



KJARTAN D. ARMANN, M.D.

Infant, Child and Adolescent Medicine

2516 Samaritan Dr, Suite J

San Jose, CA 95124

Phone: (408) 356-0578

www.kjkidmd.com

For Coaches - Management of Concussion in Sport

Grades of Concussion

Grade 1:	Grade 2:	Grade 3:
1. Transient confusion (inattention, inability to maintain a coherent stream of thought and carry out goal-directed movements)	1. Transient confusion	1. Any loss of consciousness
2. No loss of consciousness	2. No loss of consciousness	a) Brief (seconds)
3. Concussion symptoms or mental status abnormalities on examination resolve in less than 15 minutes.	3. Concussion symptoms or mental status abnormalities (including amnesia) on examination last more than 15 minutes	b) Prolonged (minutes)

Sideline Evaluation

Mental Status Testing

Orientation:	Time, place and situation (circumstances of injury)
Concentration:	Digits backward (i.e., 3-1-7, 4-6-8-2, 5-3-0-7-4).
Memory:	Name of teams in prior contest. Recall of 3 words and 3 objects at 0 and 5 minutes. Recent newsworthy event. Details of the contest (plays, moves, strategies, etc.)

Exertional provocative Tests

40 yard sprint
5 push-ups
5 sit-ups
5 knee-bends

Neurological Test

Strength
Coordination and Agility
Sensation

Management Recommendation

Grade 1:	Grade 2:	Grade 3:
1. Remove from contest	1. Remove from contest and disallow return that day	1. Transport the athlete from the field to the nearest emergency department by ambulance if still unconscious or if worrisome sign are detected (with cervical spine immobilization, if indicated)
2. Examine immediately and at 5-minute intervals for the development of mental status abnormalities or post-concussion symptoms at rest and with exertion	2. Examine on-site frequently for signs of evolving intracranial pathology	2. A thorough neurologic evaluation should be performed emergently, including appropriate neuroimaging procedures when indicated.
3. May return to contest if mental status abnormalities or post-concussive symptoms clear within 15 minutes	3. A trained person should reexamine the athlete the following day	3. Hospital admission is indicated if any sign of pathology are detected, or if the mental status of the athlete remains abnormal.
	4. A physician should perform a neurologic examination to clear the athlete for return to play after 1 full asymptomatic week at rest and with exertion	

Features Of Concussion Frequently Observed

1. Vacant stare (befuddled facial expression)
2. Delayed verbal and motor responses (slow to answer questions or follow instructions)
3. Confusion and inability to focus attention (easily distracted and unable to follow through with normal activities)
4. Disorientation (walking in the wrong direction; unaware of time, date and place)
5. Slurred or incoherent speech (making disjointed or incomprehensible statement)
6. Gross observable incoordination (stumbling, inability to walk tandem/straight line)
7. Emotions out of proportion to circumstances (distracted, crying for no apparent reason)
8. Memory deficits (exhibited by the athlete repeatedly asking the same question that has already been answered, or inability to memorize and recall 3 of 3 words or 3 of 3 objects in 5 minutes)
9. Any period of loss of consciousness (paralytic coma, unresponsiveness to arousal)

When to Return to Play

Grade of Concussion	Return to Play only after being Asymptomatic with Normal Neurologic Assessment at Rest and with Exercise.
Grade 1 Concussion	15 Minutes or less
Multiple Grade 1 Concussion	1 week
Grade 2 Concussion	1 week
Multiple Grade 2 Concussion	2 weeks
Grade 3 – Brief Loss of Consciousness (seconds)	1 week
Grade 3 – Prolonged Loss of Consciousness (minutes)	2 weeks
Multiple Grade 3 Concussion	1 month or longer, based on decision of evaluating physician