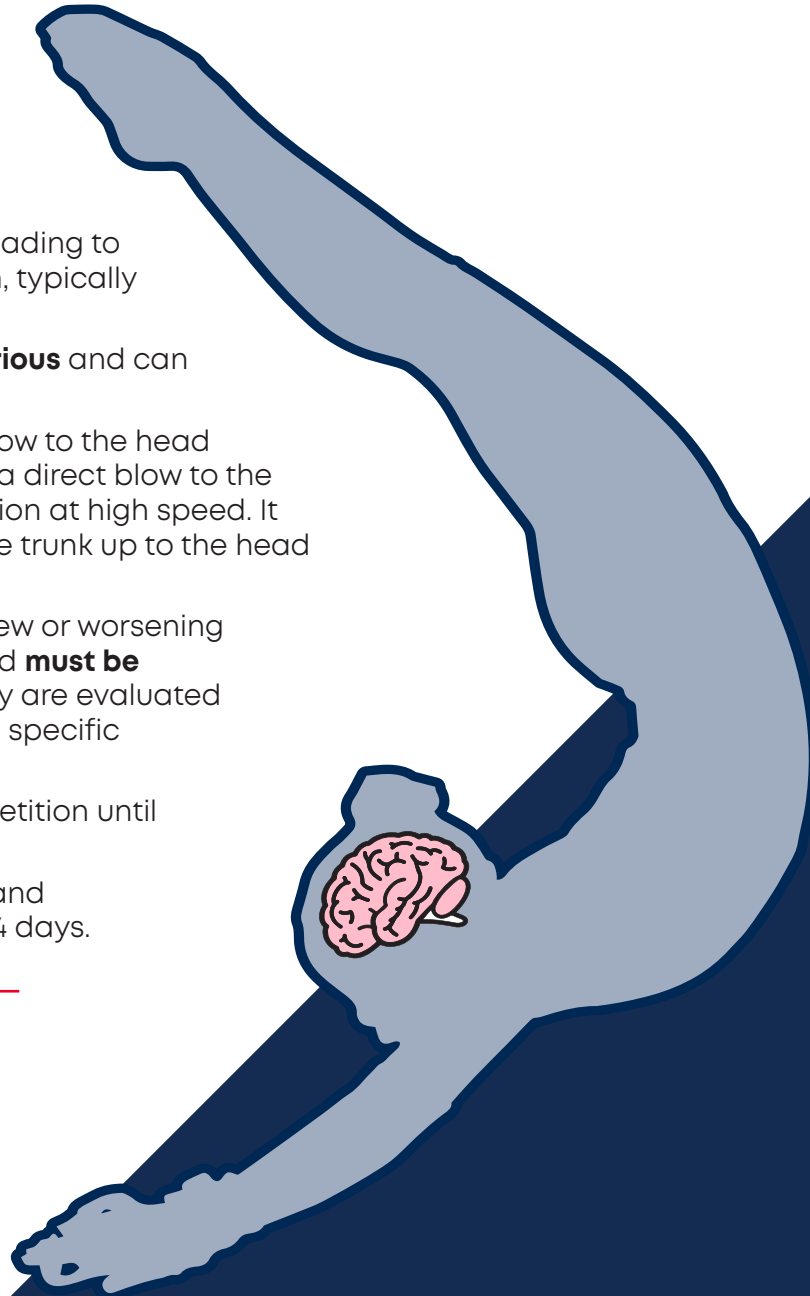




## What is concussion?

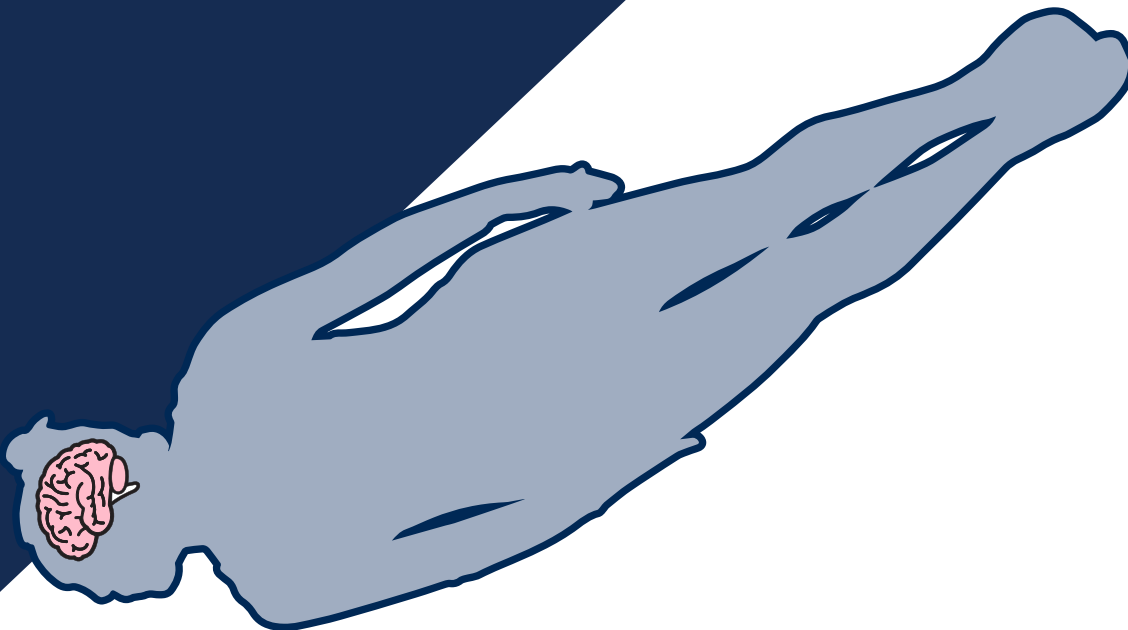
- A concussion is a mild traumatic brain injury leading to transient disturbance of normal brain function, typically without loss of consciousness.
- All head injuries, including concussions are **serious** and can be life threatening.
- A concussion typically is caused by a direct blow to the head (hitting your head on equipment or mat) or by a direct blow to the body which causes the head to change direction at high speed. It can also be caused by a jarring effect from the trunk up to the head and brain (such as a hard fall to the buttocks)
- **If in doubt, sit them out.** A gymnast with any new or worsening symptoms following a fall or a blow to the head **must be** removed from training or competition until they are evaluated by a medical professional, preferably one with specific concussion training.
- A gymnast must not return to training or competition until they have been cleared by a physician.\*
- The majority of concussions recover with rest and appropriate medical supervision in less than 14 days.



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*\* In the event a qualified non-physician provider is independently providing medical services at a practice, event or camp, and a physician is not available onsite, the non-physician medical provider may use clinical judgement to make a diagnosis of concussion, direct further care, and have autonomy regarding clearance decision-making until a physician is available for consultation.*





