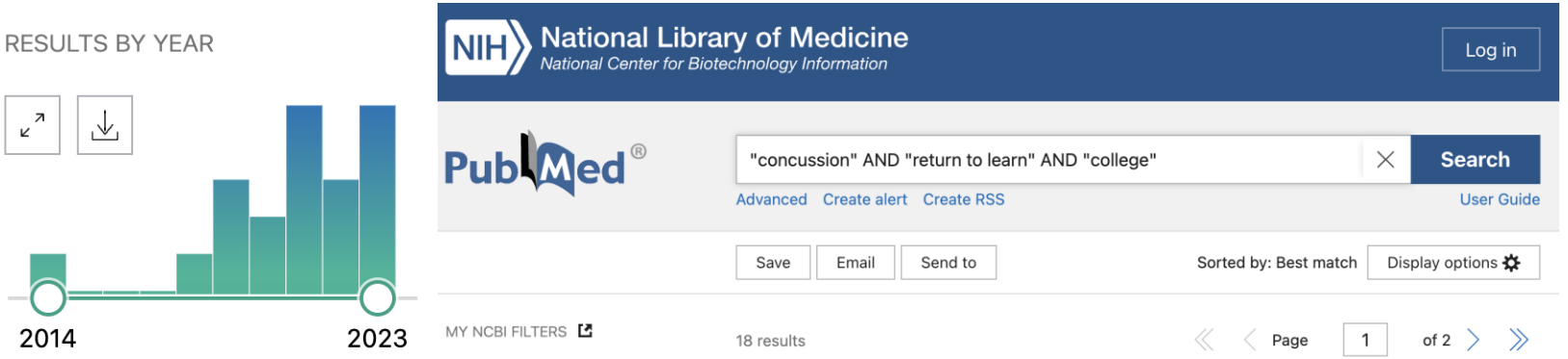
Major Gap in Post-Concussion RTL Literature





“concussion” AND “return to learn” AND “college” = 18 results

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Study 1:
Student & Faculty/Staff Experiences

Semi-structured Interviews

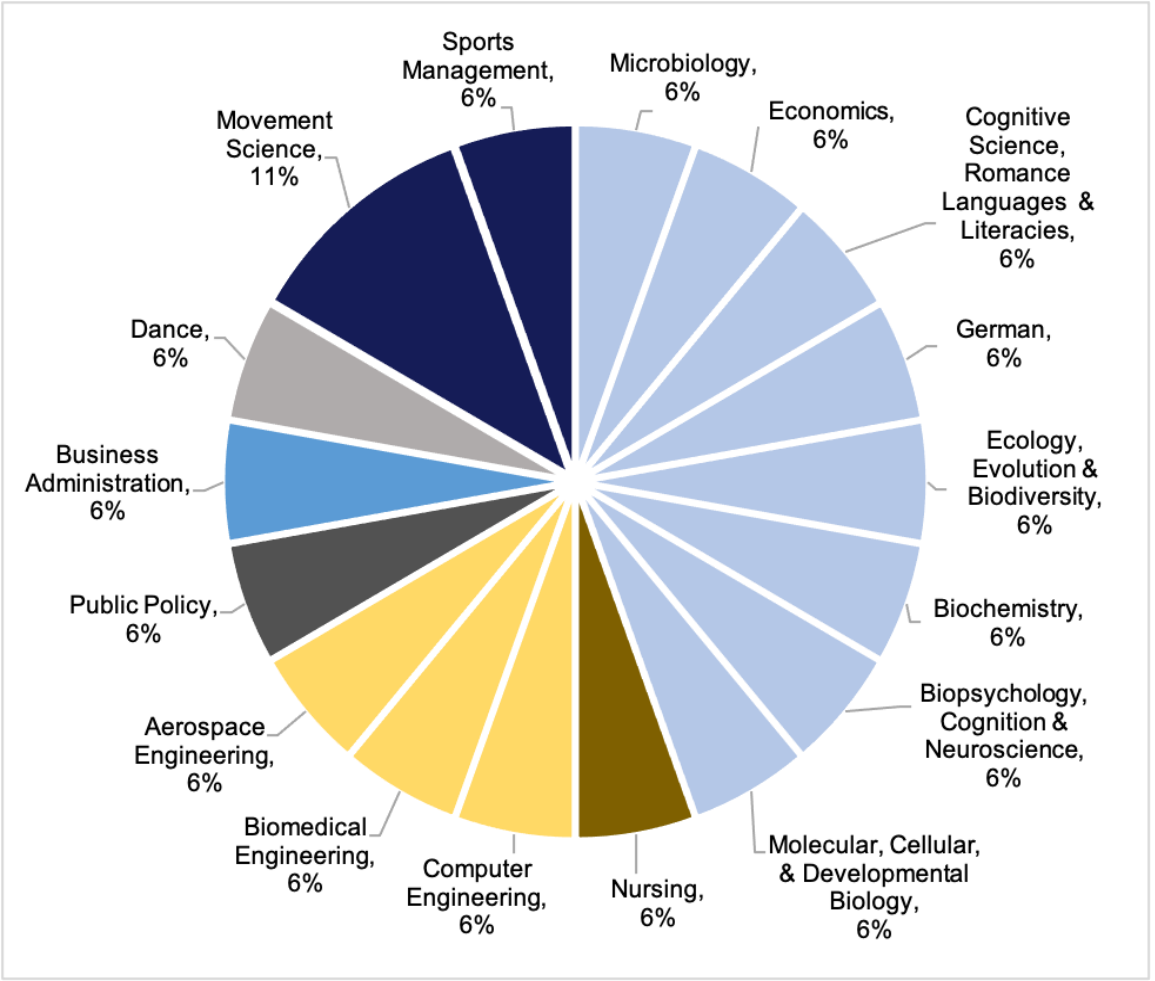
Unveil faculty/staff and undergraduate student experiences returning to the classroom after concussion

(Memmini et al., 2022)

40-minute semi-structured interviews:
n=7 academic faculty/staff
n=21 non-varsity athlete undergraduate students or recent graduates

	Undergraduate Students (n=21)	Academic Stakeholders[a] (n=7)
Age[b,c], y	21.1 ± 1.3	42.0 (34.5, 58.5)
Biological Sex		
Male	9 (42.9%)	2 (28.6%)
Female	12 (57.1%)	5 (71.4%)
Race		
African American/Black	2 (9.5%)	0 (0.0%)
Asian	3 (14.3%)	1 (14.3%)
Multiracial	0 (0.0%)	1 (14.3%)
White	16 (76.2%)	5 (71.4%)
Ethnicity		
Hispanic and/or Latinx	0 (0.0%)	0 (0.0%)
Non-Hispanic and/or Latinx	100 (100.0%)	100 (100.0%)
Time since concussion[b], y	1.3 ± 0.9	-
Academic standing at time of concussion		
Freshman	3 (14.3%)	-
Sophomore	10 (47.6%)	-
Junior	6 (28.6%)	-
Senior	2 (9.5%)	-

Note. Values reported as No. (%) unless otherwise specified
[a]Academic stakeholders include: adjunct lecturer, undergraduate academic advisor, clinical assistant professor, graduate student instructor, lecturer, and academic counselor
[b]Parametric values reported as mean ± standard deviation
[c]Nonparametric values reported as median (Q1, Q3)



Student Themes

Supportive interactions with academic staff

"I felt 100% supported by the professors I interacted with… they did everything possible to accommodate me"

Lack of academic guidance and resources following concussion

"It was more of an 'empathy thing' rather than it was tangible support. I would say my professor was really understanding and kind, but they were caught in a situation where they weren't really sure what the rules were."

