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National Athletic Trainers' Association Bridge Statement: Management of Sport-Related Concussion

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Objective: To provide athletic trainers and team physicians with updated recommendations to the 2014 National Athletic Trainers' Association (NATA) concussion position statement regarding concussion management, specifically in the areas of education, assessment, prognostic factors, mental health, return to academics, physical activity, rest, treatment, and return to sport.

Background: Athletic trainers have benefited from the 2 previous NATA position statements on concussion management, and although the most recent NATA position statement is a decade old, knowledge gains in the medical literature warrant updating several (but not all) recommendations. Furthermore, in various areas of the body of literature, current evidence now exists to address items not adequately addressed in the 2014 statement, necessitating the new recommendations. This document therefore serves as a bridge from the 2014 position statement to the current state of concussion evidence, recommendations from other organizations, and discrepancies between policy and practice.

Recommendations: These recommendations are intended to update the state of the evidence concerning the management of patients with sport-related concussion, specifically in the areas of education; assessment advances; prognostic recovery indicators; mental health considerations; academic considerations; and exercise, activity, and rehabilitation management strategies.

Key Words: mild traumatic brain injuries, brain injuries, athletes

Over the previous decade, athletic training and other medical researchers have made a myriad of scientific gains in the prevention, assessment, management, and treatment of concussion. Despite substantial advances in the science, sport-related concussion (SRC) continues to be a serious concern at all levels of sport. During the last decade and a half, the number of concussions noted in epidemiologic studies has increased significantly, likely resulting from heightened awareness among the public and medical personnel, improved recognition and reporting, and updates to legislation and management policy.[1–3] An estimated 1.1 million to 1.9 million SRCs occur annually in those under 18 years of age in the United States.[4] At the collegiate level, approximately 10 560 concussions occur each year, accounting for approximately 6% of all sport-related injuries.[5] At the professional sports level, data from the National Football League indicated a 5-year concussion rate of 1.70 concussions per 10 000 player-plays and an overall risk of concussion of 7.4%.[6] Concussion also remains a significant injury among the general physically active population, accounting for close to half a million US emergency department visits annually and 7% of sport-related emergency department visits across all ages.[1]

As part of an interdisciplinary medical team, athletic trainers (ATs) regularly identify and manage patients with concussion using guidance in concussion management stemming from the 2 previous NATA position statements.[7,8] Substantial improvements in concussion care have been noted since the initial statement was published in 2004, with more recent data suggesting that patients should remain out of participation longer, which has reduced the risk of repeat injuries.[9] Additionally, ATs appear to be using concussion assessment and return-to-activity protocols consistent with published recommendations at a higher rate than shown in past practice surveys.[10]

The most recent NATA position statement on SRC is a decade old, and considerable knowledge gains in the medical literature warrant updating several recommendations. Notably, emerging advances in concussion management and treatment have resulted in improved patient outcomes,[11–13] including quicker symptom resolution and return to activity among patients engaged in early aerobic exercise[14,15] as well as improved balance and reduced dizziness among patients

who completed vestibular rehabilitation.[16] However, ATs may be restricted in their ability to implement scientific gains due to policies drafted based on the prior NATA position statements and similar documents that reflect outdated knowledge.

Regardless of their clinical setting, ATs, in collaboration with their directing physicians, are encouraged to apply concussion management approaches that incorporate the most up-to-date scientific literature to support their patients' best interests while practicing within the scope of their state practice acts and state concussion laws. This includes viewing concussion through a biopsychosocial model, which lays the foundation for managing each patient individually and is supported by recent consensus statements,[17–19] position statements,[20] and theoretical papers.[21–23] The biopsychosocial model encompasses both biological (preinjury burden, trauma burden biomarkers) and psychosocial (psychological functioning, social and physical environmental factors, motivational factors) aspects of the patient and injury. Both the biological and psychosocial elements are important for determining the effects of the concussion on patient outcomes, including neurologic health, neurocognitive functioning, neurobehavioral function, psychosocial health and wellness, and life function and quality.[21–23] Social determinants of health[24–28] as well as culturally safe and competent care must also be considered across the concussion care continuum, from preseason assessments to full recovery and beyond,[29,30] given their influences on the quality of care and patient outcomes.

This publication is not intended as a full position statement or exhaustive systematic review but as a document to bridge the gap between the 2014 position statement and the current state of concussion evidence based on the published literature between 2014 and 2023, recommendations from other organizations, and discrepancies between clinical practice and policies stemming from older documents.

The literature review was conducted by the authorship team and was based on areas with clinical advancements relevant to ATs. The evidence and recommendations are presented using the Strength of Recommendation Taxonomy (SORT) framework as described in previous publications by the NATA.[31] Despite the updated recommendations in this document, concussion science continues to evolve, and medical care will improve in the years to come. In conjunction with their supervising physicians, ATs have a responsibility to implement the most cutting-edge, peer-reviewed evidence that is in the best interests of their patients.

Therefore, the purpose of this document is to provide ATs and team physicians with updated recommendations based on the state of concussion evidence in the areas of education, assessment, prognostic factors, mental health, return to academics, physical activity, rest, treatment, and return to sport using the biopsychosocial model and consideration for the social determinants of health as the underlying framework. Clinicians should refer to the 2014 position statement for the recommendations that have not been revised and the background literature supporting those recommendations. Tables associated with each section align the 2014 recommendations with the current 2024 bridge statement updates for ease of review.

EDUCATION AND PREVENTION

Recommendations

The 2014 statement and the current bridge statement education and prevention recommendations are outlined in Table 1.

Background and Supporting Literature

Evidence concerning concussion education content and strategies has dramatically improved in recent years, with the authors of several studies evaluating factors to be addressed and effective methods of education. Additionally, the roles of several key stakeholders and the need for interprofessional communication and collaboration that can inform educational content and strategies have been clarified.[40] These stakeholders include but are not limited to athletes, coaches, parents, school administrators, student resources personnel, and organizational management teams.[40]

One important area of education is the unchallengeable authority of licensed medical personnel in the medical decision-making processes that accompany concussion care as well as return to activity after concussion. Consensus bodies indicated the need for this model of care to reduce conflicts of interest and improve the care and well-being of athletes.[41] All key stakeholders are encouraged to receive comprehensive concussion education, including the topic of medical authority and factors that may be specific to their local context, such as the organization or institution's resources, infrastructure, and location. Athletes should also be informed about their roles as both individuals and teammates in assisting in the identification of SRC.[32] These stakeholders may be engaged in education through preseason meetings, incorporating activities across the season, or more regularly than only at the beginning of the year.[32] In addition to more traditional educational strategies, social media and other electronic means should be employed.