## What causes concussion?

A concussion can be caused by direct forces (e.g. a blow to the head), or indirect forces (e.g. a blow to the body, which causes the head to move rapidly).

Gymnastics is a high-risk sport with various types of falls that can cause a concussion, including:

- Direct contact with the apparatus/equipment or safety mats
- The whiplash effect of head/neck flexion and extension (head forced forward and/or backward)
- Rotational forces of the head/neck (head forced left, right, or in a twisting motion)
- Direct hard landings on their front, back or buttocks which transmit forces to the brain.

## What are the signs and symptoms of concussion?

Recognition of concussions occurs through:

1. Observing an injury (e.g. blow to the head)
2. Noticing changes in the gymnast's behavior, thinking, or physical functioning (ie. difficulty with balance or coordination)
3. Gymnast reporting symptoms to a coach, teammate, parent/guardian or medical provider.

**The presence of one or more of these signs and symptoms, after a fall, may suggest a concussion:**

Headache or pressure in head	Feeling slowed down or "in a fog"
Neck pain	"Don't feel right"
Nausea and/or vomiting	Difficulty concentrating or remembering
Dizziness	Fatigue or low energy
Blurred vision	Confusion
Decreased balance or spatial awareness	Drowsiness
Sensitivity to light and/or noise	Emotional (i.e. sad, anxious, or irritable)

\* Symptoms may occur more than 24 hours after the initial injury.

