

Sports Concussion Algorithm

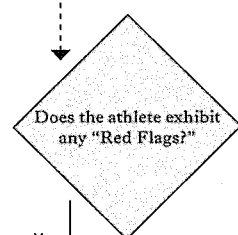
(Health Care Provider Information)

Athlete presents with signs, symptoms or behaviors of a concussion.

Performance Eval

Evaluation should include assessment for these RED FLAGS

- Headache that worsens
- Seizure
- Looks very drowsy or can't be awakened
- Repeated vomiting
- Slurred speech
- Can't recognize people or places
- Increasing confusion or irritability
- Weakness or numbness in arms or legs
- Unusual behavioral change
- Loss of consciousness > 30 seconds



Consideration should be made for EMS, ED or Advanced Imaging.

Based on clinical judgment, has the athlete sustained a concussion?

No

Yes

Monitor and/or treat as clinically indicated

Yes

Follow-up Evaluation

1. Progression back to daily life and school activities as symptoms improve
2. Monitor signs and symptoms as activities increase

1. Recommend modifications in both school and personal activities
 - Physical Rest (no running, biking, lifting, etc.)
 - Cognitive Rest (no school work, video games, etc.)
2. Hand out patient information form and continue to monitor signs and symptoms

Did Imaging or Emergency Department find evidence of an Intracranial Bleed?

Yes

No

Neurosurgery Referral

Is the athlete free of all Signs and Symptoms at Rest? (Also free of neurocognitive, balance & neurological changes?)

Yes

No

Continue to Monitor
Failure to resolve after 3-4 weeks should warrant consideration for referral to a Specialty Care Center

Concussion Modifiers*

- Duration of symptoms
- Number of symptoms
- Severity of symptoms
- Prolonged LOC (>30 seconds)
- Presence of amnesia
- History of convulsive convulsion
- Number of concussions
- Recent concussion
- History of two concussions in a short period of time
- Concussion caused by a lower threshold force
- Age (younger athlete takes longer to recover)
- History of migraine (personal or family)
- History of depression or other mental health disorder
- History of ADD/ADHD
- History of a learning disability
- History of a sleep disorder
- Psychoactive medication
- Dangerous style of play
- High-risk activity

*McCrorry P., et al. *Br J Sports Med* 2009

Begin Graduated "Return-to-Play" Protocol*
(There should be a minimum of 24 hours between stages; however the speed of progression should be based on clinical judgment with consideration of the presence of any of the Concussion Modifiers)

If return of signs or symptoms during the protocol, then re-evaluation is warranted and athlete must wait 24 hours and be free of "Signs and Symptoms at Rest" before returning to Stage 1 of protocol.

Stage 1—Light Aerobic Exercise
(Exertion Level: HR range 100-140 / RPE range 3-4)

Stage 2—Sport-Specific Exercise
(Exertion Level: HR range 120-160 / RPE range 4-6)

Stage 3—Non-Contact Training Drills (Exertion Level: HR range 140-180 / RPE range 6-8)

Stage 4—Full Contact Practice (Exertion Level: HR range 160-200 / RPE range 8-10)

*McCrorry P., et al. *Br J Sports Med* 2009

No

Has the athlete successfully completed all stages of the "Return-to-Play" Protocol without return of symptoms?

