

### Symptoms May Include

- Headaches
- Dizziness
- Nausea
- Disorientation (unaware of place, date, time)
- Fatigue
- Irritability
- Anxiety
- Difficulty Sleeping (insomnia)
- Poor Concentration
- Decreased Memory
- Incoherent Speech
- Coordination Problems (stumbling, tripping, etc.)
- Poor Emotional Control

Evaluation to rule out bleeding within the brain is pursued in the appropriate patients. If bleeding is identified, the concussion is characterized as “complicated” and recovery may be delayed.

*THESE INSTRUCTIONS FOR RETURNING TO PLAY DO NOT PERTAIN TO PATIENTS WHO ARE FOUND TO HAVE “COMPLICATED” CONCUSSIONS.*

### Concussion Severity

The severity of the concussion is frequently characterized by the following criteria:

- Loss of consciousness
- Post-injury amnesia (of events either before OR after the injury)
- Post-injury concussion signs and symptoms (see list above)

A Grade I concussion has no loss of consciousness, amnesia which lasts for less than 30 minutes, and concussion signs or symptoms which last for less than 30 minutes.

A Grade II concussion has a loss of consciousness for less than 1 minute, OR amnesia which lasts for more than 30 minutes but less than 24 hours, OR concussion signs or symptoms which persist for more than 24 hours, but less than 7 days.

A Grade III concussion has a loss of consciousness for more than 1 minute, OR amnesia which persists for more than 24 hours, OR concussion signs or symptoms which last more than 1 week.

## Making The Return To Play Decision

The decision of returning to play is based upon the grade of concussion, the resolution of the concussion signs and symptoms, and any history of previous concussion. Parents and coaches are cautioned that savvy youth may attempt to hide symptoms or feign recovery in order to resume playing as soon as possible.

Returning an athlete to participation should follow a gradual progression once symptoms have entirely resolved. Re-introduction of activity should begin with light physical activity (biking, jogging, sit-ups, etc). If these activities are tolerated for multiple days without the recurrence of symptoms, then sport specific skills can be reintroduced. Activities which would put the athlete at risk for recurrent head injury are still excluded. Examples of appropriate activities including shooting baskets, dribbling the soccer ball, etc. Again, if these activities are tolerated for multiple days without the recurrence of symptoms, then the patient may be cleared to play. If at any point symptoms recur, activity should be reduced to the level which causes symptoms to resolve.

The recommended time frame for returning to play is guided by the concussion grade. A Grade I concussion may return to play in one week if asymptomatic. A Grade II concussion may return no sooner than two weeks if asymptomatic at rest and with exertion for at least 7 days. A Grade III concussion may return no sooner than one month if asymptomatic at rest and with exertion for at least 7 days.

Athletes with a history of previous concussion should be treated even more conservatively than described above. Consideration for temporary or permanent disqualification should be given in patients with a history of three or more concussions.

## Post-Concussion Risks

There is a rare, but well known, entity known as "Second Impact Syndrome" in athletes who sustain concussions. Patients who return to play before their brains have healed, and who sustain another blow to the head, may have severe, immediate swelling of the brain. It is almost universally lethal. It is believed that the injured brain is poorly able to regulate its own blood flow, causing the brain to swell to the point that it dies.

Sports carry an inherent risk for repeated concussion. Athletes who sustain concussions are more vulnerable to future repeated injury. Appropriate sports-specific protective gear should always be worn. Consideration for temporary or permanent disqualification should be given in patients with a history of three or more concussions. Patients who have persistent symptoms, despite the number of previous concussions, should also be considered for disqualification.

## References

"National Athletic Trainers' Association Position Statement: Management of Sport-Related Concussion." *Journal of Athletic Training*. 2004; 39(3):280-297.