PLAYERS HEALTH

CONCUSSION GUIDEBOOK

A RESOURCE FOR PARENTS



Dear Parents, Guardians and Caregivers:

Many of us were brought up in an era where the severity of concussions was not fully understood. Hits or jolts to the head were often downplayed during our sport experiences. We were told to "shake it off" or "be tough."

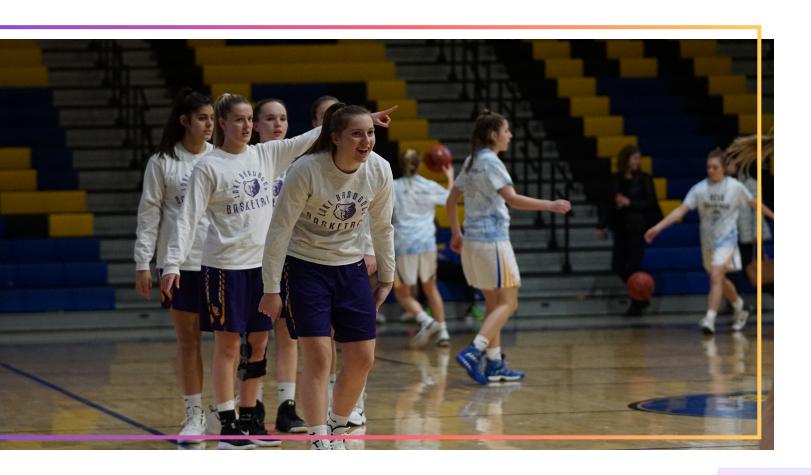
Today, we fortunately know more about the long-term ramifications of ignoring concussion symptoms or returning to play too soon after a concussion. High profile sports such as professional football have helped raise awareness around risks related to concussions and many states now have laws protecting young athletes.

Even with this heightened awareness, there are still many misconceptions about this injury, and we hope that by consolidating the most current and important information about concussions into this short guidebook we can provide you with a one-stop resource that arms you with knowledge to keep your athlete safe.

Our mission is to provide the safest possible environments for athletes to participate in the sports they love. Staying healthy and protecting them from negative outcomes related to concussion is core to our mission. We also provide sport programs with the policies, protocols and training they need to ensure that safe practices for concussion are followed. Learn more about our work at www.playershealth.com

Sincerely,

The Players Health Athlete Safety Team January 2024



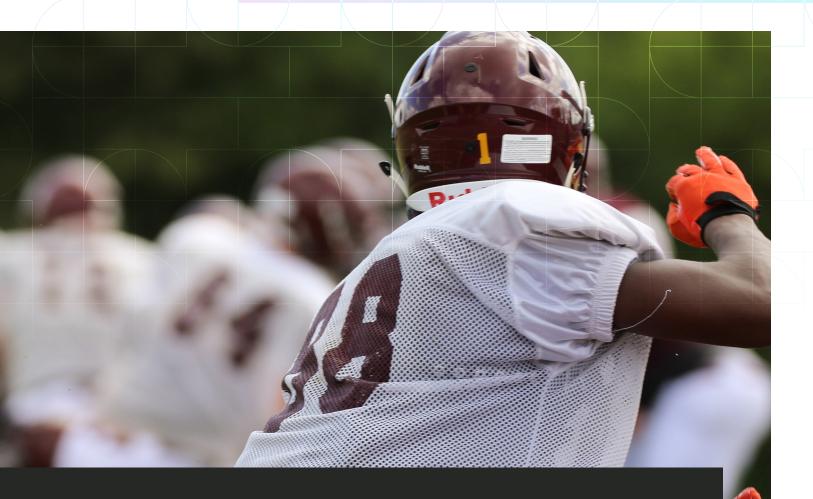


TABLE OF CONTENTS

Introduction4
What Is a Concussion?5
Keeping Your Athlete Safe from Concussion6
Concussion Signs and Symptoms8
Removing from Play10
Top Three Things to Do if an Athlete Gets a Concussion (or is suspected to have one)13
Baseline Testing14
Being a Good Consumer of Concussion Prevention and Healing Products15
What to Expect About Returning to Play16
Supporting Athlete Mental Health when Recovering from Concussion18
Resources