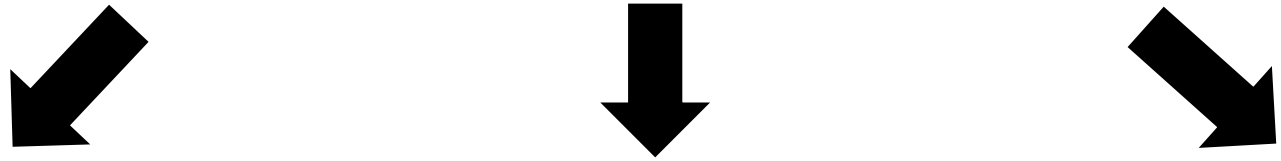
Need for concussion education with clear RTL guidelines

"I think there should be more communication on what the protocol is, what accommodations can be provided, and how to start those conversations with professors"

Faculty/Staff Themes

Student advocacy after concussion	*"…when you have a concussion, you're already having a hard time functioning, so being able to have those conversations you really need an advocate."*
Inconsistent post-concussion academic guidelines across campus	*"I asked the students what could I do to help…changing my fonts, changing my slides…so those kinds of strategies might also help with concussion."*
Student collaboration regarding post-concussion academic supports	*"I am not going to ask for a student's medical records; it has to be collaborative because if it's not, then it is not going to work because you're not going to have that trust."*
Need for clear post-concussion RTL guidelines	*"The thing about accommodations is that they're never meant to be universal, and so there are sort of like a platter of different accommodations that you can try with a student."*

Main Takeaway: Students and faculty/staff in higher education lack consistent academic guidance after concussion



Students felt **sympathy** from instructors, yet lacked guidance/resources to effectively RTL.

Academic teams preferred to **collaborate** with the student directly.

Need for **university-specific RTL protocol** and university policy

Study 2:
Delphi Procedure

Delphi Procedure

Develop university-specific RTL guidelines for faculty/staff and students returning to class after concussion

Section I:

1) Discharge Documentation

2) Multidisciplinary Team

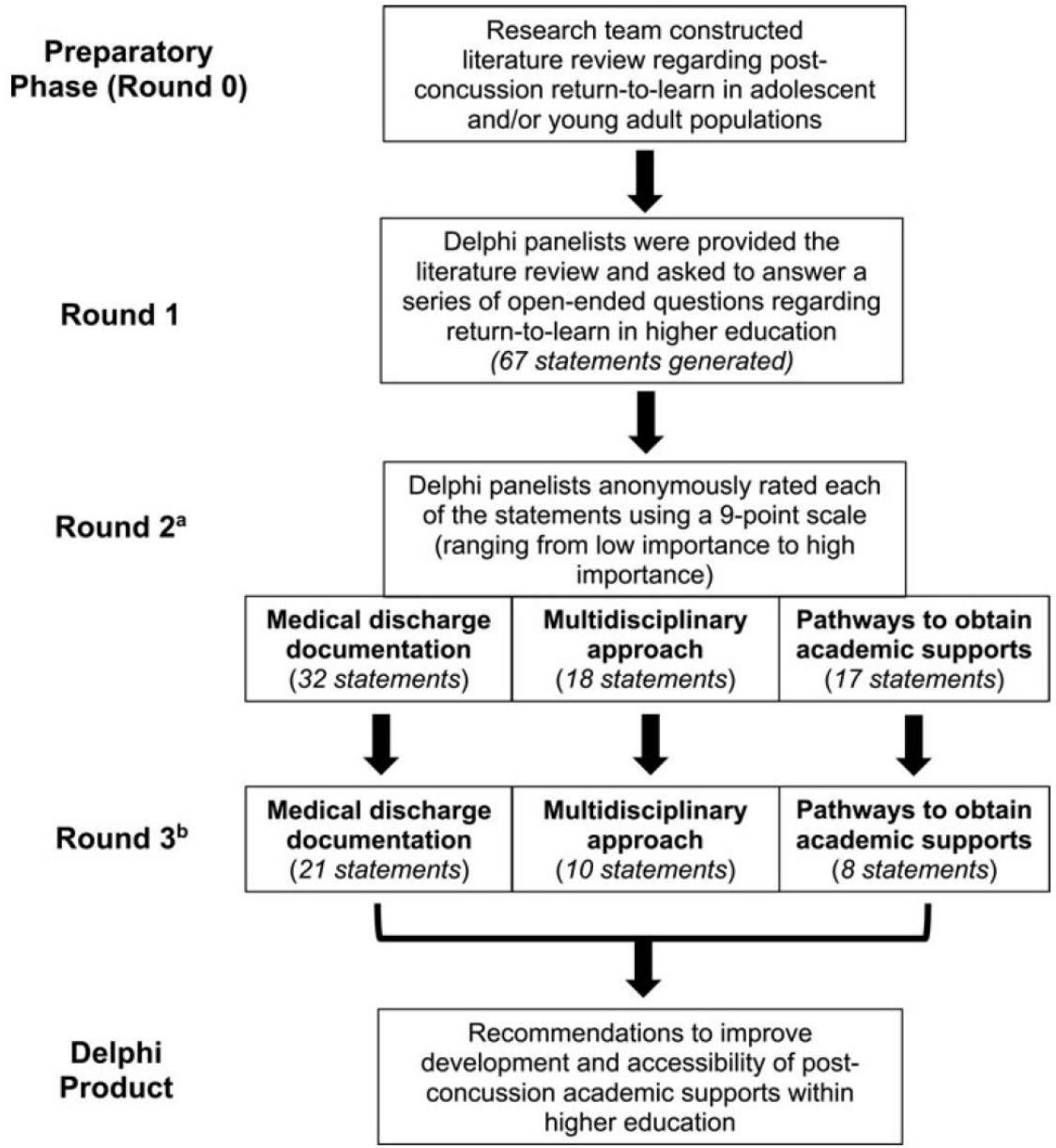
3) Address Challenges in Obtaining Academic Supports

Section II:

**Creating the Post-Concussion Collegiate RTL Protocol

(Memmini et al., 2022)

Delphi Process (*RTL Guidelines*)



