



TBI and the Non-Athlete Population

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Objectives

It is the hope after this class, everyone will be filled knowledge in the following areas:

- The differences and similarities between athletes and non-athletes as they relate to post-TBI issues
- The importance of an individualized team approach to TBI recovery and rehabilitation
- The different types of dizziness, what they could mean and how PT can help
- How TBI effects energy levels and the ability to return to life/work/play and the importance for PT guidance with return to activity
- The pain/dysfunction cycle and the impact of early PT intervention.

Why the distinction? Athlete vs. Non-Athlete

- **Athlete**

- Supportive coach/teammates anxiously waiting for return
- Need to get back to sport ASAP. Highly specialized rehab
- Athletes tend to have higher prior level of function which is a big part of prognosis and rehab potential
- Vast majority/all of research is on athlete population

- **Non-athlete**

- Family/friends often don't understand injury and are not able to provide positive support
- They many times will not seek help or know that they need medical attention after injury
 - Opportunity for ER patient education
- Broad-based rehab involves work, parenting, household responsibilities, driving, exercise, hobbies/leisure activities
- Prior level of function highly variable
- Minimal (No) research available of non-athlete population
 - Too many variables
 - How to define the success of rehab
 - Financial support for research

Prognosis for non-athletes

- Some important questions during subjective interview to help us determine prognosis:
- Past medical history
- Prior level of function
- How motivated are they to return to prior level of function (might be towards the end of their career or just not in love with their job, fear of returning to job if injured on the job or have a very physical job, etc)
- How long since TBI and what have they been doing since then
 - Get to therapies/TBI specific provider ASAP

Prognosis continued

Complicating factors to success

- Financial concerns
- Family demands
- Return to work
- Keeping track of multiple appointments, memory issues – may lead to poor compliance
- Level of impairment
- Severity of deficits/symptoms
- Energy levels depleted
- Changes in vision
- Dizziness
- PAIN

Possible symptoms of TBI

- Headache
- Nausea
- Vomiting
- Drowsiness
- Numbness/tingling
- Dizziness
- Balance problems
- Sleeping more than usual
- Difficulty concentrating
- Difficulty remembering
- Sensitivity to light
- Sensitivity to noise
- Feeling slowed down
- Feeling as if “in a fog”
- Trouble falling asleep
- More emotional than usual
- Irritability
- Sadness
- Nervousness

This type of list makes research challenging...

Interdisciplinary Approach

- With that problem list, and a wildly variable patient population, one can see how important collaborating care across many disciplines is essential to help these people get back to their lives ASAP
- Gross overview, not an exhaustive list - We all overlap in these areas and communicate often to figure out which areas each person needs help with.
- Developmental Optometry– essential for changes in vision, headaches and vague dizziness complaints
- Occupational Therapy – for ADLs, vision therapy, return to work activities
- Speech Therapy – for cognition, memory, helping organize life demands
- Social work- coordinate return to work, help pt's navigate rehab appointments and schedules, rides, financial concerns
- Psychology- stress, anxiety, depression
- Neuropsychology- tests for changes in learning/cognition
- Physical Therapy – Dizziness, neck/head pain, balance problems, physical deconditioning/fatigue

Dizziness

- Need to use words other than dizzy to describe it
- Spinning – either self or room around them
 - Could be vertigo – check for BPPV, which is very common
- Unsteady/unbalanced
 - Complete balance tests, strength and proprioception
- Lightheaded
 - Check BP with positional changes
 - Vision
 - Fear/anxiety with certain activities, can be conscious or subconscious
 - VOR testing
 - Fatigue/exertional dizziness
- Migraine associated dizziness
 - This is a tough one. Manual therapy can help temporarily, but medication likely needed

~~Research~~ Example of a patient with dizziness post TBI

- No research – as all research is on the athletes, so lets opt for a specific example
- A guy walks into a bar...
 - Gets a concussion/TBI
 - Goes to the ER – MRI, CT scans are clear, patient is sent home
 - Bills to pay, has to work, 3 young kids at home
 - Few days-weeks later, he is just tired all the time, cranky, head and neck have been hurting, but just a dull ache, nothing a few Aleve/Tylenol can't help, but now the Aleve/Tylenol aren't helping anymore and he's starting to feel dizzy and off-balance on top of everything else.
 - He just keeps hoping it will all go away- but alas, it does not
 - He goes to his MD, and they send him to a TBI clinic
 - TBI provider looks at the whole picture and decides to send our fellow to PT for dizziness, feeling off balance and head/neck pain

At the PT evaluation

- First PT appointment – likely several months after initial injury
- Thorough subjective/interrogation
- Describe the dizziness, when are you dizzy, what position, how long does it last, what makes it better, what makes it worse, diet, sleep habits, activity levels, medications, etc, etc.
- We find out that he feels dizzy/spinning
 - when he rolls from one side to another in bed
 - turns corner quickly and bends forward or gets out of bed too fast
 - feels lightheaded when his headache gets really bad or when he is really tired
- More motion sick and occasionally more unbalanced than he used to be.

What does it mean

- Dizziness when standing up or first time out of bed:
 - Check BP in sitting and standing to rule out orthostatic hypotension and if clear, I like to shelf this one until we know the BPPV is resolved.
- Anyone who says dizzy/spinning in bed or with positional changes – we think BPPV, which is the best type of dizziness – fix this first
 - Complete Dix Hallpike, find out which side has the loose crystals and treat with a canalith repositioning maneuver and this should completely resolve after 1-2 treatments
- Turning corners and forward flexion – may be BPPV related, but can also be vision related - check the developmental optometrist and OTs to see if his vision has been effected – very common!