INTRODUCTION

While this guide is written primarily with parents in mind, all sport stakeholders will gain value from the information provided in this document. Throughout this guidebook you will find helpful links to trusted resources as you explore more about the topic. While no athlete is guaranteed to never be at risk of concussion, research has shown that some sports present a greater risk for concussion than others. Generally, football, lacrosse, ice hockey, soccer, and basketball lead the research on frequency of concussion. Parents with athletes in higher risk sports can advocate for preventative measures and solid return to play policies for their athletes' sport programs. This guide will assist in that effort.

According to the CDC, "Baseline tests are used to assess an athlete's balance and brain function (including learning and memory skills, ability to pay attention or concentrate, and how quickly he or she thinks and solve problems)." It is important to baseline test all players so that the results of these tests can be used to compare results from post-injury tests when a head injury occurs and a concussion is suspected. Comparing post-injury tests to baseline tests is just one tool used by healthcare professionals trained in concussion management.

To assist in recovery and to avoid recurring concussion symptoms, it is important to follow return to play protocols, which are outlined later in this Guidebook.

Healthcare Disclaimer

This guidebook is provided for educational and informational purposes only. The information herein is not medical advice and should not be used as a substitute for professional medical advice or consultations with qualified healthcare professionals. The information provided should not be used for diagnosing or treating a health problem or disease, and those seeking medical advice should consult with an appropriately licensed healthcare professional. Always seek the advice of your doctor or other qualified healthcare provider regarding all medical conditions. Do not disregard professional medical advice or delay seeking it because of something you have read in this guidebook. No physician-patient relationship is created by reading, purchasing, or any other means of acquiring this guidebook. Players Health, nor its employees, nor any contributor to this guidebook makes any representations, express or implied, with respect to the information provided herein or to its use.

Acknowledgements

Special thanks to Sarah Strand, Ph.D., Associate Professor of Health and Human Sciences at Loyola Marymount University with focus on athlete concussion, and Jake Benford, MD, Co-Founder/Chief Medical Officer, HitCheck for the thorough review of this document and guidance in its development.

WHAT IS A CONCUSSION?

A concussion is a type of traumatic brain injury (TBI) caused by a bump, blow, or jolt to the head, or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging brain cells.

When an athlete "gets their bell rung," it should be assumed they have sustained a concussion unless it is ruled out by a trained healthcare professional. Almost all concussions CANNOT be identified by imaging studies (CT scan or MRI), so it is important for athletes and parents to know that these tests can rule out other head injuries, but not a concussion.

While concussions are often thought to only be a significant issue in collision sports such as football, according to studies including those conducted by the NCAA,² there is also a high prevalence in sports such as soccer, cheerleading, and water polo. No athlete in any sport is immune to the risk of a concussion.

Healthcare providers may describe a concussion as a "mild" traumatic brain injury (mTBI) because concussions are usually not life-threatening. However, all concussions are serious. With proper rest and rehabilitation most concussions resolve in a matter of days or weeks.



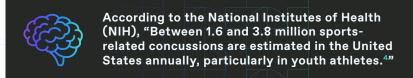
In some cases, the effects of a concussion can be serious especially if an athlete continues to play or returns to participation without adequate time to recover. This is particularly true for younger athletes.

Watch this video to learn about how concussions affect the brain and why taking time to recover is so important:

CRASHCOURSE | BRAIN FLY-THROUGH with Kate Courtney

HTTPS://YOUTU.BE/6VYRIWOEUG8





KEEPING YOUR ATHLETE SAFE FROM CONCUSSION

Sports are a great way for children and teens to stay healthy, learn life-lessons, and support academic success. To help lower your child's chances of getting a concussion or other serious brain injury, you can:

