

In the office / clinical space:

The million dollar question...

In the office / clinical space:

When can I play?



Strategies for Return to Play

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Questions Raised

- What is a concussion?
- How common are they?
- What happens inside the brain with concussion?
 - Structural injury? Inflammation? Bleeding?
- How do I know? What do I / we do?
- When can he/she return to school?
- What about headaches at school?

Questions Raised

- When is it safe to return to play?
- Can we predict who? Genetics? Biomarkers?
- How many is too many?
- Do subclinical blows matter?
- Can concussions be prevented?
 - Helmets, mouthguards, headbands, neck strengthening, rule changes, etc?

Return to Play (RTP)

- No same day return to play in kids!!!
(10 – 38% still do)
- Must be individualized as recovery rates differ from kid to kid
- Graduated, stepwise approach
- Similar to return to school progression

Return to Play: 7 Step Plan

Stage	Activity	Sport specific exercise	Goals
1	No physical activity	none	Recovery and elimination of symptoms
2	Light aerobic activity	Walk, stationary bike,	Increase heart rate
3	Moderate activity	Jogging, slow change in speed and direction	Increase aerobic activity
4	Non contact sports specific drills	Dribbling ,passing, catching, jumping, tracking objects	Maximize aerobic activity, introduce sport activity, thinkin
5	Limited contact	Sleds, pads, 1v1 Controlled setting	Add deceleration, rotation movements,
6	Full practice	Resume training activities	Frequent assessments, restore confidence
7	Return to play	Normal game play	Frequent assessments

Return to Play

Return to physical activity following concussion

Football

Stage	Activity	Football specific exercise	Objective of the stage
1	<ul style="list-style-type: none"> No physical activity Complete physical and cognitive rest 	<ul style="list-style-type: none"> No activity 	<ul style="list-style-type: none"> Recovery and elimination of symptoms
2	<ul style="list-style-type: none"> Light aerobic activity 	<ul style="list-style-type: none"> 10 to 15 minutes of walking at home or at field, or stationary bike 	<ul style="list-style-type: none"> Add light aerobic activity and monitor for symptom return
3	<ul style="list-style-type: none"> Moderate aerobic activity Light resistance training 	<ul style="list-style-type: none"> 20 to 30 minutes of jogging with helmet Light weight lifting (one set of 10 reps) 	<ul style="list-style-type: none"> Increase aerobic activity and monitor for symptom return
4	<ul style="list-style-type: none"> Noncontact football-specific drills 	<ul style="list-style-type: none"> Moving in/out of three-point stance, bear crawls through tunnel, three-step over top (lateral and lateral), QB/center exchange, QB drop backs, passing, break downs and plant, jump cuts, backpedaling, match the hips, up/downs <p><i>*Start without helmet; progress to helmets and snell if symptoms free</i></p>	<ul style="list-style-type: none"> Maximize aerobic activity Accelerate to full speed with change of directions (cut) Introduce rotational head movements Monitor for symptoms
5	<ul style="list-style-type: none"> Limited contact football drills 	<ul style="list-style-type: none"> Stage 4 workout in full pads Hit/push pads then sled focus on technique—head up, square up, stay low, step and hit, run and hit, leverage drill, punch drill 	<ul style="list-style-type: none"> Maximize aerobic activity Add deceleration/rotational forces in controlled setting Monitor for symptoms
6	<ul style="list-style-type: none"> Full contact practice (after medical clearance) 	<ul style="list-style-type: none"> Normal training activities 	<ul style="list-style-type: none"> Frequent assessments throughout the practice Monitor for symptoms
7	<ul style="list-style-type: none"> Return to play 	<ul style="list-style-type: none"> Normal game play 	<ul style="list-style-type: none"> Assess frequently Monitor for symptoms Consider one side of the ball only, no special teams play

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May begin Stage 2 when symptoms are markedly diminished, and can tolerate a partial school day.
 May begin Stage 3 when a full school day is tolerated.
 May progress to the next stage every 24 hours as long as symptoms do not worsen.