Beyond the typical education concerning prevention, recognition, management, and treatment of SRC, stakeholder education may include the ramifications of driving any vehicle or riding a bicycle, during which they are expected to obey traffic laws, while recovering from the injury.[8,20,32–37] Although ATs do not conduct full driving assessments, understanding the athlete's state and recovery process is important when ATs discuss these concerns with the physician or other concussion care team members. When patients are symptomatic or demonstrate functional impairments, ATs may recommend alternative transportation (eg, carpooling and public transport). To better understand the athlete's recovery, key stakeholders should be aware of the potential effect of the injury on driving. Researchers have illustrated cognitive deficits and slowed driving reaction time, even after symptom resolution, that may place the athlete, passengers, and others at risk.[33–35,37]

Educational materials and delivery ideally should be environmentally and culturally considerate of the sociocultural factors that may influence concussion perceptions and care among diverse patient populations, consistent with biopsychosocial approaches to concussion care.[25,26] Sociocultural factors and social determinants of health (such as race and socioeconomic status) affect not only concussion education outcomes such as concussion-related knowledge but are associated with clinical outcomes such as neurocognitive and visual-vestibular assessment scores.[24,25,27,28,42–44] Additionally, connecting this education to the values (eg, performance, supporting the team) and athletic performance domains is especially important for "buy-in" and effectiveness. Sociocultural

Table 1. Recommendations for Education and Prevention

2014 Statement	2024 Bridge Statement
1. The AT should use, and educate others in using, the proper terminology of concussion and mild traumatic brain injury as opposed to such colloquial terms as "ding" and "bell ringer." SOR: B	NA
~~2. The AT should work with the appropriate administrators to ensure that parents and coaches are educated on the following aspects of concussion: prevention, mechanism, recognition and referral, appropriate return to participation, physical and cognitive restrictions for concussed athletes, and ramifications of improper concussion management.[10–12] SOR: B~~	Update to 2014 Recommendation 2: The AT should collaborate with administrators to ensure all relevant stakeholders, including but not limited to athletes, parents and coaches, school administrators, student resources personnel, and organizational management teams, are educated on the following aspects of concussion: prevention, mechanism, recognition and referral, appropriate return to participation, physical and cognitive restrictions for patients with concussion, including driving postconcussion when relevant, and the ramifications of improper concussion management.[8,20,32–37] SOR: B
3. The AT should be aware of and document potential modifying factors that could delay the return to play, and patients should be educated on the implications of these conditions as they affect recovery. SOR: C	NA
4. The AT should work to educate coaches, athletes, and parents about the limitations of protective equipment for concussion prevention. SOR: C	NA
5. As part of educational efforts, ATs, athletes, coaches, and parents should read all warning labels associated with protective equipment. SOR: C	NA
	New: All ATs and other licensed medical professionals should collaborate with administrators to ensure all relevant stakeholders are specifically educated on the qualifications licensed medical professionals, including ATs and physicians, possess concerning concussion prevention and management. In accordance with laws, practice acts, and the relevant organizational guidelines, these medical professionals should have unchallengeable medical authority in decision-making concerning patients with concussion.[38,39] SOR: C

Abbreviations: AT, athletic trainer; NA, not applicable; SOR, strength of recommendation.[31]

factors should be foundational to all areas of educational content and educational strategies.

DOCUMENTATION AND LEGAL ASPECTS

Recommendations

No changes in guidance surrounding medical documentation and the legal aspects of concussion have ensued since 2014, so Table 2 outlines these items in the 2014 statement. Athletic trainers are encouraged to be aware of the legal ramifications of mismanaging a patient with concussion[45] and educate themselves on the relevant organizational, state, and local rules and regulations and the need for appropriate documentation throughout the injury and recovery process.

ASSESSMENT ADVANCES

Recommendations

The 2014 statement and current bridge statement assessment recommendations are provided in Table 3.

Background and Supporting Literature

Substantial changes surrounding the assessment of SRC have occurred in the previous decade. Most of the work has centered on individual assessment tools and the timing of administration; injury heterogeneity and the lack of specificity of several concussion-related symptoms make the assessment and management process uniquely challenging. Thus, a broad approach to injury management under the biopsychosocial model[23,54] can help the clinician separate what is directly related to the injury from factors that influence the injury presentation.

Several structural and situational variables can affect the baseline and postinjury evaluations, rendering implementation of all assessments unnecessary or unfeasible in some situations before or during the injury management process.[55] Athletic trainers are encouraged to adopt a standardized approach to injury management that uses the tools and procedures specific to their setting, implementing new domains when resources and circumstances allow. Also, mental health screenings should be considered during the concussion management process (see the Mental Health section) with the intent of improving clinical care and outcomes.[46,56] Consistent with prior recommendations, the assessment should include a thorough clinical examination, supported by clinical assessments where available and with the AT's medical decisions based on the best clinical judgment.

Baseline Testing

Baseline testing has long been considered an integral component of concussion evaluation, which typically consists of a battery of tests that assess self-reported symptoms and multiple domains of cognitive functioning and motor control (eg, balance). Usually administered in the weeks before the preseason, the baseline assessment is intended to capture normal functioning of the athlete. This snapshot of overall functioning is often used as a reference point against postinjury data to determine when the athlete has returned to the preconcussion level of functioning.[8,36]

Baseline testing need not be an integral part of the concussion management plan unless required by the school,

Table 2. Documentation and Legal Aspects Recommendations

2014 Statement	2024 Bridge Statement
6. The AT should be aware of any and all relevant governing bodies (eg, state, athletic conference) and their policies and procedures regarding concussion management. SOR: C	NA
7. The AT should document the athlete's (and when appropriate, the parent's) understanding of concussive signs and symptoms and his or her responsibility to report a concussion. SOR: C	NA
8. The AT should communicate the status of concussed athletes to the managing physician on a regular basis. SOR: C	NA
9. The AT should ensure proper documentation of the concussion evaluation, management, treatment, return-to-participation progression, and physician communications. SOR: C	NA
35. The AT and physician should agree on a standard concussion home-instruction form that is consistently used for all concussed patients, and a copy should be maintained in the medical record. Both oral and written instructions for home care should be given to the concussed athlete and to a responsible adult (eg, parent or roommate) who will observe and supervise the patient during the acute phase of the concussion. SOR: C	NA

Abbreviations: AT, athletic trainer; NA, not applicable; SOR, strength of recommendation.[31]

state, sporting association, or other relevant guidelines. Some work suggested that annual assessments are necessary to maximize postinjury evaluations,[57] but several international groups,[36] medical organizations,[20] and independent investigations[48,58,59] indicated that annual baseline testing may not be necessary to optimize postinjury care. In the absence of clinical baseline data, the clinical trajectory postinjury (ie, progression through the injury process) can still be a valuable indicator of recovery. Whereas inclusive normative data are available for some evaluation tools, clinicians must account for the individual's personal and medical history when interpreting manufacturer- or site-specific normative data. If baseline testing is conducted, it is imperative that ATs administer the selected assessments in accordance with testing guidelines, potentially evaluating the athlete's performance for validity, and repeat testing as necessary. Administering and interpreting tests outside of the recommended guidelines significantly impairs their utility in the postinjury state. It is important to note that the preseason is an optimal time for concussion education, baseline testing if available and indicated, and implementing a positive social environment for athletes regarding concussion reporting.

