



Defense Health Agency

Defense and Veterans Brain Injury Center
“Clinical Updates in Brain Injury Science Today [CUBIST]” Podcast
“Use of the Progressive Return to Activity Guidelines may expedite symptom resolution after concussion for active duty Military”

TRT: 11:07

Host: Dr. Donald Marion

[music]

Don 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.

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. I'm your host today, Donald Marion. I'm a neurosurgeon here at DVBIC. In this episode of CUBIST, I'll be talking with Dr. Jason Bailie. Dr. Bailie is a clinical neuropsychologist and senior Clinical Research Director for DVBIC at Naval Hospital Camp Pendleton. Jason and I will discuss a study entitled “Use of the Progressive Return to Activity Guidelines may expedite symptom resolution after concussion for active duty Military.” The study is published in the December 2019 issue of the *American Journal of Sports Medicine*, and Dr. Bailie is the lead author. Hi, Jason and welcome to CUBIST. I would like to compliment you and your team for bringing to fruition the efforts of several DVBIC staff to create and test a new clinical recommendation for how best to safely return service members to duty following a concussion. Great work!

Marion: What were the key findings of the study Jason?

Dr. Bailie: Thanks. I really appreciate that. You know, it was a large effort, and it was a challenging but necessary experiment to really allow us to better understand how activity level in our active duty personnel are impacting recovery from concussion. One of the main findings is that when we train military medical providers on how to manage concussion in their patients using a Progressive Return to Activity approach, which meant we taught them to gradually increase activity levels based off of symptoms, when we taught them to do that, we had a dramatic improvement in symptoms. People got better from their concussion much faster. We had quicker symptom resolution-their symptoms returned to the normal range quicker than when we were having patients treated by the same doctors before that training. So, you know the real takeaway being that if we train our doctors on how to use Progressive Return Activity, their patients get better faster.

Marion: So how was the study done?

Dr. Bailie: We use a two phased mix model approach, which meant that what we did is we recruited a bunch of military medical providers that we knew were likely to see acute concussions. And we looked at three different branches of the military, a Navy site, Marine Corps site, and Army site, and we recruited medical providers and they were pretty varied in their background--some physicians, some nurse practitioners, physician assistants and medics, some independent duty Corpsman. When a patient came through that was concussed, we enrolled them in the study. We monitored them for up to six months of their recovery to see how they did. We looked at one month, three months, six months. And so we were able to track that course. And then, after we had an efficient sample, we took the providers, as well as many

other different military medical providers, and we conducted an in-depth training on how to manage concussion using a Progressive Return Activity approach that was a pretty in-depth training that involves both didactics and clinical recommendations. Then, we have them go back out and start treating more patients. Again, we did the same thing where we were treating these patients over time and tracking their recovery at different periods, and we're tracking their activity. And we were able to see that there was an effect to that training that, when we train these doctors, they provided more education to their patients. And we also see that the behavior of the patients changed, their activity levels in that acute phase of injury that first week after they got hurt.

Marion: Jason, what did what did you use for an outcome indicator? Was it quality of life measure or what did you use?

Dr. Bailie: The biggest metric that we used was a self-report questionnaire, the neuro-behavioral symptom inventory or the NSI, which is a very common used metric within the military within veteran population, that is looking at common neurological symptoms that we know are associated with concussion. So, looking at changes in memory and changes and attention changes in their mood or anxiety level, their depression, changes in sleep. And so we can then take that self-report, something that we can call them and do it. So, we made it so that the study was less demanding on the individuals

Marion: You said you monitor these people at several different time points one month, three months, and six months. Were the trained provider group or the PRA subjects, were they better at all of those time points or not?

Dr. Bailie: We first enrolled them at 72 hours when they're first entered, and at that point, the groups look exactly the same. But when actually the treatment was done, the time between the first treatment, and then the next time we see them, we already saw an improvement in terms of reduction in symptoms, and then we saw that later on at one week and one month. We saw it at three months, the effects is no longer significant at six months. But there's a bunch of reasons why that might be, the biggest reason being we expect most people to be recovered by six months of injury. So they recover faster, but eventually that the treatment and usual group kind of caught up.

