



**Defense and Veterans Brain Injury Center “The TBI Family” Podcast**  
“Sleep Issues and TBI / Women and TBI”  
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Host: Dr. Scott Livingston

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**Katherine Snedaker:** Overall, there's more male brain injury than female brain injury. Mostly because male take more risk. So if you go online and you put any kind of foolish stunt in YouTube, there'll be more men. There'll be a couple women, but there'll be more men. So hence, more male brain injury. [music] Female brain injury, though, if you take a sport like soccer where the risk factors are relatively the same, women concuss at a higher rate. [music]

**Dr. Scott Livingston:** Welcome to “The TBI Family,” the podcast for caregivers of service members and veterans who've experienced traumatic brain injuries. This program is produced by the Defense and Veteran's Brain Injury Center, otherwise known as DVBIC. I'm your host, Dr. Scott Livingston. At the top of the podcast, you heard Katherine Snedaker, director of Pink Concussions, an organization which is dedicated to improving TBI pre-injury education and post-injury treatment for women and girls. We recently spoke with her at Brain Injury Awareness Day on Capitol Hill, sponsored by the Congressional Brain Injury Task Force. A little later in this podcast, we'll talk more with Katherine and others about gender and traumatic brain injuries.

But first, let's talk about sleep. Sleep is important. Studies have suggested that getting enough good-quality sleep can improve your immune system, help with weight loss, ease mood disorders, and play an important part in preventing heart disease and diabetes. Nearly everyone who sustains a traumatic brain injury reports some level of sleep disturbance, which can slow recovery from the TBI, worsen symptoms such as pain, irritability, and memory problems, and even cause functional problems when socializing, responding to rehabilitation, and after returning to work. “The TBI Family's” Terry Welch looked into recent research about sleep and traumatic brain injury and brought back some tips and resources for improving sleep, whether you've experienced a TBI or not.

**Terry Welch:** Irritability, headaches, anxiety, inability to focus. These are all symptoms commonly associated with traumatic brain injuries. They're also, though, symptoms that could point to sleep disorders. It's why treatment of traumatic brain injury often begins with the treatment of sleep. Because, according to Dr. Janna Mantua, a principal investigator studying sleep at the Walter Reed Army Institute of Research, it can be hard to know whether symptoms are related to TBI or to poor sleep.

**Dr. Janna Mantua:** Let's say, for instance, your-- something like your short-term memory. That is often very impacted by sleep loss. And let's say that you're going about your day-to-day life and you forget something. You get frustrated and then you yell at your partner, something like that happens. And so these small effects can actually accumulate and then impact your relationships with people, impact how you're feeling, your mood. And so treating the sleep first is really, really critical. Ruling out sleep disorders that might be undetected is really critical.

**Welch:** Those of us who aren't medical providers may remember a time when sleep and traumatic brain injuries were considered to not mix. If not by providers, then at least by parents. I have my own memories of being awakened in the middle of the night after a concussion from football by my fearful parents, who had internalized the idea that having concussion meant I might just drift away in my sleep.

**Mantua:** It seems like, historically, it was something that was done so that symptoms could be monitored. So that you could actually ask people, "Hey, how are you feeling now? Can you talk to me? Do you remember what happened?" Things like that. If there's any vomiting that occurs, of course, you want them to be awake. And I think that might have been morphed into something about it sort of being standard practice to keep them awake after a TBI or to at least wake you up and say, "Hey. How are you doing?" But now the general recommendation is the opposite. It's to rest. It's to stay in the dark. It's to not look at any screens, things like that. It's to actually avoid some of those things that we may have placed on the person back in the day.

**Welch:** In fact, recent research published by Mantua has shown that the brain can be using sleep to heal itself longer than was previously understood.

**Mantua:** What we found was, people who have had moderate and severe traumatic brain injury have much more deep sleep. So they have much more of a stage that we call slow wave sleep. And that's really important because we know slow wave sleep, at least in animal studies, is really important for neuronal healing and reorganization. So what we think is happening, is this increased slow wave sleep in this population is a sign of continued healing, even at least six months after the brain injury.

**Welch:** But signs that caregivers see and are worried about shouldn't be taken lightly. So Mantua recommends caregivers seek help when they think it's necessary.

**Mantua:** If you're really concerned, take them to a sleep physician. Do an in-lab sleep test, something like that. Because as has been mentioned, there's a really high prevalence of sleep disorders in this population, so it's important that they're cleared for sleep disorders after the TBI. But also, it just might be their brain's natural reaction to get more sleep after a TBI. And that's probably going to be more beneficial for them in the long run.

**Welch:** Many problems with sleep, however, can be traced back to, well, doing it wrong.

**Dr. Julie Kinn:** I thought I had OK sleep before I started, but since really getting involved in this podcast, my sleep has improved so much [laughter].