# When to seek emergency help

If any of the following symptoms occur, seek emergency medical attention immediately:

- A severe or worsening headache or neck pain
- Weakness or numbness in their arms and/or legs
- Repeated vomiting
- Difficulty talking (i.e. slurred speech or memory loss)
- Change in vision (i.e. blurred or difficulty seeing)
- Double vision
- Seizure
- Difficulty staying awake or conscious
- Any other concerning symptoms

## Management of concussion

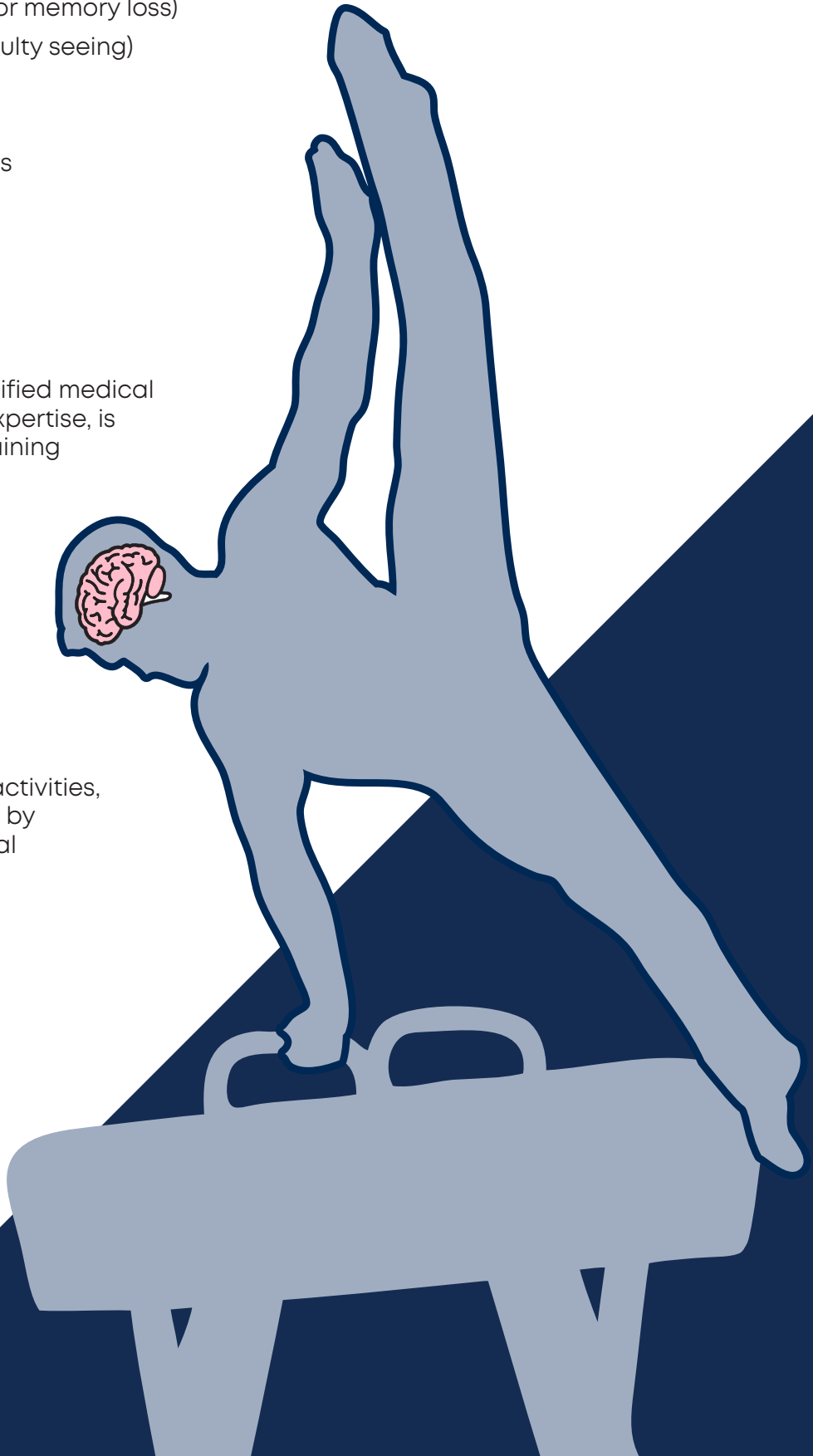
Evaluation and monitoring from a qualified medical provider, preferably with concussion expertise, is required. Physicians with advanced training in concussion management typically include sports medicine physicians, some pediatricians/family medicine physicians, neurologists, and physiatrists.

