

Mild Head Injury/Concussion Management Plan

Baseline Testing

Baseline testing is completed for all Football, Field Hockey, Men's Soccer, Women's Soccer, Men's Basketball, and Men's Lacrosse student-athletes prior to their freshmen season.

- Standardized Assessment of Concussion (SAC) – Tests cognitive function.
- Balance Error Scoring System (BESS) – Tests postural stability.

Clinical Evaluation and Assessment Following Mild Head Injury

Student-athletes who exhibit signs, symptoms, or behaviors consistent with a mild head injury **shall be removed** from practice or competition and **evaluated** by a staff Athletic Trainer. Student-athletes diagnosed with a concussion **shall not return** to activity for the remainder of the day. *Mild Head Injury Instructions* form is completed and given to the student-athlete and reviewed with their roommate or parents (if they are going home after a game in which they sustained an injury). The GSC is recorded daily until the student-athlete is cleared for full participation. Both the SAC and BESS tests are performed 1-3 hours following the initial injury, 1 day post-injury, once the student-athlete is symptom free, and following the Exertional Bike Test. Return to participation is an objective decision. No one test (GSC, SAC, or BESS) is utilized solely to determine recovery or return to participation.

- Graded Symptom Checklist (GSC) – Self reported symptoms.
- Standardized Assessment of Concussion (SAC) – Tests cognitive function.
- Balance Error Scoring System (BESS) – Tests postural stability.

Physician Referral

- **Mild MHI** - There is no amnesia (amnesia is different than confusion) or loss of consciousness. Student-athletes are not referred to the team physician unless:
 - Post-concussive symptoms worsen or do not improve.
 - Increase in the number of symptoms reported.
 - Post-concussive symptoms begin to interfere with the student-athlete's daily activities.
- **Moderate MHI** - There is amnesia, but no loss of consciousness. Student-athletes are referred to the team physician. The team physician will determine if further diagnostic testing (i.e. CT Scan, MRI) and/or follow-up with the team neurologist is required.
- **Severe MHI** - There is amnesia and observable loss of consciousness (by coach, athletic trainer, or team physician). Student-athletes are referred to the team physician. The team physician will determine if further diagnostic testing (i.e. CT Scan, MRI) and/or follow-up with the team neurologist is required.

Best Practice Guidelines for Cognitive Rest

Cognitive rest is an often neglected component of concussion recovery. A student recovering from a concussion is faced with predictable challenges in the academic realm. Mental/physical fatigue and sleep disruption may leave the student-athlete without the mental capacity to participate in a full day of classes and subsequent efforts necessary for assignments or scheduled exams.

Our therapeutic goal during recovery involves eliminating athletic activity and limiting physical activity as well as increasing cognitive rest by reducing demands pertaining to learning, concentration, and memory as these are directly affected by a concussion. The therapeutic goal requires a synchronization of academic support initiated by the Athletic Trainer to the Dean of Students office resulting in communication with professors and possibly the Office of Disability Services.

Ultimately, our goal is to assist a recovering student in fulfilling academic requirements being cautious not to overload cognitive functions resulting in a worsening of symptoms. In essence, developing a plan between the Dean of Students office and medical staff prioritizes academic efforts through utilization of the following recommendations and/or referral to Disability Support Services. In prolonged or more severe cases, a neuropsychological evaluation may be requested from the attending physician for review by the Disability Services Office to determine appropriate academic recommendations.

The following recommendations will promote cognitive rest, and ensure the student continued educational success as symptoms resolve.

Recommendations for the Student Recovering from a Concussion

<i>Recommendations</i>	<i>Rationale</i>
Excused absence from class	Complete rest, progressing to limited attendance, may be needed
Rest period during the day	When symptoms flare, brief rest may allow student to return to class
Reduction of light or noise sensitivity	Fluorescent light and high-stimulation environments may cause symptoms
Monitor computer use, TV use, video games, music	Avoidance of cognitive stresses
Reduced course load/credits	Full course load may worsen symptoms
Preferential classroom seating	Lessens distractions
Temporary assistance of a tutor or academic coach	Assists in organizing and prioritizing assignments
Extension of assignment deadlines	Postponement or staggering of exams in accordance with the professor's make up privileges
Information processing speed and ability to handle full workload may be impeded	Mental efforts to prepare and then take tests may worsen symptoms
Excuse from team sport practice or athletic activities	No physical activity progresses to limited physical activity

