Sports Concussions
In Youth and Adolescent Athletes

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Concussion Trauma Risk Seen in Amateur Athlete

By ALAN SCHWARZ
Published: October 21, 2009

Ex-N.F.L. Executive Sounds Alarm on Head Injury
By ALAN SCHWARZ 28 minutes ago
Gay Culverhouse, former president of the Tampa Bay Buccaneers, will testify before Congress on brain trauma.

THE NEW YORKER

ANNALS OF MEDICINE
OFFENSIVE PLAY
How different are dogfighting and football?
by Malcolm Gladwell
Football player dies after hit

THE ASSOCIATED PRESS

WINSTON-SALEM — A 15-year-old high school football player died early Sunday from a brain injury he suffered during the season-opening game, officials said.

Matt Gfeller was playing for Reynolds High School in Winston-Salem when he was injured in Friday night’s game against Page High School of Greensboro.

The sophomore linebacker had been on life support at Wake Forest University Baptist Medical Center and underwent brain surgery late Friday.

Reynolds coach Mike Propst said Gfeller was taken off life support Saturday night and died about five hours later at 2:15 a.m. Sunday. A hospital spokeswoman said it would provide no additional information.

This was Gfeller’s first year at Reynolds.

Assistant coach James Alexander said Gfeller was hit on the first play of the game nearly the same way he was hit on the play in which he was injured.

“It’s the type of hit that occurs once or twice a year around the world,” Paschal said.

Propst, school administrators and two pastors from local churches met with the 33 varsity players to help deal with Gfeller’s death.
High school football player’s death ruled accidental

By Tim Candon, HighSchoolOT.com editor
Posted: Today at 12:17 a.m.
Updated: Today at 8:05 a.m.

GREENVILLE, N.C. — A state medical examiner in Greenville ruled Tuesday that the death of a Greenville Rose football player was accidental and the result of “second impact syndrome.”

In a statement, Dr. M.G.F. Gilliland said Jaquan Waller died because of a “very rare condition which can occur when two relatively minor head injuries occur in a short time interval. It usually occurs in young athletes and is very rapidly fatal.”

Waller, a junior running back, left the field after being tackled in Rose’s game Friday against Wilmington Hoggard. He then collapsed on the sideline. Waller was taken to Pitt County Memorial Hospital, where he was placed on life support. He died Saturday morning. Waller had been hit in practice two days before the game and suffered a mild concussion.
Lacrosse player dies in 'tragic accident'

15-year-old's death after Monday game leaves sport community reeling in shock

May 22, 2008 04:30 AM

EMILY MATHIEU
STAFF REPORTER

Note: Jamieson Kuhlmann’s team was playing Newmarket, not Mississauga, when the fatal injury occurred. Incorrect information was provided to the Star.

An on-field collision during a lacrosse game has resulted in the death of a promising 15-year-old Toronto athlete and devastated his family, friends and members of the city’s sporting community.

Jamieson Kuhlmann was fatally injured during a field lacrosse game in Newmarket late Monday afternoon. His Toronto Beaches team was playing against a Mississauga team when the incident happened around 5:30 p.m. It was about five minutes into the first quarter of the game.

Jamieson Kuhlmann, shown in a Facebook photo, was taken off life support on the afternoon of May 21, 2008.
A Ding Is Not Always Just A Ding

300,000 sports concussions per year
A Ding Is Not Always Just A Ding

1.6 to 3.8 million sports/recreational concussions per year

Center for Disease Control 2006
Effective Sports Concussion Program

- Education & Awareness (Pre-Injury)
- On Field Observation, Signs & Symptoms Recognition
  - When in Doubt, Sit Them Out
- Post Game-Day Evaluation & Management by Healthcare Professionals
- Activity Treatment/Management
  - Medical
  - Physical, Cognitive (Academics) Activity
- Gradual Return-To-Play Protocol
  - Return to Play Needs Medical OK
Recognizing a Concussion

*Signs and Symptoms*

**Signs observed by coach, parent, teammates include:**
- Appears dazed or stunned
- Is confused about assignment
- Forgets plays
- Is unsure of game, score, or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness
- Shows behavior or personality changes
- Can’t recall events prior to hit
- Can’t recall events after hit.

**Symptoms reported by athlete include:**
- Headache
- Nausea
- Balance problems or dizziness
- Double or fuzzy vision
- Sensitivity to light or noise
- Feeling sluggish
- Feeling foggy or sluggish
- Concentration or memory problems
- Confusion
**HEADS UP CONCUSSION IN FOOTBALL**

**ACTION PLAN**
If you suspect that an athlete has a concussion, you should take the following four steps:

1. **Remove athlete from play.**
2. **Ensure that the athlete is evaluated by an appropriate health care professional.** Do not try to judge the seriousness of the injury yourself.
3. **Inform the athlete’s parents or guardians about the possible concussion and give them the fact sheet on concussion.**
4. **Keep the athlete out of play the day of the injury and until an appropriate health care professional says they are symptom-free and it’s OK to return to play.**

**IMPORTANT PHONE NUMBERS**

**Emergency Medical Services**
Name:  
Phone:  

**Health Care Professional**
Name:  
Phone:  

**School Staff Available During Practice**
Name:  
Phone:  

**School Staff Available During Games**
Name:  
Phone:  

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**SIGNS AND SYMPTOMS**

Athletes who experience any of the signs and symptoms listed below after a bump, blow, or jolt to the head or body may have a concussion.