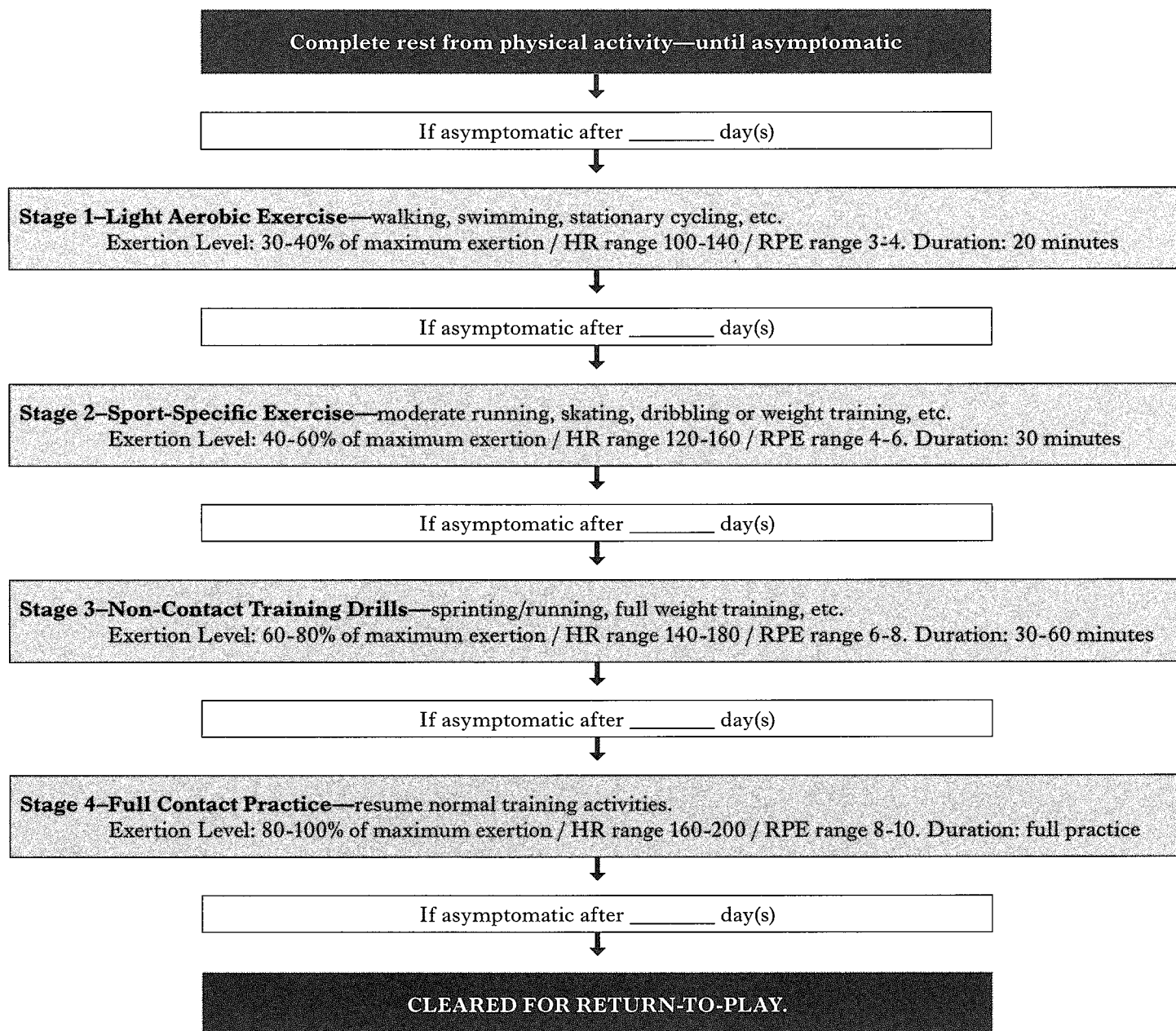
Yes

No

RETURN TO PLAY

Sports Concussion—Graduated “Return-to-Play” Protocol

(Guidelines for exercise progression from your Health Care Provider)



Please note

- Each stage is to take at least 24 hours, but longer in recurrent or severe cases.
- Each stage should be completed without a return of concussive symptoms before proceeding to the next stage.
- If the athlete becomes symptomatic during the course of the protocol, he or she should be reevaluated by a health care provider for clearance before restarting the protocol.
When the athlete restarts the protocol, he or she needs to begin again **at stage 1.**
- RPE is an abbreviation for Rating of Perceived Exertion. It should be measured on a scale from 1 to 10.

Office-Based Concussion Evaluation

(For use in clinic setting)

Name: _____ Referral Source: _____ N/A
 DOB: _____ Age: _____ Level of Education: _____ School: _____
 Date of Evaluation (Today's Date): _____ Date of Injury: _____ Time Since Injury: _____
 Person Reporting: _____ Patient _____ Parent _____ Spouse _____ ATC _____ Other _____

Cause: _____ MVA _____ Ped-MVA _____ Fall _____ Assault _____ Sport (specify) _____
 _____ Practice _____ Game _____ Position: _____ Mouthguard: Y / N Type: bite & boil custom
Mechanism of Injury: _____ Head to Head _____ Head to Ground _____ Head to Body Part _____ Other _____
Location of Contact: _____ Frontal _____ R / L Temporal _____ R / L Parietal _____ Occipital _____ Neck Other _____
Injury Description: _____

