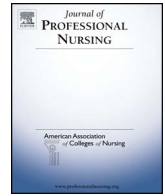


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A primer on traumatic brain injury for nursing faculty

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ABSTRACT

Incidence of traumatic brain injury (TBI) is increasing on campuses. Despite growing media attention and athletic program protocols to address the issue, many are unaware of the potential effects such an injury can cause. This may be true for nursing faculty who teach or advise students recovering from TBI. This article will examine relevant aspects of injury and recovery, as well as ways faculty can advocate for and support students who struggle during what can be a protracted period of recovery. Students' symptoms while recovering from TBI may diminish cognitive, emotional, and physical resources. Because individual responses to similar injuries may vary significantly, an individualized plan of academic support is important. A key component to academic support for students with TBI is integrated communication between athletic department staff, students, faculty, and administration.

Stories of traumatic brain injury

While most people have heard of TBI, many are unaware of the impact and recovery process resulting from this injury. This article will begin with firsthand accounts from individuals, a student and three adults, who graciously agreed to tell their stories in hopes of providing insight about what recovery from TBI can be like.

At a school tournament during the 2016 Fall Break, nineteen year old S. C. was struck in the face by a rebounding volleyball. A straight-A student balancing sports and academics well, she progressively developed neurological, cognitive, and physical symptoms that prevented her from functioning normally, or finishing classes that semester. Six months of physical, occupational, and speech therapy brought improvement, though there are still days when symptoms prevent regular activities.

For this student, there was no loss of consciousness, although she did experience a rapid onset of nausea, dizziness, and disorientation. Over the next several months there were symptoms in conjunction with normal activities (like walking across campus), including an inability to concentrate or read, nausea, headaches, dizziness, memory loss, word-finding difficulties, and a diminished capacity to process environmental stimuli. While the student noted gradual improvement in symptoms, this was not a linear progression. Six months later, routine activities could still induce dizziness and headaches. Her school followed protocol, comparing a pre-season baseline neurological assessment to post-injury results. This provided evidence of both the initial injury and the slow process of recovery.

In her own words, “The event that caused me to realize that something was really wrong happened when I left my hotel room to go to someone else's. I was reading the room numbers on the doors, but I couldn't process their meaning, and I ended up walking up and down the hallway until I found the room. As I watched my team play the next day at our volleyball tournament, my headache increased. I felt dizzy and detached from everything going on around me, experiencing extreme nausea and dry-heaving. During my recovery, one of the symptoms that affected me most was memory loss. I often couldn't finish a question or statement, simply because I would forget what I had been saying, leading me to sometimes ask questions multiple times. Being able to tell stories verbatim like I could pre-injury was impossible afterwards and continues to be difficult even months later.”

While visiting a family member in the hospital in 2015, thirty seven year old R.H. recalls the room feeling uncomfortably warm as a nurse explained aspects of care he would be providing after discharge. He began feeling dizzy, passed out, and awoke on the floor where he had fallen over backwards and hit his head. He experienced a seizure that lasted approximately one minute. At the time, he reported dizziness, disorientation, and a headache. After being discharged from the ED with a normal CT scan, he was accompanied home by family, with instructions for physical and cognitive rest. Wondering about the severity of his symptoms, at home he searched the internet for information on “concussions”, and noticed that concentrated computer use intensified his nausea and dizziness. Initially sleeping 18–20 h a day, for weeks after the injury he required the diminished stimulation of a darkened room to avoid exacerbating his symptoms. At an appointment

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with his primary care provider, he recalls the glare of fluorescent lights, excruciating office noise, and rapid-fire assessment questions, all of which rendered him unable to process or communicate information. Weeks later, he was referred to a TBI clinic. There he discovered a quiet environment, dim lights, staff who spoke quietly and slowly, and the first experience of healthcare providers who understood the struggles he faced when attempting even the most basic tasks. At this clinic, he underwent TBI specific therapy, gradually returning him to near-normal functioning months later. Though he appears to have recovered fully to those he encounters at work and socially, two years post-injury, he still notes symptoms and deficits, particularly when fatigued.

As nurse faculty member J.H., 62 years old, walked to clinicals one morning in January 2017, she was hit by a pickup truck while crossing the street. She recalls stepping into the street, but not the impact or immediately afterwards. She's been told that she disagreed with a paramedic, saying that she couldn't go to the ER, but needed to get to clinicals. Although she had no broken bones, she did have significant musculoskeletal soreness and bruising afterwards. Gradually, TBI symptoms of aphasia, dizziness, headache, and confusion developed over the next two days. There was a noticeable difficulty processing information, and periods of emotional lability that were unlike her prior typical behavior. She did not teach for the first eight weeks of the semester, anticipating a gradual return. Even after this delay, she found that half days of work necessitated extended periods of rest at home, with onset of symptoms that included headaches and dizziness. Though outwardly she appears to have recovered, fluorescent or bright lights and continual noise still induce headaches and cognitive challenges.