Assessment Domains

The evaluation of concussion-related symptoms, neurologic and neurocognitive status, and motor control domains is the core of the concussion assessment process, with emerging evidence suggesting that a vision or vestibulo-ocular examination should inform the AT's clinical decisions.[49–51,60,61] Multiple tests are available to assess each of the primary domains, and clinicians should become familiar with how to best administer each test, the psychometric properties[47] for test interpretation, and the limitations of each test. The domains outlined in Table 4 supply providers with information to better inform clinical decision-making.

Although concussion assessment via the evaluation of multiple domains (as noted earlier) continues to be endorsed, the limitations of cognitive testing are being identified. Recent work on the most common computer-based cognitive assessments administered in the first 48 hours after injury revealed sensitivities that were only slightly better than chance.[62] Other researchers have demonstrated no added benefit of computer-based cognitive testing beyond a symptom evaluation, neurologic examination, and motor control assessment within the first 48 hours of injury.[57] Mass baseline testing of athletes (when available) is discouraged by the test manufacturers, yet the time constraints and demands of athletic medicine often preclude the ability to administer tests appropriately, affecting their postinjury validity.[52] Given the demands, limitations, and practicalities of athletic medicine, cognitive testing should no longer be considered an integral part of the concussion assessment process. Despite this, some may administer these tests as a preseason baseline and postinjury under optimal conditions, ie, when the appropriate time, equipment, and trained personnel are available, in special circumstances (eg, with persistent symptoms), or at the discretion of the directing physician. Additionally, the key domains of the baseline and postinjury concussion assessment can be conducted in the absence of computerized testing, allowing for a more inclusive assessment approach that relies less heavily on facilities and resources.

Postinjury Testing

Consistent with previous recommendations, from the moment of a suspected injury through all evaluations, the clinical examination remains the criterion standard for decision-making, with support from adjunct assessments when available.[8] At the discretion of the AT, the postinjury examination may include the domains listed in Table 4[8,20,53,63] or other measures deemed relevant. The importance of cervical injury in the signs and symptoms after concussion has been recognized.[64–68] Authors of studies in other areas of traumatic brain injury have suggested cervical dysfunction may be correlated with longer recovery times and additional postinjury deficits. Specifically, a complete cervical spine evaluation[69] should be conducted initially to rule out any cervical injuries, including more severe injuries, and may be repeated during follow-up to identify any problems that may require treatment and affect the outcome.

Previous recommendations highlighted the need to assess all domains at all time points throughout the recovery process.[8] However, in many cases, concussion is obvious without having to assess all domains. Such instances may include but are not limited to an observed injury mechanism with altered consciousness or gross motor impairment (or both) or symptom reports consistent with concussion the day after injury.[70] Furthermore, some assessment tools have

Table 3. Recommendations for Assessment Advances

2014 Statement	2024 Bridge Statement
	New: Baseline cognitive assessments are not considered a mandatory part of the concussion assessment process but may be useful in particular circumstances and under the guidance of the directing physician.[46,47] SOR: B
~~10. Athletes at high risk of concussion (eg, those in contact or collision sports) should undergo baseline examinations before the competitive season. SOR: B~~	Update to 2014 Recommendations 10 and 11: To maximize postinjury identification and management, clinicians should conduct baseline testing only when resources allow.[46,47] SOR: B
~~11. A new baseline examination should be completed annually for adolescent athletes, those with a recent concussion, and, when feasible, all athletes. SOR: B~~	
12. The baseline examination should consist of a clinical history (including any symptoms), physical and neurologic evaluations, measures of motor control (eg, balance), and neurocognitive function. SOR: B	NA
13. The baseline and postinjury examinations should be administered in similar environments that maximize the patient's abilities, and all baseline examinations should be reviewed for suboptimal performance. SOR: C	NA
NA	New: Visual-vestibular function should be considered a key domain of the concussion assessment.[48–51] SOR: B
NA	New: Concussion should be viewed as a biopsychosocial injury, with the AT accounting for cultural, social, and psychological considerations alongside the physical injury.[23,45] SOR: C
14. Any athlete suspected of sustaining a concussion should be immediately removed from participation and evaluated by a physician or designate (eg, AT). SOR: C	NA
~~15. The concussion diagnosis is made through the clinical evaluation and supported by assessment tools.[19] SOR: B~~	Update to 2014 Recommendations 15 and 17: A clinical examination, including cervical spine and neurologic evaluation at the time of injury, should be conducted initially and repeated during the course of recovery.[20,52,53] SOR: C
~~17. Once a concussion diagnosis has been made, the patient should undergo a daily focused examination to monitor the course of recovery. SOR: C~~	
16. When the rapid assessment of concussion is necessary (eg, during competition), a brief concussion-evaluation tool (eg, Standardized Assessment of Concussion) should be used in conjunction with a motor-control evaluation and symptom assessment to support the physical and neurologic clinical evaluation. SOR: B	NA
~~18. During the acute postconcussion recovery stage, daily testing of neurocognitive function and motor control is typically not needed until the patient is asymptomatic. SOR: C~~	Update to 2014 Recommendation 18: During the baseline and postinjury phases, ATs should use clinical reasoning to determine the appropriate domains and frequency of assessment to guide recovery strategies.[46] SOR: B

Abbreviations: AT, athletic trainer; NA, not applicable; SOR, strength of recommendation.[31]

greater or lesser utility throughout the management process. For example, the Standardized Assessment of Concussion has the greatest utility within 48 hours of injury but lacks the requisite sensitivity to be beneficial beyond that time frame.[71–73]

Athletic trainers are obligated to abide by policies and procedures consistent with external mandates from sports organizations, state legislations, or similar entities, but concussion policies should empower them to use their clinical judgment in selecting and implementing the specific assessments needed to facilitate clinical care.[57] Athletic trainers should apply their best clinical judgment in conducting the examination, including which domains are to be evaluated, which assessments are implemented to evaluate the chosen domains, and how to weigh the clinical importance of the findings in the best interests of the patient. Simply stated, the AT must maintain legal compliance but is not bound to complete all assessments at all timepoints. Moreover, ATs and other appropriately trained medical personnel should hold unchallengeable authority over nonmedical providers to remove and withhold those athletes with a suspected concussion from participation.[38,39]

PROGNOSTIC FACTORS FOR RECOVERY AND PERSISTING SYMPTOMS

Recommendations

Recommendations for prognostic factors concerning recovery and persisting symptoms are shown in Table 5.