Delphi Demographics

Age[a], y	45.6 ± 11.8
Biological sex	
Male	10 (45.5%)
Female	12 (54.5%)
Race	
African American/Black	2 (9.1%)
Asian	2 (9.1%)
White	18 (81.8%)
Ethnicity	
Hispanic and/or Latinx	0 (0.0%)
Non-Hispanic and/or Latinx	100 (100.0%)
Professional title[b]	
Clinician	9 (40.9%)
Researcher	8 (35.4%)
Academic faculty/staff	5 (22.7%)
Highest degree awarded	
Bachelor's degree	1 (4.5%)
Master's degree	2 (9.1%)
PhD/EdE/PsyD or similar	14 (63.6%)
MD/DO	4 (18.2%)
Dual Degree (PhD/MD/DO or similar)	1 (4.5%)
Concussion-specific research focus[c,d]	
Education	7 (31.8%)
Prevention	4 (18.2%)
Diagnosis	8 (36.4%)
Biomarkers	1 (4.5%)
Management	12 (54.5%)
Did not specify	4 (18.2%)
Time per week spent advocating for undergraduate students and their academic needs[a], %	35.4 ± 29.0
Time per week spent diagnosing/managing patients with concussions[a,e], %	25.0 ± 18.0

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Delphi Panel Questions

What specific information do you believe should be included in their **discharge documentation** regarding their injury, recovery timeline, and academic supports to consider during in-class coursework and out-of-class assignments?

What strategies can we implement to **promote collaboration** between medical staff and academic faculty on campus?

Based on your experiences, what do you believe are the **greatest school-related challenges faculty members and/or medical staff experience** while managing university-aged students who sustain a concussion? How could we address these challenges in a RTL policy at a university setting?

Medical Discharge Documentation

Statement	Mean (SD), Median, Range
Discharge paperwork/resources/emails should be written using colloquial language.	8.5 (0.7), 9, 7-9*
Provide definition of concussion.	6.4 (1.6), 6.5, 3-9
List medical “red flags” associated with concussion that require immediate medical attention (e.g., repetitive vomiting, worsening headache, slurred speech).	7.6 (2.1), 8, 7-9*
List common concussion signs and symptoms.	8.1 (0.8), 8, 7-9*
Provide instructions for analgesic use (anti-inflammatory medication) after concussion.	7.7 (1.2), 8, 5-9*
Educate students on avoiding alcohol/drugs while symptomatic.	8.3 (0.8), 8, 7-9*
Provide recommendations for a referral or follow-up appointment through Student Health Services.	8.4 (0.7), 8, 7-9*
Encourage students to stay with a responsible adult for the first night following injury for potential medical ‘red flags’.	7.4 (1.1), 7, 5-9*
Encourage rest for the first 24-48 hours following injury, followed by gradual increase in activities of daily activity; complete rest is no longer recommended and may increase recovery timelines.	8.1 (0.7), 8, 6-9*
Detailed explanation of limited physical and cognitive activities (i.e., provide explicit examples of what “cognitive rest” means).	7.8 (0.9), 8, 6-9*
Include information on consequences of returning to physical activity too early (i.e., increased risk of secondary or more severe injury).	7.5 (1.1), 8, 5-9*
Educate students on how concussions may negatively affect academics.	7.1 (1.0), 7, 5-9*
Counsel students to stay connected with friends, family, social networks.	7.0 (1.2), 7, 4-9*
List behavioral management strategies (e.g., sleep, nutrition, hydration, stress management) that are suggested to improve recovery timelines.	7.9 (0.8), 8, 6-9*
Emphasize the individuality of symptom presentation and recovery timelines.	7.8 (0.9), 8, 6-9*
Suggest return to classroom and physical activity may occur simultaneously as long as symptoms do not increase.	7.0 (1.2), 7, 4-8*
Educate students that they have a right to request for additional assistance in institutions of higher education if they experience symptoms that affect their ability to attend class and learn.	7.7 (1.0), 8, 5-9*
Encourage students to communicate with their academic faculty/staff as soon as possible to promote self-advocacy.	8.4 (0.7), 8, 7-9*
Provide direct contact information for campus resources and/or student liaison to obtain academic accommodations (e.g., Dean of Students, Disability Office, embedded academic advisor, etc.).	8.2 (0.7), 8, 6-9*
Encourage academic faculty/staff to consider excused absences for the first 24-48 hours following concussion, if warranted by the student.	7.4 (1.3), 8, 5-9*
Encourage students to reach out to concussion management team/student liaison to discuss recovery and/or update their academic adjustments/accommodations/modifications.	7.5 (0.7), 8, 6-9*
Outline specific procedures to medical and/or concussion management team if students experience prolonged symptoms (>4 weeks).	7.1 (1.6), 7, 3-9*

Medical Discharge Documentation

- Provide recommendations for referral or follow-up through Student Health Services.
- Educate students that they have the right to obtain academic assistance during their recovery.
- List medical “red flags” that would warrant immediate follow-up medical care.
- Outline specific procedures for students who take longer than four weeks to recover.

Multidisciplinary Approach to Concussion Management

Statement	Mean (SD), Median, Range
Obtain consent from the student to approve communication between medical and disability services.	8.6 (0.8), 9, 6-9*
Encourage collaboration: do not impose the burden of mediation on the students or instructors. Medical teams should be teamed with academic advisors and disability specialists as a concussion management team.	7.8 (0.8), 8, 6-9*
Find champions within the academic team (e.g., academic advisor, counselor, academic faculty/staff) to serve in the multidisciplinary team.	7.6 (0.9), 8, 6-9*
Build a multidisciplinary team with clear delineation of roles and responsibilities regarding RTL after concussion.	8.0 (1.0), 8, 5-9*
Educate multidisciplinary team about how decisions regarding the need for academic adjustments/accommodations/modifications are made with information on the institution's policy on RTL after concussion.	7.6 (1.1), 8, 4-9*
Educate medical and academic staff on their respected roles in the concussion management team. Medical teams are knowledgeable about the physiology of the injury, whereas academic teams are experts in their courses' pedagogy.	7.7 (1.3), 8, 3-9*
Develop information resources that the medical team can provide academic faculty/staff with alternative academic adjustments/accommodations/modifications depending on class-type.	7.4 (1.1), 8, 4-9*
Construct a HIPAA/FERPA-safe forum where medical and academic teams can securely discuss the student's academic needs (with the consent of the student).	7.7 (0.9), 8, 6-9*
Leverage collaboration with Disability Services, Dean of Students, etc. as an intermediary student liaison between teams.	7.4 (1.0), 7.5, 5-9*
Create standardized campus-wide and campus-approved forms/emails/letters to notify academic faculty/staff of injury and request academic supports.	7.9 (0.7), 8, 7-9*

Multidisciplinary Approach

Encourage collaboration among medical and academic teams: do not leave mediation to the students

Educate medical and academic teams of their roles/responsibilities regarding concussion management.

Leverage the Dean of Students or Disability Office to serve as a liaison between medical and academic teams.

Create and utilize a standardized email to notify both academic and medical teams (if warranted) regarding concussion status.

