LINFIELD COLLEGE ATHLETIC TRAINING

CONCUSSION MANAGEMENT PLAN

Definition of Concussion: A complex pathophysiological process affecting the brain, induced by biomechanical forces.¹

In accordance with NCAA guidelines, all student-athletes will be required to sign a statement in which they accept the responsibility for reporting their injuries and illnesses to the Linfield College medical staff, including signs and symptoms of concussions. Student-athletes will be presented with educational material on concussions during the review and signing process.

Concussion Management Procedures

Guiding Principles
- Student-athletes who present with an altered state of consciousness and are unable to communicate with the athletic trainer or physician will be referred immediately for evaluation of cervical spine and/or intracranial pathology.
- Student-athletes who are suspected to have sustained a concussion will be examined as soon as possible by a team physician or physician designee (i.e., certified athletic trainer). Management will be decided by the team physician (if present) and/or certified athletic trainer based on the initial assessment and any previous history of concussion. In the event that a Linfield College certified athletic trainer or team physician is not present, management will be the responsibility of the host certified athletic trainer when the student-athlete is away from campus. When a healthcare provider is not present, head coaches should refer the student-athlete to a certified athletic trainer or nearest emergency room depending on the circumstances.
- Any student-athlete exhibiting signs and symptoms of a concussion shall not return to physical activity on the same day of the injury and should be given a copy of the “Head Injury Take Home Information” sheet.
- Medical clearance following concussion injury will be made by the Linfield College team physician or designated certified athletic trainer in consultation with the team physician. Other appropriate healthcare professionals, such as neuropsychologists, may be consulted.
- The following student-athletes will complete baseline testing, including SCAT3 and neuropsychological assessment (ImPACT) prior to participation in their first year at Linfield College:
  - football, soccer, volleyball, cheer, basketball, baseball, softball, lacrosse, and pole vault
  - any other student-athlete with special concern for head injury

Concussion Signs and Symptoms
A unanimous agreement reached at the 3rd International Conference on Concussion in Sport in 2008 and supported in the 4th International Conference on Concussion in Sport in 2012 was that grading of concussion and even the Simple vs. Complex terminology previously proposed should be abandoned. The panel did agree that the majority (80-90%) of concussions resolve in a short (7-10 days) period, with the exception of longer time frames in children and adolescents. The diagnosis of concussion involves the assessment of a range of domains, and can include one or more of the following:
- Symptoms: somatic (e.g., headache, nausea, dizziness, blurred vision), cognitive (e.g., feeling like in a fog or slowed down) and/or emotional symptoms (e.g., sadness/depression)
- Physical signs: (e.g., LOC, amnesia, poor balance)
- Behavioral changes: (e.g., irritability, nervousness)
- Cognitive impairment: (e.g., slowed reaction time, memory problems, poor concentration)
- Sleep disturbance: (e.g., drowsiness, trouble sleeping, excess sleep)
Examples for each domain are listed on the previous page. A comprehensive list of post-concussion signs and symptoms can be found in the attached assessment tool.

If any one or more of these components is present, a concussion should be suspected and the following management strategy instituted.

**On-field and Sideline Assessment of Acute Concussion**

When a student-athlete shows ANY signs or symptoms of a concussion:

a. The injured student-athlete shall be immediately evaluated onsite by a team physician or certified athletic trainer using standard emergency procedures with particular attention given to excluding a cervical spine injury.

b. If an appropriate healthcare provider (i.e., team physician or certified athletic trainer) is not present, the student-athlete shall be safely removed from activity and a certified athletic trainer summoned immediately; or the student-athlete should be referred to a medical facility.

c. Once emergency management issues are addressed, a concussion assessment shall be made using the attached instrument or similar tool.

d. The student-athlete should not be left alone following the concussion injury; serial monitoring for deterioration should be administered during the subsequent hours. Written instructions should be given upon discharge; preferably to a roommate, guardian, or someone that can follow the instructions.

e. Student-athletes diagnosed with a concussion shall not return to activity for the remainder of that day.

