

# CAM therapy in TBI

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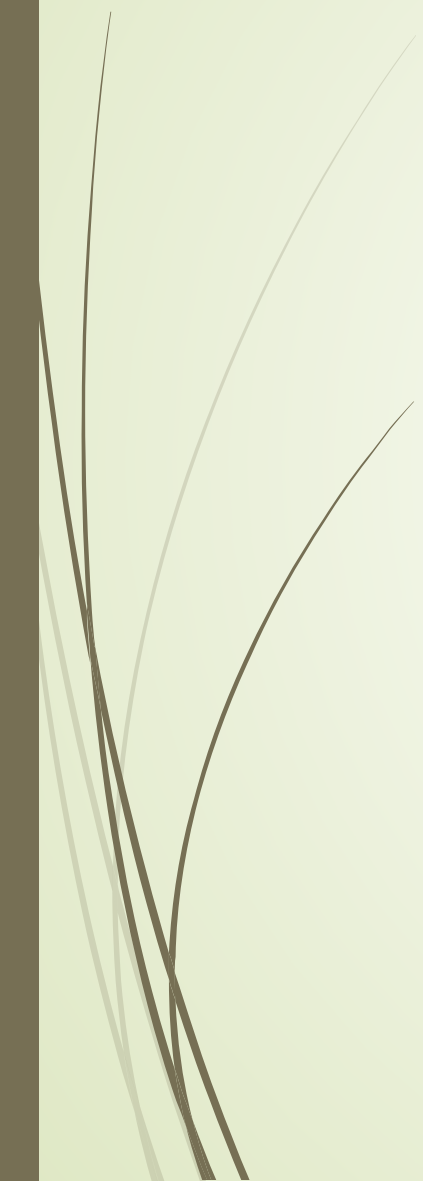
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Brain Health and Wellness - BIAWA



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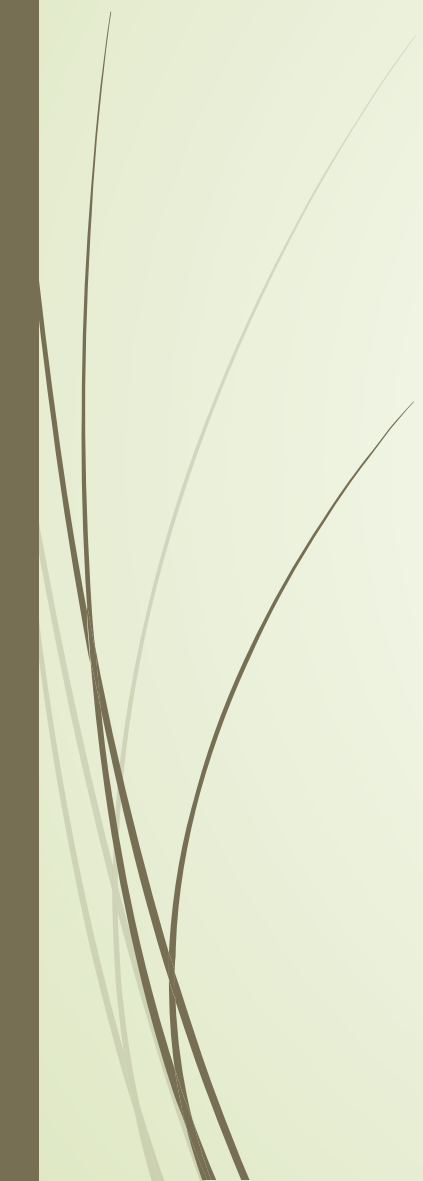


What is CAM Therapy?