Digging deeper into the dizziness

- Dizziness with fatigue, motion sickness and feeling unbalanced
- Need to prioritize these based on patients goals and which one keeps him from being his best self the most
- For this example, let's address the balance first, because of fall risk and risk of decreasing mobility
- Balance tests
- Head turns and when his eyes are closed are the aggravating factors
 - this fellow likely has a visual dependency and his vision may have changed so now he is relying on bad vision for balance
- VOR – vestibulo-ocular reflex – can he maintain stable vision during head motion
 - Stare at a letter on a stick and turn your head fast – does the letter stay clear
 - This is a common impairment, but relatively easy to fix with very boring exercises
- Once vision is improved, make him do whatever aggravates his symptoms with modifications that do not aggravate his symptoms and build him back slowly.
- Balance problems increase when patient closes his eye – vestibular problem **
 - Work on activities with eyes closed to retrain vestibular system

Self-awareness

- Many times people may not know what is causing the dizziness
- Recommend people jot down times when they have it, or at least make a quick mental note
- Finding patterns can be very helpful to creating the plan of care and treatment interventions
- Memory Issues – type in smart phone, or keep small notebook in pocket
- Make sure patient understands what a true rest break is
 - Not reading the paper, watching TV, or reading screens
 - Meditation, eyes closed, breathing

Fatigue

- Frequent subjective comment – “I feel exhausted after doing things that used to be so easy.”
- There is a legitimate complex cellular reason for this. They are not lazy or crazy. Think about a post-op patient or when you have a flu or a cold, how much energy do we have, then consider the brain and all it does...
- Education for patient that the brain is constantly being used, even sitting here right now
- What do they absolutely need to do, physically – cater therapy sessions to attempting these activities in very small doses with frequent rest breaks.
- What can they stop doing temporarily to set themselves up for success and make sure they have the gas in the tank to do the things they need to do.

How to help with fatigue

- Back to our initial example – tired with activity
- Again – there are no research studies out there for our non-athletes, so we tend to let their symptoms be our guide
 - In the clinic start light – NuStep or upright stationary bike (TMs and ellipticals can increase symptoms due to increased head movements)
 - Homework, try walking program
 - Assess symptoms and HR while exercising and see how much he can tolerate.
 - Always work within the symptoms- in the early stages, do not push through them.
 - 0-10 point scale – 1-2 point increase OK, more than 2 points, we stop and rest
 - Delayed symptoms also something to remember
 - Patient education is key – Goldie Locks syndrome...
 - For non-active folks, need to start slowly but make sure they know and appreciate the importance of light exercise for healing
 - For super active folks, need to also start slowly and make sure they know and appreciate the dangers of doing too much, too soon.
 - Needs to be JUST RIGHT... Symptoms will guide them, but they must listen to the symptoms

Pain

- Does the pain start in the neck and go up to the head or start in the head and go to the neck?
- Either way, people tend to drastically decrease the amount they move their head and neck...
- Need to get the head/neck moving again ASAP
- Number one best way to get a PT to roll their eyes (internally of course) – ask for a massage.
- That being said, we will do what we call soft tissue mobilization, vertebral mobilization, and myofascial release with the intention of locating any tense or painful areas and working them out for a few minutes early on in the treatment plan.
 - Patient education for the importance of self-massage, stretching, posture and muscle relaxation
- If the headache does seem to be the primary culprit, may need medication for migraine type headaches, OR it may clear up as vision improves

Pain/dysfunction cycle

- “It hurts when I do that, so I stopped doing that.” Without therapeutic intervention this is a reasonable mindset, but wrong.
- We can even include “It makes me dizzy when I do that, so I stopped doing that.”
- Use it in moderation or lose it is a phrase I often use.
- If it’s been months since the injury and people haven’t been moving their head for 6 months, do we think they will get dizzy or have pain when they go to move their head – You betcha!
- You can also add anxiety and fear to that
- It is this area that early intervention from PTs can really make a difference
- Modify the activity that causes pain to the point that it does not cause pain/dizziness, complete it at that level for brief periods of time on good days, then gradually increase duration/intensity/speed
- Getting back to the modified comfortable version of these aggravating activities will prevent long-term negative consequences.

Physical Therapy treatment sessions/ideas

- Going back to our original list – it is easy to get overwhelmed by all the complaints and impairments
- Group them – ie – pain, vision, balance, fatigue and prioritize based on patient reports and patient needs
- We are lucky here, in that we get a full hour of treatment time
- Combo platter!
- Start off with a bit of balance or something we know aggravates them
- Rest break
- Manual therapy (not massage, but can offer similar type of relief)
- Light exercise
- Rest
- VOR activity
- Rest
- Sadly, insurance does not cover therapeutic napping, but it does cover therapeutic rest
- Check vitals, provide education, discuss symptoms, or just sit quietly

When in doubt, go for function

- What are they passionate about
- What brings them joy
- What do they want to do that they can't do because of their TBI
- Work with them to make a plan to get back to those things and set them up for success by building slowly.



Closing thoughts

Believe them, even if symptoms sound completely nonsensical– it is the super complex brain involved, and no two TBIs are the same, no two brains are the same and no 2 people are the same

Any chance we have to educate people after they hit their heads to have them evaluated sooner rather than later will be of benefit

Let symptoms and function be our guide

Questions?