### Protection & Progression (for the body and mind):

- The cornerstone of concussion treatment
- Initial reintegration to normal daily activities, school, and physical activity guided by symptoms and directed by a medical professional
- Avoid driving
- Avoid alcohol

### Medications:

- Avoid NSAIDs (i.e. Ibuprofen, Aleve, aspirin, or other anti-inflammatory medications)
- Avoid sleeping aids (i.e. Benadryl)
- Consult with your doctor about the current medications you are taking





# Return to Sport Protocol

Return to school and sport average timeline:

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Timeline to return to sport varies based on individual factors, such as prior history of concussion and other underlying medical conditions. **Symptom resolution for adults can take on average 7-10 days, and for children/adolescents 2-4 weeks.**

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On the next page, we present the *Gymnastics-Specific Return-to-Sport Strategy* (RTS) that will enable coaches and medical providers to safely return their gymnasts to full training. Gymnasts will need clearance from a physician, prior to starting the program (stage 1), prior to starting gymnastics-specific activities (Stage 2), and prior to completion (stage 6).

## Stage 1 Details:

**AEROBIC ACTIVITY:** Light aerobic activity progressed to moderate intensity, per symptom parameters\*. Activities should be without risk of falling or hitting of the head. Can include activities such as walking, stationary bike, elliptical, rowing, light jogging.

**STRENGTH & FLEXIBILITY ACTIVITY:** Light body-weight strength training progressed to more intense gymnastics-specific strengthening and/or weight training, per symptom parameters\*. All flexibility/mobility training, as well as low impact landing drills is allowable, per symptom parameters\*.

The USA Gymnastics Stage 1 Symptom Tracking Sheet can be utilized to monitor symptoms effectively.

\* *Stage 1 Symptom Parameters: Under the direction of a medical professional, a gymnast may pursue Stage 1 activities after 24 hours of a concussion event, while monitoring for symptom exacerbation. Mild and brief exacerbation of symptoms during activity is allowable, defined as an increase of no more than 2 points, on a 0-10 point scale, for less than an hour, when compared to the baseline value reported prior to the start of the physical activity. If more than a mild exacerbation of symptoms occurs (more than 2 points for more than an hour), the gymnast should stop and wait till the following day to resume activity.*

\*\* *A treating physician may consider progressing a gymnast through Stage 2 and Stage 3 during the completion of Return to Learn (RTL), if clinically appropriate.*

## SPORTS CONCUSSION: GYMNASTICS-SPECIFIC RETURN-TO-SPORT STRATEGY



Return-to-Sport strategy starts after evaluation from a physician. Early return to aerobic and strengthening activities can be considered per symptom parameters\* and physician guidance. A minimum 24 hours should separate each step within this Return-to-Sport strategy