Cognitive Management = Academic Management

Return to Participation for Mild MHI

- ***Mild MHI Testing***

When the student-athlete is completely symptom free, they will be re-assessed for the SAC and BESS test scores. Once the student-athlete's SAC and BESS test scores have returned to baseline and they remain completely symptom free for an additional 24 hours, the Graduated Exertional Return to Participation Protocol will begin.

- ***Mild MHI Graduated Exertional Return to Participation Protocol***

- **Exertion Step 1** - Exertional Bike Test (20 Minutes, Manual Program, Level 5, 15-20 MPH)
 - If there are no return of symptoms during the Exertional Bike Test, there is no change in the SAC and BESS scores following the Exertional Bike Test, and they remain completely symptom free for an additional 4 hours following the Exertional Bike Test, the student-athlete is cleared to progress to *Exertion Step 2*.
 - If there is a return of symptoms during the Exertional Bike Test, there is a change in the SAC and BESS scores following the Exertional Bike Test, or they do not remain completely symptom free for an additional 4 hours following the Exertional Bike Test, continue to re-evaluate daily. Repeat all procedures from the beginning of *Mild MHI Testing*.
- **Exertion Step 2** - Cardiovascular Activities (Functional Agilities Protocol Workout or Interval Bike Workout and Body Weight Circuit)
 - If there are no return of symptoms during the Cardiovascular Activities, and they remain completely symptom free for an additional 24 hours following the Cardiovascular Activities, the student-athlete is cleared to progress to *Exertion Step 3*.
 - If there is a return of symptoms during the Cardiovascular Activities, or they do not remain completely symptom free for an additional 24 hours following the Cardiovascular Activities, continue to re-evaluate daily. Repeat all procedures from the beginning of *Mild MHI Testing*.
- **Exertion Step 3** - Non Contact Practice (Non-Contact Skill Drills, No Live Activity)
 - If there are no return of symptoms during the Non Contact Practice, and they remain completely symptom free for an additional 24 hours following the Non-Contact Practice, the student-athlete is cleared to progress to *Exertion Step 4*.
 - If there is a return of symptoms during the Non Contact Practice, or they do not remain completely symptom free for an additional 24 hours following the Non Contact Practice, continue to re-evaluate daily. Repeat all procedures from the beginning of *Mild MHI Testing*.
- **Exertion Step 4** - Return to Controlled Full Contact in a Practice (Controlled Situation Live Activity, Limited Repetition Live Activity)
 - If there are no return of symptoms during the Controlled Full Contact Practice, and they remain completely symptom free for an additional 24 hours following the Controlled Full Contact Practice, the student-athlete is cleared to progress to *Exertion Step 5*.
 - If there is a return of symptoms during the Controlled Full Contact Practice, or they do not remain completely symptom free for an additional 24 hours following the Controlled Full Contact Practice, continue to re-evaluate daily. Repeat all procedures from the beginning of *Mild MHI Testing*.

- **Exertion Step 5** - Return to Unrestricted Full Contact in a Practice (Live Activity, Full Repetition Live Activity)
 - If there are no return of symptoms during the Unrestricted Full Contact Practice, and they remain completely symptom free for an additional 24 hours following the Unrestricted Contact Practice, the student-athlete is cleared to progress to *Exertion Step 6*.
 - If there is a return of symptoms during the Unrestricted Full Contact Practice, or they do not remain completely symptom free for an additional 24 hours following the Unrestricted Full Contact Practice, continue to re-evaluate daily. Repeat all procedures from the beginning of *Mild MHI Testing*.
- **Exertion Step 6** - Return to Participation in a Game/Event

Return to Participation for Moderate/Severe MHI

- ***Moderate MHI Testing***

When the student-athlete is completely symptom free, they will be re-assessed for the SAC and BESS test scores. Once the student-athlete's SAC and BESS test scores have returned to baseline and they remain completely symptom free for an additional 7 days, the Graduated Exertional Return to Participation Protocol will begin.