Processes to Obtain Academic Supports after Concussion

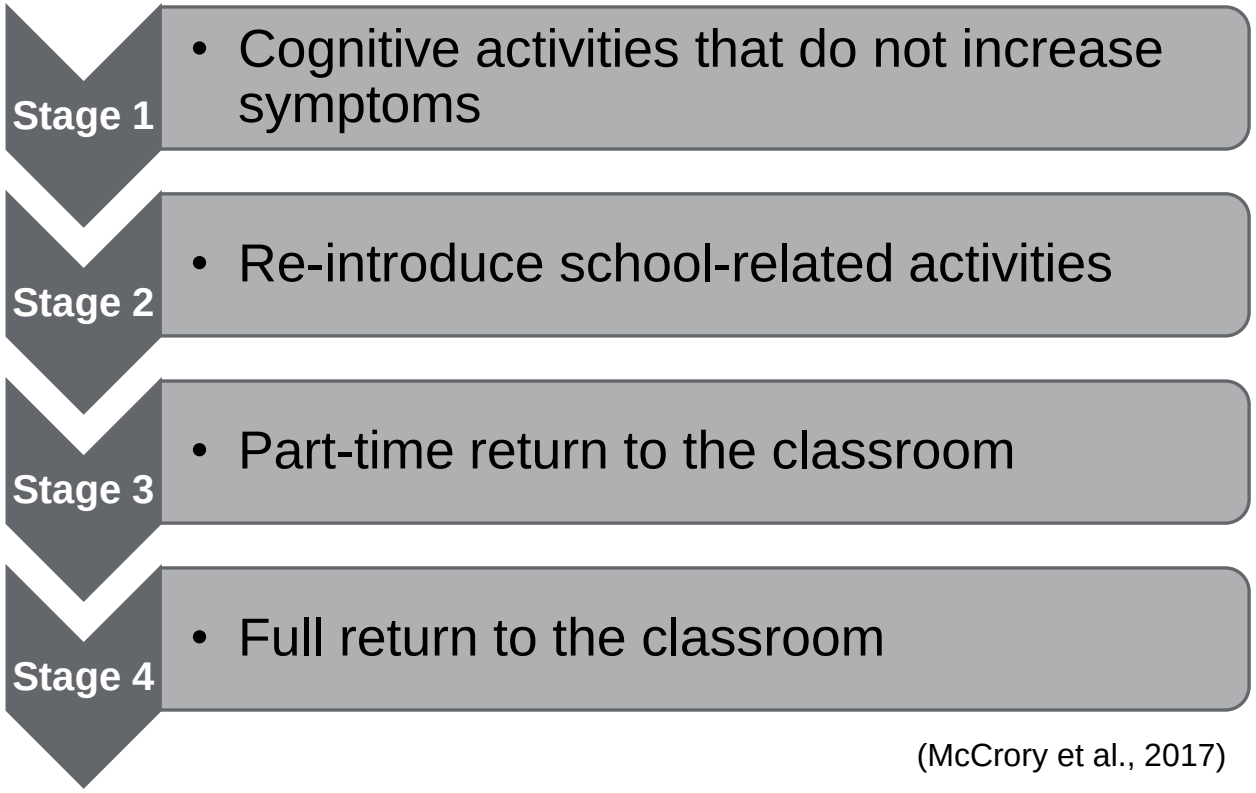
Statement	Mean (SD), Median, Range
Establish open dialogue between medical staff to discuss what challenges students may face in the classroom after concussion, and academic staff to discuss feasibility of suggested academic adjustments/accommodations/modifications.	7.3 (1.3), 7, 5-9*
Include major stakeholders in the development of academic adjustments/accommodations/modifications as a multidisciplinary approach such as the medical staff and academic team.	7.9 (0.8), 8, 6-9*
Include major stakeholders in the development of academic adjustments/accommodations/modifications such as the medical staff, academic team, and student.	7.2 (1.8), 8, 1-9*
Academic adjustments/accommodations/modifications should be developed in collaboration between medical and academic teams with guidance initially provided by the medical professionals.	7.9 (0.7), 5, 2-9*
Academic adjustments/accommodations/modifications should be provided to academic teams as a general framework with examples of how to adjust their classroom environment or curricula.	7.2 (0.7), 7, 6-8*
Academic adjustments/accommodations/modifications should also include guidelines for technology-use during in and out-of-class coursework based on the specific curriculum's objectives.	7.3 (0.8), 7, 6-9*
Academic adjustments/accommodations/modifications should be considered for courses that involve movement and/or physical activity for prolonged periods.	8.0 (0.7), 8, 7-9*
Multidisciplinary team should consider a hybrid model (return to class and return to physical activity progressions) for students and academic faculty/staff to utilize in courses that involve movement and/or physical activity for prolonged periods.	7.0 (1.3), 7, 3-9*

Processes to Obtain/Develop Academic Supports after Concussion

- Include key stakeholders when developing post-concussion academic supports (students, medical and academic teams).
- Consider strategies to modify technology-use during in-class and out-of-class coursework.
- Work with the instructor to create academic supports for coursework that requires long periods of standing and/or physical activity.
- Establish open dialogue between the student, instructor, and medical teams regarding the feasibility of the proposed academic support(s).

Developing the RTL Protocol

Return-to-Learn Strategy



(McCrory et al., 2017)

1) **Stage 1:** How would you modify this stage to include university-specific daily activities?