- Talk to the league/school about your child (and all athletes on the team or in the program) having access to a certified athletic trainer. While the title is similar to a personal trainer, an athletic trainer is a healthcare practitioner who has at least a bachelor's degree in athletic training and is regulated by a national board including continuing education in concussions. An athletic trainer is the first line of care for concussions and should be present at all high concussion-risk sport activities, and available for any sport.
- Talk with your children or teens about concussion and ask if they have concerns about reporting a concussion. Talk with them about their concerns; emphasize the importance of reporting concussions and taking time to recover from one.
- Ensure that they follow their coaches' rules for safety and the rules of the specific sport for their age-group. Inquire into whether the league trains the coaches regarding correct form to reduce the risk of head and neck injuries, and what the protocol is for a suspected head/neck injury.
- >> Tell your child or teen that you expect them to practice good sportsmanship which includes respecting opponents.
- When appropriate for the sport or activity, emphasize with your children or teens that they must wear any required head protection at all times during sport activity to lower the chances of the most serious types of brain or head injury.
- Develop in your child a love and competency for many sports-- team, individual, contact, non-contact, and recreational. Giving them baseline athletic skills gives them more options to be active if they are sidelined by a concussion at some point.
- Help create a culture of safety for athletes—if you have the opportunity, work with their coach to teach ways to lower the chances of getting a concussion.



CONCUSSION SAFETY

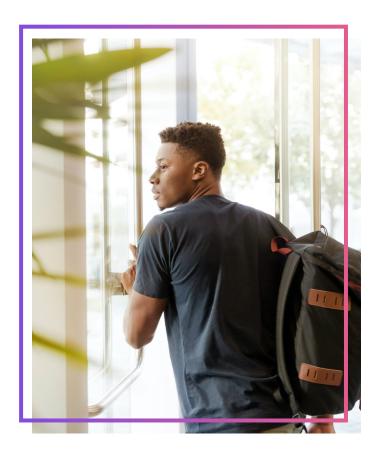
What parents should expect from their athlete's sport program

FROM COACHES:

- That they ensure that the athletes wear properly fitted equipment and that it is checked and maintained regularly (if applicable). If the sport has an organization that approves the safety of certain types of equipment, it should be marked with that approval.
- Encourage good sportsmanship and following the rules which are there to protect athletes.
- Be trained in and teach good technique.
- Put the safety of the athletes ahead of winning and performance.
- That they work with you to advocate for the availability of an athletic trainer at practices and games if there isn't one being provided currently.

FROM PROGRAM LEADERS AND ADMINISTRATORS

- Have a documented and available concussion plan and return to play policy that is communicated and followed.
- Educate coaches and parents on the organization's policies and concussion awareness.
- Establish and support an organizational culture that places the safety of athletes ahead of winning and performance.
- Have an athletic trainer at events and high contact practices. There are many clinics and organizations through whom an athletic trainer can be contracted.



CONCUSSION SIGNS AND SYMPTOMS

CONCUSSION SYMPTOMS

Reported by Athlete

Headache or "pressure" in head

Nausea or vomiting

Balance problems or dizziness, or double or blurry vision

Bothered by light or noise

Feeling sluggish, hazy, foggy, or groggy

Confusion or concentration or memory problems

Just not "feeling right" or "feeling down"

CONCUSSION SIGNS

That Can Be Observed

Can't recall events prior to or after the hit or fall

Appears dazed or stunned

Forgets an instruction, is confused about a position, or unsure of game, score or opponent

Moves clumsily

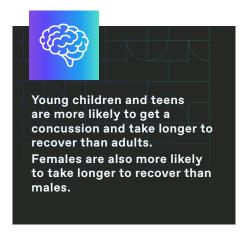
Answers questions slowly

Loses consciousness (even briefly)

Shows mood, behavior, or personality changes







CONCUSSION DANGER SIGNS

In rare cases, a dangerous collection of blood (hematoma), or a spinal cord injury may occur after a bump, blow, or jolt to the head or body. Call 9-1-1 immediately, or take the athlete to the emergency department if they have one or more of the following danger signs:

DANGEROUS SIGNS & SYMPTOMS

of a Head or Spinal Cord Injury

One pupil larger than the other

Drowsiness or inability to wake up

A headache that gets worse and does not go away

Slurred speech, weakness, numbness, or decreased coordination



Repeated vomiting or nausea, convulsions, or seizures (shaking or twitching)

Unusual behavior, increased confusion, restlessness, or agitation

Loss of consciousness (passed out/knocked out). Even a brief loss of consciousness should be taken seriously

Worsening symptoms

Pain radiating down from the neck to one or both shoulders or arms

Decreased sensation

Muscle weakness or paralysis in the arms or legs

REMOVING FROM PLAY

If an athlete has a concussion, their brain needs time to fully heal. While an athlete's brain is still healing, they are much more likely to have another concussion. Repeat concussions can increase the time it takes to recover. In rare cases, repeat concussions in young athletes can result in brain swelling or permanent damage to their brain. This condition is called "second impact syndrome."

Second impact syndrome only occurs in those whose brains are not yet fully developed. It can occur even from a very minor blow while the athlete is still symptomatic even if those symptoms are themselves mild. This is why it is imperative that all athletes, particularly those still developing, be removed immediately if a potentially concussive event occurs. The now widely accepted mantra is "When in Doubt Sit it Out."

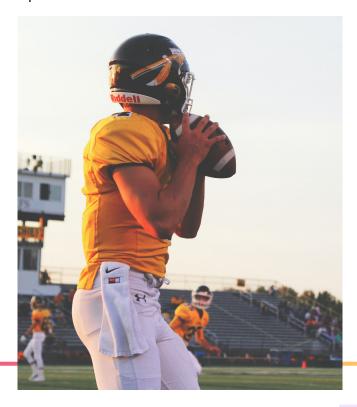
In some sports this may also mean removing the athlete from the sidelines where they could be in danger of being hit by errant balls or players crashing in.

THE ZACHARY LYSTEDT LAW, WASHINGTON STATE

Zachary Lystedt was an athletic 13 year-old in Washington state. During the end of the second quarter of a junior high school football game he hit his head on the ground after making a tackle. He held his head in pain, was removed from the field, but later went back into the game at the start of the 3rd quarter. Zack later collapsed on the field and needed to be airlifted to a nearby medical center where he had emergency surgery to remove portions of his skull to relieve pressure from his swelling brain. Zach had multiple strokes, was on a ventilator and spent three months in a coma.⁵

Zach fortunately survived and in May 2009 Washington state passed the Lystedt Law requiring any youth showing signs of concussion to be examined and cleared by a licensed health care provider before being allowed to return to play. Currently all 50 states have return to play laws to protect athletes from premature return which can be detrimental, if not fatal.

The Lystedt Law was often referred to as the "shake it off" law—it may have been acceptable in earlier times for coaches and parents to tell athletes to "shake it off" after suffering a blow and get back into the game. We now know this practice can put the athlete in great danger.



WHY DON'T ATHLETES SPEAK UP?

- They are unaware of the symptoms and don't think they are concussed.
- They are afraid of seeming to be soft or unable to handle pain or injury.
- They feel obligated to keep playing for the team, coach, or parents.
- >> They fear losing their role on the team or playing time.
- They underestimate the consequences of continuing to play even if they do have a concussion.



Tips for ensuring athletes are removed from play after they may have sustained a concussion:

PARENTS

- Talk with your children or teens about concussion and ask if they have concerns about reporting a concussion. Talk with them about their concerns; emphasize the importance of telling someone if they feel like they may have a concussion and to not go back into the game or practice.
- Educate yourself on the signs and symptoms of concussion.
- Mow the laws in your state, expect that your child's program shares information about concussion and its concussion return to play policies.

ATHLETES

- Say something to trusted adults if you experience any of the signs and symptoms of concussion and don't go back into the game or practice if you do. Your athletic trainer is a good first person to see.
- If you think a teammate is showing signs of a concussion, say something to your coach. This is hard but it could save your teammate from longer recovery.
- Watch Crash Course Concussion Education videos at teachaids.org/for-concussions/products.

