

Sport is NOT the Enemy...The Rules of Engagement
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Boston University's Brain Lab team provides a long list of the [potential consequences of having CTE](#): dementia; drug and alcohol abuse; cognitive symptoms, such as memory loss and attention deficit; motor-control issues; and various behavioral disorders such as depression, anxiety, violence, and suicide. We can easily see from the above description, CTE is bad, and needs to be prevented at all costs. Having the words violence and suicide associated with it, makes it extremely bad and dramatically more important to prevent. Violence and suicide are at the extreme end of the disease. Knowing that a process can be going on in the athlete's body that could possibly lead to this, has to make everyone take notice and try to help to prevent it.

In the movie CONCUSSION, there was a very interesting scene. Dr. Omalu, at the autopsy would take time to speak to the brain. By understanding what the brain looked like, it gave him a picture of how the brain got to that point. The problem with this, is Dr. Omalu was at the autopsy. Too late to help the person on the table, but through his extraordinary ability able to gather information to help all athletes going forward. The importance here is Dr. Omalu spoke to the brain through his ability of being a pathologist. Every movement and every thought that a person makes is controlled by their brain. We should take a moment and do what Dr. Omalu did, and speak to the brain from our own point of view. The brain has messengers, that directly speak to its ability and function. The messengers of the brain are, **Balance, Timing/Coordination, Brain Speed, and Cognitive Ability.**

For example, Dr. Tabara at Kyoto University showed how balance is directly related to brain health. In his impressive work, Dr. Tabara shows that increased ability to balance was directly related to a "cleaner/better" MRI of the brain. In this study, participants were asked to balance on one leg for as long as they could up to 60 seconds with their eyes open. After balancing, each participant would get a MRI of their brain. After performing this procedure over 900 times, Dr. Tabara found that participants that could reach 60 seconds of balance had a very "clean" MRI of their brain. For those that balanced for 20 seconds or less, numerous petechial lacunar hemorrhages were found. Between 20-60 seconds of ability to balance, this finding would decrease in a proportional rate. This clearly showed the ability to balance is directly related to brain health. Balance must be protected and improved at all times for optimal brain health. This was Dr. Tabara's way of speaking to the brain and understanding its health.

Before we get into it, let's back up for a moment. CTE is a progressive condition. The devastations that everyone worry about, develop OVER TIME. You do not just wake up in the morning, and you suddenly realize that you have CTE. Without getting too scientific, the tau protein tangles that distinguish the condition, evolve over time. These tangles develop from mild and focal, to severe and widespread. Affected regions of the brain, evolve over time. Words like Frontal, Parietal, Temporal, Thalamus, Hypothalamus, Amygdala, etc. slowly get involved. As the tangles and brain regions get more involved, the symptoms and condition become more dramatic.

Actually, CTE is rated in stages 1-4. Stage 1, attention deficits, and headaches. Stage 2, memory loss, irritability, and poor judgment. Stages 3/4, progressive dementia, movement disorders, tremor, and possible suicidal tendencies. There is a big difference between a mild headache, and a suicidal tendency. Also, there is a lifetime of play separating the mild headache from the tendency. There is also a subset of CTE called CTEM, Chronic Traumatic Encephalomyopathy. A condition that mimics ALS. This condition shows progressive muscle weakness, resulting in balance and gait changes. Again, this condition evolves from mild to extreme over time and should be thoroughly understood. With this understanding, interventions must be made.

Now that the condition has been identified, let's do what we all do best... Blame someone for it. History shows us that CTE was originally called dementia pugilistica (DP) in the 1920's. What has been learned over time is that repeated head traumas are closely related to the development of the condition. Once head trauma was identified as the eliciting factor, all traumatic sports became the enemy. Now before we go any further, we have to make a statement. We do not like football, we do not like hockey, and we definitely will not stand in a ring and box. There is no bias, or arrangement here to protect any of these sports. Seeing numerous head injuries in not just these sports, but also cheerleading, soccer, etc. makes us wish that nobody ever got hurt.

Having said that, we honestly feel that SPORT IS NOT THE ENEMY, and the blame has to be redirected. If sport was the enemy, then everyone in that sport should suffer from the condition. That is far from the truth. **If there is an enemy it is not the sport, but it is the inability to understand and take care of our athletes.** Ignorance, or a blatant disregard of the truth is the enemy, and someone must always be held accountable.