Background and Supporting Literature

As outlined in the 2014 NATA position statement and recent literature, several factors may modify the management, return-to-play, and other outcomes postconcussion.[8,74–76] Over the past 5 years, several groups have evaluated prognostic signs and symptoms, including potential clinical subtypes associated with recovery, with various levels of evidence as described by Iverson et al[70] in a comprehensive review.[74,77–80]

Table 4. Assessment Domains

Domain	Features and Examples	Example Assessment Strategies and Tools
Concussion history	Date(s) and circumstances; presence and duration of loss of consciousness, amnesia, and symptoms with each injury	Clinical interview Preparticipation examination
Personal or family medical history	Mood disorder, learning disability, epilepsy or seizures, sleep apnea, skull fracture, migraine headaches	Clinical interview Preparticipation examination
Mental health screening[a]	Mood, psychiatric distress, anxiety, depression	See mental health section (Table 8)
Symptoms	Current and recurrent	Symptom scale[b]
Neurostatus screen	Attention and concentration, orientation, memory	Standardized Assessment of Concussion[b]
Motor control and balance	Coordination and balance	Balance Error Scoring System[b]; single- and dual-task tandem gait[b]
Vision or vestibulo-ocular	Eye tracking, gaze stability, near-point convergence, eye movements with smooth pursuits, nystagmus, pupillary reflex	Vestibular Ocular Motor Screening
Cervical examination	Strength, range of motion, proprioception	Joint position test Alar ligament test

[a] The athletic trainer's role is to facilitate mental health screening, not diagnose.
[b] These items are included in the Sport Concussion Assessment Tool.

The most recent updates support the concept that the initial symptom burden is closely associated with recovery time (ie, those with a higher initial burden take longer to recover).[81–83] Additionally, authors of prospective and retrospective studies have indicated that early care seeking, both in the clinic and on-field, facilitated recovery and improved the return to play, whereas delayed medical evaluation may delay recovery.[84–87] Investigators who study attention-deficit/hyperactivity disorder now believe it to be a risk factor for sustaining a concussion but have questioned its relationship to delayed recovery.[80,88,89] New data suggest that visual-vestibular deficits postconcussion influence the recovery time. More context concerning factors that may influence injury recovery is supplied in Table 6.[8,74,88] The literature surrounding the social determinants of health concerning concussion is evolving,[25–28] yet evidence from various disciplines emphasizes the need to consider the social and cultural factors that may influence patients' outcomes, health care delivery, and health care overall.[85,86]

MENTAL HEALTH CONSIDERATIONS

Recommendations

The current bridge statement mental health recommendations are shown in Table 7. The 2014 statement contained no recommendations in this area.

Background and Supporting Literature

The mental health of patients before and after sport-related injury has drawn increasing attention from sport governing bodies[101] and medical organizations. Guidelines and recommendations for improving mental health services planning have been published.[46,56,102] Organizations are advised to have plans for emergent mental health referrals, to educate clinicians on the appropriate monitoring of behavior for psychological concerns, and to have procedures in place for the referral of student-athletes with psychological concerns. Athletic trainers should be aware of these recommendations and develop mental health policies and procedures to include collaborative partners for referring patients with mental health considerations. Such considerations are especially important in SRC, as preexisting mental health conditions can influence the baseline and postinjury assessments, are often exacerbated after injury, and can influence the symptom presentation and length of recovery.

Screening for mental health conditions before sport participation is important for several areas of concussion management, including the interpretation of adjunct assessments and the prognosis postconcussion.[103] With respect to preparticipation screening, the most recent iteration of the preparticipation monograph[104] includes a robust chapter on mental health. The revised preparticipation screening history form uses the Patient Health Questionnaire-4 (PHQ-4) to screen for anxiety and depression, and the physical examination form reminds providers to ask mental health–related questions.[104] The slightly longer PHQ-9 could be a valid screening tool as part of the preseason intake forms or for patients after concussion in the presence of mental health concerns. Furthermore, interassociation recommendations[46,56] offer clinicians a list of behaviors to monitor in student-athletes, and other authors[92,98,105] have summarized various patient-reported outcome measures that can assist in screening athletes for mental health conditions.

Identifying patients with a history of mood disorders is important for the appropriate interpretation of adjunct concussion assessments used at baseline or postinjury.[98] Athletes with preexisting mental health conditions have consistently demonstrated higher symptom scores at baseline than athletes without preexisting conditions,[106–109] whereas differences among balance and neurocognitive assessments have been inconsistent.

Table 5. Recommendations for Prognostic Factors for Recovery and Persistent Symptoms

2014 Statement	2024 Bridge Statement
NA	New: Athletic trainers and other health care providers managing patients with concussion should consider the moderating factors for concussion recovery when developing management plans.[74–76] SOR: B

Abbreviations: NA, not applicable; SOR, strength of recommendation.[31]

Table 6. Risk Factors for Delayed or Difficult Recovery Consistent in the Literature

Risk	Modifiers	Evidence[a]
Access to care and care seeking	Delayed access	Consistent
	Delayed care seeking	Consistent
	Continued participation after injury	Consistent
Symptoms	Longer duration	Consistent
	Greater severity	Consistent
	Specific symptoms (eg, dizziness)	Emerging
	Visual-vestibular deficits	Emerging
Sleep	Poor sleep after injury	Emerging
Temporal	Frequency: repeated concussions over time	Consistent
Age	Adolescence	Consistent
Comorbidities and preexisting conditions	Depression	Consistent
	Migraine	Consistent
	Other mental health disorders	Consistent
Sport	High-risk activity, contact or collision sport, high sporting level	Consistent
Social determinants of health	Health care access, health insurance	Emerging

[a] *Consistent* indicates that most available studies showed the factor was related to recovery. However, all factors should be considered in the context in which they occur, as it is well documented that the social determinants of health may affect recovery and outcomes for other health conditions.

Also, a history of concussion has been associated with reports of worse psychological health and quality of life.[93–96] Specifically, youth athletes with a history of ≥1 concussions displayed more perceptions of psychiatric difficulties,[93] and adolescent[95] and collegiate[96] athletes with concussion histories reported poorer general health, vitality, social functioning, and mental health. Chrisman et al[96] noted that adolescents with a concussion history were at a 3.3 times greater risk for depression, and Sarmiento et al[110] found that adolescents with ≥1 concussions more often (41%) expressed persistent feelings of sadness or hopelessness.