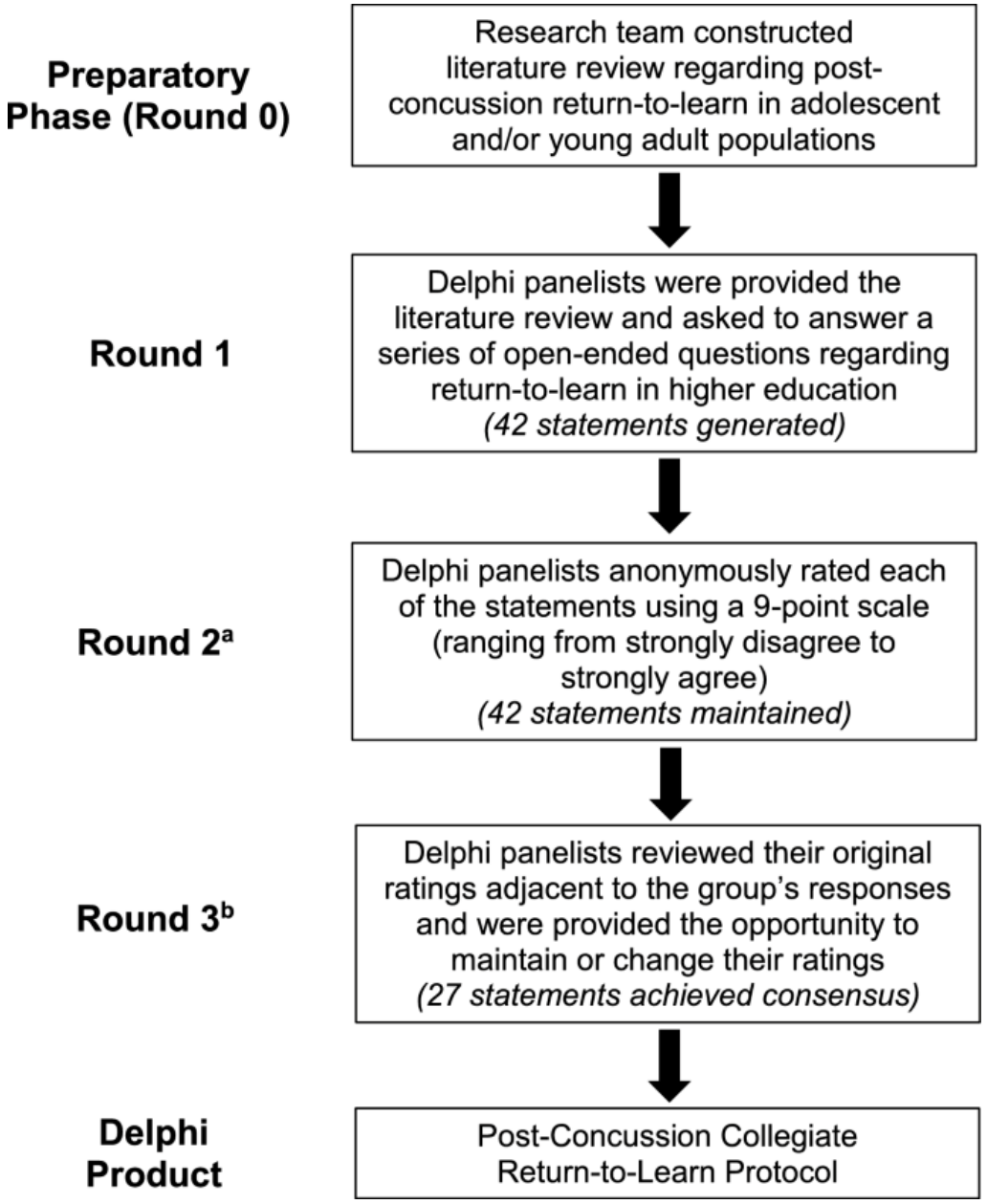
2) **Stage 2:** What recommendations would you include in this stage to address how faculty members and university students should manage out-of-class assignments?

3) **Stage 3:** What *specific* academic adjustments/guidance would you include this stage for faculty members to consider when working with university-students recovering from concussion?

4) **Stage 4:** What resources do you believe would be the most beneficial for both faculty members and/or university-students during this stage if students experience prolonged recovery and/or are unable to return to class full time?

5) Do you have any other recommendations on how to improve or modify the RTL protocol?

Delphi Process (*RTL Protocol*)



Post-Concussion Collegiate Return-to-Learn Protocol

Stage 1

- **Light cognitive activities that do not exacerbate symptoms**
  - Notify your instructor about potential absences within the first 72 hours
  - Seek additional medical care if symptoms worsen or you cannot tolerate light cognitive tasks
  - Gradually return to social activities
  - Check in with multidisciplinary team

Post-Concussion Collegiate Return-to-Learn Protocol

Stage 2

- **Reintroduction to course-related activities and part-time return to learning environment(s)**
  - Slowly reintegrate technology in coursework
  - Additional time for course-related tasks
  - Discuss alternative assignments or due dates with instructor(s) or TA(s)
  - Check in with multidisciplinary team
  - If symptoms worsen, return to Stage 1

Post-Concussion Collegiate Return-to-Learn Protocol

Stage 3

- **Attend a full class in learning environment(s)**
  - Build in breaks between classes if your schedule permits
  - Discuss additional academic supports with instructor(s) or TA(s) for “high stakes” assignments or exams
  - Utilize strategies to decrease symptoms in class: notetaker, hybrid attendance, etc.
  - Check in with multidisciplinary team
  - If symptoms worsen, return to Stage 2

Post-Concussion Collegiate Return-to-Learn Protocol

Stage 4

- **Attend a full week of class in learning environment(s)**
  - Begin to wean away from academic supports
  - Maintain communication with your instructor(s) or TA(s)
  - Check in with multidisciplinary team
  - If symptoms worsen, return to Stage 3
  - Seek additional medical care if you cannot complete this protocol within 2-4 weeks

Post-Concussion Collegiate Return-to-Learn Protocol

Phase	Aim	Progression Suggestions	Goal
1	Light cognitive activities that do not increase symptoms	Notify your instructor(s) of potential absences as you may need intermittent cognitive and physical rest for up to 72 hours. Seek additional medical care if you cannot tolerate short periods of light cognitive activities (reading, writing, etc.) or if worsening symptoms (e.g., increasing headache, repetitive vomiting, slurred speech, loss of consciousness). Gradually return to in-person social interactions (e.g., meeting with friends, talking on the phone, visiting face to face, cooking, going to the cafeteria). Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to develop academic strategies and/or accommodations specific to your coursework.	Reintroduce activities of daily living
2	Reintroduction of course-related activities and part-time return to learning environment(s)	Allow yourself additional time to complete out-of-class assignments and/or other coursework. Slowly reintegrate technology when completing coursework (e.g., turning down screen brightness, using blue light filters, and/or consider taking breaks when using computers/cell phones/tablets). Return to class with the possibility of breaks during class and/or attending partial classes. Discuss with your instructor(s) about adjusting quizzes/tests/assignments either by excusing certain coursework or delaying due dates, or offering alternative options for quizzes/tests/assignments. Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to review and/or revise your academic strategies and/or accommodations. If symptoms worsen (e.g., increased headaches, sensitivity to noise or light, etc.), return to Phase 1 or collaborate with your instructor(s) on how to further modify the activities outlined in Phase 2 to tolerate your symptoms.	Increase cognitive tolerance of course-related work at home
3	Attend a full class in learning environment(s)	Attend a full lecture/laboratory course with academic supports (beyond rest breaks), if needed. Build in breaks between courses, if your schedule permits. Discuss with your instructor(s) about modifying or prioritizing quizzes/tests/assignments rather than extending due dates (i.e., may include, but is not limited to, scaffolding assignments to avoid workload buildup). Meet with your instructor(s) to discuss permitting a notetaker, providing audio recordings of the lecture or hard copy print-outs of lectures/notes, allowing sunglasses/blue light glasses, turning off computer screens during hybrid learning, or other academic supports that may decrease your symptoms during class. Discuss with your instructor(s) about implementing academic supports for “high stakes” assignments or exams such as additional time, distraction-free testing environments, or postponing until you are no longer symptomatic. Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to review and/or revise your academic strategies and/or accommodations. If symptoms worsen (e.g., increased headaches, sensitivity to noise or light, etc.), return to Phase 2 or collaborate with your instructor(s) on how to further modify the activities outlined in Phase 3 to tolerate your symptoms.	Increase cognitive and symptom tolerance during in-class activities
4	Attend a full week of class in learning environment(s)	Begin to wean away from academic adjustments until you can successfully attend a full week of class without academic supports. Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to discuss recovery and/or continued use of academic supports. If symptoms worsen (e.g., increased headaches, sensitivity to noise or light, etc.), return to Phase 3 or collaborate with your instructor(s) on how to further modify the activities outlined in Phase 4 to tolerate your symptoms. Seek medical care from a licensed healthcare provider trained in assessment and management of concussion (e.g., physician, athletic trainer, etc.) if you are not progressing through this protocol within 2-4 weeks, or if you have persistent symptoms during cognitive activities such as reading, completing coursework, or taking exams.	Gradually decrease the need for academic supports while fully returning to coursework