**Welch:** That's Dr. Julie Kinn, a clinical and research psychologist with the Defense Health Agency's Connected Health Center, and host of a new podcast called "A Better Night's Sleep".

**Kinn:** The Better Night's Sleep podcast is aimed at helping get practical tips on sleep disorders and information about the evidence-based treatments-- what treatments really work for our military families. Some of the treatments we talk about are things people can do in their own homes, like sewing tennis balls on the back of your pajamas to help with sleep apnea. That was something completely new I learned. We also talk about the common medications that are used and what to expect when you take them.

**Welch:** On the podcast, Kinn brings on sleep experts to give advice about how to improve sleep. She says she's learned about how we can sabotage our own sleep by doing things like choosing to sleep at the wrong time, using cell phones as alarm clocks, or even relaxing with a glass of wine before bed.

**Kinn:** The number one nonprescription drug people are taking to help them get to sleep at night is a beer, or a glass of wine, or other kinds of alcohol. This is so common. And again, it's socially acceptable to think, "Oh, I'm just going to have a nightcap. This will help me get drowsy." But then you're putting a lot of sugar into your body. You're going to metabolize it in a few hours and need to get up and go to the bathroom. And then you're going to be wide awake. Plus, drinking alcohol doesn't help you learn other good ways of getting to sleep, like meditating or purposely relaxing, turning off all your screens, etc.

**Welch:** If your loved one is experiencing sleep disorders such as having difficulty getting to sleep, staying asleep, or feeling sleepy during the day, you can find the "A Better Night's Sleep" podcast on Soundcloud, iTunes, or Stitcher. You can also download a copy of DVBC's "Healthy Sleep Fact Sheet", which provides tips on how to improve your sleep, including a muscle relaxation exercise to help get you sleep-ready. Again, it's a good idea to seek professional help if you suspect a medical condition like sleep apnea might be causing the sleep problems. However, as bad as sleep issues can be, Mantua says they're not the worst problem to have, because they're beatable.

**Mantua:** Sleep is a... It's a wonderful thing because it's treatable. We know how to treat bad sleep. Sometimes it takes people a long time to get there. For instance, insomnia, it's difficult to treat. But we have known treatments that really do work. There's cognitive behavioral therapy for insomnia. It's very effective. Worst case scenario, we have sleeping medications you can take. We have many ways to treat sleep. It's something that could be and should be targeted, if possible. And so I think for caregivers, knowing that this is something that needs to be checked up on prior to treating other things, it's very important. [music]

**Livingston:** You can find a link to the "A Better Night's Sleep" podcast in the description below as well as links to DVBC Resources to improve sleep. [music] It shouldn't be a surprise that men and women are different. Not in the "Men Are from Mars, Women Are from Venus" sense, but physically, medically. Everything from cardiac issues to mental health concerns can present differently in women than in men. Understanding these differences can be the key to delivering quality health care. In recent years, clinicians and researchers have begun to pay more attention to the way traumatic brain injury can affect women differently. "The TBI Family" Sydney Hines reports on recent research and the need for women to have peers to talk to.

**Heather Nottingham:** The biggest thing I deal with is temperature sensitivity and use of language. I'll forget words. I'll transpose them. I won't remember different names or what something is so I kind of have to be prompted.

**Sidney Hinds:** That was Heather Nottingham an air force veteran living with a TBI. We spoke to her at Brain Injury Awareness Day on Capitol Hill where she had come to speak about her personal experiences. According to the numbers, men are more likely to sustain traumatic brain injuries than women. Because of that, research has traditionally focused on men's experiences of TBI, if only by default. However, with more women taking on combat roles in the armed forces, it's possible military women like Heather could experience more TBIs than they have in the past. Recent studies have begun to shed light on the differences in the ways TBI affect women. But according to Christina Agbayani, a clinical neuropsychologist at the Palo Alto VA's Polytrauma Network Site, there's a need for more data on female service members with concussions.

**Christina Agbayani:** Female veterans still are the minority in the military population. And so not a lot of research has focused specifically on female veterans and service members because they're such a small subset of that population.

**Hinds:** This lack of data can have consequences for clinical care. Dr. Anne Bunner, a program analyst in the Research Division of the Defense and Veterans Brain Injury Center, noted that care facilities may not have the same level of experience treating women with TBI.

**Anne Bunner:** I think that because women haven't been officially in combat roles until recently, deployment-related TBI is perceived differently for them. There are also gender differences in health care, access and delivery that are not specific to TBI. In emergency departments in the United States, bias based on race, gender and insurance status has been documented. This suggests that self-advocacy or having caregivers present to advocate can be especially important for women and minorities.