Concussion may also result in postinjury mental health difficulties, including a few symptoms that may be categorized as an emotional or affective cluster,[111] which may represent either an exacerbation of a prior condition or the emergence of new symptoms. Several investigators have noted transient mood disturbances and lower health-related quality of life after concussion that typically resolved as the patient recovered and returned to school, social, and sport activities.[112–114] In some cases, however, the recovery from mood disturbances may not follow the recovery trajectory of other concussion domains. This should raise suspicion of an underlying mood disorder and prompt a thorough clinical examination.[20] The use of patient-reported outcome measures (Table 8) may help clinicians better understand the effect of specific symptoms endorsed by patients on the traditional graded symptom scale indicating the perception of their health.[98,115] Clinicians using patient-reported outcome measures should be familiar with their administration, scoring, and interpretation. Furthermore, a mental health policy and procedures document should be in place to provide guidance for any test scores that exceed established cutoffs or responses that are concerning to the clinician.[67,68]

For patients with diagnosed mental health conditions, the evidence suggests their preexisting conditions may influence concussion recovery and should be included as part of the postconcussion patient education discussion. In 9 of 12 studies in a recent systematic review,[97] a psychiatric history increased the risk of persistent symptoms. In other research outlined in this review, an association was identified

Table 7. Recommendations for Mental Health

2014 Statement	2024 Bridge Statement
NA	New: Athletic trainers should be familiar with the interassociation consensus recommendations for developing plans for the recognition and referral of secondary school[56] and collegiate[46] athletes with psychological concerns. SOR: C
NA	New: Psychosocial and mental health disorder screening should be a standard aspect of the preparticipation examination.[20,92] SOR: C
NA	New: Athletic trainers should be aware that athletes with a concussion history have demonstrated higher perceived ratings of psychological difficulties and deficits in the psychosocial domains of health-related quality of life at baseline.[93–96] SOR: B
NA	New: Athletes with a preexisting mental health condition—specifically anxiety or depression—appear to be at increased risk for prolonged recovery.[19,20,97] SOR: B
NA	New: A family history of psychiatric or mood disorders may be a predictor of worse psychiatric outcomes and prolonged symptoms after concussion.[97] SOR: B
NA	New: Athletic trainers should assess and manage patients with concussion using a biopsychosocial model[23,45] that includes patient-reported outcome measures to serially assess the exacerbation of preexisting mental health conditions and the onset of new psychological symptoms throughout recovery.[98] SOR: C
NA	New: Athletic trainers should collaborate with mental health specialists to provide timely referrals for patients with psychological difficulties identified during the preparticipation physical examination or after concussion.[46,56] SOR: C
NA	New: The school-based concussion management team should assess adverse postconcussion academic effects that may negatively influence the student-athlete's mental health.[99,100] SOR: B

Abbreviations: NA, not applicable; SOR, strength of recommendation.[31]

Table 8. Patient-Reported Outcome Measures for Mental Health Conditions

Domain or Symptom	Patient-Reported Outcome Measure Examples	License Fee or Agreement Required?	Distributor
Mood	Profile of Mood States	Yes	Multi-Health Systems: https://mhs.com/
	Brief Symptom Inventory–18	Yes	Pearson Assessments: https://www.pearsonassessments.com/
Anxiety	Generalized Anxiety Disorder Scale	No	Patient Health Questionnaire Screeners: https://www.phqscreeners.com/
	Quality of Life in Neurologic Disorders (Neuro-QOL) Anxiety Scale	No	Health Measures: https://www.healthmeasures.net/explore-measurement-systems/neuro-qol
Depression	Beck Depression Inventory	Yes	Pearson Assessments: https://www.pearsonassessments.com/
	Neuro-QOL Depression Scale	No	Health Measures: https://www.healthmeasures.net/explore-measurement-systems/neuro-qol
	Center for Epidemiological Studies Depression Scale	No	Center for Epidemiological Studies: https://cesd-r.com/wp-content/uploads/2018/04/cesdrscale.pdf
	Patient Health Questionnaire (PHQ-4, PHQ-9, PHQ-15)	No	Patient Health Questionnaire Screeners: https://www.phqscreeners.com/
Quality of life	Medical Outcomes Short Form (SF-12, SF-36)	Yes	Quality Metric: www.qualitymetric.com
	Pediatric Quality of Life Inventory	Yes	Mapi Trust: http://www.pedsql.org/
	Patient-Reported Outcomes Measurement Information System Pediatric Profile	No	Health Measures: https://www.healthmeasures.net/score-and-interpret/interpret-scores/promis/162-promis

between a family history of psychological illness and worse postinjury outcomes, including persistent symptoms. In their systematic review, Rice et al[116] noted an association with depression in both those acutely postconcussion and those with persistent symptoms. The association between concussion and other mental health conditions, such as anxiety and other mood disorders, was inconsistent or limited.[116] These findings support the use of a biopsychosocial model and patient-reported outcomes for assessing and managing patients with concussion.[23,98,117]

Studies of long-term mental health conditions after concussion are often limited by design and recall bias. In a systematic review of long-term health considerations after concussion, Manley et al[75] determined that psychological health problems existed in only a minority of former professional American football athletes. Among those reporting mental health conditions, depression was the most common, and current depression was more prevalent in those with a history of concussion.[75] Similarly, a history of concussion was consistently associated with a clinical depression diagnosis and depressive symptom acknowledgment among former athletes, even when accounting for confounding factors.[118]

Preexisting mental health conditions or postconcussion mood and anxiety symptoms can complicate concussion management, so ATs are encouraged to include assessments to help identify these concerns and have mental health referral networks in place in their concussion protocols. To ensure proper recognition and referral of patients with mental health conditions after concussion, ATs should develop a plan that follows the guidance provided by the twin Interassociation Recommendations for Developing a Plan to Recognize and Refer Student-Athletes With Psychological Concerns statements.[46,56] Seeking local referral sources with expertise in mental health conditions, including psychologists, school psychologists, neuropsychologists, psychiatrists, or school counselors, is an important part of the recommendations and allows the AT to have collaborators in position before they are needed for the referral of a specific patient.[92] Establishing these lines of communication with other health care providers in advance can assist in educating patients and families after the injury and aid in timely referrals when required.

COGNITIVE ACTIVTY AND RETURN TO SCHOOL

Recommendations

The 2014 statement and the current bridge statement recommendations on cognitive activity and return to school are outlined in Table 9.

