



# TBI

## Model System Updates

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**The UW TBI Model System has been funded for another 5 year cycle along with 15 other sites around the country!**

### **Sleep and TBI Studies: One Ends, While Another Begins**

**By: Erica Wasmund and Taylor Obata**

#### **The TWILIGHT Study**

This spring we completed the study called TWiLight: Treatment with Light after TBI. This study was conducted at 3 sites: Harborview Medical Center, and at Mount Sinai in New York and Baylor Institute

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for Rehabilitation in Dallas. We began recruitment in December of 2013 and finished in April of 2017.

This study randomized participants who enrolled into one of two groups (like flipping a coin). One group received light therapy that used a bright white light treatment, and the other group received therapy that used a red light.

Each group received 30 minutes of light therapy in the morning for up to 10 days, depending on the length of stay on the inpatient rehabilitation unit. The participants were also asked to wear an Actiwatch device overnight, which measured movement as well as the amount of light exposure. The Actiwatch acts a little like a Fitbit in that it measures sleep efficiency, which is the percent of time you are actually asleep during the hours you are trying to sleep as well as activity in the daytime.



Our aims and goals included:

- Exploring the relationship between Bright White Light exposure during inpatient rehabilitation after TBI with mood, therapy participation, and attention, rate of functional recovery and length of stay.
- Developing and describing sleep study procedures on the inpatient rehabilitation unit for persons with TBI to support a feasible design for future studies in this important area.

We theorized that individuals exposed to Bright White Light for 30 minutes each morning would have better sleep, mood and therapy participation compared to the other group, as measured by sleep efficiency and questionnaires asked of the patient before and after light therapy. We hope that exposure to Bright White Light will be rated as a reasonable addition to clinical care by staff and that light exposure will be generally well tolerated. All in all, we enrolled 131 subjects across the 3 hospitals. It was a fairly even split with 65 participants receiving the white light compared with 66 receiving the red light.



### **What Comes Next?**

We have now checked all the data and are beginning to examine the data that we collected. We found that putting everyone together, both groups are very similar to each other after receiving either bright white or red light therapy. However, we know that some people got very little light treatment and others got more and we plan to look at whether there is a “dose” or amount of therapy that might be more helpful. We have also just started looking at all of the actiwatch data. So far, sleep efficiency is the same in both groups, but again, we need to look at whether there are any people who were different based on how much light they were exposed to. We also expect that people will generally get better over time as they heal and participate in rehabilitation therapies.

No one had any problem tolerating the light therapy, so this is something anyone could try at home if they have sleep problems and want to try a new strategy, even though we don’t yet know how effective it is early after TBI. As we try to understand the significance of light therapy, we hope to learn what dosage and light frequency will offer patients the most benefit.

We want to thank all of the participants, and we will keep you posted as we put together papers and

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posters to highlight our results.

### **Introducing... C-SAS**

Our new sleep related study is called [Comparison of Sleep Apnea Assessment Strategies to Maximize TBI Rehabilitation Participation and Outcome](#) or **C-SAS** for short. This study was funded by a grant from the [Patient-Centered Outcomes Research Institute \(PCORI\)](#). The Principal Investigator is Risa Richardson, PhD, a Clinical Neuropsychologist from the Polytrauma Program at the James A. Haley VA Medical Center, and an Associate Professor at the University of South Florida in Tampa. The University of Washington TBI Model System is one of six sites participating in the study.

Sleep apnea is a sleep disorder that can occur in patients after a TBI, and can make it harder for them to participate in rehabilitation. This is because sleep apnea causes patients to stop breathing while they sleep, which can limit all the benefits of sleep including rest and time for recovery and healing. It can also cause problems with thinking, daily functioning, and overall health. By identifying this issue early on in a patient's recovery from TBI, doctors may be able to improve a patient's recovery after TBI.

In this study, the investigators hope to learn a number of different things about TBI and sleep apnea. First, and most important for inpatients, we want to determine the best screening tool to determine whether someone should undergo a more extensive sleep study. Second, while we need to use the "gold standard" test (having a overnight observed sleep study) to see which screening tool works best, we also want to determine if a more accessible version works as well in diagnosing sleep apnea. The more accessible version can be used by patients at home, or potentially by nurses on the inpatient rehabilitation unit, which is easier and less expensive.

