The Welfare-Performance Continuum: Is Technology the Answer?

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What's this I hear about a concussion problem?
What Constitutes Sport?
Hornets' Monty Williams Fined for Concussion Comments

Published November 6. 2012

NEW YORK (AP) — New Orleans Hornets coach Monty Williams was fined $25,000 by the NBA on Tuesday for public comments criticizing the league's concussion policy.

Williams made the comments Saturday night in Chicago before the Hornets faced the Bulls with first overall draft pick Anthony Davis sidelined by a mild concussion.

Williams blasted the NBA's protocols for determining when a player can return from a concussion, saying, "Now, they treat everybody like they have white gloves and pink drawers and it's getting old. It's just the way the league is now."

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A 5-Concussion Pee Wee Game Leads to Penalties for the Adults

Published: October 23, 2012

By KEN BELSON

It took just one play on Sept. 15 to suggest the game between the Southbridge Pop Warner pee wees and their rivals, the Tantasqua Braves, could mean trouble. Two Tantasqua players were hit so hard that their coach pulled them off the field. An emergency medical technician on the sidelines evaluated the boys, grew worried that they might have concussions, and had them take their pads off.

The boys on the teams were as young as 10, and, because of rules about safety, none could weigh more than 120 pounds. Shortly after 3 p.m. at McMahon Field in Southbridge, though, things quickly became worse. Six plays into the game, another Brave was removed after a hard hit. An official with the Tantasqua team said the eyes of one of the boys were rolling back in his head.

But the game, an obvious mismatch between teams from neighboring towns in central Massachusetts, went on, with Southbridge building a 28-0 lead in the first quarter. The game went on without the officials intervening. It went on despite the fact that the Braves, with three of their players already knocked out of the game, no longer had the required number of players to participate.

Even with what are known as “mercy rules” — regulations designed to limit a dominant team’s ability to run up scores — the touchdowns kept coming, and so did the concussions. When the game ended, the final score was 52-0, and five preadolescent boys had head injuries, the last hurt on the final play of the game.
NCAA Membership Principles

• **Principle of Institutional Control and Responsibility**
  • It is the responsibility of each member institution to control its intercollegiate athletic program in compliance with the rules and regulations of the Association.

• **Principle of Student-Athlete Well-Being**
  • Health and Safety: It is the responsibility of each member institution to protect the health of and provide safe environment for each of its participating student-athletes.
Pro and NCAA Hot Topics

- Drug Testing
- Concussion
- Violence
- LGBT
- Question/Persuade/Refer (QPR)
- Hazing/Bullying
- Over-training/Overuse Injuries
- Eating Issues Disorders
The Health & Performance Continuum

Clinical Disorders - Co-Occurring Dis - Sub-Clinical Dis - Peak Performance

Performance Issues are Clinical Issues
Beyond the Blue

• 1st Edition of NCAA Mental Health Handbook
  • Published 2007
• Second Edition addressing broader scope of mental health problems
  • Sleep Disorders
  • Anxiety
  • Additional Mood Disorders: Bi-Polar
  • Eating Disorders
  • Substance Related Disorders
  • Impulse Disorders
  • Attentional Disorder
  • Concussion

• International Society of Sport Psychology
  • Sponsoring series of books looking at the fundamentals of Sport and Exercise Psychology
  • Mental Assessment and Diagnosis
Without Measurement, What Do We Know?

• Error in clinical judgment without measurement
• Subjective and objective value
• N of 1 modeling
• Whenever possible use multiple sources of data
• Recognize the systemic influences in decision making
Multimodal Approach

*South County Hospital Oncology Service Model
Emerging Technologies in Health Promotion and Performance Enhancement

- **Upstream Measures**
  - Neurofeedback
  - Subcortical Potential
  - Optic Flow
  - Read and React Abilities

- **Downstream Measures**
  - Heart Rate
  - HRV
  - Biochemical
  - Biomechanical
  - Neuromuscular
People Drive Prevention

Licensed Clinical Sport Psychologists can enhance the medical care for student-athletes by:

• Providing mental-health screening and prevention education.
• Pre-participation evaluation screenings.
• Providing continuing care for concussion management.
• Managing eating disorders.
• Providing counseling on challenges and stresses related to being a student-athlete.
• Resolving conflict between athlete and coach, athlete and athlete, coach and administrator, etc.
# NFL Combine Sample Report

## General Information

<table>
<thead>
<tr>
<th>Player Name:</th>
<th>D.O.B: Age: 22</th>
<th>Height: 77 inches</th>
<th>Weight: 265 pounds</th>
<th>College:</th>
</tr>
</thead>
</table>

## Overall Summary

<table>
<thead>
<tr>
<th>Overall Score: 46 (100 is maximum, 50 is average)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reaction Time and Decision Making</strong></td>
</tr>
<tr>
<td>Ranking: 83 out of 91 players tested overall, 14 out of 18 players at his position</td>
</tr>
<tr>
<td><strong>Motion and Object Tracking</strong></td>
</tr>
<tr>
<td>Ranking: 5 out of 91 players tested overall, 1 out of 18 players at his position</td>
</tr>
<tr>
<td><strong>Athletic Intelligence</strong></td>
</tr>
<tr>
<td>Ranking: 34 out of 91 players tested overall, 7 out of 18 players at his position</td>
</tr>
<tr>
<td><strong>Balance</strong></td>
</tr>
<tr>
<td>Ranking: 88 out of 91 players tested overall, 17 out of 18 players at his position</td>
</tr>
</tbody>
</table>
NFL Combine
Sample Report

Observations
Chandler was engaged and focused throughout the interaction with the staff. He demonstrated appropriate awareness that each interaction in the room was important whether he was working with technology or the professional staff. This is remarkable as not all those tested behave with good situational awareness about the importance of the moment.