Background and Supporting Literature

Supporting student-athletes as they return to school is an important aspect of concussion management. Numerous symptoms associated with concussion can hinder a student-athlete's ability to succeed in the classroom.[126] Therefore, individualized monitoring of postconcussion symptoms and the implementation of return-to-school plans can create an optimal environment for returning to academics.[18] Authors have evaluated aspects of returning to academics among secondary school students, yet the evidence for college and elementary school students is limited. The most recent international Concussion in Sport Group statement recommended that children and adolescents not be cleared for a full return to competition until they have successfully completed a full return to school.[19] However, instituting the return-to-school and return-to-play progressions in parallel[124] may improve outcomes versus prolonged strict cognitive and physical rest.[127]

Successful return to school may require academic support, including a brief absence from school, as the heightened symptomatic state after concussion may cause cognitive difficulties that interfere with the ability to keep up with academic requirements.[125] Current guidelines caution against returning students immediately to school, but this does not mean that they should remain at home for an extended period of time.[18] Evidence

Table 9. Recommendations for Cognitive Activity and Return to School

2014 Statement	2024 Bridge Statement
~~34. Athletic trainers should work with school administrators and teachers to include appropriate academic accommodations in the concussion-management plan. SOR: C~~	Update to 2014 Recommendation 34: All ATs should be familiar with the ascending levels of academic supports and collaborate to develop individualized care plans to ensure the student-athlete's return to academics.[18,119] SOR: C
41. School administrators, counselors, and instructors should be made aware of the patient's injury with a recommendation for academic accommodation during the recovery period. SOR: C	NA
NA	New: An interdisciplinary school-based concussion management team, which may include ATs, teachers, coaches, school nurses, parents, student-athletes, school administrators, and other school stakeholders, should be developed to provide the student-athlete with support for a successful return to academics after concussion.[18,120.121] SOR: C
NA	New: The school-based concussion management team should be educated regarding how concussion symptoms and impairments can manifest as functional school problems that may require academic supports.[18,120,122,123] SOR: C
NA	New: After a short period of cognitive rest (24–48 hours), student-athletes can begin the return-to-learn process by physically returning to school. They may benefit from academic supports to limit symptom exacerbation.[18,119,121,124] SOR: C
NA	New: The school-based concussion management team should assess adverse postconcussion academic effects that may negatively influence the student-athlete's mental health.[99,125] SOR: B (Note: The same recommendation is presented in Table 7.)
NA	New: Student-athletes who have sustained a concussion should return to the classroom using a gradual, stepwise strategy that may include the use of academic supports.[18,119,121,122,125] SOR: C

Abbreviations: AT, athletic trainer; NA, not applicable; SOR, strength of recommendation.[31]

from 2 systematic reviews suggested that, although an initial short period of relative rest (eg, 24 to 48 hours) is beneficial, beginning subsymptom threshold-limited physical and cognitive exertion after this timeframe improves outcomes.[127,128]

At both the secondary school[129,130] and collegiate levels,[131] ATs and the school-based concussion management team could improve their familiarity with academic supports and the facilitation of an athlete's return to academics. The AT, who is often the first person the student-athlete sees for concussion management, plays a critical role in supporting student-athletes as they progress through the return-to-school plan.[129,131] Practical implementation of academic supports requires an interdisciplinary school-based concussion management team, with involvement and home monitoring from the family.[18,119,122,126] Team members and stakeholders with academic responsibilities on the concussion management team can include health care providers, school personnel and administrators, the student-athlete, and the student-athlete's family members.[18,122,126] Nearly 75% of ATs surveyed said they should be a part of the academic support team[129,132]; inconsistencies existed regarding their roles in the development and implementation of academic supports.[100,133] These inconsistencies were primarily influenced by the school's infrastructure, the ATs' knowledge of academic supports, and the ATs' perceptions of their role at the school. Those ATs with involvement in supplying academic support identified several strategies to successfully implement academic adjustments, including the establishment of a formal policy, development of individualized return-to-learn (RTL) progressions, and use of a multidisciplinary concussion management team.[134] Because the role of the AT in the concussion management team is often school dependent, each AT should be involved in discussions regarding the role of each of the concussion management team members in developing the concussion policy. One component of this policy is to educate all team members and stakeholders on how a concussion can affect learning so that they may improve care and support for any academic challenges, reduce the effect of symptoms on learning, and help ensure a successful transition back to the classroom.[18,122,126]

Heavy academic loads that may cause significant difficulties in school postconcussion can be mitigated through various academic supports.[99,126] Academic supports include a range of options such as temporary academic adjustments (eg, extra time, reduced load), formal accommodations (eg, 504 plan), and academic modifications (eg, Individualized Education Program [IEP]).[119] It is vital for ATs to become familiar with the different levels of academic supports available and the process for implementing these supports in their institution or school district, even if they are not the primary initiators. Most patients require only temporary academic adjustments, such as wearing sunglasses and sitting away from bright sunlight or other noxious classroom lighting for patients with light sensitivity, that can be offered by teachers and the concussion management team.[119] Iverson et al recommended several areas of adjustment based on the patient's presentation. For example, shorter assignments and a lighter workload could be given to patients presenting with attention, concentration, or memory deficits or hall passes and rest breaks to patients with complaints of headache or dizziness.[126] Regarding informal academic adjustments, the AT plays a crucial role in informing the school-based team of

Table 10. Return-to-Academics Strategy[a]

Step	Mental Activity	Activity at Each Step	Goal
1	Daily activities that do not result in more than a mild and brief exacerbation[b] of symptoms related to the current concussion	Typical activities during the day (eg, reading) while minimizing 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.[b]	Return to full academic activities and catch up on missed work

[a] After an initial period of relative rest (24–48 hours postinjury 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. Reprinted with permission.[19]

[b] *Mild and brief exacerbation of symptoms* is defined as an increase of $\leq$2 points on a 0–10 scale (0 = *no symptoms*, 10 = *worst symptoms imaginable*) for $<$1 hour when compared with the baseline value reported before cognitive activity.

the patient's current symptom status and physical deficits so that specific academic adjustments can be developed. Formal accommodations include Individualized Healthcare Plans, Section 504 plans, or IEPs for patients with persistent symptoms or significant impairments after concussion.[119] A health care provider can ask a school to consider a 504 plan or IEP for a student postconcussion but cannot prescribe such plans. The decision is made after a school-based multidisciplinary evaluation.[18,119] Understanding and implementing a safe return to academics through interprofessional collaboration and proper concussion management will ultimately assist the student-athlete's academic, emotional, and physical recovery.[123] In these situations involving more formal academic support, the AT may function as part of the team developing the supports, contributing important health information on the patient's symptom status over time, and identifying deficits on physical or cognitive testing. (A detailed RTL progression is illustrated in Table 10.) It should be noted that not all students require academic supports; those who do may not need to begin at stage 0, and many will not have any school absences. The entry point for the RTL progression should be dictated by the patient's symptoms and functional status in collaboration with medical and school personnel.[19,120]

PHYSICAL ACTIVITY, REHABILTIATION, AND RETURN TO SPORT

Recommendations

The 2014 statement and the current bridge statement recommendations on physical activity, rehabilitation, and return to sport are offered in Table 11.