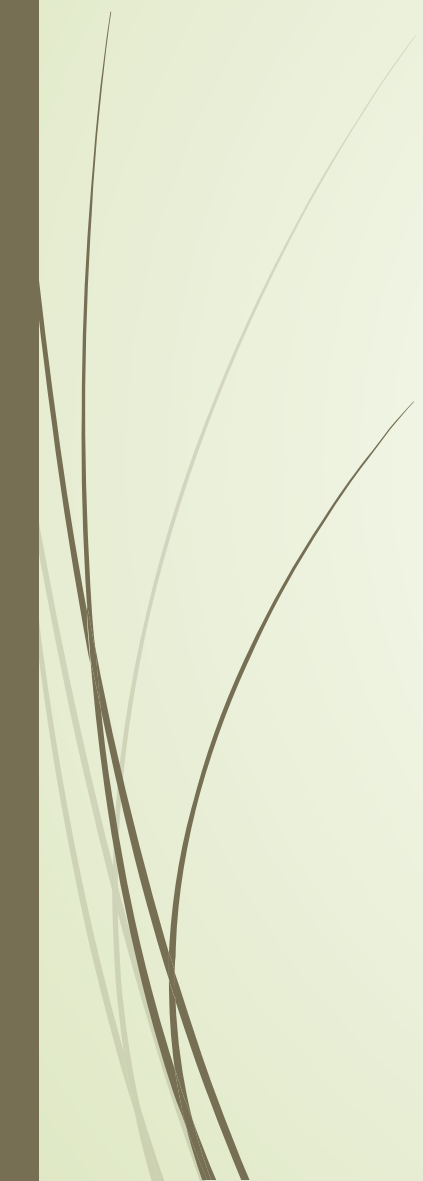


# What is CAM therapy?

- **“Complementary and Alternative Medicine”** Defined as the use and practice of therapeutic techniques that are not traditionally found in western healthcare systems.
  - **Complementary**= used WITH conventional medicine.
  - **Alternative**= Used INSTEAD of conventional medicine.
- 



# TBI and CAM

- Unique opportunity given its complexity
  - Limited studies specific to TBI population
  - Many treatment options overlap
  - Can help avoid/reduce polypharmacy effects
- 



# Common issues with TBI



# Common issues in TBI

- Mood changes
- Pain/Headaches
- Sleep disturbances
- Memory/attention issues
- Fatigue








# CAM Therapy Overview



# Nutraceuticals

- Is the hybrid of 'nutrition' and 'pharmaceutical'.
- Are food or part of food playing a significant role in modifying and maintaining normal physiological function that maintains healthy human beings.





# Omega 3 fatty acid

- ▶ Thought have association with promoting neuro-recovery, treating depression, aggression.
- ▶ The brain is made up of lipids (60%)
  - ▶ DHA (**Docosahexaenoic acid**) and EPA (**Eicosapentaenoic acid**) very important in terms of their anti-inflammatory properties.
  - ▶ Some suggest these have a role in axonal injury reduction (oxidative stress)
- ▶ Has been associated with cardiovascular risk reduction (inconclusive), depression, and TBI recovery (VERY mixed results with amongst several studies).
- ▶ Can be useful for anti-inflammatory properties for pain, depression/ADHD

# Butterbur

- ▶ Based on two high-quality studies, the American Academy of Neurology and the American Headache Society PREVIOUSLY endorsed the use of a butterbur extract to reduce the frequency of migraines.
- ▶ There have since been concerns associated with liver toxicity (**No recommendation for its use as of Jan 2017**).
  - ▶ Concerns with Pyrrolizidine alkaloids (PA)





# Feverfew

- From the dried leaf of weed plant *tanacetum parthenium*. Available as tea.
- Some research suggests that feverfew may help to prevent migraine headaches, but results have been mixed.
  - Evidence-based guidelines from the American Academy of Neurology and the American Headache Society suggest that a feverfew extract may be effective and should be considered for migraine prevention.
- Can take 1-3 cups per day
- Side effects: GI irritability, arthralgias, mouth ulcers



# Vitamin B complex/SAMe

- ▶ Important in depression, thought to assist with serotonin restoration.
- ▶ Studies have shown that SAM-E supplements have comparable anti-depressive efficacy as imipramine in patients with major depression.
- ▶ Doses:
  - ▶ SAMe 200 mg a day
  - ▶ Vitamin B2 400 mg daily
  - ▶ Vitamin B12 1000 mcg daily
- ▶ Considerations:
  - ▶ Bipolar, mania can worsen with SAMe
  - ▶ Can decrease effectiveness of Levodopa





# Gingko biloba

- ▶ Used to slow memory decline in patients with dementia (Alzheimer's and vascular)
  - ▶ Some studies also show some improvement in memory and social interactions.
  - ▶ Still controversial Very little research in the TBI population
- ▶ Doses used: 120-240mg daily
- ▶ Avoid if on blood thinners or have history of blood disorders.
  - ▶ Inhibits platelet aggregation



# St. John's Wort

- ▶ Thought to assist with depression, anxiety, insomnia
- ▶ Typical doses: 500 to 1,050 mg daily
- ▶ INTERACTS WITH SEVERAL MEDICATIONS. MUST SEEK MEDICAL ADVICE.
  - ▶ stimulates a drug-metabolizing enzyme (cytochrome P450 3A4) that metabolizes at least 50% of the drugs on the market.
  - ▶ Can reduce effectiveness of blood thinners/statins/antidepressants
- ▶ Can cause skin/light sensitivity