PROGRAM LEADERS

- Annually review, update, and share your return to play policies and procedures.
- Educate coaches, parents and athletes on concussion and return to play.
- Consistently track required concussion and return to play training requirements.
- Make sure coaches are enforcing "When in Doubt Sit It Out."
- Have a certified, licensed athletic trainer available to assess the head injury.

COACHES

- Participate in regular concussion training.
- Know the return to play laws in your state, area and program policies about athlete return to play.
- Establish a culture of trust and communication for athletes where it is ok and not "wimpy" to sit-out if an athlete doesn't feel right.
- Don't be afraid to make the hard call to remove an athlete from play, even if they are a key contributor to your team's performance.
- Listen to the expertise of the health care practitioners who are well-versed in concussion management. Use your athletic trainer as a key resource.

The Concussion Legacy Foundation has a program for athletes to become leaders for their sport program in concussion awareness and speaking up.

CONCUSSIONFOUNDATION.ORG



TOP THREE THINGS TO DO IF AN ATHLETE GETS A CONCUSSION (OR IS SUSPECTED TO HAVE ONE)

As a parent, if you think your athlete may have a concussion, you should:

- 1. Remove your athlete from play.
- 2. Keep your athlete out of play the day of the injury. Your athlete should be seen by a healthcare provider and only return to play with permission from a healthcare provider who is experienced in evaluating for concussion.
- 3. Ask your athlete's healthcare provider for written instructions on helping your athlete return to school. You can give the instructions to your child's school nurse and teacher(s) and return-to-play instructions to the coach and/or athletic trainer.

Do not try to judge the severity of the injury yourself. Severity of the concussion cannot be determined immediately when the injury occurs. While concussions used to be graded on a scale of 1-3 depending on immediate symptoms, this system is no longer used by those trained in concussion. Only a healthcare provider should assess an athlete for a possible concussion. You may not know how serious the concussion is at first, and some symptoms may not show up for hours or days. A return to school and sports should be a gradual process that is carefully managed and monitored by a healthcare provider.



BASELINE TESTING

WHAT IS BASELINE TESTING?

Baseline testing is a test that can be conducted by a healthcare professional to assess your child's neurocognitive function, typically pre-season. It can be a computerized test or a mobile app like HitCheck⁹.

Some common options are the ImPACT test, or Concussion Vital Signs. Certified athletic trainers can often administer this too at the high school and collegiate levels.

WHAT DOES THE TEST EVALUATE?

This test assesses the healthy athlete's brain function including reaction time, attention, memory and decision-making skills pre-season. The test may be completed in as little as 10 minutes¹⁰. Sometimes baseline testing may also include a small physical component like a balance assessment. Contrary to popular belief, it is very difficult for an athlete to "beat the system" and register an inaccurate baseline test result.

HOW ARE TEST RESULTS USED?

If a head injury occurs or a concussion is suspected a healthcare professional can use the baseline test results to compare brain function as determined by the results of the same assessment administered post-injury. This is not the sole determinant of return-to-play but is one piece of the clinical puzzle.

HOW DO I GET A BASELINE TEST FOR MY CHILD?

The CDC recommends baselne tests for children ages 10 and up¹¹. Some programs provide this testing as part of their standard protocol for participants. If your sport program does not, ask your pediatrician, local health system's sports medicine department or concussion clinic about testing. Tests themselves are typically very affordable.

HOW OFTEN DO TESTS NEED TO BE DONE?

The CDC recommends athletes retake the test every year unless recommended otherwise by a health-care provider.

BEING A GOOD CONSUMER OF CONCUSSION PREVENTION AND HEALING PRODUCTS

With heightened concern about concussion, sense of urgency to find solutions, and an opportunity to capitalize on the desire for prevention and cures, in the last few years many products have come to market touting their concussion prevention and treatment solutions.