Background and Supporting Literature

Despite previous clinical guidelines that endorsed strict cognitive and physical rest as a primary treatment for concussion, recent randomized controlled trials suggested that an immediate initial period of relative rest (24 to 48 hours) followed by symptom-limited cognitive and physical activity as well as symptom-tolerated aerobic exercise treatment and clinician-directed activities may be appropriate.[12,14,15,121,135,136] Earlier return-to-play protocols were crafted primarily for the contact- or collision-sport athlete and did not consider the unique demands of noncontact-sport athletes with concussion. When managing athletes with concussion, ATs should help them steadily increase aerobic exercise duration and intensity, avoiding more than a mild increase in symptoms (*mild* = $\leq$2-point increase in any symptom during activity or exercise compared with the preactivity value on a 0–10 scale), before returning them to unrestricted practice and competition.[12,14,15,19,136,137,140] The updated return-to-sport protocol is available in Table 12. The most current literature highlighted the negative aspects of strict rest (ie, *cocooning*). It is now established level 1 evidence that clinically directed physical activity, including prescribed aerobic exercise treatment (based on the individual's exercise tolerance on systematic exertional testing) that does not exacerbate symptoms more than mildly, facilitates recovery from SRC and reduces the incidence of delayed recovery in adolescent athletes.[12,14,15,135–137] Aerobic exercise likely improves autonomic function and oxygen delivery to the brain, yet more studies are needed to fully understand the mechanisms behind the beneficial effects of aerobic exercise on concussion recovery.

The latest evidence on the timing and effectiveness of aerobic activity after SRC indicates that early aerobic activity can facilitate recovery; therefore, it is a recommended portion of the first 2 stages of the return-to-sport strategy. The updated return-to-sport guidance includes clinically directed or supervised aerobic exercise and other interventions as treatment for the injury.[14,138] These are progressed in duration and intensity as an individual moves through the protocol. Authors of prospective studies[14,15,135,141] have confirmed that early, controlled subsymptom threshold aerobic exercise was safe and beneficial beginning as soon as 1 to 2 days after injury in symptomatic patients and certainly within the first 10 days after injury.[137] Additionally, in multiple prospective studies,[14,15,135,141] investigators have demonstrated that mild symptom exacerbation during physical activity or exercise did not delay concussion recovery. However, activity that more than mildly exacerbates symptoms, especially if performed repeatedly, may put the athlete at risk for prolonged symptoms and delayed recovery; thus, clinician monitoring of interventions is advised.[142] Exercise subacutely (within the first 10 days of injury) has proven

Table 11. Physical Activity, Rehabilitation, and Return-to-Sport Recommendations

2014 Statement	2024 Bridge Statement
19. A concussed athlete should not be returned to athletic participation on the day of injury. SOR: C	NA
20. No concussed athlete should return to physical activity without being evaluated and cleared by a physician or designate (eg, AT) specifically trained and experienced in concussion evaluation and management. SOR: C	NA
21. Young athletes with a past medical history that includes multiple concussions, a developmental disorder (eg, learning disabilities, attention-deficit/hyperactivity disorder), or a psychiatric disorder (eg, anxiety, depression) may benefit from referral to a neuropsychologist to administer and interpret neurocognitive assessments and determine readiness to return to scholastic and athletic activities. SOR: C	NA
~~22. A physical-exertion progression should begin only after the concussed athlete demonstrates a normal clinical examination, the resolution of concussion-related symptoms, and a return to preinjury scores on tests of motor control and neurocognitive function.[7,26] SOR: C~~	Update to 2014 Recommendation 22: Controlled, subsymptom threshold aerobic exercise training can begin as soon as 1–2 days after injury, provided resting symptoms are stable (not getting worse) and not severe, regardless of motor control and neurocognitive test scores.[12,14,15,135–137] SOR: A
23. Concussed athletes who do not show a typical progressive return to normal functioning after injury may benefit from other treatments or therapies. SOR: C	NA
24. Concussion-grading scales should not be used to manage the injury. Instead, each patient should be evaluated and treated on an individual basis. SOR: B	NA
~~25. After the injury has resolved, the concussion may be retrospectively graded for the purpose of medical record documentation. SOR: C~~	NA
36. After a concussion diagnosis, the patient should be instructed to avoid medications other than acetaminophen. All current medications should be reviewed by the physician. SOR: C	NA
37. After a concussion diagnosis, the patient should be instructed to avoid ingesting alcohol, illicit drugs, or other substances that might interfere with cognitive function and neurologic recovery. SOR: C	NA
38. After the initial monitoring period, rest is currently the best practice for concussion recovery. As such, there is typically no need to wake the patient during the night unless instructed by a physician. SOR: C	NA
~~39. During the acute stage of injury, the patient should be instructed to avoid any physical or mental exertion that exacerbates symptoms.[5,7,28,39,42] SOR: C~~	Update to 2014 Recommendation 39: During the acute stage of injury (24–48 hours postinjury), the patient should be instructed to avoid any physical or mental exertion that exacerbates symptoms more than mildly.[137,138] SOR: B
NA	New: When appropriately implemented, aerobic exercise that does not exacerbate symptoms more than mildly should be viewed as treatment or medicine for concussion.[12,15,137] SOR: A a. Early prescription of subsymptom threshold aerobic exercise, after determination of the individual athlete's exercise tolerance, can improve recovery and outcomes. b. In individuals with persistent postconcussive symptoms, subthreshold aerobic exercise can also be safely implemented to improve outcomes.
NA	New: Targeted and multidimensional active rehabilitation strategies can also be safety and effectively implemented into concussion management paradigms when directed by a trained clinician.[12,138,139] SOR: A
~~40. In addition to exclusion from physical activity related to team activities, concussed student-athletes should be excused from any activity requiring physical exertion (eg, physical education classes). SOR: C~~	Update to 2014 Recommendation 40: In addition to exclusion from physical activity related to team activities after concussion, student-athletes should be excused from any activity requiring physical exertion that puts the athlete at risk for further head injury.[138,140] SOR: C
42. A patient with a concussion should be instructed to eat a well-balanced diet that is nutritious in quality and quantity and should drink fluids to stay hydrated. SOR: C	NA