Loss of Consciousness: Y / N Duration: _____
Amnesia (Retrograde): Loss of memory of events **before** the injury? Y / N Duration: _____
Amnesia (Anterograde): Loss of memory of events **after** the injury? Y / N Duration: _____
Early Signs: _____ Dazed or stunned _____ Confused or disoriented _____ Answered questions slowly _____ Repeated questions _____ Forgetful
Seizures: Were seizures observed? Y / N **Same Day Return-to-Play** Y / N Describe: _____
 Overall, how severe would you rate your problems with this injury? 0 1 2 3 4 5 6
Previous Provider: _____ Date: _____ CT or MR Imaging _____ Yes _____ No Results: _____

Symptom Check List: Initial (day of injury) and Current (at the time of evaluation) – Rate severity on scale from 0-6

Physical (10)	Initial	Current	Cognitive(4)	Initial	Current	Sleep (4)	Initial	Current	NA
Headache			Feeling mentally foggy			Drowsiness			
Nausea			Feeling slowed down			Sleeping less than usual			
Vomiting			Difficulty concentrating			Sleeping more than usual			
Balance problems			Difficulty remembering			Trouble falling asleep			
Dizziness			COG Total Score			SLEEP Total Score			
Visual problems			COG Total Symptoms			SLEEP Total Symptoms			
Fatigue			Emotional (4)	Initial	Current	Headache			
Sensitivity to light			Irritability			Type: Throbbing/Pressure/Dull			
Sensitivity to noise			Sadness			Location: R or L Top/Frontal/Parietal/ Occipital/Generalized			
Numbness/Tingling			More emotional			Neck Pain? Y / N			
			Nervousness			Worse in AM / PM			
PHYS Total Score			EMO Total Score			Headache worse with cognitive exertion? Y / N			
PHYS Total Symptoms			EMO Total Symptoms			Describe:			
TOTAL SCORE			TOTAL SYMPTOMS			Headache worse with physical exertion? Y / N			
Do these symptoms get worse with physical activity? Y / N / NA						Describe:			
Do these symptoms get worse with cognitive activity? Y / N / NA									

Sports Concussion

(Sideline instructions from your Health Care Provider)

Athlete Name: _____ DOB: _____ Date: _____ Date of Injury: _____

When To Seek Care Urgently

Seek care quickly if symptoms worsen or if there are any behavioral changes. Also watch for any of the following serious signs/symptoms, which may not appear immediately following the trauma, but can develop hours after the injury itself.

Headache that worsens	Looks very drowsy or can't be awakened	Can't recognize people or places	Unusual behavior change
Seizure	Repeated vomiting	Increasing confusion	Increasing irritability
Neck pain	Slurred speech	Weakness or numbness in arms or legs	Loss of consciousness

Common Signs & Symptoms

It is common for a concussed child or young adult to have one or many concussion signs or symptoms. Signs or symptoms present at time of evaluation are circled or checked.

PHYSICAL		THINKING	EMOTIONAL	SLEEP
Headache	Sensitivity to light	Feeling mentally foggy	Irritability	Drowsiness
Nausea	Sensitivity to noise	Problems concentrating	Sadness	Sleeping more than usual
Fatigue	Numbness/Tingling	Problems remembering	Feeling more emotional	Sleeping less than usual
Visual problems	Vomiting	Feeling more slowed down	Nervousness	Trouble falling asleep
Balance problems	Dizziness			Trouble staying asleep

It is okay to:	There is no need to :	Do not:
Use acetaminophen (Tylenol) for headaches	Check eyes with flashlight	Drink alcohol
Use ice pack on head and neck as needed for comfort	Test reflexes	Take sleeping pills or sleeping aids
Eat a light diet	Stay in bed	Take products that contain ibuprofen (Advil, Motrin)
Go to sleep	Wake up every hour	Take products that contain aspirin or naproxen (Aleve)
Rest		Drive until medically cleared