To blame sport for CTE, is like blaming candy for diabetes. The person lost their leg, due to the complications of diabetes. Now there could be many reasons for this, but let's keep it simple for this article. The patient developed diabetes. Then they developed a sore in their leg. Even though they knew they had high blood sugar, they insisted on eating candy. This caused the blood sugar to worsen over time. Eventually the sore got much worse, and eventually the leg was removed. Very dramatic, but it does not allow us to say that candy is bad. What it does allow us to say is the improper use of candy is bad in some situations. Serious conditions develop over time. During that time of development, interventions must be made to help the athlete in the best possible way. If these interventions to help are not performed, then someone must be held accountable.

So now everyone will argue that this point is irrelevant because, with diabetes the person knew they had a blood sugar problem. With CTE, until they autopsy the brain, they have no way of knowing that it exists. NONSENSE. This is where the crime comes in. Looking at the symptoms of CTE, we see a progression from mild headaches, to memory problems, to loss of motor control, to in some instances suicidal tendencies. In other words, there is dysfunction that manifests as headaches. There is loss of balance that leads to loss of motor control. There is disruption in the balance of the brain, that leads to personality changes, memory ability, and eventually uncontrolled tendencies. If all of this is slowly evolving, then why are we not taking time out to talk to the Messengers of the Brain... (Remember: the messengers of the brain are **Balance, Timing/Coordination, Brain Speed, and Cognitive Ability**). We are not saying that any of these messengers only occur with CTE. **What we are saying is that if any of these messengers show a problem, then the problem must be identified and corrected before play can continue.**

There is much great research for the identification of CTE going on around the world right now. In time, with this research, identification of tau proteins will be made simple. Such as, a reagent will be placed on the athlete's wrist. The athlete will be able to lick the reagent mixing it with his/her saliva, causing a reaction between the proteins in the saliva and the reagent. If the reagent turns green, the athlete will return to the game and if it turns red the athlete will stay out of the game. All of this research as fantastic as it is, is based in finding tau proteins. This is great and will help tremendously but that is in the future. At present, we cannot overlook the fact that the messengers of the brain are constantly communicating with us. With or without the presence of tau proteins, if loss of **Balance, Timing/Coordination, Brain Speed and Cognitive Ability is occurring, this cannot be healthy** and must be addressed. We cannot be so focused on the identification of tau protein that other obvious conditions related to the health and performance of the athlete are overlooked and allowed to evolve overtime.

If there is a headache, would you treat it by hitting yourself in the head more. Sounds crazy and you would never do that. So why are players allowed to play with a headache??? Same thing with balance. If a person is losing their balance, why don't we help them by hitting them in the head more. Better yet, person is getting personality changes, let's see if we can fix their brain by hitting them in the head more consistently. This all sounds so crazy, but this is what happens. A little 10-year-old football player gets "rattled", coach tells him to shake it off, tough it out. Athlete on the hockey team starts to lose their balance for reasons that are not physical. **IS HE STOPPED FROM PLAYING???** In many cases this would not even be known, due to the athletes Capacity to compensate. Eventually athletes show rage, and uncontrolled emotions start. Are they told to stop playing??? Or are they allowed to continue to hit their head, and just told to take two of these pills every four hours to help them relax. The messengers are telling us a story, and many are not taking time out to listen thoroughly.

Sport is far from being the enemy. How one is coached, trained, and pushed is the more likely enemy. Yes, there are great coaches, trainers and doctors but let's stay focused on the point of this article. CTE is always talking to us, we just have to listen better. As the condition evolves, Balance, Timing/Coordination and Brain/Personality changes appear to be at the core of the matter. Knowing this, why aren't there any rules and regulations to monitor this? Yes, we do understand that a lot is being done, and we respect it. The work out of Geneva, the various screens and tests are all excellent and needed. What we are talking about here, is an

OBJECTIVE set of rules, that are founded in the Messengers of the Brain. Remember, we are not saying that all balance changes are CTE related. What we are saying is, if there is balance loss, why do we still allow hitting the head? Why not fix the balance loss before play can resume? Johnny use to stand on one leg for 15 seconds with his eyes closed. Now Johnny can only stand on one leg eyes closed for two seconds. I think we should help Johnny fix his balance by allowing him to hit his head more in a game. THAT IS CRAZY.

However, it must be happening because people play until lack of motor control stops them. The Brain is constantly telling us a story. The tests we use to speak to it, must speak directly to the Messengers of the Brain.

From the great work of Mike Merzenich Ph.D., we know that the brain is plastic. If injured the brain can be fixed with cognitive trainings and therapy. Just like any part of the body, the brain just needs a chance to recover. The question becomes... How do we speak to the Brain, to know that it is starting to injure???