# Tumeric

- ▶ The curcuminoids found in turmeric are thought to help reduce inflammation (as well as ibuprofen, NSAIDS).
  - ▶ Lowers histamine levels
  - ▶ curcumin can be taken in the amount of 250 to 500 mg three times per day
- ▶ Side effects: GI irritation at high doses






# Magnesium

- ▶ Thought to assist with migraine headache prevention
  - ▶ Patients with migraines found to be deficit
- ▶ The recommended dose is 400–600 mg/day of chelated magnesium (taurate, glycinate, oxide, etc) for at least 3 to 4 months.
- ▶ Side effect: diarrhea (GI discomfort)



# Boswellia

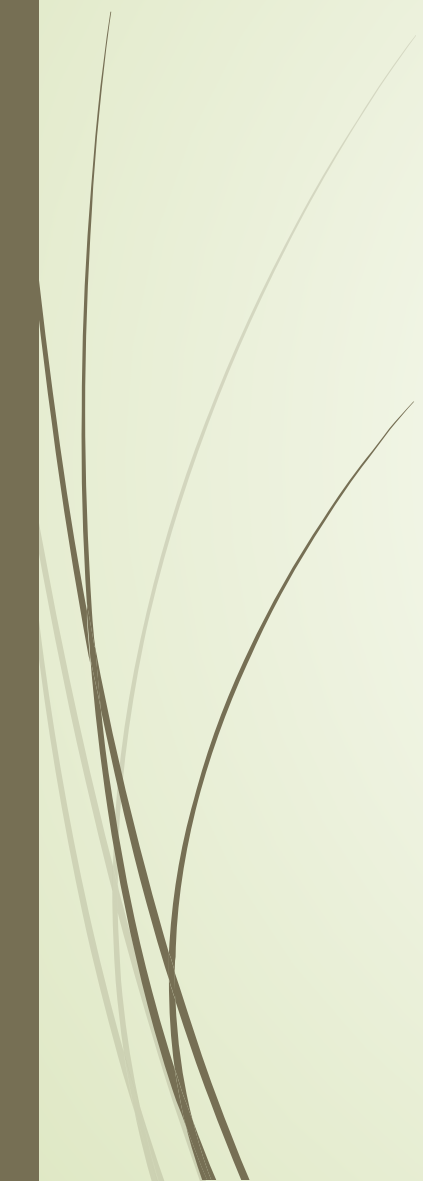
- Frankincense Tree sap from India
- Has anti-inflammatory properties
  - First line treatment in Headache clinic
- As opposed to NSAIDs, long-term use of boswellia does not appear to cause irritation or ulceration of the stomach
- 150- 800 mg 2-3 times per day (depending on extract amount)
- Side effects: Rare: Diarrhea, skin rash



Additional  
approaches to CAM  
therapy.

