



# Allegheny Health Network

AHN Concussion Therapy  
Holistic Approach to Care

*Putting the Pieces together*



# Putting the Pieces Together

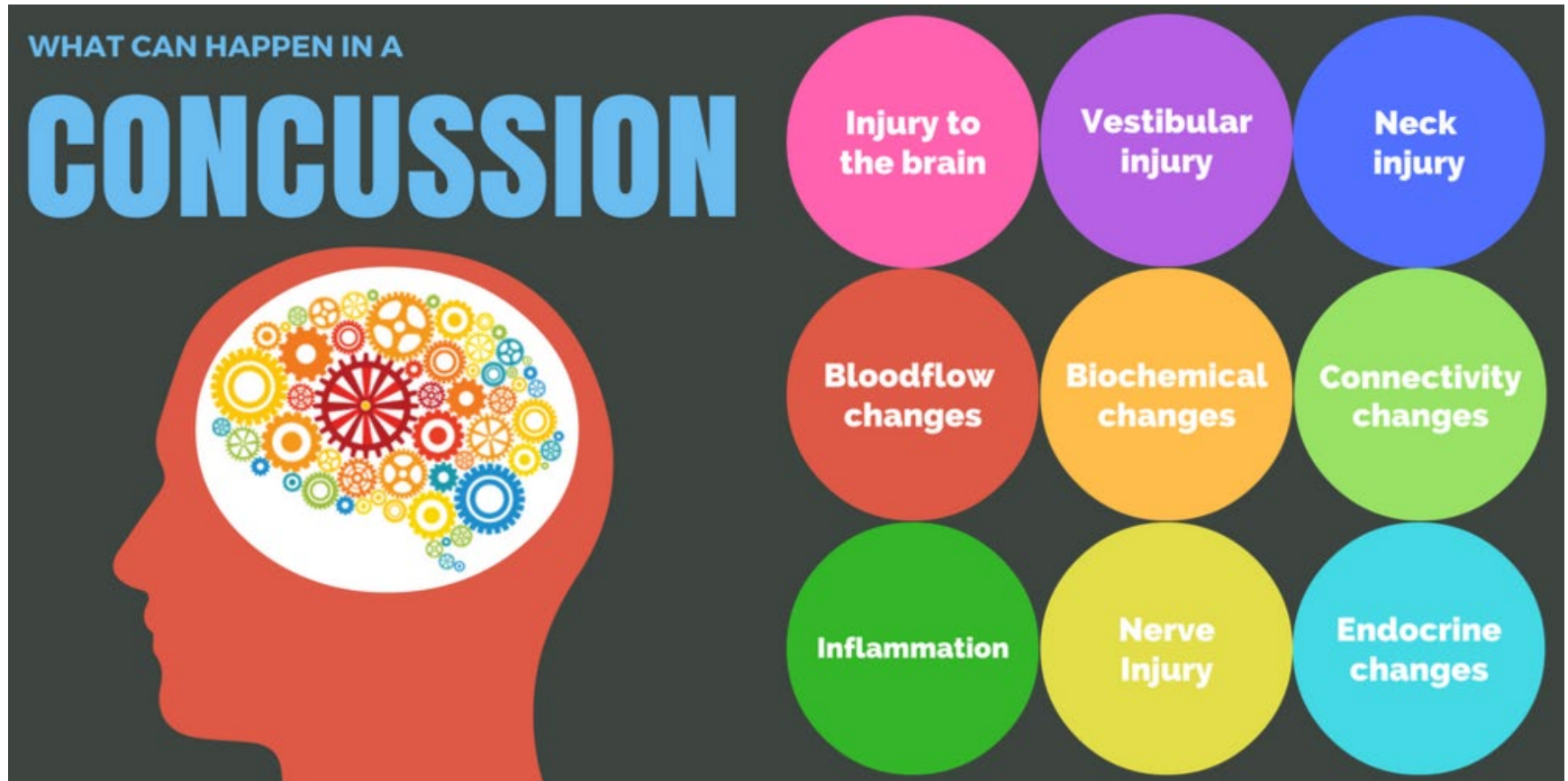
*Providing support to the entire person- physical, emotional, social and spiritual well being*