Vitamins and Supplements

In 2014 some nutritional supplement companies escalated marketing some of their products as concussion cures without any scientific merit, prompting the FDA to publicly denounce such claims.¹²

Q-Collar

As of 2022, the FDA has approved the Q-Collar as a wearable neck device that has been seen on several high-profile athletes. The research proving the collar's efficacy has been questioned.¹³

Head Protection

Helmets are essential for contact sports like football, ice hockey and men's lacrosse. Helmets are important for reducing skull fractures. Helmets, however, cannot necessarily prevent the brain from colliding with the skull. Newer to market are thick, soft headbands (particularly aimed at soccer players) that consumers may falsely think prevent concussion. These products are designed to provide impact protection from cuts, bruises, and contusions, not concussion. There is also speculation that by wearing headgear athletes may feel more protected and play more recklessly. Remember that concussions can occur not only from blows to the head but by blows to the body that shake the brain, including when the body (not just the head) meets the ground.

The best treatment for concussion remains appropriate rest and following a return to play plan as prescribed by a physician. Parents should carefully evaluate products claiming to cure or prevent concussion. Always consult a healthcare professional.

Evaluating the quality of the sport program your child participates in is also recommended. Particularly valuable as related to concussion is the availability of an athletic trainer on-site at practices and games.

WHAT TO EXPECT ABOUT RETURNING TO PLAY

Most symptoms resolve within 14 to 21 days¹⁷ if appropriate steps are taken not to suffer from another concussion in that time period.

Although recovery plans are unique to each person, they all involve mental and physical rest and a gradual return to activity.

SAMPLE RETURN TO PLAY STAGES

Below is a sample of what the return to play stages may look like. This is presented for illustrative purposes as a common progression, but each athlete's journey will be different as prescribed by the medical professional under whom they are being treated.

Under the supervision of a professional trained in concussion management,¹⁹ the below six gradual steps over the course of time should help to safely return an athlete to play. (Note: Any state specific return to play laws would supersede these recommendations)



MYTH

Individuals with concussions should be confined in a dark room.

FACT

Current research shows that moderate exercise (as indicated by a physician) is important for healing from a concussion. 18



BACK TO REGULAR ACTIVITIES

The athlete is back to regular activities and has been cleared to begin the process for return to play. Regular activities include school, light activity (such as short walks) and moderate activity (such as riding a stationary bike) that do not worsen symptoms.





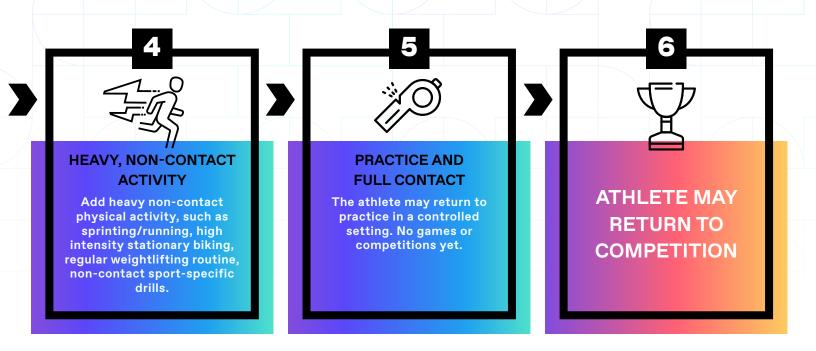
LIGHT AEROBIC ACTIVITY

Light aerobic activity meant to increase the heart rate. Short time increments 5-10 minutes, walking, light jog or exercise bike. No weightlifting at this step. 3



MODERATE ACTIVITY

Continue with activities that increase the athletes heart rate to include moderate jogging, brief running, moderate intensity stationary biking, moderate intensity weightlifting (should be less than their typical routine was).



An athlete will only move to the next step if they do not have any recurring or new symptoms at the current step. If symptoms return the athlete will stop those activities and contact the healthcare professional involved in managing the return to play. When no symptoms are present, they may start the progression again at the previous step, or the step before the symptoms occurred.