Returning to Daily Activities

- Limit activities that require thinking or concentration (e.g., homework, job-related activity) as much as possible. These activities can make symptoms worse.
 - Limit screen time (television and computer) as much as possible. Especially in the early stages of healing, a good rule of thumb is no screen time.
 - Avoid reading, video games and text messaging as much as possible.
 - Limit extra-curricular activities.
 - Avoid loud noise and bright lights.
 - As symptoms decrease, encourage frequent study breaks to avoid provoking symptoms (for example, studying for 15 minutes, then resting for 10-15 minutes, etc.)
- No physical activities until cleared by a medical professional. Physical activity includes PE, sports practices, weight training, running, exercising, heavy lifting, etc.
- Get lots of rest. Be sure to get enough sleep at night - no late nights. Keep the same bedtime weekdays and weekends.
- Take rest breaks when you feel tired or fatigued.
- Drink lots of fluids and eat carbohydrates and protein to maintain appropriate blood sugar levels and caloric intake.
- Under provider supervision, and as symptoms decrease, you may gradually return to your daily life activities. If symptoms worsen or return, lessen your activities, and follow-up with your health care provider.

- During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
- Repeated evaluation of your signs and symptoms is recommended to help guide recovery.

Comments: _____

Do not return to sports/vigorous physical activity until all your symptoms have completely cleared and you have been cleared by a medical professional.

Recommendations provided to: _____

Relationship: _____

Date: _____

Health Care Provider Name & Contact Information: _____

Please feel free to contact me if you have any questions. I may be reached at: _____

Sports Concussion

(Office-based instructions from your Health Care Provider)

You have been diagnosed with a concussion (also known as a mild traumatic brain injury). This personal plan is based on your symptoms and is designed to help speed your recovery. Your careful attention to these instructions can also prevent a worsening condition or further injury.

Rest is the key. It is very important to limit all physical activity. Particularly, you should not participate in any high-risk activities (e.g., sports, physical education (PE), skateboarding, riding a bike, etc.) if you still have any of the signs and symptoms below.

It is also important to limit activities that require a lot of thinking or concentration (e.g., test taking, homework, job-related activities), as this can also make your symptoms worse and your recovery longer. If you no longer have any signs or symptoms and believe that your concentration and thinking are back to normal, you can slowly and carefully return to your daily activities. If you are a child or teenager, get help from your parents, teachers, coaches, and athletic trainers to help monitor your recovery and return to activities.

Common Signs & Symptoms

It is common for a concussed child or young adult to have one or many concussion signs or symptoms. Signs or symptoms present at time of evaluation are circled or checked.

PHYSICAL		THINKING	EMOTIONAL	SLEEP
Headache	Sensitivity to light	Feeling mentally foggy	Irritability	Drowsiness
Nausea	Sensitivity to noise	Problems concentrating	Sadness	Sleeping more than usual
Fatigue	Numbness/Tingling	Problems remembering	Feeling more emotional	Sleeping less than usual
Visual problems	Vomiting	Feeling more slowed down	Nervousness	Trouble falling asleep
Balance problems	Dizziness			Trouble staying asleep

Red Flags

Call your doctor or go to your emergency department if you suddenly experience any of the following:

Headache that worsens	Feel very drowsy or can't be awakened	Can't recognize people or places	Unusual behavior change
Seizure	Repeated vomiting	Increasing confusion	Increasing irritability
Neck pain	Slurred speech	Weakness or numbness in arms or legs	Loss of consciousness

Returning to Daily Activities

- Get lots of rest. Be sure to get enough sleep at night—no late nights. Keep the same bedtime weekdays and weekends.
- Drink lots of fluids and eat carbohydrates and protein to maintain appropriate blood sugar levels and caloric intake.
- During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
- Repeated evaluation of your signs and symptoms is recommended to help guide recovery.

Physical Exertion (check all that apply)

- ☐ No physical exertion/athletics/gym class
- ☐ Begin return-to-play protocol as indicated below
 - ___ Low levels of physical activity (only if symptoms do not come back during or after the activity). This includes walking, light jogging, light stationary biking, and light weight lifting. (lower weight, higher reps, no bench, and no squat)
 - ___ Moderate levels of physical activity with some non-rapid body/head movement. This includes moderate jogging, brief running, moderate-intensity stationary biking, moderate-intensity weightlifting. (reduced time and/or reduced weight from your typical routine)

- ___ Heavy, non-contact physical activity. This includes sprinting/running, high-intensity stationary biking, regular weightlifting routine, non-contact sport-specific drills (in 3 planes of movement)
- ___ Full contact in controlled practice
- ___ Full contact in game play