**Objective:** Understanding the importance of a holistic approach to concussion care



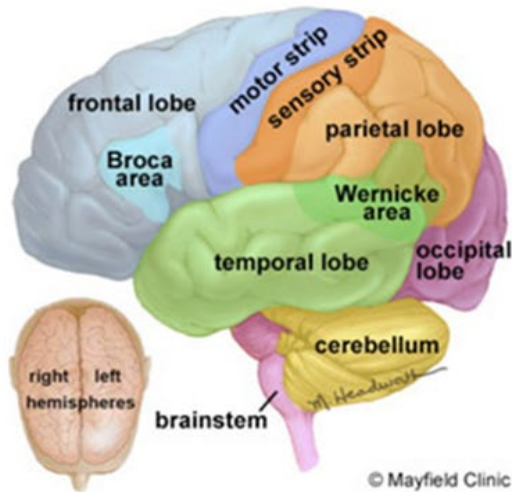


# Injuries that can occur





# Concussed Brain



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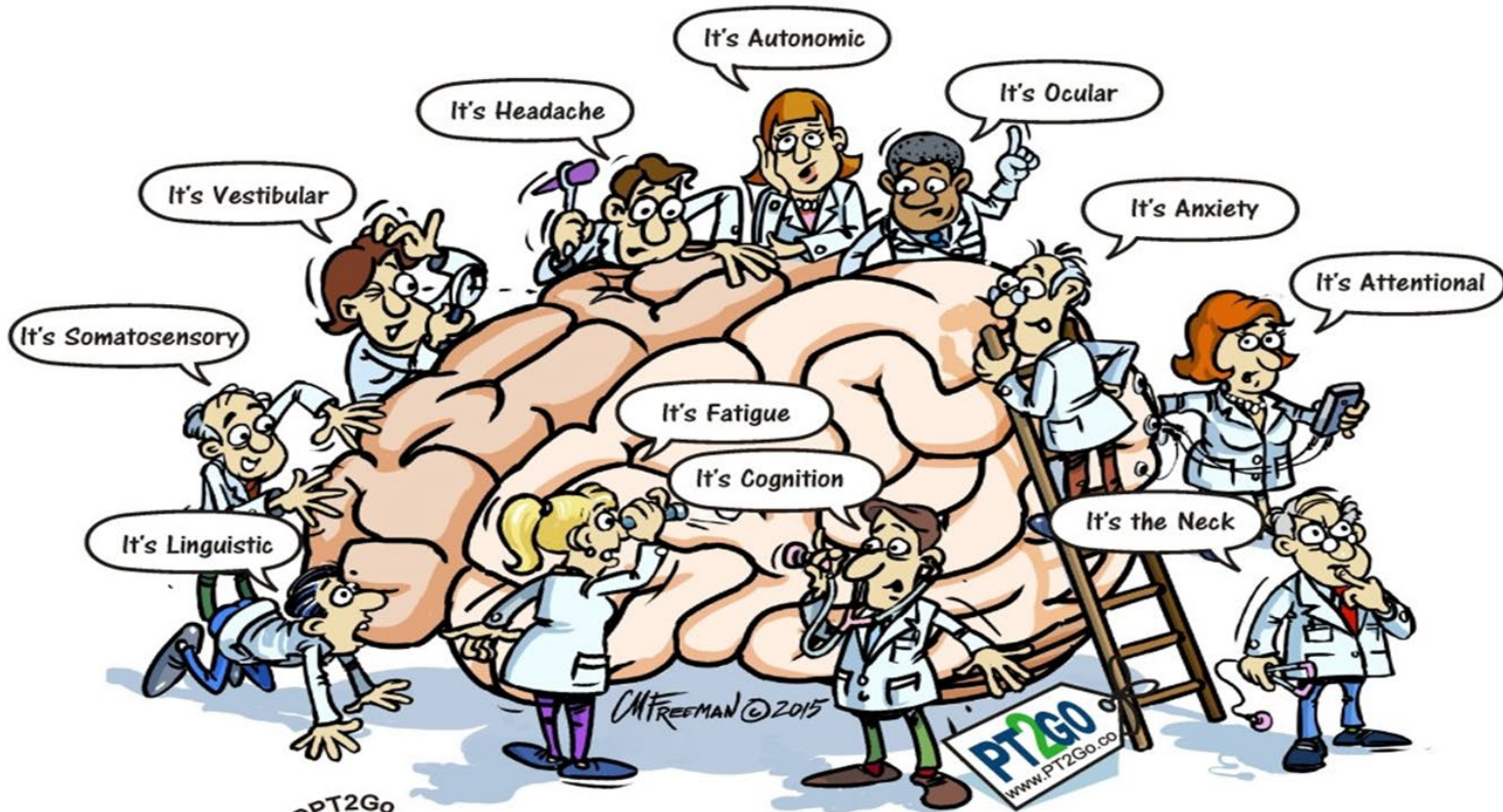
Figure 2. The brain is composed of three parts: the brainstem, cerebellum, and cerebrum. The cerebrum is divided into four lobes: frontal, parietal, temporal, and occipital.