Marion: I have a few technical questions. The first is I noticed that you originally enrolled 58 subjects in the usual care and 48 and the PRA care arms of the study. But your final analysis was really based on just 33 of usual care 19 in the PRA groups, and I'm wondering how certain you are that the demographic and clinical profile of those 33/19 subjects were comparable and, and without bias one way or another?

Dr. Bailie: That's a great question. When we look further out, is when we had attrition in the study, basically, and attrition mean when people they stopped coming, they stop participating. We looked at the sub sample that 33 in that 19, and they didn't differ from each on demographics, statistically, and they also didn't differ from the larger sample, that original sample. So based on those two avenues, we can be fairly confident that the key differences between them are related to the training and the intervention, not other variables that we're not looking at.

Marion: Got it. My second question, I noticed in your paper that service members of the PRA group were 59 percent more likely to receive written education and service members in the training before provider training. How do you know it wasn't just the written education that made the difference rather than the actual PRA protocol and they're good outcomes?

Dr. Bailie: I think that was written materials are very important. You know, something that the patients can take home; they can refresh. But I can be really confident based off of previous work that's been done that education alone isn't the effectiveness. There was a study done in 2017 by Varner et al. that was looking at Progressive Return Activity and acute concussion. They showed that the written education didn't matter. People don't always read their information pamphlets; the most important communication is verbal, and so I really think that even though we changed our providers' behavior and that they gave more education materials and that is important, I think the most effective for this study comes from the doctors' actions and their verbal education.

Marion: Can you tell me some of the key limitations of the study?

Dr. Bailie: I think the biggest limitation is related to how we measure physical activity. When you're relying on self-report, that really is prone to people's interpretation and their perception, especially in terms of intensity, right. That's really what we're getting at. For the most part, we're not saying don't walk, we're saying don't overly exert yourself. I think the best approach would actually have more direct physiological metrics of intensity of physical exertion. And I think that would give us more accuracy and actually trying to draw the line, try to draw the causal link between physical activity levels at different periods of recovery and their recovery. At this point, we're primarily making an assumption. But we're assuming that there's this link between what they're telling us in terms of physical activity and the recovery that we observe. If we had more data points and more direct metrics of physical exertion, I think we can be more confident and making that assumption.

Marion: Referring to heart rate, for example, and having them exercise to a maximum heart?

Dr. Bailie: Absolutely, and the longer you had smoked, or the more amount of smoking that you did per year, also limited your cognitive recovery.

Marion: That makes a lot of sense, Jason. So finally, what are the key two or three takeaways for the primary care provider that you want to leave the listener with?

Dr. Bailie: Activity is important. You know, over time we pivoted somewhat in our beliefs. You know, 20-30 years ago, I think coaches and athletic trainers and physicians, we were very lacked and appreciating the consequences of concussion. And we would send people back too soon to risk further injury, risk symptoms exacerbation. Then we kind of overreacted and we had a lot of doctors who are putting people in complete rest, right. We were having people were being advised to do nothing basically on bed rest. We found out the hard way that was actually even worse. And so I think the major take home is--too much activity is bad, too little activity is bad, but just the right amount of activity based off of that patients tolerance, based off of that patients experience leads to the best success rates. And if we can educate our patients to be aware, that this is the Best way to get healthy faster. I think that could be really impactful.

Marion: And the PRA clinical recommendation guides the primary care provider on just how to do that correct?

Dr. Bailie: Absolutely, absolutely

Marion: All right. Well, Jason, thank you very much. That's all we have time for today. You can stay up-to-date on future episodes of CUBIST by subscribing to Cubist on iTunes, Sound Cloud, Stitcher, or wherever you listen to podcasts, where you can also find links to the article we discussed today and other relevant resources. CUBIST is produced and edited by Vincent White and is hosted today by me Don Marion and it is a product of the Defense and Veterans Brain Injury Center led by Division Chief CAPT 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.

[music]