STAGE	AIM	ACTIVITY	GOAL OF EACH STEP
1	Early aerobic and strength activities	<ul style="list-style-type: none"> <li>All activities progressed per symptom parameters*</li> <li>Light aerobic activity progressed to moderate intensity activity: Stationary bike, walking, light jogging, sprinting</li> <li>Strength &amp; flexibility activity: Body weight training progressed to higher intensity gymnastics-specific strengthening</li> <li>Low impact landing drills</li> </ul>	<ul style="list-style-type: none"> <li>Gradual reintroduction of work/school activities</li> <li>Need to achieve academic return, symptom resolution, and physician clearance prior to starting Stage 2**</li> </ul>
2	Return to early sport specific training: Inversion	<ul style="list-style-type: none"> <li>Start basic, non-dynamic inversion (ie. Handstands)</li> <li>Discipline-specific progression:                             <ul style="list-style-type: none"> <li>Ar – all events - basic swings/tap swings/cast handstands, leaps, jumps &amp; dance on ground/low heights, sprints</li> <li>R – basic dance, no rotation</li> <li>TT – non-impact, land-based drills, straight bounces</li> <li>Ac/G – dance choreography only</li> <li>P – running, jump drills without obstacles</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Increase heart rate</li> <li>Start non-dynamic basic skills</li> <li>Limited inversion</li> <li>No twisting or flipping</li> </ul>
3	Progress sport specific training: Flipping	<ul style="list-style-type: none"> <li>As above with increased intensity</li> <li>Discipline-specific progression:                             <ul style="list-style-type: none"> <li>Ar – FX-basic tumbling/B-series on floor/UB&amp;HB-giants/R-static strength holds (ie. L sit, planche), inlocates, dislocates/V - timers</li> <li>R – advance dance, rotation, basic throws (Indiv./No Group)</li> <li>Tr – straight bounces, level 10 single flipping skills</li> <li>DM – soft landing, straight bounces, single rotation on &amp; off</li> <li>Tu – soft landing, basic HS, RH, RH, BHS, combining two skills</li> <li>Ac/G – basic balance/lift drills/limit # of lifts, basic tumbling</li> <li>P – low height hurdles, climbs, flipping drills</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Add full inversion</li> <li>Advance basic skills</li> <li>Limited flipping</li> <li>No twisting</li> </ul>
4	Progress sport specific training: Twisting	<ul style="list-style-type: none"> <li>As above with increased complexity</li> <li>Discipline-specific progression:                             <ul style="list-style-type: none"> <li>Ar – add twisting, complex flipping, release timers, high beam</li> <li>R – add full throws, rotation, sequences (Indiv./No Group)</li> <li>Tr – add double salto skills and single twisting skills</li> <li>DM – soft landings, single mount flipping skills, double landing skills, single twist on or off</li> <li>Tu – soft landing, combining skills down the floor, double salto, complex flipping, single twist</li> <li>Ac/G – progress from basic to advance balance, lift skills, twisting</li> <li>P – high height hurdles, climbs, flip &amp; twist without obstacles</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Add complex flipping</li> <li>Start basic twisting</li> </ul>
5	Progress sport specific training: Advanced Skills  <i>* Physician clearance required to move to step 6</i>	<ul style="list-style-type: none"> <li>As above with increased complexity</li> <li>Discipline-specific progression:                             <ul style="list-style-type: none"> <li>Ar – complex skills, higher risk skills (i.e. release skills)</li> <li>R – continue full skills/sequences, integrate with Group</li> <li>Tr – working rotation and twisting, progress to loop skills 1-5/5-10 together with limited turns</li> <li>DM – hard landings, progress to mounts and dismounts in limited #</li> <li>Tu – combo of inverted skills and one twisting skill in combination, complex flip/twist skills, basic sequences</li> <li>Ac/G – add full tumbling, lift, balance skills, progress to full routines with choreography</li> <li>P – add flip/twist with obstacles</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Combine complex inversion and rotation</li> <li>Improve endurance and strength</li> </ul>
6	Return to full training	<ul style="list-style-type: none"> <li>All disciplines – full clearance</li> <li>Focus on slow increase in volume, to build stamina &amp; strength</li> <li>Progress through the following steps:                             <ol style="list-style-type: none"> <li>Single skill elements</li> <li>Combined elements/Sequences</li> <li>Routine parts</li> <li>Full routines</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Final full reintegration</li> <li>TT if symptoms reoccur, go back to step 3</li> </ul>

Ar = Artistic; R = Rhythmic; TT = Tumbling & Trampoline; Ac/G = Acro/Group; P = Parkour; FX = Floor Exercise; B = Beam; PH = Pommel Horse; PB = Parallel Bars; UB = Uneven Bars; R = Rings; HB = High Bar; Indv = Individual; Tr = Trampoline; DM = Double Mini; Tu = Tumbling



\* Stage 1 activities can begin 24 hours after a concussion event, while monitoring for symptom exacerbation. Mild and brief exacerbation of symptoms associated with activity, is defined as an increase of no more than 2 points, on a 0-10 point scale, for less than an hour, when compared to the baseline value reported prior to the start of the physical activity. If more than a mild exacerbation of symptoms occurs (more than 2 points for more than an hour), the gymnast should stop and wait till the following day to resume activity.

\*\* A treating physician may consider progressing a gymnast through Stage 2 and Stage 3 during the completion of RTL, if clinically appropriate.

**Stage 2 or Beyond:** If the gymnast experiences new or recurring symptom, the gymnast should pause the progression, be reassessed by their treating physician, wait for symptoms to resolve, then restart at the previous symptom-free stage as directed by the treating physician.