The table lists the lobes of the brain and their normal functions as well as problems that may occur when injured. While an injury may occur in a specific area, it is important to understand that the brain functions as a whole by interrelating its component parts.

	Healthy Brain	Injured Brain
<b>Frontal lobe</b>	Personality / emotions Intelligence Attention / concentration Judgment Body movement Problem solving Speech (speak & write)	Loss of movement (paralysis) Repetition of a single thought Unable to focus on a task Mood swings, irritability, impulsiveness Changes in social behavior and personality Difficulty with problem solving Difficulty with language; can't get the words out (aphasia)
<b>Parietal lobe</b>	Sense of touch, pain and temperature Distinguishing size, shape and color Spatial perception Visual perception	Difficulty distinguishing left from right Lack of awareness or neglect of certain body parts Difficulties with eye-hand coordination Problems with reading, writing, naming Difficulty with mathematics
<b>Occipital lobe</b>	Vision	Defects in vision or blind spots Blurred vision Visual illusions / hallucinations Difficulty reading and writing
<b>Temporal lobe</b>	Speech (understanding language) Memory Hearing Sequencing Organization	Difficulty understanding language and speaking (aphasia) Difficulty recognizing faces Difficulty identifying / naming objects Problems with short- and long-term memory Changes in sexual behavior Increased aggressive behavior
<b>Cerebellum</b>	Balance Coordination	Difficulty coordinating fine movements Difficulty walking Tremors Dizziness (vertigo) Slurred speech
<b>Brainstem</b>	Breathing Heart rate Alertness / consciousness	Changes in breathing Difficulty swallowing food and water Problems with balance and movement Dizziness and nausea (vertigo)



# Which symptom is most important?



@DPT2Go  
**Concussion**

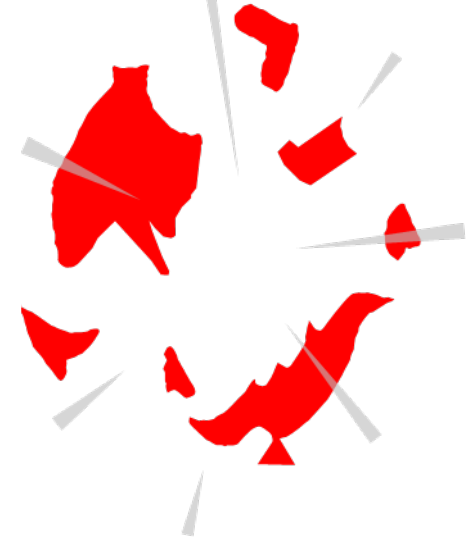
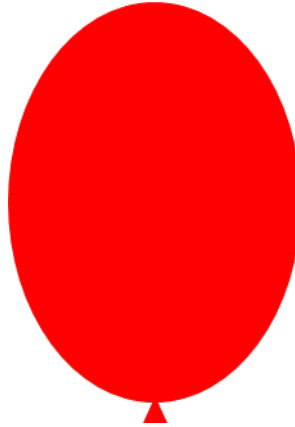
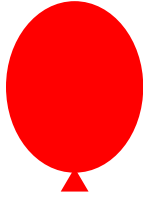


# Post Concussion Symptom Tool

Physical	Cognitive	Emotional	Sleep
Headache	“Slowed Down”	More emotional	Drowsiness
Pressure in head	“In a Fog”	Irritability	Trouble falling asleep
Neck Pain	“Don’t feel right”	Sadness	Sleeping more than usual
Nausea or Vomiting	Difficulty concentrating	Nervous or anxious	Sleeping less than usual
Dizziness	Difficulty Remembering		Difficulty sleeping soundly
Blurred Vision	Fatigue/low energy		
Balance Problems	Confusion		
Sensitivity to Light			
Sensitivity to Noise			
Numbness/Tingling			
Ringling in the ears			