Brain Exertion (check all that apply)

- ☐ No school, homework, or other after school academic activities
- ☐ No reading or texting
- ☐ No driving
- ☐ No computer time or video games
- ☐ Limit television time
- ☐ Avoid loud noise and bright lights
- ☐ Allow listening to low-volume music (i.e., iPod, book on tape, etc.)
- ☐ Allow light reading for ___ minutes at a time, for a total of ___ minutes per day
- ☐ Allow homework for ___ minutes at a time, for a total of ___ minutes per day
- ☐ Allow computer work for ___ minutes at a time, for a total of ___ minutes per day
- ☐ Allow texting for ___ minutes at a time, for a total of ___ minutes per day

Accommodations for Students

(Instructions from the Health Care Provider)

Patient Name: _____

Date of Evaluation: _____

Restrictions should be applied from ____/____/____ until ____/____/____

This patient had been diagnosed with a concussion and is currently under our care. It is recommended that the below accommodations be implemented to avoid increasing concussion symptoms and delaying recovery.

Physical Exertion (check all that apply)

- ☐ No physical exertion/athletics/gym class
- ☐ Begin return to play protocol as indicated below
 - _____ Low levels of physical activity (only if symptoms do not come back during or after the activity). This includes walking, light jogging, light stationary biking, and light weight lifting (lower weight, higher reps, no bench, and no squat)
 - _____ Moderate levels of physical activity with some non-rapid body/head movement. This includes moderate jogging, brief running, moderate-intensity stationary biking, moderate-intensity weight lifting (reduced time and/or reduced weight from your typical routine)
 - _____ Heavy, non-contact physical activity. This includes sprinting/running, high-intensity stationary biking, regular weight lifting routine, non-contact sport-specific drills (in 3 planes of movement)
 - _____ Full contact in controlled practice
 - _____ Full contact in game play

Brain Exertion (check all that apply)

- ☐ No school, homework, or other after-school academic activities
- ☐ No reading or texting
- ☐ No computer time or video games
- ☐ Limit television time
- ☐ Avoid loud noise and bright lights
- ☐ Allow listening to low-volume music (i.e. iPod, book on tape)
- ☐ Allow light reading for _____ minutes at a time, for a total of _____ minutes per day
- ☐ Allow homework for _____ minutes at a time, for a total of _____ minutes per day
- ☐ Allow computer work for _____ minutes at a time, for a total of _____ minutes per day
- ☐ Allow texting for _____ minutes at a time, for a total of _____ minutes per day

Academic Accommodations (check all that apply)

Attendance

- ☐ No school for _____ day(s)
- ☐ Part time attendance for _____ day(s), as tolerated
- ☐ Full school days, only as tolerated
- ☐ Tutoring homebound/in school, as tolerated
- ☐ No school until symptom free or significant decrease in symptoms
- ☐ Initiate homebound education

Academic Accommodations (continued)

Visual Stimulus

- ☐ Allow student to wear sunglasses in school (including in class)
- ☐ Permit pre-printed notes for class material or note taker
- ☐ Limit smart boards, projectors, computers, TV screens or other bright screens
- ☐ Enlarge font when possible
- ☐ Allow student to sit near the front of the classroom

Workload/Multi-tasking

- ☐ Reduce overall amount of make-up work, class work and homework when possible
- ☐ No homework
- ☐ Limit homework to _____ minutes a night
- ☐ Prorate workload when possible
- ☐ Limit backpack weight
- ☐ Limit stair use

Breaks

- ☐ Allow student to go to the nurse's office, if symptoms increase
- ☐ Allow student to go home, if symptoms do not subside

Audible Stimulus

- ☐ Allow student to leave class 5 minutes early to avoid noisy hallways
- ☐ Provide opportunity to have lunch in a quiet place
- ☐ Use audible learning (discussions, reading out loud, or if possible, text-to-speech programs or Kindle)

Testing

- ☐ No testing
- ☐ Extra time to complete tests
- ☐ No more than one test a day
- ☐ Oral testing only
- ☐ Open book testing
- ☐ Testing in a quiet environment

Work Restrictions

- ☐ No work at this time
- ☐ Limit work to _____ hours per day

Additional Instructions:

Provider Signature: _____