This study is only open to patients who enroll in the UW TBI Model System Study and are undergoing inpatient rehabilitation at Harborview Medical Center.



## **Sleep and TBI Resources**

### **Here are some of the great resources available about Sleep and Traumatic Brain Injury:**

- The *Model Systems Knowledge Translation Center (MSKTC)* is a great resource for learning about many topics related to TBI. Here is the web version of their [Sleep and Traumatic Brain Injury Factsheet](#), which includes links to printer-friendly versions in English and Spanish.
- *TBI Infocomics* has a great comic on Sleep and TBI, adapted from the MSKTC factsheet information. Check it out on their website [here](#). At the top right of the screen, you can download the PDF or view a Spanish version.
- For our readers in the Seattle area seeking medical attention for their sleep issues, the University of Washington Sleep Institute is a great facility that is accredited by the American Academy of Sleep Medicine. They have clinics in multiple locations, and their contact information can be found [here](#).





# Survivor Perspective: Rebuilding After TBI

By: Christian Rusby

I was a young man building my career around construction trades and sustainability work. I had spent my 20's in home-building and exploring innovative green building solutions to today's housing issues. I decided to attend graduate school in Urban Planning and earned a Master's degree with a thesis on smaller homes and providing more living spaces within existing neighborhoods. This has proven to be important as many people are currently moving to the Seattle area and need homes to live in. I found excellent work on my journey as a student-hired Sustainability Coordinator as North Seattle College (NSC) engaging students in these conversations about not only housing but, food, building community, and more appropriately managing our wastes. In an example of leading empowered students, we baked and delivered a fresh loaf of bread to then Seattle Mayor Mike McGinn as testament to building community through food and community organizing!



**NORTH SEATTLE  
COLLEGE**

*One of the Seattle Colleges*



It was working at NSC where I suffered a severe TBI while commuting to (ironically) a nearby hospital by bicycle. I spent the next month in the ICU but wasn't discharged from the hospital until after 4 months. I had great difficulty walking, talking, and even providing for even my basic needs for many months. I struggling with things such as my right-side physical motor function, memory, order of operations, navigation, and many other common challenges that TBI survivors face. I worked very hard with friends and family through these difficulties. Finding my way back home (after even a half a block!) was very difficult initially, so I had to learn coping strategies for each of my impairments until I could function more normally. I developed systems and/or procedures to arrive at the goals I set out to reach. Just as I knew from my Sustainability work, it was through "little wins" that I built confidence and would be motivated to reach-for more difficult aims in the future. Cooking pasta then turned to cooking whole meals as I would be pre-injury for my family.

Ultimately, after 18 months NSC hired me back with my challenging conditions continuing to diminish as I spoke with students to align their educational objectives with real-world applications of Sustainability. Due to my successes working with students before my and then after my injury, the Seattle Colleges hired a Sustainability Coordinator for the broader Seattle College District to work on similar initiatives connecting student-learning at the Colleges.

More currently, my wife and I purchased a home in Portland for me to renovate and refine my skills. Now 4 years after injury, it is these trials of consistent daily problem solving that I continue healing and retraining after my TBI. In my current work, I continue to demonstrate accessible strategies to provide cost savings and our basic needs to my family and community through this green building project.



## What's Your Survivor Story?

Send your story to [uwtbi@uw.edu](mailto:uwtbi@uw.edu) and we may be able to feature it in our next newsletter!

## Looking to get involved in TBI research?

We have multiple studies that are currently recruiting participants. The first study is for individuals that are experiencing new or worse headaches since their injury. The second is for current TBIMS participants.

If you are interested in participating in research, check out our studies below:

### The TWIST Study

**Study Contact: Taylor Obata, [tobata@uw.edu](mailto:tobata@uw.edu) or by phone at 206-685-8354**

**The TWIST Study** looks at whether Sumatriptan (also known by the brand name *Imitrex*™) an FDA-approved medication for treatment of migraine, shows similar effectiveness for treatment of chronic post-traumatic headache. Eligible subjects must be **16 to 65 years of age**, within **2 weeks to 5 years post TBI**, and experiencing **new or worse** headaches since their TBI. Subjects are asked to keep a headache diary while enrolled.

