

Baseline Testing for Youth Athletes

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Making the Difference in Player Recovery

Concussions will now plague one in five high school athletes before the end of their high school career.¹ Heady injury, return to play, headache, school accommodations, are all words that youth athletes will know all too well after they have experienced this injury. As more children choose to play youth sports, every year the risk of injury is rising.

Today 4-5 million concussions occur every year with rates of concussion at the middle school level increasing at an alarming rate.² More than ever, young athletes are struggling through the recovery and return to play process in order to participate once again in their favorite sports.

Sports clubs and organizations have the power to significantly impact their player's recovery by simply requiring a preseason baseline test. This requirement will allow the players to have initial cognitive measurements that can be used as reference if they happen to suffer from a concussion.³ This information will assist in laying the groundwork for their recovery, allowing them to safely return to the game they love.

Current Measures

Currently when a child is suspected of having a concussion, the CDC recommends for them to be evaluated by a physician.⁵ The doctor does multiple evaluations in order to form a diagnosis.

Protocol #1: Interview the patient for loss of memory

First the physician attempts to evaluate the patient's memory by discussing their injury. This test helps the doctor evaluate if the patient has suffered any memory loss.⁶

Protocol #2: Determination of severity

This often requires the patient to take a symptoms based survey to evaluate the degree of high frequency symptoms concussions are likely to cause. The SCAT-2 is common survey that is administered.

Some of the major symptoms asked in this survey are listed below.⁷

- Headache
- Blurred Vision
- Sensitivity to Light
- Difficulty Remembering
- Feeling Slowed Down
- Difficulty Concentrating
- Nausea
- Sensitivity to Noise

What is a concussion?

A concussion is when the body, head, or neck is impacted to such a degree that the brain is hit against the interior of the skull. A concussion changes chemical processes in the brain, interfering with brain function and creating a multitude of symptoms.⁴

Protocol #3: Examination

This procedure can consist of a physical and or neurological examination. A commonly used test called the SAC or Standardized Assessment Concussion test is administered. This test examines concentration as well as immediate, and long term memory by asking the patient a series of questions.⁸

Protocol #4: Impact test

The impact test involves the patient taking a computerized test in order to quantitatively measure the patient's memory, reaction time, and concentration levels.⁹ A common program used is the ImPACT test.¹⁰

Problems with Current Protocol

Even though the current procedure may seem thorough, it lacks uniformity and comparability.

Currently there is no standard checklist or procedure for diagnosing concussions across the US. At one point in time there were seventeen protocols in use. Today the most current list of recommendations is entailed in the Zurich Guidelines. However, only 9.4 % of surveyed US physicians state they are using the most up to date protocol.¹¹

In regards to comparability, the current protocol only evaluates the patient's current symptoms without knowing their normal levels before the injury.¹² This is why having baseline data can be advantageous.

Zurich Guidelines were a result of an international collaboration in Zurich Switzerland, where the 4th International Conference of Concussions in Sports took place. The 2012 conference deliberated the most scientifically accurate definition to a concussion as well as return to play protocol, symptoms, and areas that need additional investigation.¹³

Medical Advantages of Baseline Testing

Baseline testing is the act of taking a cognitive examination before injury in order to evaluate the severity of that injury after it has already occurred.

According to studies, baseline computer and SCAT-2 testing is recommended in order to aid recovery and return to play recommendations.

This test not only assists in diagnostics, but is uniform over time and provides quantitative data in order to assist in making educated decisions about player health.¹⁴

Current Legal Obligations

With fifty percent of post-concussion accidents resulting in the death, the US government has begun to put legislation into place in order to protect youth athletes.¹⁵ The first concussion related legislature was named the Zackery Lystedt Law. This was the first legal document that regulated youth athlete return to play protocol.¹⁶ After this was implemented at the national level, individual state governments took it upon themselves to add additional safety precautions. Most states include the following regulations.¹⁷

Zachery Lystedt was a middle school athlete that suffered a brain hemorrhage after returning to play too soon from a concussion. The laws was enacted in his name.¹⁸

- Taking players out of the game once suspected of injury
- Education of coaches, and sports officials about the signs and symptoms of a concussion
- Enforcement of national return to play protocol

Local Laws

Currently in Pennsylvania the state requires youth athletes, parents, and coaches to be educated about the risk of concussion and traumatic brain injury.

State laws also requires athletes to be removed from play if they are thought to be injured. However, there is no piece of the amendment recommending baseline testing as a needed precaution assisting in recovery.¹⁹

Even though the state law is moving in the right direction by putting safety measures in place for youth athletes, there are still prevention methods that need to be required in order to ease player recovery process even further, and this is baseline concussion testing.