Modified from the 5th International Conference on Concussion in Sport Consensus Statement (McCrory et al., 2017)

COLLEGE OF EDUCATION & HUMAN SCIENCES

Study 3:
Feasibility, Acceptability, & Appropriateness

Implementation

Assessing

Acceptability, Feasibility, Appropriateness, Organizational Readiness for Change

regarding the *Post-Concussion Collegiate RTL Protocol*

(Memmini et al., 2022)

Online survey sent to clinicians and academic faculty/staff across Power 5 Conferences (N=49):

1. Demographics
2. Acceptability of intervention measure (**AIM**)
3. Intervention appropriateness measure (**IAM**)
4. Feasibility of intervention measure (**FIM**)
5. Organizational readiness for change measure (**ORIC**)
6. Open-ended questions

The Post-Concussion Collegiate Return-to-Learn Protocol

Researchers at the University of Michigan (U-M) Concussion Center developed the *Collegiate Return-to-Learn (RTL) Protocol* to provide medical and academic stakeholders with a framework to progress students back to the classroom after concussion. The protocol is designed with university-specific recommendations for students and instructors to consider as they gradually reintroduce course-related activities and academic strategies to smooth the transition back to class.

We strongly recommend students provide this protocol to their instructor(s), academic counselors, and/or anyone else involved in their post-concussion care.

The *Collegiate RTL Protocol* is a *suggested* progression for students and/or instructors to use in their course(s)/classroom(s). Students/instructors may decide to use, or modify, some of the recommendations based on the demands of the coursework, learning environments (e.g., lectures, labs, etc.), and/or how the student's recovery is progressing.

Concussion recovery is different for every student, and it is possible for some students to progress quicker than others. Therefore, students may advance, or slow down, at certain phases of the protocol depending on how they are feeling.

Phase	Aim	Progression Suggestions	Goal
1	Light cognitive activities that do not increase symptoms	Notify your instructor(s) of potential absences as you may need intermittent cognitive and physical rest for up to 72 hours. Seek additional medical care if you cannot tolerate short periods of light cognitive activities (reading, writing, etc.) or if worsening symptoms (e.g., increasing headache, repetitive vomiting, slurred speech, loss of consciousness). Gradually return to in-person social interactions (e.g., meeting with friends, talking on the phone, visiting face to face, cooking, going to the cafeteria). Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to develop academic strategies and/or accommodations specific to your coursework.	Reintroduce activities of daily living
2	Reintroduction of course-related activities and part-time return to learning environment(s)	Allow yourself additional time to complete out-of-class assignments and/or other coursework. Slowly reintegrate technology when completing coursework (e.g., turning down screen brightness, using blue light filters, and/or consider taking breaks when using computers/cell phones/tablets). Return to class with the possibility of breaks during class and/or attending partial classes. Discuss with your instructor(s) about adjusting quizzes/tests/assignments either by excusing certain coursework or delaying due dates, or offering alternative options for quizzes/tests/assignments. Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to review and/or revise your academic strategies and/or accommodations. If symptoms worsen (e.g., increased headaches, sensitivity to noise or light, etc.), return to Phase 1 or collaborate with your instructor(s) on how to further modify the activities outlined in Phase 2 to tolerate your symptoms.	Increase cognitive tolerance of course-related work at home
3	Attend a full class in learning environment(s)	Attend a full lecture/laboratory course with academic supports (beyond rest breaks), if needed. Build in breaks between courses, if your schedule permits. Discuss with your instructor(s) about modifying or prioritizing quizzes/tests/assignments rather than extending due dates (i.e., may include, but is not limited to, scaffolding assignments to avoid workload buildup). Meet with your instructor(s) to discuss permitting a notetaker, providing audio recordings of the lecture or hard copy print-outs of lectures/notes, allowing sunglasses/blue light glasses, turning off computer screens during hybrid learning, or other academic supports that may decrease your symptoms during class. Discuss with your instructor(s) about implementing academic supports for "high stakes" assignments or exams such as additional time, distraction-free testing environments, or postponing until you are no longer symptomatic. Check in with multidisciplinary team (academic counselor, physician, instructor, or any other student-advocate) to review and/or revise your academic strategies and/or accommodations. If symptoms worsen (e.g., increased headaches, sensitivity to noise or light, etc.), return to Phase 2 or collaborate with your instructor(s) on how to further modify the activities outlined in Phase 3 to tolerate your symptoms.	Increase cognitive and symptom tolerance during in-class activities
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Modified from the 5th International Conference on Concussion in Sport Consensus Statement (McCrory et al., 2017)

Table 1. Demographics

	Mean ± SD, No. (%), or Median [IQR]	
	Clinicians (n = 25)	University Faculty/Staff[a] (n = 24)
Age, y	30.1 ± 7.6	38.3 ± 9.9
Biological sex		
Male	9 (36.0%)	9 (37.5%)
Female	16 (64.0%)	15 (62.5%)
Race		
Bi/multiracial	2 (8.0%)	1 (4.2%)
Black	1 (4.0%)	2 (8.3%)
White	20 (80.0%)	20 (83.3%)
Other[b]	2 (8.0%)	1 (4.2%)
Ethnicity		
Hispanic and/or Latinx	2 (8.0%)	3 (12.5%)
Not Hispanic and/or Latinx	23 (92.0%)	21 (87.5%)
Highest academic degree		
Bachelor's	2 (8.0%)	0 (0.0%)
Master's	23 (92.0%)	8 (33.3%)
PhD/EdE/PsyD or similar	0 (0.0%)	16 (66.7%)
Power 5 Conference		
Atlantic Coast Conference	4 (16.0%)	3 (12.5%)
Big 10 Conference	8 (32.0%)	7 (29.17%)
Big 12 Conference	11 (44.0%)	4 (16.7%)
Pacific-12 Conference	0 (0.0%)	5 (20.8%)
Southeastern Conference	2 (8.0%)	5 (20.8%)
Total years employed at current institution		
< 1 year	5 (20.0%)	2 (8.3%)
1-5 years	16 (64.0%)	12 (50.0%)
5-10 years	3 (12.0%)	3 (12.5%)
> 10 years	1 (4.0%)	7 (29.2%)
Time spent per week advocating or providing undergraduate academic supports, %	35.0 [10.0, 50.0]	15.0 [5.0, 25.0]
Concussion training required for current position		
Yes	18 (72.0%)	2 (8.3%)
No	4 (16.0%)	22 (91.7%)
Unsure	3 (12.0%)	0 (0.0%)
Aware of institution's post-concussion RTL policy		
Yes	24 (96.0%)	3 (12.5%)
No	0 (0.0%)	13 (54.2%)
Unsure	1 (4.0%)	3 (12.5%)
My institution does not have a post-concussion RTL policy	0 (0.0%)	5 (20.8%)