# Managing your Concussion Symptoms



Baseline –  
start of  
your Day

1<sup>st</sup>  
Symptom –  
i.e. eye  
strain

2<sup>nd</sup> Symptom  
– i.e.  
headache,  
nausea, don't  
feel right

Blow Up Symptoms –  
Worsening Headache,  
fogginess, tired, sleepy,  
unable to concentrate

**Reset** if stop  
activity, **2-3 min**  
to resolve sx

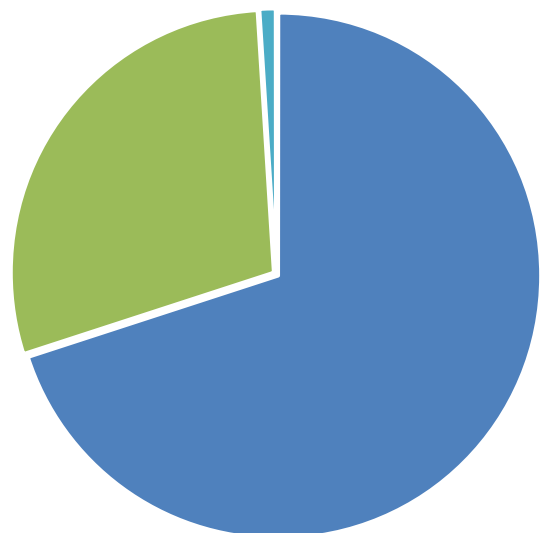
**Reset** if stop activity,  
**20-30 min** to resolve sx

**Reset** if stop activity,  
**6-12 hrs** to resolve sx



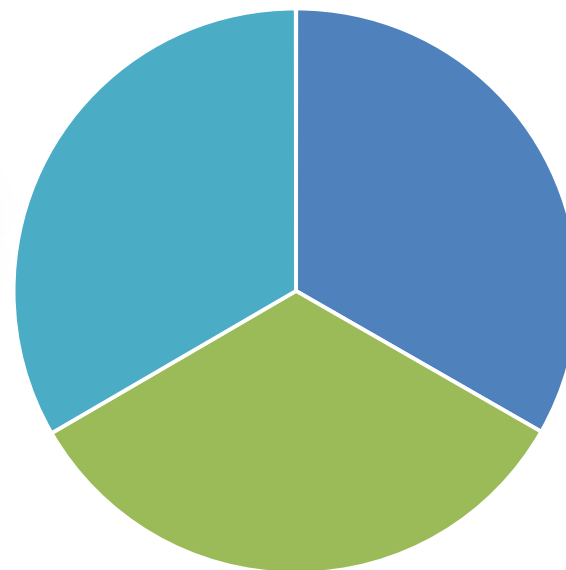
# Therapy Symptoms

Physical Therapy



■ Headache ■ Dizziness ■ Light sensitivity

Speech Therapy



■ Concentration ■ Memory ■ Ability to Multitask

VISION



# Therapy Findings and Interventions

Physical Therapy



- Vestibular Ocular Dysfunctions
- Joint/Soft Tissue Dysfunctions
- Posture/Balance



