



Defense and Veterans Brain Injury Center
“Clinical Updates in Brain Injury Science Today [CUBIST]” Podcast
Season 3 Episode 5
“Delayed Clinic Visits Following Concussion and Association to Recovery”
Total Run Time: 8:33 min
Host: Dr. Donald Marion

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Marion: The views, opinions, and findings contained in this podcast are those of the host and subject matter experts. They should not be construed as official Department of Defense positions, policies, or decisions unless designated by other official documentation.

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Marion: Hi. Welcome to Clinical Updates in Brain Injury Science Today, or “CUBIST,” a podcast for health care providers about current research on traumatic brain injury, also known as TBI. This program is produced by the Defense and Veterans Brain Injury Center, otherwise known as DVBIC. And I'm your host today, Don Marion.

I'm really excited with this episode today. I'll be introducing Ms. Amanda Gano to take the place of Ms. Betsy Mhyre, who has been my colleague in the past. Amanda and I will discuss a study entitled: “Association of time since Injury to the first clinic visit with recovery following concussion,” the study was written by Anthony Kontos and colleagues, and published in *JAMA Neurology* January 2020.

Marion: Hi Amanda, and welcome and thanks for bringing this article to our attention today. Can you tell me a little bit about this study?

Gano: Hi, sure Don. I wanted to discuss this article because it addresses one of the factors that may be associated with the time it takes to recover from concussion and that's the timing of the initial clinical evaluation following the concussion. So this study examined the recovery time of 162 adolescents and young adult athletes that were diagnosed with sports-related concussions and then compared the recovery times of those who had initiated their clinical evaluation early, or within seven days after their injury, with those whose clinical evaluation was late or eight to 20 days after their injury. The study found that initiation of clinical care is associated with faster recovery after a concussion. Athletes in the late intervention group, were 4.7 times more likely to have a recovery time of greater than 30 days than the early intervention group. Athletes in the early group recovered on average 20 days faster than the late group. So this could be attributed to earlier initiation of active rehabilitation strategies, earlier initiation of a progressive return to activity plan, and an earlier opportunity to start structured physical therapies like vestibular therapy or vision therapy. Athletes in the late group could also have been engaging in counterproductive activities that may have impacted their recovery time due to a lack of early concussion education.

Marion: That certainly all makes sense, Amanda. How was the study done, exactly?

Gano: Yeah, so this was a retrospective cross-sectional study that was conducted in a sports medicine clinic between August 2016 and March of 2018. The participants were aged 12-to-22 years old and had a diagnosed symptomatic

concussion. There were 416 patients that met the inclusion criteria. However, 254 patients were excluded because there was incomplete recovery data. Participants were also excluded if they experienced a moderate or severe traumatic brain injury. Or if they had a preexisting neurological disorder or a vestibular disorder, like Meniere's disease or Vertigo. The remaining 162 patients were divided into two groups, the early intervention group, which again included those patients seen within seven days of injury, and the late intervention group, which included those patients that were seeing eight-to-20 days following their injury. There were 98 participants in the early group and 64 participants in the late group. The two groups did not differ in symptom severity, cognitive, vestibular, or ocular outcomes at the time of the initial evaluation. All of the patients in the study completed the Post-Concussion Symptoms Scale or the PCSS to evaluate symptomatology. The Immediate Post-Concussion Assessment Test or IMPACT test to evaluate for neurocognitive performance, and the Vestibular Ocular Motor Screening or the VOMS to evaluate for the presence of vestibular or ocular motor symptoms. The participants could return to their sport when they were asymptomatic and also back to their pre-injury levels in their cognitive, ocular, and vestibular performance with exertion. The recovery time was calculated by subtracting the date of injury from the date of the clearance for return to full play.

Marion: Just so I had that straight. So you had to have returned to baseline on those three evaluations, the IMPACT the VOMS and that PCSS even after exertion, okay. Thanks, Amanda. I have a few other questions. First of all, how exactly did they make the diagnosis of concussion?

Gano: Yeah, so concussion was diagnosed according to the Consensus Statement on Concussion in Sport, which is the fifth international conference on concussion in sport held in Berlin in October of 2016.

Marion: I guess that's commonly called the SCAT-5, is that right?

Gano: Yes.

Marion: Okay. Then the other question I had was, and since you kind of hinted at that in your previous descriptions, were the participants actually asked why they did or did not report to the clinic soon after their injury?

Gano: No, this wasn't taken into consideration in this study. And that data was not actually available from the sample that they collected the data from.

Marion: Okay, so what were the limitations of the study?

Gano: Sure. So the biggest limitation was in the study design and the potential for selection bias. So there were 419 athletes that met the inclusion criteria, but only the ones that had complete data for this study were included. So, that ended up excluding 254 athletes or 61.1 percent of the concussed athletes seen in the sample. This study also did not consider all of the factors that may influence recovery, such as adherence to rehabilitation strategies, or whether or not the participants went back to school during their recovery. Additionally, a big reason that athletes don't receive early care is their tendency to not report a concussion and remain in play throughout their injury. And that's a factor that is known to be associated with a protracted recovery. And this problem was not considered in this study. Lastly, the participants in this study, were just adolescents, young adults with sports-related concussion, and that may limit the generalizability of these findings to other populations, like our military service members.

Marion: That makes a lot of sense. So finally, Amanda, what were the key takeaways? What do you want providers to take away from this podcast?

Gano: Yeah, so I think the most important thing that I took from this study, Don, was that despite the limitations, if a patient can be seen in the clinic sooner rather than later, they are likely to get better faster. And delays in initial medical evaluation can actually be detrimental. I really liked that this was the first study to take a scientific look at this problem and these findings emphasize the fact that we really need to educate our patients on the importance of not playing through symptoms, or in the case of our military service members, not under reporting symptoms just to continue with their military training. So in my experience as a military provider, the service members often don't report to the clinic for

weeks and sometimes months after their injury. But seeking care as soon as possible after a concussion can actually hasten recovery and improve outcomes.

Marion: Thanks Amanda. This is a great study with obvious clinical implications for, for our service members. So I really appreciate your bringing that to our attention. So that's all we have time for today. You can stay up-to-date on future episodes by subscribing to "CUBIST" on iTunes, Sound Cloud, Stitcher, or wherever you listen to podcasts, where you can also find links to the articles we discuss and other relevant resources.

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"CUBIST" is produced and edited by Vinnie White and was hosted by me, Don Marion. It is a product of the Defense and Veterans Brain Injury Center, led by Division Chief Captain Scott Pyne, Medical Corps, United States Navy.

Thank you for listening to this episode. Next time, we will discuss TBI research getting attention in the mainstream press.

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