<table>
<thead>
<tr>
<th>Signs Observed by Coaching Staff</th>
<th>Symptoms Reported by Athlete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appears dazed or stunned</td>
<td>Headache or “pressure” in head</td>
</tr>
<tr>
<td>Is confused about assignment or position</td>
<td>Nausea or vomiting</td>
</tr>
<tr>
<td>Forgets an instruction</td>
<td>Balance problems or dizziness</td>
</tr>
<tr>
<td>Is unsure of game, score, or opponent</td>
<td>Double or blurry vision</td>
</tr>
<tr>
<td>Moves clumsily</td>
<td>Sensitivity to light</td>
</tr>
<tr>
<td>Answers questions slowly</td>
<td>Sensitivity to noise</td>
</tr>
<tr>
<td>Loses consciousness (even briefly)</td>
<td>Feeling sluggish, hazy, foggy, or groggy</td>
</tr>
<tr>
<td>Shows mood, behavior, or personality changes</td>
<td>Concentration or memory problems</td>
</tr>
<tr>
<td>Can’t recall events prior to hit or fall</td>
<td>Confusion</td>
</tr>
<tr>
<td>Can’t recall events after hit or fall</td>
<td>Does not “feel right” or is “feeling down”</td>
</tr>
</tbody>
</table>

For more information and safety resources, visit [www.cdc.gov/Concussion](http://www.cdc.gov/Concussion) or [www.usafootball.com](http://www.usafootball.com).
Key Elements in Recognizing a Possible Concussion

1. Blow to the head or other part of body with force of the impact transferred to the head
2. You recognize a change in player’s function
3. Refer to your Signs & Symptoms card
Return-To-Play *Same-Day*

It is *essential* to understand:

- Younger athletes recover more slowly
- It takes time for all the signs and symptoms to develop
- The safest course of action is to hold an athlete out.
- When in doubt, sit them out.
Return-To-Play *Same-Day*

It is *essential* to understand

- A player with diagnosed (or suspected) concussion should not be allowed to return to play on the same day as the injury.

Catastrophic Head Injuries in High School and College Football

- 94 cases
  - 75 subdural hematomas, 10 subdural with diffuse brain swelling, 5 diffuse brain swelling, 4 AVM or aneurysm
- 92 cases were in high school players
  - Boden et al. AJSM 2007; 35: 1075 - 1081
Catastrophic Head Injuries in High School and College Football

- 59% of athletes had a previous history of concussion(s)
  - 71% of those injuries occurred in the same season as the catastrophic injury

- 39% (21/54) of athletes at time of catastrophic injury were playing with residual symptoms from a previous concussion

  - Boden et al. *AJSM* 2007; 35: 1075 - 1081
Neuropsychological testing

• Only one component of the evaluation process
• Useful in tracking cognitive functioning/impairment during recovery
• Useful to understand effects on school learning and performance
• Complex process requiring proper personnel with training
  • Administering the tests
  • Interpreting the tests
• Normal” test scores alone do not indicate recovery
Neuropsychological Testing

Blue Litmus paper

Acid

crossed out

neuropsych test

crossed out

concussion
Premature Return to Play

- Subdural hematoma
- Second Impact Syndrome
- Prolong recovery
Return to Play

More Common Concerns

• 2-4X increased risk for recurrent concussion
  – More symptoms
  – Last longer
• Post-concussive syndrome
• Cumulative brain trauma
Youth Sports Concussions

- Prolong recovery in student athletes
Concussion

- Remove from practice or play
- Do not leave the player alone
- Healthcare provider evaluation following the injury
- Return to play - medically supervised stepwise progression
- Complete recovery before return to play
What is this game worth?

The rest of the season?

The rest of the athlete’s career?

The rest of the athlete’s life?
Engrossed House Bill 1824
Requiring the adoption of policies for the management of concussion and head injury in youth sports.

• All student athletes and parents/guardians sign an information sheet regarding concussion prior to each season.

• School districts to work with the Washington Interscholastic Activities Association (WIAA) to develop information and policies on educating coaches, youth athletes, and parents about the nature and risk of concussion including the dangers of premature return to practice or play after a concussion.

Engrossed House Bill 1824
Requiring the adoption of policies for the management of concussion and head injury in youth sports.

- Any athlete suspected of suffering a concussion is removed from play until they receive written clearance for return to practice and play by a licensed health care provider trained in the evaluation and management of concussions.

May 14th 2009

Zackery Lystedt Law
Why Players Don’t Report Concussions

The top reason athletes don’t report concussions is NOT for fear of losing their position!

It is LACK OF KNOWLEDGE

**Why Concussion Was Not Reported** (McCrea 2004)

- Did not think it was serious enough: 66%
- Did not want to leave the game: 41%
- Did not know it was a concussion: 36%
- Did not want to let down teammates: 22%

• Delaney (2002) found that only 23.4% of concussed college football players and 19.8% of concussed soccer players realized they had suffered a concussion

We need to educate players about symptoms and risks

Coaches, parents, and officials too
Finally

Do not let a injured athlete back into practice or games until they have been evaluated and cleared in writing by a licensed healthcare provider trained in the evaluation and management of concussions.

That is not only the Law (in Washington);
It Is The Right Thing To Do!