Table 11. Continued From Previous Page

2014 Statement	2024 Bridge Statement
43. For an athlete with a concussion history, the AT should adopt a more conservative return-to-play strategy. SOR: B	NA
44. Referral to a physician or designate with concussion training and experience should be considered when an athlete with a history of multiple concussions sustains concussions with lessening forces, demonstrates increasing severity with each injury, or demonstrates objective or subjective changes in baseline brain function. SOR: C	NA
45. The AT should recognize the potential for second-impact syndrome in young patients who sustain a second trauma to the brain prior to complete resolution of the first injury. SOR: C	NA
46. The AT should be aware of the potential for long-term consequences of multiple subconcussive and concussive impacts. SOR: C	NA
30. When working with children and adolescents, ATs should be aware that recovery may take longer than in adults and require a more prolonged return-to-play progression. SOR: B	NA

Abbreviations: AT, athletic trainer; NA, not applicable; SOR, strength of recommendation.[31]

effective in speeding recovery from concussion in adolescents and reducing their incidence of persistent symptoms (symptoms >1 month).[15] Specifically, individualized subsymptom-threshold aerobic exercise treatment prescribed to adolescent athletes with concussion symptoms as soon as 2 days after SRC safely sped up recovery and reduced the incidence of delayed recovery.[14,15,135]

Evidence also supports the use of aerobic exercise and deficit-targeted rehabilitation interventions to improve outcomes in individuals with prolonged symptoms.[12,138,139] Exercise and targeted rehabilitation strategies can be safely implemented in both the early and late phases of the concussion recovery process. Vestibular[143,144] and cervicovestibular rehabilitation protocols[138,139,145–147] have been successfully

Table 12. Return-to-Play or -Sport Strategy[a]

Step	Exercise Strategy	Activity at Each Step	Goal
1	Symptom-limited activity	Daily activities that do not exacerbate symptoms (eg, walking)	Gradual reintroduction of work or school
2	Aerobic exercise: a. Light (≤∼55% of max HR), then b. Moderate (≤∼70% max HR)	Stationary cycling or walking at a slow to medium pace. May start light resistance training that does not result in more than mild and brief exacerbation[b] of concussion symptoms.	↑ Heart rate
3	Individual sport-specific exercise Note: If sport-specific training involves any risk of inadvertent head impact, medical clearance should occur before step 3	Sport-specific training away from the team environment (eg, running, change of direction and/or individual training drills away from the team environment). No activities that risk head impact.	Add movement, change of direction
	Steps 4–6 should begin after the resolution of any symptoms, abnormalities in cognitive function, and any other clinical findings related to the current concussion, including with and after physical exertion.		
4	Noncontact training drills	Exercise to high intensity, including more challenging training drills (eg, passing drills, multiplayer training) that can integrate into a team environment.	Resume usual intensity of exercise, coordination, and ↑ thinking
5	Full-contact practice	Participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal game play	

Abbreviation: max HR, predicted maximal heart rate according to age (ie, 220 – age).

[a] A minimum of 24 hours at each step is required; each step tally takes a minimum of 24 hours.

[b] *Mild and brief exacerbation of symptoms* = an increase of ≤2 points on a 0–10 scale (0 = *no symptoms*, 10 = *worst symptoms imaginable*) for <1 h when compared with the baseline value reported before physical activity. Athletes may begin step 1 (ie, symptom-limited activity) within 24 h of injury, with progression through each subsequent step typically taking ≥24 h. If more than mild exacerbation of symptoms (ie, ≥2 points on a 0–10 scale) occurs during steps 1–3, the athlete should stop and attempt to exercise the next day. Athletes experiencing concussion-related symptoms during steps 4–6 should return to step 3 to establish full symptom resolution with exertion before engaging in at-risk activities. Written determination of readiness to return to sport should be provided by a health care provider before unrestricted clearance as directed by local laws and/or sporting regulations. Reprinted with permission.[19]

Table 13. Equipment Recommendations

2014 Statement	2024 Bridge Statement
26. The AT should enforce the standard use of certified helmets while educating athletes, coaches, and parents that, although such helmets help to prevent catastrophic head injuries (eg, skull fractures), they do not significantly reduce the risk of concussions. SOR: B	NA
27. Helmet use in high-velocity sports (eg, alpine sports, cycling) has been shown to protect against traumatic head and facial injury. SOR: A	NA
28. Consistent evidence to support the use of mouthguards for concussion mitigation is not available. However, substantial evidence demonstrates that a properly fitted mouthguard reduces dental injuries. SOR: B	NA
29. Research on the effectiveness of headgear in soccer players to reduce concussion is limited. The use of headgear is neither encouraged nor discouraged at this time. SOR: C	NA

Abbreviations: AT, athletic trainer; NA, not applicable; SOR, strength of recommendation.[31]

and safely performed by individuals with persistent symptoms. Patients who received these directed therapies displayed faster recovery and improved outcomes when compared with those who did not receive them.[12,13,137,138]

EQUIPMENT

Recommendations

No change in guidance surrounding equipment has occurred since the 2014 position statement. As such, no background is presented for this section. All ATs should continue to be aware of new equipment and critically appraise its validity before implementation. Table 13 supplies the 2014 recommendations.

CONCLUSIONS

Since the publication of the 2014 NATA position statement on concussion management, the science and care of individuals with concussion have advanced significantly. Despite these improvements, concussion remains one of the most complex and challenging injuries for the practicing AT to manage. The present bridge document, which synthesizes key literature over the previous decade, supplements the 2014 statement by presenting new or modified recommendations that link the existing position statement to the best current clinical evidence by giving foundational information for the AT concerning the assessment and management of the patient with concussive injury. Important updates include the education of patients about driving, use of vision or vestibulo-ocular assessments, assessment timing and domains, considerations in evaluating and addressing mental health concerns, management of return to academics, identification of prognostic factors for prolonged recovery, and active treatment and rehabilitation strategies for those with acute concussions and those with persistent symptoms. In addition to reflecting on updated evidence in the clinical management of concussion, this bridge document highlights the need to adopt the biopsychosocial model for managing concussion, which emphasizes the social and cultural factors affecting quality of care and patient outcomes.

The new and revised recommendations integrate known evidence into areas with large effects on clinical practice for ATs involved in a team-based approach to concussion management. To effectively implement the new evidence in a manner that maximizes patient care, ATs are encouraged to facilitate interprofessional care by engaging with domain-specific stakeholders who have expertise beyond the scope of AT clinical practice when feasible. Despite the updates provided herein, concussion science and care will continue to evolve, including in the areas of diagnostic and treatment capabilities. To best facilitate a successful outcome for their patients, ATs are encouraged to stay abreast of scientific advances and thoughtfully modify clinical policies within their scope of practice to provide evidence-based care whenever possible.

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