### The LE-TBI Study

**Study Contact: Taylor Obata, [tobata@uw.edu](mailto:tobata@uw.edu) or by phone at 206-685-8354**

**The Late Effects of TBI or LE-TBI Study** aims to learn more about the long-term effects of TBI in the general population. This study is for individuals who are already enrolled in the TBI Model System Study, are over 40 years of age, and at least 1 year out from their injury. You must be able to undergo an MRI and be willing to have a brain tissue sample donated in the event of your passing during the course of the study. Please give us a call for more information.

**\*All studies are voluntary and will not affect the care you receive at the University of Washington\***

## UW TBIMS Starting New Research Study!

### BRITE Study

The UW TBIMS is the lead site for the [PCORI](#) funded BRITE Study (Brain injury Rehabilitation Improving the Transition Experience). This study will compare the current discharge model with a model that includes follow up contacts for people with TBI discharging from inpatient rehabilitation. The aim of the study is to improve participation and quality of life for individuals with TBI and also for their caregivers.

# University of Washington and Seattle Children's Hospital Collaborate on Concussion

By: Taylor Obata

With growing concern in recent years about the risk of concussion in contact sports, a newly formed partnership in the Seattle area is attempting to bridge a large knowledge gap. Started in 2014, the **Seattle Pediatric Concussion Research Collaborative** brings together experts from the University of Washington, Seattle Children's Hospital, Harborview Medical Center, the Harborview Injury Prevention Research Center, the Seattle Sports Concussion Program and other top institutions. This collaboration was formed to conduct clinical studies focused on prevention, diagnosis, and treatment of youth concussion.

The Collaborative is led by Dr. Fred Rivara, an internationally-recognized expert in pediatric injury research. Research done by this group will focus on filling gaps in three specific areas: *Epidemiology and Prevention* – specifically how often concussions occur, what the risk factors are, and what strategies can prevent them; *Pathophysiology* – these studies look at the biological mechanics of how concussion damage occurs in order to develop and evaluate tools for diagnosing and measuring concussion impact; and *Treatment* – clinical trials that will evaluate treatments for post-concussive symptoms. This research collaborative is one of the largest pediatric concussion research programs in the country, and is made possible by a \$5 million gift from the [Satterberg Foundation](#).

Since 2014, the Collaborative has completed a large body of publications on various topics related to youth concussion, and currently has eight active studies. Their study topics include: exercise and concussion; concussion and driving; concussion education; and ways of treating persistent concussion symptoms. The research done by the Collaborative has the collective aim of reducing the incidence and consequences of youth concussion. With their combined expertise, they are able to study a variety of research topics from a wide array of medical disciplines.

If you are interested in learning more about the Collaborative, please visit their website here: [Seattle Pediatric Concussion Research Collaborative](#).

## Contact Information:

### Address

2001 Eighth Ave., Suite 400  
Seattle, WA 98121

### Mailing address

PO Box 5371  
Mailstop: CW8-6  
Seattle, WA 98145



## Healthy Recipes for Fall

### Chicken, Kale, and Quinoa Soup

Adapted by RJ Owens, HMC Executive Chef

Servings: 6

#### Ingredients:

- 8 Cups Low-Sodium Chicken Broth
- 1 Cup Onion, chopped
- 1 Cup Celery, chopped
- 1 Cup Carrot, chopped
- 1 Cup Tomato, chopped
- 1/4 Cup Garlic, chopped
- 1/2 tsp Crushed Red Pepper
- 1/2 tsp Ground Black Pepper
- 1/2 tsp Salt
- 2 Bay Leaves
- 1 lb Boneless Skinless Chicken Thighs
- 2/3 Cup Quinoa
- 6 Cups Kale, chopped
- 2 tsp Fresh Thyme



- 1/4 Cup Lemon Juice
- 1 (15-oz) Can Cannellini Beans (rinsed and drained)

#### Instructions:

1. Mix chicken broth, onion, celery, carrot, tomato, garlic, red and black pepper, salt, and bay leaves in the slow cooker. Allow broth to simmer and then add chicken. Cook on low for 3-4 hours.
2. Remove chicken thighs, place aside.
3. Add quinoa, kale, thyme, lemon juice and beans. Cook for 45 minutes to 1 hour, until quinoa is tender.
4. Dice chicken and add back to slow cooker. Allow to warm for 5 minutes before serving.