What do the experts say?

Concussions and the diagnostics behind them are currently a hot topic in the medical community, and the following experts are striving to educate the public about concussions and their symptoms in order for youth athletes to be properly diagnosed and treated.

Current Experts

- CDC
- Youth Soccer
- Weill Cornell Medicine: Concussion and Brain Injury Clinic

CDC

The CDC is currently one of the biggest advocates for concussion awareness and education for all the key members involved. Their website provides resources for players, parents, coaches, and game officials.

The CDC provides a FAQ sheet on baseline testing. The source states that testing should be conducted annually and before every season in order to be used as a comparison if a player were to get injured.

Additional Resources for Coaches: Specifically for coaches the website provides a free concussion training course, fact sheets, and posters.²⁰

US Youth Soccer

US Youth Soccer has just formed an alliance with Axon Sports, a company that specializes in cognitive athletic performance. This company also created a baseline test in order to advocate about concussion awareness and preseason testing. Together the two companies hope to encourage athletes to take baseline tests in order to ease recovery.²¹

The following resources will be provided by Youth Soccer/Axon Sports²²

- Discounts on baseline testing for members
- 25,000 free CogState baseline tests
- Free samples of baseline test

“Best Practice for Concussion Management” - US Youth Soccer

Never taken a baseline test before?

Here is the link to a free baseline test sample

<http://www.axonsports.com/de motest>

Weill Cornell Medicine – Concussion and Brain Injury Clinic

The Concussion and Brain Injury Clinic is dedicated to providing physicians who specialize in brain injury and prescribing recovery methods that are scientifically tested. They have team of neurologists that patients can see or request advice from. The following resources are also provided.²³

- Concussion Hotline: to ask questions or receive advice from an expert
- Receive an online second opinion – with results analyzed by a professional
- Request Appointments

Need to speak with an expert?

Call the Concussion Brain and Injury Clinic for advice and recommendations at the following phone number.

212-746-1112

Picking up the Slack

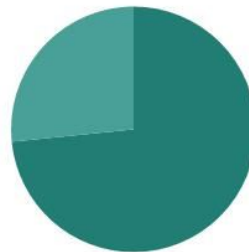
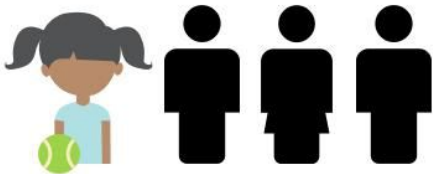
The experts agree that baseline testing could be beneficial for players, but state law does not require the test. Due to the fact that children 5-18 year olds are at the highest risk of concussion,²⁴ this inconsistency leaves a huge gap in safety for youth athletes.

Baseline testing is becoming more popular in high school sports seeing that 75% of Nebraska high schools have implemented the preseason test.²⁵

But what about the youth athletes that don't participate in baseline testing through their school?

Youth Athletes

6-12 Years Old



■ Non Athletes (73.40%) ■ Athletes (26.60%)

According to statistics 26.6% of children 6 to 12 participate in youth sports.²⁶

This means that almost one fourth of the children in America from kindergarten to eighth grade will not have access to baseline testing through their school.

The one common denominator between these youth athletes is that they all belong to a youth sports club or organization that could provide this service to them.

This gap in concussion safety in youth athletes does not have to remain unaccounted for. Youth sports clubs and organizations can pick up the slack in order to ensure optimum player safety.

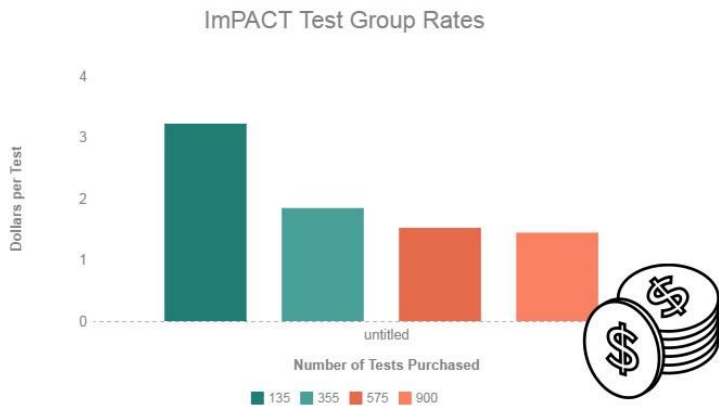
Advantages of Clubs Requiring Baseline Test

The following are the top advantages for sports clubs and organizations for requiring baseline testing

- Affordable
- Convenient
- Inclusive

Affordable: Providing baseline testing for youth and club athletes can be extremely affordable for clubs and organizations to purchase. With the growing number of providers and the use of only a computer, the benefits of this test surely outweigh the minimal cost.