**Hinds:** While care for traumatic brain injury is similar in many ways across genders, the experience can differ in ways patients and caregivers should be aware of. A TBI can occur in many situations. While playing sports, in a crash, and during deployment. The symptoms afterward tend to be fairly similar between men and women.

**Bunner:** In the weeks and months after a TBI, symptoms may include things like sleep disturbance, difficulty concentrating, fatigue, headache, and others. The gender differences come out when we look at how often women report symptoms and how severe they rate those symptoms.

**Hinds:** Caregivers should be aware of these common concussion outcomes, but also understand that every TBI is unique and that women may not experience the exact same symptom severities as men.

**Bunner:** Some studies have shown that women have better functional or cognitive outcomes than men after a moderate or severe TBI. The studies I have seen don't consistently highlight specific symptoms that occur more in women. And some don't find any significant differences between men and women. One study of adults with sports concussion found that women reported headache, fatigue, irritability and concentration problems at higher rates

than men. A study of service members with deployment-related concussion found that women reported higher severities of change in appetite, nausea, light sensitivity, and change in taste or smell.

**Hinds:** Katherine Snedaker, the founder and Executive Director for Pink Concussions, an organization dedicated to improving medical care for women who have experienced a traumatic brain injury, and providing education for those women and their caregivers, said the differences in treatment of symptoms can be compounded by the isolation of being a woman with a TBI. Katherine was also attending Brain Injury Day on Capitol Hill.

**Snedaker:** Most women don't know another woman with brain injury. So you really are isolated. If you compare your symptom constellation, your symptom pattern, and your recovery to other males, you're going to come up short.

**Hinds:** Heather Nottingham said this was one of the issues she has dealt with.

**Nottingham:** Right now, I have no female friends that have had TBIs. All the correspondence I have with women would be caretakers of others and then the gentlemen that I know that have had TBIs.

**Hinds:** While many forums exist for those with TBI to find help and share their stories, having a network for women allows them to understand the unique nature of their TBI. Pink Concussions offers a number of ways for women who've experienced TBI to connect with each other.

**Snedaker:** I find that when women find other women with brain injury and realize they're not bad, stupid, crazy, faking, or the medical term malingering. When you say, "Your injury is real, you're not faking it, there are others like you, and we can help you," the hope, and the optimism, and the, "You are not alone anymore" just skyrockets. And I see real, real health in that.

**Hinds:** Symptoms are not the only differences women may experience. Recovery may also look different for female veterans and service members. The timeline for return to activity will not always be the same for men and women. Dr. Bunner.

**Bunner:** One study of concussed high school athletes found that young women started to return to play after an average of 29 days, while young men started to return to play after an average of 23 days. So that's about a week difference. In another study of adolescent athletes with concussion, over 40 percent of young women took 60 days or longer to recover, while only 21 percent of young men needed that much time.

**Hinds:** Caregivers should be aware female service members or veterans may not recover along the timeline that they expect or that a provider gives them based on data that comes primarily from men with TBI. Understanding these differences can aid the recovery itself.

**Bunner:** If patients are told or educated about what to expect during recovery, that they will get better, then they tend to have a smoother recovery. If we tell women patients, "You might take a little longer than your male counterpart," then we might see a smoother recovery for women, as well.

**Hinds:** The research into gender and TBI continues. Some would argue it's just beginning. Currently, many studies show very few or no differences between the way men and women experience TBI. But knowing the possible issues women face can greatly improve how much support a caregiver can offer. Remember that your loved one can still benefit from the vast body of work on TBI treatment and that they deserve proper health care as much as anyone.

**Bunner:** Men and women have a lot more in common than we do differently so I've been investigating gender differences in TBI in the literature. [music] And what I find is that there are a lot of studies that find no significant gender differences. So, I think it's important to remember that women are people and their health care should be approached as such.

**Livingston:** If you are, or know, a woman who's interested in joining the conversation surrounding gender and traumatic brain injury, you can find links to the Pink Concussions' online communities at pinkconcussions.com. If you have questions or comments for "The TBI Family", feel free to drop us a line at [info@dvbic.org](mailto:info@dvbic.org). [music]

The TBI Family is produced and edited by Terry Welch and is hosted by me, Dr. Scott Livingston. It's a product of the Defense and Veterans Brain Injury Center led by acting director Kathy Helmick and by the Defense Health Agency's

Research and Development Directorate commanded by Rear Admiral Mary Riggs. Thanks this week to Myron Goodman who assisted with reporting the gender and traumatic brain injury story. As always, thank you for listening.

**Narrator:** The views, opinions, and/or findings contained in this podcast are those of the host, reporters, and guests. They should not be construed as an official Department of Defense position, policy or decision, unless designated by other official documentation