Return to physical activity following concussion

Lacrosse (Boys)

Stage	Activity	Lacrosse-specific exercise	Objective of the stage
1	<ul style="list-style-type: none"> No physical activity Complete physical and cognitive rest 	<ul style="list-style-type: none"> No activity 	<ul style="list-style-type: none"> Recovery and elimination of symptoms
2	<ul style="list-style-type: none"> Light aerobic activity 	<ul style="list-style-type: none"> 10 to 15 minutes of walking at home or at field, or stationary bike 	<ul style="list-style-type: none"> Add light aerobic activity and monitor for symptom return
3	<ul style="list-style-type: none"> Moderate aerobic activity Light resistance training 	<ul style="list-style-type: none"> 20 to 30 minutes of jogging with helmet and gloves Light weight lifting (one set of 10 reps) 	<ul style="list-style-type: none"> Increase aerobic activity and monitor for symptom return
4	<ul style="list-style-type: none"> Noncontact lacrosse-specific drills 	<ul style="list-style-type: none"> Cradling, catching, scooping, fielding ground balls, shooting, change of direction, give and go, waterfall drill, hamstring drill, pinwheel drill, eagle eye drill <p><i>*Start with helmet and gloves; progress to full pads if symptoms free</i></p>	<ul style="list-style-type: none"> Maximize aerobic activity Accelerate to full speed with change of directions (cut) Introduce rotational head movements Monitor for symptoms
5	<ul style="list-style-type: none"> Limited contact lacrosse drills 	<ul style="list-style-type: none"> Riding after the shot, riding off the end line, pick and roll, 1 v 1 scramble, 3 v 2, 3 v 4 <p>*Full pad</p>	<ul style="list-style-type: none"> Maximize aerobic activity Add deceleration/rotational forces in controlled setting Monitor for symptoms
6	<ul style="list-style-type: none"> Full practice (after medical clearance) 	<ul style="list-style-type: none"> Normal training activities 	<ul style="list-style-type: none"> Frequent assessments throughout the practice Assess frequently during line changes Monitor for symptoms
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- Baseball/softball
- Basketball
- Cheerleading
- Football
- Gymnastics
- Ice hockey
- Lacrosse boys
- Lacrosse girls
- Soccer
- Swimming
- Wrestling



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Return to physical activity following concussion

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choa.org/concussion

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Stage 1

- Lots of symptoms
- Usually 1-3 days

Goal: Get back in school and improve symptoms



Stage 2

- As symptoms improve, add light aerobic activity that does not worsen symptoms
 - Walking, stationary bike

Goal: Increase HR to 30-40% max
(max HR is 220-age)

Stage 3

- Moderate aerobic activity
 - 20-30 min jogging
 - Light weight or resistance training
 - Slowly change speed and direction
 - Dribble, throw/catch ball

Goal: Increase HR to 40-60% max

Add resistance, vestibular stress

Track moving objects



Stage 4

- Should be symptom free and tolerating full school day with minimal accommodations
- Intense aerobic activity/supervised play
 - 40-60 min running, accelerate to full speed
 - Increase resistance training
 - Non contact sport-specific drills
 - Pre-competition warm-up
 - No head contact

Goal: Increase HR 60-80% max, mimic the sport

Stage 5

- Symptom free, no academic accommodations
- Controlled contact / training drills
 - Normal practice session
 - Limited contact if part of the sport
 - Frequent assessments

Goal: 60-90 max HR

Mimic sport without risk or re-injury

Stage 6

- Full school day
- Normal training activities
 - Frequent assessments

Goal: Resume full training activity without restriction
Restore confidence



Stage 7

- Clear for game play
 - Must be in writing by qualified medical professional trained in concussions
 - Frequent assessments

Return to Play (RTP) Summary

- Allow **at least** 24 hours per stage
 - If symptoms worsen, wait 24 hours and resume at the previous stage
- Ok to start light activity (stage 2) even with minimal symptoms
- Symptom free for stage 3-4
- If RTL and RTP overlap, RTL takes precedence

