



Hackensack Meridian *Health* JFK Johnson Rehabilitation Institute

Not Just Football, Athletes in Summer Spring Sports Also At Risk for Concussion and ‘Sub-Concussion’ Injuries

*‘Sub-Concussive’ Blows in Lacrosse, Soccer, Volleyball, Frisbee and Other
Sports Can Add Up to Injure Young Brains*

EDISON, NJ — Although football attracts the most attention when it comes to concussion, a prominent brain injury specialist warns that other sports — such as baseball, lacrosse, volleyball, basketball, ultimate Frisbee and soccer — also put young athletes at risk for brain injury — from both concussion and sub-concussive/repetitive head injuries.

“Football gets a lot of attention, but in my practice I also see patients with brain injuries in other sports as well,” said Dr. Christine Greiss, a Brain Injury Certified Physician and Director of the [Concussion Program at JFK Johnson Rehabilitation Institute](#).

In addition to concussion, Dr. Greiss said athletes, coaches, and parents must be aware that brain injury can result from repeated “sub-concussive” blows, which transmit enough force through the brain to cause a neurochemical imbalance — but not enough to cause full-blown concussion.

But these blows, if repeated over a long period of time, may possibly put a person at risk of brain injury, including Chronic Traumatic Encephalopathy, or CTE, a degenerative brain disease.

Dr. Greiss said the danger of sub-concussive blows is that they come and go quickly. “The person feels fine. They are like, ‘Forget it. I’m alright,’” she said. “It’s still poorly understood, but we know repeated sub-concussive injuries can add up.”

The number of sub-concussive blows that will cause eventual injury is unclear and likely varies among patients. Moreover, the number of sub-concussive blows that leads to irreversible damage also varies with each individual.

The American Academy of Pediatrics currently is engaged in discussions over whether young children should be allowed to play youth tackle football because of the uncertainty about the link between sub-concussive blows and CTE.

“Children have more space between their brain and the skull,” Dr. Greiss said. “This allows for more intracranial brain movement during rapid accelerations and therefore ‘room to shake’ upon impact, thus making younger athletes more susceptible to injury during a delicate neurodevelopmental time.”

She said youth are at greater risk of injury at lower impact compared with adults, and they are more likely to suffer persistent symptoms.

Additionally, Dr. Greiss said, “A player experiencing a sub-concussive blow might be at heightened risk for second impact syndrome if the second injury occurs immediately the first. In second impact syndrome, a person suffers a second blow to the head before the damage of an earlier blow has resolved. If the athlete continues to play while the brain is attempting to recover... the athlete will be at risk for another head injury.”

In lacrosse, soccer, basketball, baseball and other spring sports, head injuries can occur following head-to-head collisions — or head to elbow, foot, knee, ball, goalposts or ground. With lacrosse, for instance, a player can get hit with the puck, or another player’s stick. In addition, quick maneuvers performed incorrectly or with poor technique can cause neck whiplash that results in repetitive sub-concussions. Dr. Greiss also has seen swimmers misjudge the end of the pool and hit the wall.

She offers advice for parents, athletes and coaches:

- Practice safe play. Do not use your head to tackle or collide.
- Use helmets and any other safety equipment properly.
- Follow the rules and avoid illegal plays, such as checking, tackling, or colliding with an unprotected opponent.
- Recognize the symptoms of concussion, which include headache, nausea and/or vomiting, dizziness, sensitivity to light, blurry vision, memory problems or feeling sluggish or down.

Recognizing the signs of concussion and seeking medical treatment often can be difficult for young athletes eager to participate in their sport, and sometimes relying on scholarships for college.

“Sometimes we see athletes delay in reporting symptoms. They are so eager to play they dismiss the symptoms. So it’s important that parents and coaches pay attention and have honest conversations with athletes,” Dr. Greiss said.

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Our continuum of care assures patients of an integrated, personalized program that facilitates the recovery process and encourages family participation.

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