Note: RTL = return to learn; values may not equal to 100% due to missingness/unknown

[a]University faculty/staff included: assistant, associate, and full professors; adjunct lecturer; full and associate clinical professors; graduate student instructors/research assistants, university administrators, and a post-doctoral research fellow

[b]Includes Asian and Middle Eastern

Table 2. AIM, IAM, FIM Results

Table 2. AIM, IAM, FIM Results

		Clinicians (n=25)	University Faculty/Staff (n=24)	U statistic, *p*-value
AIM	The *Post-Concussion Collegiate RTL Protocol* meets my approval.	4 [4,5]	4 [4,5]	U = 1813, 0.49
	The *Post-Concussion Collegiate RTL Protocol* is appealing to me.	4 [4,5]	4 [4,5]	U = 1980, 0.74
	I like the *Post-Concussion Collegiate RTL Protocol*.	4 [4,5]	4 [4,5]	U = 1957, 0.69
	I welcome the *Post-Concussion Collegiate RTL Protocol*.	4 [4,5]	5 [4,5]	U = 1948, 0.51

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	I welcome the *Post-Concussion Collegiate RTL Protocol*.	4 [4,5]	5 [4,5]	U = 1948, 0.51
IAM	The *Post-Concussion Collegiate RTL Protocol* seems fitting.	4 [4,5]	5 [4,5]	U = 1949, 0.52
	The *Post-Concussion Collegiate RTL Protocol* seems suitable.	4 [4,5]	4 [4,5]	U = 1981, 0.96
	The *Post-Concussion Collegiate RTL Protocol* seems applicable.	4 [4,5]	5 [4,5]	U = 2059, 0.78
	The *Post-Concussion Collegiate RTL Protocol* seems like a good match.	4 [4,5]	4.5 [4,5]	U = 2044, 0.86

Table 2. AIM, IAM, FIM Results

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	The *Post-Concussion Collegiate RTL Protocol* seems suitable.	4 [4,5]	4 [4,5]	U = 1981, 0.96
	The *Post-Concussion Collegiate RTL Protocol* seems applicable.	4 [4,5]	5 [4,5]	U = 2059, 0.78
	The *Post-Concussion Collegiate RTL Protocol* seems like a good match.	4 [4,5]	4.5 [4,5]	U = 2044, 0.86
FIM	The *Post-Concussion Collegiate RTL Protocol* seems implementable.	4 [4,5]	4 [4,4]	U = 1830, 0.38
	The *Post-Concussion Collegiate RTL Protocol* seems possible.	4 [4,5]	4 [4,5]	U = 1837, 0.36
	The *Post-Concussion Collegiate RTL Protocol* seems doable.	4 [4,5]	4 [4,5]	U = 1980, 0.31
	The *Post-Concussion Collegiate RTL Protocol* seems easy to use.	4 [4,5]	4 [3.5,4]	U = 2095, 0.21

Note. AIM = acceptability of intervention measure; IAM = intervention appropriateness measure; FIM = feasibility of intervention measure; AIM, IAM, FIM scales ranges from 1 (completely disagree) to 5 (completely agree); values are described as median [interquartile range]; differences across group medians were calculated using Mann-Whitney *U* Tests.

Table 3.
ORIC Results

Table 3.
ORIC Results

Domain	Survey Item	Clinicians (n=25)	University Faculty/Staff (n=24)	U statistic, *p*-value	η^2
Change Commitment	People who work here are **motivated** to implement the *Post-Concussion Collegiate RTL Protocol.*	4 [3,5]	3 [2,3]	U = 2332, < .001	0.32
	People who work here **want to implement** the *Post-Concussion Collegiate RTL Protocol.*	5 [4,5]	3 [3,3]	U = 2210, < .001	0.42
	People who work here **will do whatever it takes** to implement the *Post-Concussion Collegiate RTL Protocol* delivery.	4 [3,5]	3 [2,3]	U = 2366, < .001	0.31
	People who work here are **committed to implementing** the *Post-Concussion Collegiate RTL Protocol.*	5 [4,5]	3 [3,4]	U = 2304, < .001	0.26
	People who work here are **determined to implement** the *Post-Concussion Collegiate RTL Protocol.*	4 [4,5]	3 [2,3]	U = 2336, < .001	0.42