Chandler did ask clarifying questions during the testing showing engagement and his desire to perform well. He was distracted at times due to his performance when he did not succeed easily. This may at times get the best of him, reducing focus, reaction time, and his decision making. If this is accurate it may be important to address with him after further evaluation. Frustration tolerance is a significant predictor of success and consistency, if he has a reduced capacity he may not perform optimally unless he is comfortable. Nevertheless, frustration tolerance can be developed and it seems he has a good foundation of skills to build upon.

Overall, he was a pleasure to work with and he showed good situational awareness and interpersonal control throughout. He demonstrated adequate emotional awareness, management, and concentrated focus.

Detailed Sub-Scores By Test

Reaction Time and Decision Making

Assessment: Far Below Average. This athlete has a far below average ability to read and react, and to make adjustments quickly to what is happening on the field. On the field he may be distracted at times by external events (bad calls from the referee, frustrations from opponents, and pain felt at times in games). He seems to have difficulty taking in important information and disregarding the non-essential in order to make complex decisions/reads quickly. He may not have understood the assessment, or have a reduced ability to read and adjust to information.

If this player is selected, it would be best to retest his abilities to assist his develop. It is possible that as a player he may have difficulty in focusing if he is not feeling 100% healthy or comfortable. This inability can be trained and developed for high pressure situations.

<table>
<thead>
<tr>
<th>Composite Score</th>
<th>11% (100 percent is maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores by Sub-Category</td>
<td>Decision Time: 26%</td>
</tr>
<tr>
<td>Recognize and React: 35%</td>
<td>Timing: 6%</td>
</tr>
</tbody>
</table>

Motion and Object Tracking

Assessment: Exceptional. This athlete has an exceptional ability to see what is happening on the field and make good decisions under time pressure. He will be able to read gaps, track multiple assignments, and not only make reads but help others around him. His scores were well above the average of all athletes assessed at the combine.

He seems to have a skill for “slowing the game down” and seeing the whole field. He can pay attention to multiple moving objects at once, thus he is good at making sense of game speed action by consistently keeping track of where things are and where they are going to be, as well as making accurate decisions when needed.
NFL Combine Sample Report

**Athletic Intelligence**

**Assessment: Average.** This athlete has an average ability to manage the demands of learning, adapting, and consolidating information. This athlete displays good skills for learning especially with understand schemes, memorization, and recalling patterns. His scores on nine sub-tests indicate that he has an average ability to encode, retrieve, and consolidate information.

This athlete demonstrated average skills with visual memory and could further develop his studying and memorization skills to assist in his transition from college to the demands of the NFL.

<table>
<thead>
<tr>
<th>Full Scale AIQ:</th>
<th>103 (100 is average)</th>
</tr>
</thead>
</table>

**Scores by Sub-Category**  
- Reaction Time: 97  
- Visual Processing Speed: 107  
- Visual Memory and Retrieval: 101

**Balance**

**Assessment. Far Below Average.** This athlete has a far below-average ability to control his balance and center-of-mass. His scores were well below the average for athletes assessed at the Combine. He demonstrated deficiencies for controlling abilities associated with movement and dynamics of push/pull contact. These deficiencies may put him at risk for (1) consistency with regards to the demands of the game or (2) injury.

Balance can be improved with training, and this athlete would benefit from a balance training program to help him achieve his maximum potential. Targeted training may assist in the development of coordination contributing to improved speed, agility, vertical and horizontal movement, push/pull dynamics of contact, and overall symmetry in the orthopedic system. The training program may also help to reduce his risk of injury.

<table>
<thead>
<tr>
<th>Composite:</th>
<th>48 (100 is maximum, 68 is average)</th>
</tr>
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</table>

**Scores by Sub-Category**  
- Both Feet, Eyes Open: 83  
- Both Feet, Eyes Closed: 69  
- Left Foot, Eyes Open: 40  
- Left Foot, Eyes Closed: 23  
- Right Foot, Eyes Open: 52  
- Right Foot, Eyes Closed: 25

The following table provides a brief description of each of the relevant test areas:

<table>
<thead>
<tr>
<th>Reaction Time and Decision Making</th>
<th>A quick and accurate reaction is essential for sport performance. NeuroScouting diagnostics evaluate core visuo-motor skills that are called upon in ‘read-and-react’ abilities on the field. The skills that were assessed involved a number of core brain-based skills that have been shown to have a strong link with on-field performance in a number of professional sports.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion and Object Tracking</td>
<td>When the brain is taxed with having to pay attention to the movements of multiple teammates and opponents, decision making can become cloudy. This assessment provides information about the potential for how quickly and accurately the athlete can track multiple teammates and opponents and make accurate decisions.</td>
</tr>
<tr>
<td>Balance</td>
<td>Assessing balance is a key component for injury prevention, performance, and concussion detection/treatment. Various subcomponents of “balance” include upper and lower body sway, pressure per square inch displaced by each foot, and the symmetry of posture</td>
</tr>
<tr>
<td>Athletic Intelligence</td>
<td>The Athletic Intelligence Quotient (AIQ) assesses the innate cognitive abilities that are most utilized in attaining, developing, and applying athletic skills, strategies, and tactics. The AIQ provides quantifiable data regarding the athlete’s sport-performance specific intellectual abilities.</td>
</tr>
</tbody>
</table>

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Player:
Resources

- American Psychological Association
  - Division 47 Sport and Exercise Psychology
- National Institute of Mental Health
- The Jed Foundation
- American College Health Association
- National Athletic Trainers Association
- American College of Sports Medicine
- National Collegiate Athletic Association