PARENT TIP:

Working with your healthcare provider, you can advocate for academic accommodations that can help an athlete returning to school after a concussion. These can include:

- Extended deadlines for assignments
- Times of rest during the school day
- Extended time to take tests
- Adjustments for oversensitivity for light and noise (such as avoiding cafeterias or band rooms, limiting use of fluorescent lights)
- Temporary use of a tutor

SUPPORTING ATHLETE MENTAL HEALTH

WHEN RECOVERING FROM CONCUSSION

Emily* was a high-achieving student and gifted lacrosse player. When she suffered a concussion during a game, she found she was unable to concentrate on her schoolwork for long periods of time and experienced severe headaches when she tried to read. In addition, she was not able to participate in the sport she loved. Because she had always been a good student and dedicated athlete, she found herself experiencing anxiety over her grades and deep feelings of isolation and sadness from missing out on her team activities.

Emily's story is not unique. While most athletes' concussions resolve within a few weeks, there is still a significant time needed to allow the brain to heal. This, coupled with changes in the brain due to the concussion itself, can create mental health concerns for those who suffer a concussion.

Mental health challenges athletes may encounter while recovering from a concussion:

MOOD CHANGES/SWINGS

It is important to note that concussions won't "change" an athlete's personality. It just may be masked due to the other difficulties caused by the concussion. ²⁰

This can look like:

- Social anxiety
- Teariness
- Irritability and anger
- Feelings of being overwhelmed
- Impulsivity
- Hyperactivity

ANXIETY 21

This can look like:

- Feeling like you can't relax
- >> Feeling like you can't stop worrying
- Difficulty falling asleep (because of worry)
- Worrying about worrying
- Constantly imagining how something can go wrong ("What if ...?" thinking)
- >> Feeling uncomfortable and being unable to fix it
- Feeling tense

DEPRESSION 22

- A negative feeling that goes beyond normal sadness
- Low or no motivation, such that your ability to do what you need or want is hampered.
- The inability to take pleasure in things
- A persistent disinterest or apathy
- Feeling empty or robotic
- A negative outlook
- A sense of worthlessness
- Indecisiveness
- Suicidal ideation

HOW YOU AS A PARENT, GUARDIAN OR CAREGIVER CAN HELP:

Support eating healthy food and drinking enough water.

Focus on consuming healthy greens, fruits, nuts, and healthy proteins; avoiding processed or sugary foods. This will aid in recovery and help your child's mood and energy levels. ²³

Encourage good sleep habits.

Returning to normal sleep patterns can take time while recovering from a concussion but you can help your child with consistent wake up and bedtimes, creating an uncluttered, calming sleep environment, and limiting screens at night (which may also be part of the recovery plan). Unless instructed to wake the athlete due to severe symptoms, they should be allowed to sleep normally. Let sleep happen.

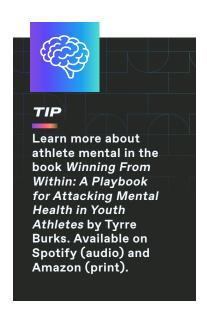
Provide opportunities for appropriate social interaction.

While following the recovery plan, encourage and help support your athlete in staying connected while they are recovering. Talk with them about what they would like to do socially that does not over-tax the brain and encourage friends to reach out and connect non-digitally.

Be patient.

Do not pressure your child about missing school or sports. Let them know it is OK to take a break and that the most important thing is getting better.

Talk to your healthcare provider about mental health options if symptoms of anxiety, depression or mood changes persist. If your athlete expresses suicidal feelings or you suspect they are having suicidal thoughts, seek help from a qualified medical professional. In emergencies, call the National Suicide Prevention Hotline at 1-800-273-8255. Or dial 988 for help available in either English or Spanish.