- ***Severe MHI Testing***

When the student-athlete is completely symptom free, they will be re-assessed for the SAC and BESS test scores. Once the student-athlete's SAC and BESS test scores have returned to baseline and they remain completely symptom free for an additional 2 to 4 weeks, the Graduated Exertional Return to Participation Protocol will begin.

- ***Moderate/Severe MHI Graduated Exertional Return to Participation Protocol***

- **Exertion Step 1** - Exertional Bike Test (20 Minutes, Manual Program, Level 5, 15-20 MPH)
 - If there are no return of symptoms during the Exertional Bike Test, there is no change in the SAC and BESS scores following the Exertional Bike Test, and they remain completely symptom free for an additional 24 hours following the Exertional Bike Test, the student-athlete is cleared to progress to *Exertion Step 2*.
 - If there is a return of symptoms during the Exertional Bike Test, there is a change in the SAC and BESS scores following the Exertional Bike Test, or they do not remain completely symptom free for an additional 24 hours following the Exertional Bike Test, continue to re-evaluate daily. Repeat all procedures from the beginning of *Moderate MHI Testing* or *Severe MHI Testing* (depending on the original assessment).
- **Exertion Step 2** - Cardiovascular Activities (Functional Agilities Protocol Workout or Interval Bike Workout and Body Weight Circuit)
 - If there are no return of symptoms during the Cardiovascular Activities, and they remain completely symptom free for an additional 24 hours following the Cardiovascular Activities, the student-athlete is cleared to progress to *Exertion Step 3*.
 - If there is a return of symptoms during the Cardiovascular Activities, or they do not remain completely symptom free for an additional 24 hours following the Cardiovascular Activities,

continue to re-evaluate daily. Repeat all procedures from the beginning of *Moderate MHI Testing* or *Severe MHI Testing* (depending on the original assessment).

- **Exertion Step 3** - Non Contact Practice (Non-Contact Skill Drills, No Live Activity)
 - If there are no return of symptoms during the Non Contact Practice, and they remain completely symptom free for an additional 24 hours following the Non-Contact Practice, the student-athlete is cleared to progress to *Exertion Step 4*.
 - If there is a return of symptoms during the Non Contact Practice, or they do not remain completely symptom free for an additional 24 hours following the Non Contact Practice, continue to re-evaluate daily. Repeat all procedures from the beginning of *Moderate MHI Testing* or *Severe MHI Testing* (depending on the original assessment).
- **Exertion Step 4** - Return to Controlled Full Contact Practice (Controlled Situation Live Activity, Limited Repetition Live Activity)
 - If there are no return of symptoms during the Controlled Full Contact Practice, and they remain completely symptom free for an additional 24 hours following the Controlled Full Contact Practice, the student-athlete is cleared to progress to *Exertion Step 5*.
 - If there is a return of symptoms during the Controlled Full Contact Practice, or they do not remain completely symptom free for an additional 24 hours following the Controlled Full Contact Practice, continue to re-evaluate daily. Repeat all procedures from the beginning of *Moderate MHI Testing* or *Severe MHI Testing* (depending on original assessment).
- **Exertion Step 5** - Return to Unrestricted Full Contact Practice (Live Activity, Full Repetition Live Activity)
 - If there are no return of symptoms during the Unrestricted Full Contact Practice, and they remain completely symptom free for an additional 24 hours following the Unrestricted Contact Practice, the student-athlete is cleared to progress to *Exertion Step 6*.
 - If there is a return of symptoms during the Unrestricted Full Contact Practice, or they do not remain completely symptom free for an additional 24 hours following the Unrestricted Full Contact Practice, continue to re-evaluate daily. Repeat all procedures from the beginning of *Moderate MHI Testing* or *Severe MHI Testing* (depending on original assessment).
- **Exertion Step 6** - Return to Game/Event Participation

Note: Final return to play decisions will be made solely by Lehigh University Sports Medicine (athletic trainer, team physician, and team neurologist if consulted) based upon the Mild Head Injury/ Concussion Management Plan.