We feel the following Rules of Engagement, directly speak to the Messengers of the Brain. These rules can be quickly performed objectively, to better determine an athlete's ability to rest or play.

The 4 Rules of Engagement are:

RULE #1- No athlete is allowed to play if his/her balance control is getting worse. Stop, evaluate, fix the reason and then resume play. Do not allow the reasons for the loss of balance control to accumulate. Every athlete has to monitor and baseline their balance control. Balance is the critical component of all movement. For a quick understanding see the Balance Protocol at <http://www.biggerfasterstronger.com>. For a more precise understanding, perform the same test using a GYKO made by Microgate Italy <http://www.gyko.it> The GYKO can be used any time indoors or out, or a force plate can be used in the lab. Balance has to be shown to be improving over time. Any deviation from this is a cause for concern. Most reasons will be simple and easily fixed. However, let's not get caught by the occurrence of slow and steady loss of balance without making proper interventions and understanding of it.

RULE #2- No athlete is allowed to play if asymmetries in their GAIT cycle are getting worse. We are not talking about a subjective look at posture in motion. We are talking about an objective, Jacqueline Perry understanding of Gait. Precise understanding of the temporo spatial parameters of gait is needed. Whether the reason is a sore ankle, or an injured brain does not matter. The athlete is getting increased asymmetries in their Gait cycle. Where does it say fix them by allowing him to hit his head more in a game??? Most asymmetries are caused by simple muscle imbalances. These imbalances effect timing and coordination of the movement cycle. With today's technology, such as <http://www.optogait.com> asymmetries can be identified in less than a minute. Once identified, most asymmetries can be easily fixed. For more information on how to help fix asymmetries check out barefoot-science.com/4yourgait For the one asymmetry that is more persistent, control play until the root cause is understood. Every athlete should baseline their Gait report on a regular basis, to ensure that timing and coordination are improving and not failing due to their play.

RULE #3- NO INJURY TO THE BRAIN CAN TAKE PLACE WITHOUT AFFECTING BRAIN SPEED.... Hallelujah... This might be the Holy Grail of understanding brain health. If the athletes brain speed is getting slower, then there should be NO play until it is understood and corrected. In the description of CTE, we said the athlete could end up with dementia. Knowing dementia amongst many other things is a slowing of the brain, why would anyone with brain slowing be allowed to play. Brain slowing has many causes. Dehydration, bad night sleep, concussion, etc. and etc. All easily fixed when understood. One thing is for sure though, Having the athlete hit their head more in a game, DOES NOT FIX BRAIN SPEED. Knowing that every movement, of every play is decision based, we must keep our athlete's decision-making ability as efficient as possible. This requires constant improvement in brain speed. Every athlete should monitor and baseline their brain speed for effective play, and rest when necessary to restore it. Make sure the brain speed test is validated and published to insure proper interpretation of brain function.

RULE #4- We know from the great work of Dr. Mark Allen and Dr. Alina Fong, and the superior cognitive trainings of Dr. Michael Merzenich, Ph.D., the brain can go out of balance. Those crazy words like Amygdala, Thalamus, Hippo campus, etc. can all function above and below normal. This evolvment of brain dysfunction can lead to changes in personality, emotions and behavior. One thing is for sure, hitting the athletes head more in a game, does not restore balance and ability to the brain. These days validated published peer reviewed brain trainings can be played on computers and smart phones. All athletes should be base lining

their brain function by performing quality cognitive trainings. Any lessening of ability should be base lined and corrected, before play is allowed.

These Four simple rules, can have a profound effect on safe and simple play if followed. The art of Neuroplasticity tells us, that the brain is plastic and it can be fixed. To do so, we just have to give it a chance. Inability to understand the needs of our athletes is unacceptable, and this inability should be considered more of the enemy. CTE is a devastating, accumulative process over time. Why not take time to understand and stop the process? Not just by looking for tau protein, but also trying to ensure the efficiency of the brain messengers that appear to have an integral role in this devastating process. An injury can happen at any time. We pray and hope that it never does. As terrible as it may be, this type of sudden injury is an accident. When an injury is allowed to evolve over time, it is no longer considered an accident... it is now considered a **TRAGEDY**. Someone must be held accountable for it. Knowing that most injuries are an accumulative process, as coaches, trainers, doctors etc., **we must be able to see when others are blind**. By the time the athlete has "it", it is too late. Knowing that interventions should have already been made, everyone must be better able to identify the development of dysfunction. That is why it is imperative that all of us learn to speak directly and precisely to the messengers of the brain. One thing is for sure though... Sport is NOT the Enemy.

Wishing everyone Safe and Healthy Play