#### Nutrient Analysis:

Calories: 250

Protein: 20g

Carbohydrate: 37g

Total Fat: 4g

### Lamb Curry with Apples

Servings: 4

#### Ingredients:

- 12 oz Lamb (diced 1" cubes)
- 1/2 Cup Onion (diced)
- 1/2 Cup Celery (diced)
- 2 Tbsp Flour
- 1/4 tsp Salt
- Dash Black Pepper
- 1 Tbsp Curry Powder
- 1/2 tsp Ginger Puree
- 1 tsp Garlic (chopped)
- 1/4 tsp Worcestershire Sauce
- 1 tsp Chicken Bouillon
- 1/2 Cup Hot Water
- 1/2 Cup thinly sliced Apples
- 2 Tbsp Raisins



#### Instructions:

1. Heat large Dutch oven or sauce pan over medium heat. Cover with cooking spray. Brown lamb.
2. Add onions and celery. Saute 5-10 more minutes until onion is translucent.
3. Stir in flour, salt and spices through worcestershire sauce.
4. Stir bouillon into hot water. Add to lamb mixture. Simmer until lamb is tender, about 1 hour.
5. Add apples and raisins. Simmer 20 minutes.
6. May serve over rice.

#### Nutrient Analysis

Calories: 155

Protein: 18 grams

Carbohydrate: 10 grams

Total Fat: 5 grams



### **TBIMS Staff:**

#### **Project Director:**

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PhD

#### **Investigators:**

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## **Who's Who at UW**



**Donald Fogelberg, Ph.D., OTR/L** is an investigator with the UW TBI Model System Study, and an Associate Professor in the Department of Rehabilitation Medicine, Division of Occupational Therapy. He has been with the UW since 2010, and became involved with the TBI Model System in 2011 shortly after joining the UW faculty. He is currently a co-investigator on the TWILIGHT Study, which is examining the effects of light therapy on sleep in patients with TBI during acute inpatient rehabilitation at Harborview Medical Center.

Dr. Fogelberg first became interested in the relationship between sleep and traumatic injury while working on his doctoral dissertation at the University of Southern California in 2008. At the time he was studying spinal cord injury (SCI), and came to realize that there was a lack of scientific literature regarding the impact of sleep issues on people with SCI. When Dr. Fogelberg started working on traumatic brain injury (TBI) research, it only made sense that he would look into sleep and TBI as well.

Long-term goals of Dr. Fogelberg's research program include developing a better understanding of how rehabilitation outcomes are affected by sleep, and identifying effective strategies that people who have experienced traumatic injuries can use to improve their sleep quality. The TWILIGHT study, for which he is currently analyzing data, provided a good foundation for studying sleep treatments in an inpatient rehabilitation setting, and should shed some light on the effectiveness of light therapy at improving sleep quality in that setting.

## **Announcements:**

### **Two Yoga Classes for People with TBI**

Janet Novinger is offering two accessible yoga classes in the Seattle area!

#### **Gentle Yoga**

**Mondays, 8:30 to 9:30 AM**

**Phinney Ridge Yoga**

**6615 Dayton Ave N, Seattle, WA 98103**

**Contact: 206-547-2526**

#### **Adaptive Yoga**

**Fridays, 4 to 5 PM**

**Aditi Studio**

**4206 Stone Way, Seattle, WA 98103**

**Contact: 206-547-2526**



## The Washington Traumatic Brain Injury Resource Center

BIAWA is first and foremost a source of support for those affected by Brain Injury, and the Resource Center is a critical part of this.

[Brain Injury Alliance of Washington](http://www.biawa.org/): [www.biawa.org/](http://www.biawa.org/)

[BIAWA Support Center](http://www.biawa.org/getsupport.php): [www.biawa.org/getsupport.php](http://www.biawa.org/getsupport.php)



## TBIMS Updates

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