J.L., a nurse midwife, was riding her bike to work in 2005 when she was hit by a car. The impact cracked her helmet. At the ER, she was initially released after being evaluated, having a relatively benign neurological exam and no signs of fracture or bleeding on CT scan. Over the next few days, dizziness, headaches, and disorientation worsened. Ever the dutiful nurse, she didn't want her partners to cover her weekend shift. When she arrived at Labor and Delivery, she found the letters on the report board incomprehensible. She began to develop gait disturbances, aphasia, and problems with balance. Multiple trips to healthcare providers yielded no diagnosis, despite her debilitating symptoms. When she developed facial numbness, a neurologist diagnosed her with anxiety and encouraged her to decrease her respiratory rate to diminish this sensation. After 6 months of trying to manage the severity of her symptoms by remaining in dark, quiet spaces, a TBI specialist correctly diagnosed her injury which led to appropriate therapy. The damage was severe and resulted in a year's long struggle with aphasia, gait and balance problems, inability to tolerate visual and auditory stimulation, and other symptoms. She eventually was connected to experimental research which has improved her symptoms over time.

This article grew out of the experiences of a nursing faculty member accompanying a nursing student athlete on her journey of recovery from TBI. While much of what follows applies to any student experiencing a TBI, there are some concerns specific to nursing that can be addressed.

In Fall 2016, S.C. texted to say she had received a head injury during a volleyball match. After Fall break, she came to my office where it was immediately apparent that she had a significant injury. In conversation, she struggled to complete thoughts, and in class she seemed to have difficulty concentrating and coping with classroom stimuli. As a new faculty member, I was unsure how to support her beyond providing emotional encouragement and a listening ear. The student agreed that a meeting with faculty and her parents would help her decide how to move forward. She was clear that she preferred to finish the semester if at all possible. By the end of the semester, she was able to read and study more, though one nursing exam was given orally, with the student writing multiple choice answers on a response sheet. Fellow teammates/nursing students assisted with note-taking as needed, and provided moral support during the long process of healing. We kept in

close contact during the semester, and there was a gradual improvement by December which continued through second semester. With the student's permission, there was some communication between the school's academic success center, the athletic trainer, and select nursing faculty. Because this was the beginning of the nursing curriculum, clinicals had not yet started. The main academic concern was covering nursing fundamentals content and keeping up with assignments as much as possible.

Background

TBI is reported to affect over 2 million people in the United States each year (Chamard et al., 2013; Davies & Bird, 2015; Haring et al., 2015). Some estimate that actual injuries may be twice that number given that some go unrecognized or unreported (Buckley, Burdette, & Kelly, 2015; Sahler & Greenwald, 2012). Sports and recreation-related TBI accounted for over 3 million emergency department (ED) visits between 2001–2012, with 91% of those people being discharged home from the ED (Coronado et al., 2015). Among 15–24 year olds, TBI related ED visits nearly doubled between 2001–2010 (Centers for Disease Control, 2013). In the same demographic, causes of injury include motor vehicle accidents, falls, and being struck. It is reported that 56% of mild TBI cases go undiagnosed in the emergency room, especially if a CT scan appears negative (Mansour & Lajiness-O'Neill, 2015). Reviews estimate that 13–23% of post-deployment combat veterans have symptoms of mild TBI on physical exam (Mansour & Lajiness-O'Neill, 2015).

As the above true stories illustrate, experiences with TBI are as unique as the individuals experiencing the trauma—while some will recover in days, others will take weeks, months, or even years. When TBI occurs in the context of sports, athletes are often encouraged to “shake it off” and keep playing, even though evolving research shows this is not conducive to healthy recovery. Such research on former football players and boxers has made clear that even a single concussive head injury can have lasting, and sometimes severe, effects (DeKosky, Ikonovic, & Gandy, 2010; McAllister & McCrea, 2017; Stern et al., 2011).

Statistics on numbers of nursing students involved in athletics are not readily available (McDowell, 2017). Nursing student athletes are often high achievers, who possess excellent time-management and academic skills needed to succeed in studies and the demands of collegiate level sports (Forsk, 2017). Research shows that the incidence of TBI in the 18–24 age range is increasing (Davies & Bird, 2015), and a 2016 national survey of nursing programs showed that 75% of BSN students were under the age of 25 (NLN, n.d.). Thus, traditional pre-licensure students, whether athletes or not, are likely to fall into the demographic that is at increased risk for TBI. And though nursing faculty might have students in class who have experienced a TBI, many are unaware of the challenges facing students as they recover.

The purpose of this article is to describe the prevalence, pathophysiology, and diagnosis of TBI along with current recommendations about how to support students with mild to moderate TBI as they recover and return to classes. The neurologic deficits and challenges faced by individuals with severe TBI are beyond the scope of this article. It should also be noted that while understanding of TBI has increased in recent years, significant gaps in scientific knowledge exist about prognostic indicators and healing trajectories. Despite those limitations, there is much that can be learned about how to support students who find themselves facing this challenging injury. Though much of the literature focuses on sports-related concussion (SRC) in mild and moderate TBI, the mechanism of injury does not necessarily impact the recovery process and so references to student athletes can generally be applied to others with the same diagnosis (Kelly, Amerson, & Barth, 2012). One final note before proceeding: some students may come to college with a history of TBI and documented disability accommodations. This article is directed towards considerations of students who

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