**Further Assessment**

Student-athletes diagnosed with a concussion should be assessed daily using the Post-concussion Signs and Symptoms Scale (PSSS) and/or SCAT3. Student-athletes will take the ImPACT test when they report a total score of “0” on the PSSS or when directed by a team physician. Physical, emotional, and cognitive symptoms must return to near baseline before the gradual return to play protocol is initiated. Further consultation with neurological professionals, including neuropsychologists, will be at the discretion of the team physician.

**Concussion Management**

It is imperative that concussion management include both physical and cognitive rest, otherwise the student-athlete is at the risk of exacerbating symptoms and prolonging recovery or even causing permanent injury. The majority of injuries will recover spontaneously over several days and it is expected that a student-athlete will proceed progressively through a stepwise return to play strategy. No unnecessary physical activity should be allowed and the following guidelines for academic participation are suggested:

1. The student-athlete and supervising certified athletic trainer, in collaboration with learning support services, should communicate with their professors that attending class while suffering from concussion symptoms is likely to be detrimental not only to their recovery but also to their academic performance.

2. Mental rest will be recommended for each concussed student-athlete. That may include missing classes, deferring reading assignments and homework, and rescheduling tests.

3. When returning to class, the student-athlete should work with learning support services on obtaining class notes. They are encouraged to consult with professors about any and all available class materials.

4. Use of technology (e.g., computer or phone texting) or watching a TV should be limited to brief periods of time that do not increase symptoms. All unnecessary stimulation, including light and sound should be minimized or eliminated if possible during the recovery period.

5. The student-athlete will be monitored for signs and symptoms indicative of unusual emotional response to the injury or its aftermath (forced inactivity, isolation from social support); and if detected, will be referred to the student health center for further evaluation.
**Return to Play Protocol**

A stepwise return to play protocol is outlined below. The student-athlete may proceed to the next level if asymptomatic at the current level and scores are near baseline on SCAT3, and ImPACT tests. A 24-hour period between steps is the minimum time frame. If any post-concussion symptoms occur while in the stepwise program, the student-athlete will drop back to level 1 and can progress after a new 24-hour period of asymptomatic rest. SCAT3 will be implemented for any un-witnessed impact for return to play criteria.

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<thead>
<tr>
<th>Stage</th>
<th>Functional Activity</th>
<th>Objective</th>
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<tbody>
<tr>
<td>1. Rest until asymptomatic</td>
<td>When completely asymptomatic, administer ImPact test.</td>
<td>Recovery, assessment of cognitive function</td>
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<tr>
<td>2. Light aerobic exercise</td>
<td>Stationary bike 20 minutes. Heart rate &lt;70% max. No resistance training.</td>
<td>Increase HR</td>
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<tr>
<td>3. Moderate aerobic exercise</td>
<td>Jogging 1 mile with 10 crunches, push-ups, and air squats between each quarter-mile.</td>
<td>Dynamic Movement</td>
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<tr>
<td>4. Sport-specific exercise</td>
<td>1 hour of sport specific activity including team warm-ups, short sprints, and cutting drills. Begin progressive resistive training.</td>
<td>Exercise, coordination, cognitive load</td>
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<tr>
<td>5. Non-Contact Practice</td>
<td>Full practice with NO CONTACT</td>
<td>Team interaction; increase exercise, coordination, and cognitive load.</td>
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<tr>
<td>6. Full contact practice if applicable</td>
<td>Full contact practice</td>
<td>Increase/restore confidence and assess functional level.</td>
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<tr>
<td>7. Return to competition</td>
<td>Normal game play</td>
<td>Full Participation</td>
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**Modifying Factors**

Several modifying factors exist that may influence the management of concussions and even predict the potential for prolonged or persistent symptoms. In these cases, the student athlete will be referred to Dr. Jim James and there may be additional management considerations beyond the return to play protocol above. The items in the list below are common concussion modifiers, but are not the only ones.

- a. number, duration (>2 weeks), or worsening of symptoms
- b. any LOC or amnesia
- c. convulsions
- d. 2nd concussion in a season, injuries close together in time, previous concussion history
- e. age under 18 y/o
- f. migraine, depression or other mental health disorders, ADHD, LD, and sleep disorders
- g. any abnormal neurologic symptoms

Along with the above guidelines, each case is treated on an individual basis to determine the safest return to activity as possible.