ADDITIONAL RESOURCES

BIAA National Brain Injury Information Center (NBIIC)

1-800-444-6443

https://www.biausa.org/brain-injury/about-brain-injury/nbiic/contact-nbiic

Center for Disease Control Heads UP Concussion Resources

https://www.cdc.gov/headsup/index.html

Center for Disease Control Heads UP Concussion Training

https://www.cdc.gov/headsup/resources/index.html

Players Health Guide to Concussion Laws by State

https://www.playershealth.com/guidebooks

Players Health CDC Concussion Training

https://www.playershealth.com/courses

Players Health Concussion and Return to Play Policy Template

Contact asainfo@playershealth.com for a copy

CrashCourse Concussion Education and CrashCourse Brain Fly-Through

https://teachaids.org/for-concussions/products/

Concussion StoryWall-Shared stories and advice about concussion recovery

https://concussionstorywall.org/storywall

Concussion Legacy Foundation-Concussion Legacy Captains Program

https://concussionfoundation.org/programs/concussion-legacy-captains

HitCheck Baseline Testing

https://www.hitcheck.com/

ImPACT Baseline Concussion Testing

https://impactconcussion.com/

About Baseline Testing

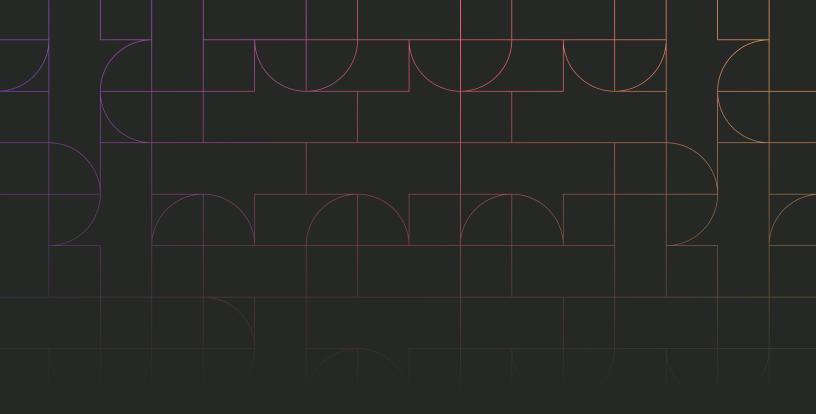
https://www.cdc.gov/headsup/basics/baseline_testing.html

National Suicide Prevention Hotline

1-800-273-8255 or dial 988

FOOTNOTES

- 1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2140075/
- https://www.ncaa.org/sports/2016/8/3/concussion-data-and-research.aspx
- 3. https://www.cdc.gov/traumaticbraininjury/research-programs/ncss/index.html
- 4. https://pubmed.ncbi.nlm.nih.gov/25470159/
- https://www.cdc.gov/headsup/pdfs/stories/031210-zack-story.pdf
- 6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5384820/
- 7. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779117
- 8. https://teachaids.org/for-concussions/research/
- HitCheck | Baseline Testing: https://www.hitcheck.com/
- 10. https://impactconcussion.com/
- 11. https://www.cdc.gov/headsup/basics/baseline_testing.html
- 12. https://www.bloomberg.com/news/articles/2014-01-03/fda-warns-against-concussion-curing-claims-on-supplements?leadSource=uverify%20wall
- 13. https://www.nytimes.com/2022/12/19/sports/concussion-q-collar.html
- 14. https://share.upmc.com/2020/12/does-protective-gear-prevent-concussions
- 15. We googled "headband for soccer concussion prevention" and Amazon was happy to provide us with a link to their Concussion Headband for Soccer product search which displayed over 75 products. While none of these products explicitly claim to prevention concussion, the consumer can certainly be led to believe that this is the case.
- 16. nfhs-soft-headgear-in-non-helmeted-sports-position-statement-april-2023-final.pdf
- 17. https://my.clevelandclinic.org/health/diseases/15038-concussion
- 18. https://teachaids.org/for-concussions/research/
- 19. Medical Professional trained in concussion management could be a Physician, Physician Assistant, Neuropsychologist, Clinical Psychologist, Nurse Practitioner, or a Certified Athletic Trainer. Which type of medical professional that is required may depend on state laws and/or programs guidelines.
- 20. https://www.cognitivefxusa.com/blog/navigating-mental-health-after-tbi-and-concussion
- 21. https://pubmed.ncbi.nlm.nih.gov/32962513/
- 22. https://pubmed.ncbi.nlm.nih.gov/32064943/
- 23. https://www.cognitivefxusa.com/blog/navigating-mental-health-after-tbi-and-concussion





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