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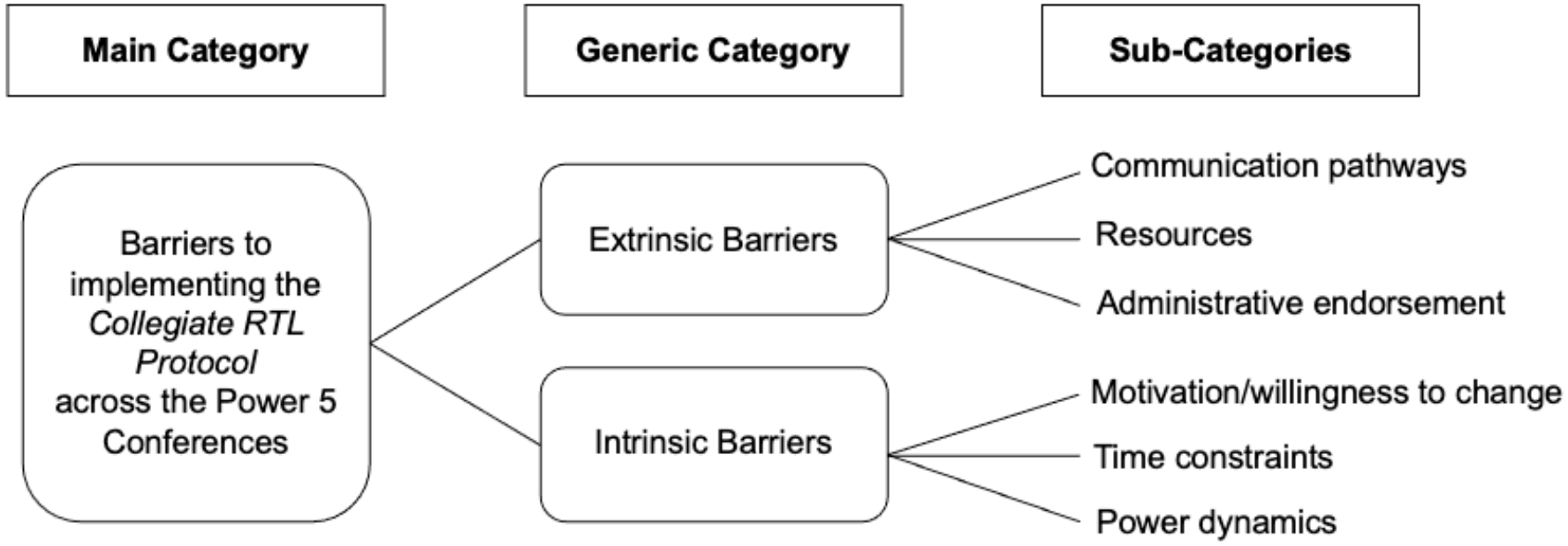
	People who work here are **determined to implement** the *Post-Concussion Collegiate RTL Protocol.*	4 [4,5]	3 [2,3]	U = 2336, < .001	0.42
Change Efficacy	People who work here feel confident that they can **keep track of progress** in implementing the *Post-Concussion Collegiate RTL Protocol.*	4 [4,5]	2.5 [2,3]	U = 2338, < .001	0.54
	People who work here feel confident that **the organization can support people** as they adjust to the *Post-Concussion Collegiate RTL Protocol.*	5 [4,5]	3 [3,4]	U = 2301, < .001	0.23
	People who work here feel confident that they can **keep the momentum going** in implementing the *Post-Concussion Collegiate RTL Protocol.*	4 [4,5]	3 [3,3]	U = 2289, < .001	0.46
	People who work here feel confident that they can **manage the politics** of implementing the *Post-Concussion Collegiate RTL Protocol.*	4 [3,5]	3 [2,3]	U = 2358, .001	0.22
	People who work here feel confident that they can **coordinate tasks** so that implementation goes smoothly.	4 [4,5]	3 [2.5,3]	U = 2311, < .001	0.10
	People who work here feel confident that the organization can **get people invested** in implementing the *Post-Concussion Collegiate RTL Protocol.*	4 [4,5]	3 [2,4]	U = 2333, < .001	0.24
	People who work here feel confident that they can **handle the challenges** that might arise in implementing the *Post-Concussion Collegiate RTL Protocol*.	5 [4,5]	3 [2,3.5]	U = 2352, < .001	0.10
Change Commitment Subscore[a]		22	15		
Change Efficacy Subscore[b]		30	20.5		
Total Score[c]		**52**	**35.5**		

Main Takeaway: Clinicians and academic faculty/staff within the Power 5 conferences agree the novel the RTL protocol is **appropriate**, **feasible**, and **acceptable** in their setting

Faculty/staff reported lower organizational readiness for change



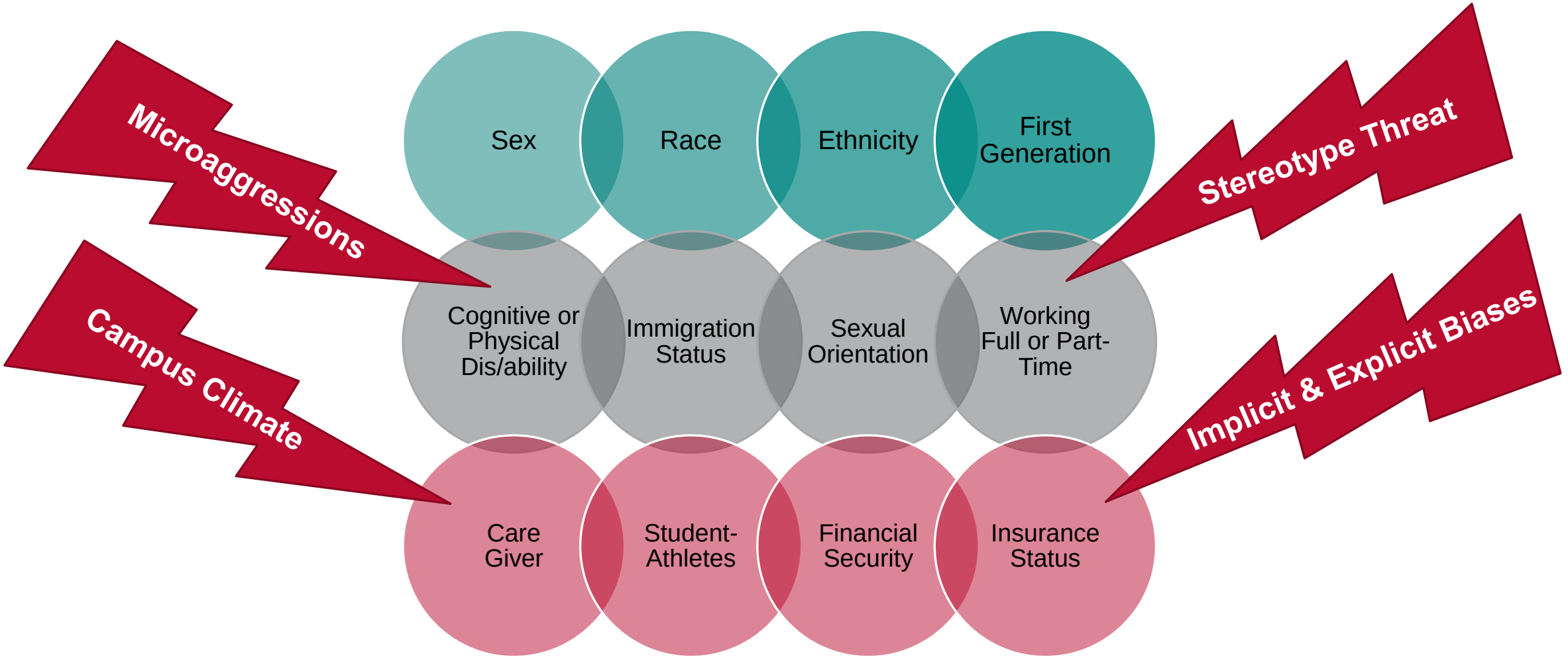
Considerations for Future Investigations


I identify as a non-binary, student-athlete at my university.


I work part-time to help contribute to my family's finances.


My pronouns are she/her, and I am a 1st generation student.

Student Identity & Experiences



Main Takeaways

- University students, faculty and staff prefer transparent RTL recommendations.
- Academic teams need guidance on how to support students after concussion.
- Additional work is needed to understand the RTL experiences of historically marginalized student groups on campus.

Funding Sources

These investigations were funded by the University of Michigan *Rackham Graduate Student Research Grants*

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Questions?

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Advancing Concussion Education and Clinical Management among Interdisciplinary Healthcare Providers through Community Health Needs Assessments

If you are currently employed as **an allied healthcare provider who treats patients in the State of New Mexico**, please consider filling out this brief survey on general concussion knowledge, clinical management, and your role(s) on an interdisciplinary team.

You may access the survey by clicking the link below or scanning the QR code:
https://tinyurl.com/ConcussionIPE

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