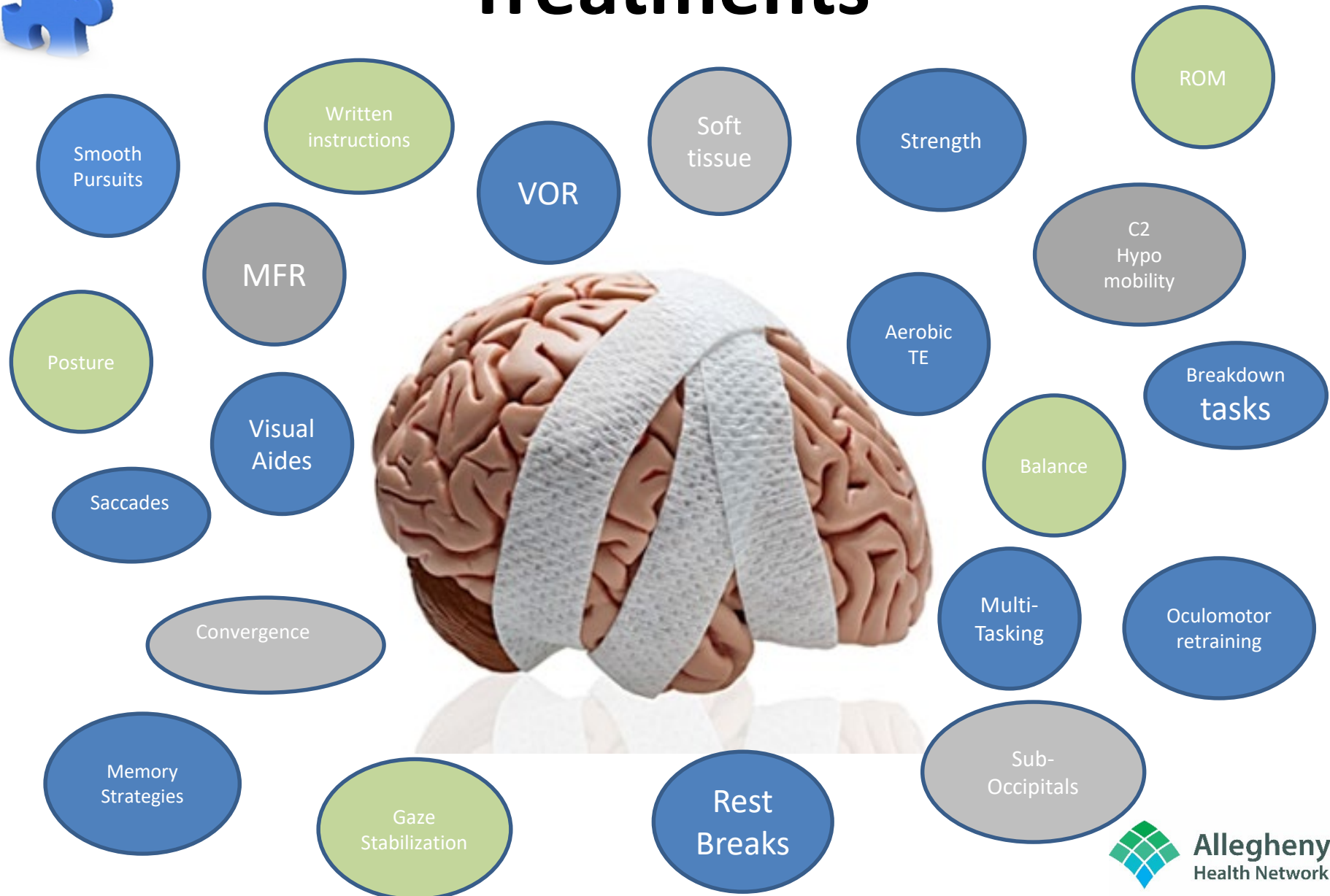
Speech Therapy



- Attention
- Recall
- Working Memory
- Cognitive Fatigue



# Treatments





# Return to Life Protocol

## PT: 6 Week Protocol with 12 -13 visits

	Evaluation	Computer Test	Manual	NMR	TE
Phase 1 Week 1 and 2	Evaluate	Test	up to 40 minutes	Up to 10 minutes	10 minutes including cardio
Phase 2 Week 3 and 4			Up to 20 minutes	Up to 20 minutes	Up to 20 minutes
Phase 3 Week 5 and 6	Re - Evaluate	Re test	0-5 minutes	Up to 30-45 minutes	Up to 30-45 minutes



# Case Study

- 43 y/o female sustained a concussion on 11/5/21 while working as a PTA
- Mechanism of Injury: Hit her head upon standing after cleaning a patient care table
- Immediate symptoms: Headache, nausea, fatigue, light sensitivity
- Started PT: on 11/24/21 after seeing our AHN Concussion MD
- Returned to full duty as a PTA within 3 months and reported with PT felt 99.5% better

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## Post-Concussion Syndrome



## Post Concussion Symptom Tool

- Physical Symptom Score: 15/66
- Cognitive Symptom Score: 15/42
- Emotional Symptom Score: 2/24
- Sleep Symptom Score: 12/30

Total: 44/162= 27% impaired



# Interventions

- **Physical Therapy:**
  - 1-2 times per week, for a total of 6-8 weeks
- **Manual:**
  - To address cervical and cranial restrictions – started in quiet/dark room
- **Therapeutic Exercise / Neuromuscular Reeducation:**
  - Stretches
  - ROM
  - Stabilization
  - Convergence ex, saccades, VOR x 1, VOR cx, brock string
  - Progressed with varying surfaces (foam, physioball),
  - Gait/Balance: with visual and memory tasks, divided attention activities
  - NMR with work specific activities
  - Progression from dark quiet room into stimulated gym environment