ImPACT offers packages for schools and organizations to purchase at group rates.²⁷



Convenient: Baseline testing takes a maximum of 30 minutes and can be taken from any quiet location with a computer. Players can access material at home and results can be saved for use at a later date if needed.²⁸

Inclusive: baseline tests are recommended for athletes 10 years and older. If the test is taken every year the most up-to-date data can be used in order to help with the diagnosis process. If this practice is instated, millions of youth athletes will have taken precautionary measures in case of injury.²⁹

Test Taking Tips

In order for this test to be successful and produce optimum results the following tips should be followed.³⁰

- Ensure that players are taking the baseline test in a quiet environment
- Explain to players that the test should be taken seriously and to do their best in order to ensure accurate results
- Explain the long term harms of untreated concussions in order to avoid players from purposely producing lower test scores

Current Clubs Making an Impact

FC United: An Illinois soccer club requires their players ages 12 and over to take a baseline test before every season. In order to provide free testing to their players the club partnered with the Illinois Bone & Joint Institute, a local sports medicine practice that administers baseline testing for all of the club's 12 and over players.³¹

Capital Futbol Club: A club in Virginia created a concussion management program that does not require baseline testing, but does provide the following resources.³²

- Notifies players and parents of location/timing of baseline testing opportunities
- Provides reminders for players to be tested every 12 months

A Program that Needs Improvement

Sporting Blue Valley Soccer Club: A club in Kansas City that does not require baseline testing, however, provides resources about concussions and highly recommends baseline testing.³³

Problems:

- By not requiring and just recommending baseline testing, players may not be motivated to take the test
- By not providing resources of where they can obtain the test players/parents may not know where to find resources

Why Clubs Should Do This

With the advantages listed above and the facts behind concussions in youth athletes, it is hard not to be concerned about youth player health. In order to ensure long term health and safe return to play of your athletes, the cost and effort should be negligible when speaking of the long term health of a child.

What will happen if this is not implemented?

If youth athletes are not tested, their recovery process may not be as effective due to the value it adds to the diagnostic process. If this recovery is not successful youth athletes have the potential to suffer from immediate and long term injury and illness.

Immediate

- Second Impact Syndrome: athletes who currently have a concussion are at risk for a second head injury do to unhealed symptoms such as slow reaction time and dizziness.³⁴

Long Term

- Depression: it was reported that retired athletes that suffered from one or two concussions were 1.5% more likely to be diagnosed with depression. This risk doubles with three or more concussions.³⁵
- CTE: is a neurological disease that involves the deterioration of the brain. It is caused by repeated traumatic brain injury over time. The following symptoms are a result of this illness.³⁶

Symptoms of CTE

- Decreased Memory
- Cognition Problems
- Agression
- Suicidal
- Poor Self Control

Consider What is at Stake

Looking at the short and long term impacts concussions could have on a youth athlete, recovery and returning to play safely would hopefully be the top priority for all parties involved.

Sport clubs and organizations have the power to assist all players who suffer from a concussion to return to the game safely by simply requiring a preseason baseline test every year. There should be no compromise when it comes to the safety of a child and their lifelong health.

Personal Accounts of Concussion and Baseline Testing

To help shed some additional light on baseline testing and prevention, here is a personal account from an ex club soccer player about her high school's and club's prevention methods.

- Dagny Gould

When she was playing club soccer she knew that all of her coaches were required to be trained about concussions and how to look for signs and symptoms on the field.

“My coaches would always take players out when they saw us get into a hug hit.”

Her club did not require a baseline test due to the fact that her local high school required the test every two years.

Dagny emphasized the importance of athletes taking the test seriously. She recalled teammates and other students at her high school “dumbing down” while taking the test in order to produce lower baseline scores.

When Dagny was asked if she thought baseline testing should be extended to the middle school sports level she replied **yes**.

She stated that, “Middle school is when competitive sports really begin and the same precautions should be extended to the younger athletes.”

Final Remarks

It is impossible to completely stop concussions in youth athletes from occurring. However, the way these athletes recover from their injury will impact them for the rest of their lives. Sports clubs and organizations have the power to supplement their recovery and diagnosis by simply requiring their players to take a preseason baseline test. For such little cost and time, the benefits are overwhelming. If this program were to be implemented, youth athletes would be able to live a long symptom free life and return safely to the game they love.

With the help of sports clubs and organizations, baseline testing can change the game for concussed youth athletes and their recovery.

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