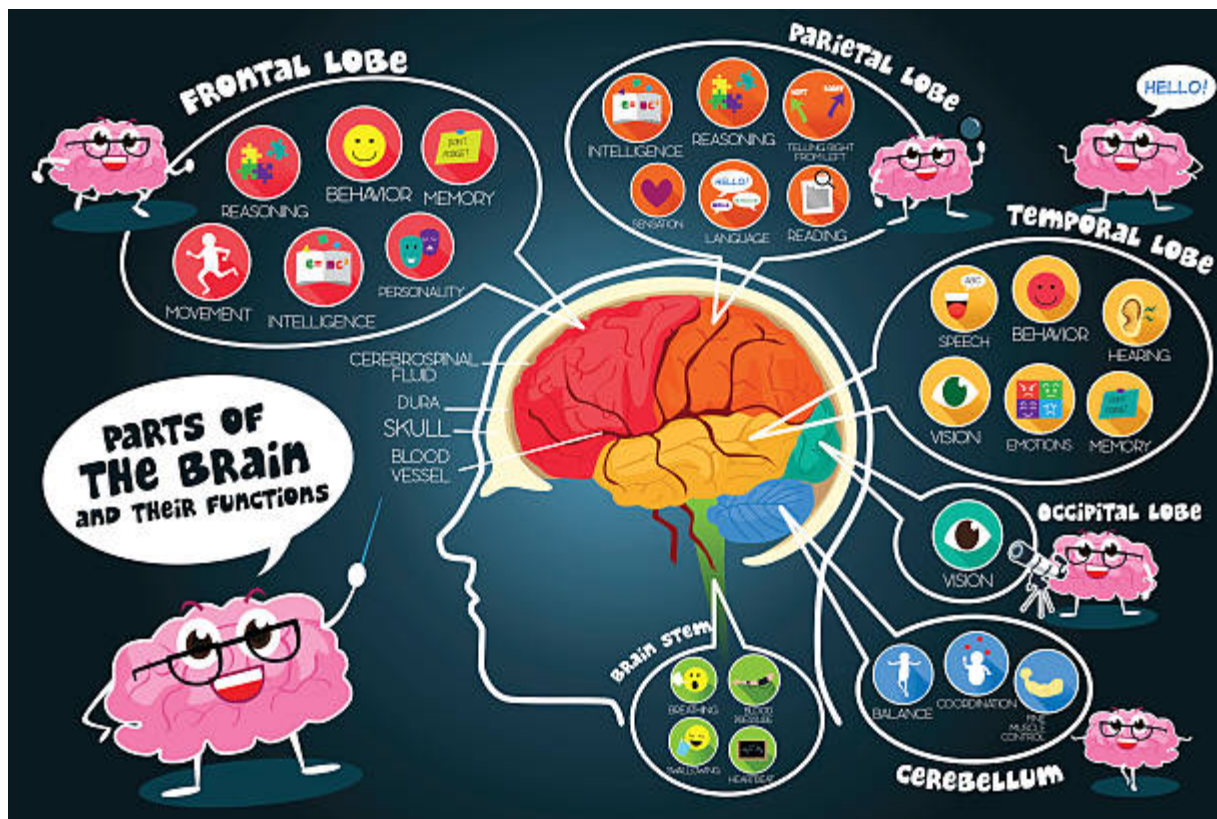
# AHN Concussion Management Theory

- Physician-led Concussion Program with a holistic approach to care. Referral sources including:
  - AHN Concussion Clinic – Orthopedic Institute
  - AHN Neurology Institute
  - AHN Primary Care Physicians
- Integrated Model for treatment which may include:
  - Physical Therapy – pain, ortho, vestibular
  - Occupational Therapy – visual
  - Speech Therapy – cognitive
  - Neurology for headache management
  - Neuro-Ophthalmology
  - Optometry
  - Behavioral Therapy
  - Neuropsychology





# QUESTIONS?



# References

<http://www.cdc.gov/headsup/basics/index.html>

<http://www.cdc.gov/concussion/headsup/clinician/index.html>

<http://www.cdc.gov/traumaticbraininjury/statistics/html>

McCrea HJ, Perrine K, Niogi S, Hartl R. Concussion in Sports. *Sports Health* . 2013;5: 160-164

McCrea M. *Traumatic Brain Injury and Post concussion Syndrome*. New York: Oxford University Press; 2007.

Please request due to multiple sites and articles

Yakel Jane. Cognitive Rehabilitation Seminar