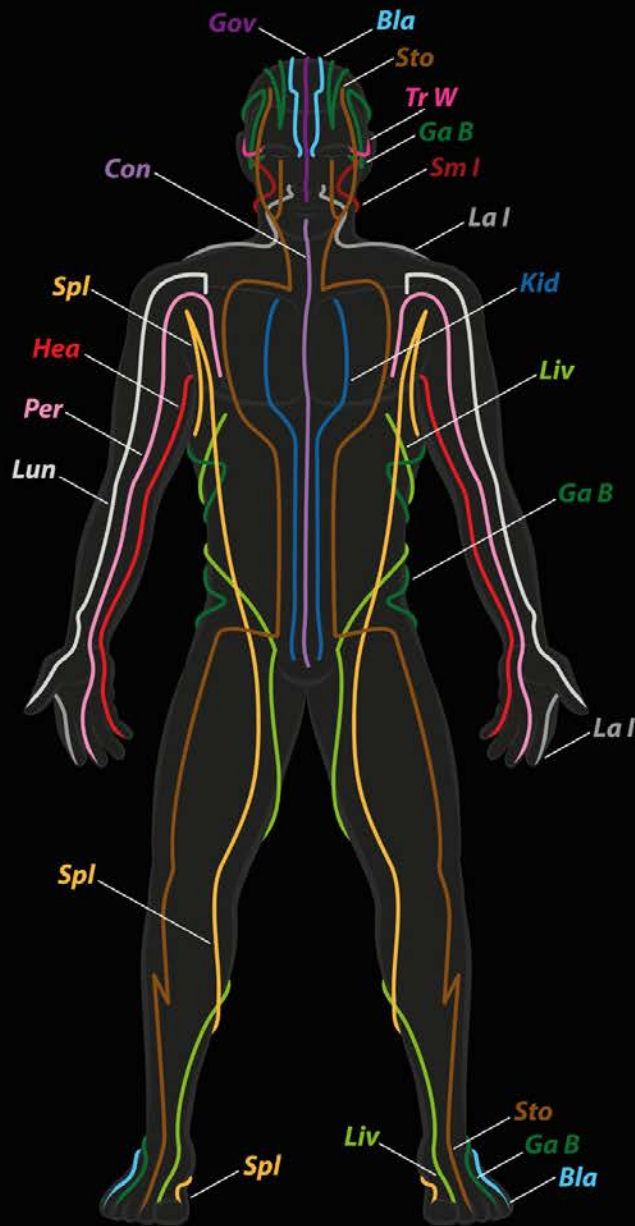


# Acupuncture

- Used in classical Chinese medicine for over 2000 years
  - Utilizes fine needles at specific acu-points in the body
  - Meridian pathways
    - Release of Qi (pronounced "Chee")
    - Removes blockages in the flow of energy
  - Has become one of the more accepted methods in western medicine.
  - Thought to change the brain's perception of pain
- 



# The Body Meridians



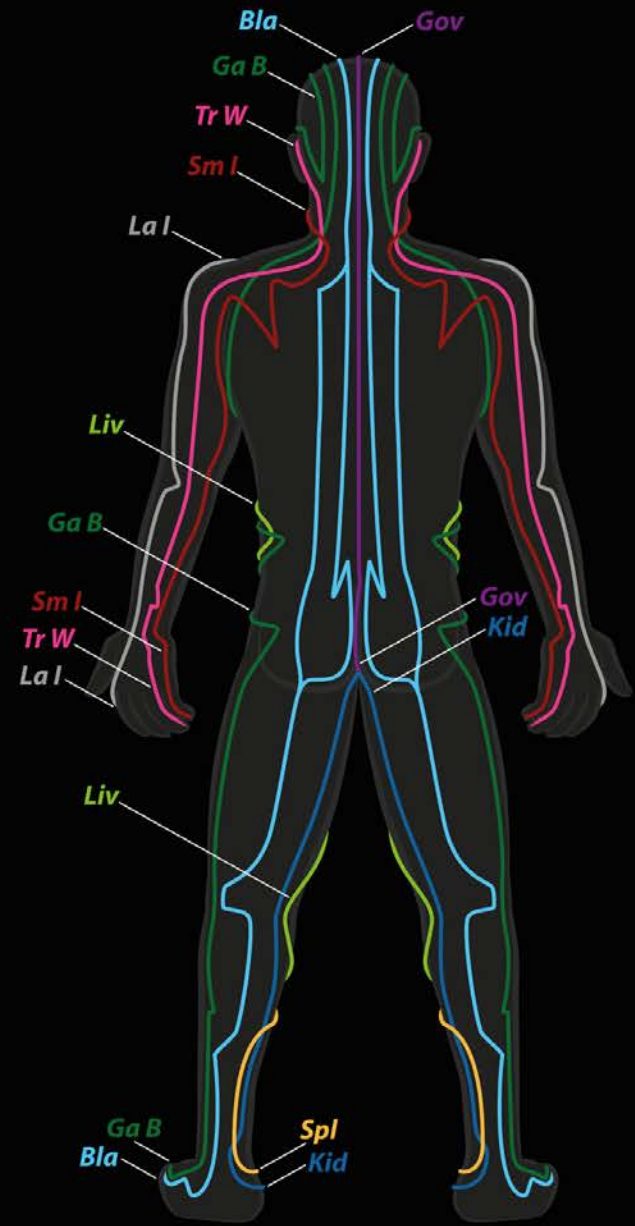
anterior view

## Two Centerline Meridians:

Conception Vessel  
Governing Vessel

## Twelve Principal Meridians:

Stomach Meridian  
Spleen Meridian  
Small Intestine Meridian  
Heart Meridian  
Bladder Meridian  
Kidney Meridian  
Pericardium Meridian  
Triple Warmer Meridian  
Gall Bladder Meridian  
Liver Meridian  
Lung Meridian  
Large Intestine Meridian



posterior view



# Considerations

- ▶ Can be used to assist with:
  - ▶ Depression
  - ▶ Insomnia
  - ▶ Chronic pain
  - ▶ Headaches
- ▶ Risk:
  - ▶ Pain, discomfort, vasovagal effect, pneumothorax, infection
  - ▶ Use caution if on blood thinners
  - ▶ Monitor for effects, particularly during trials





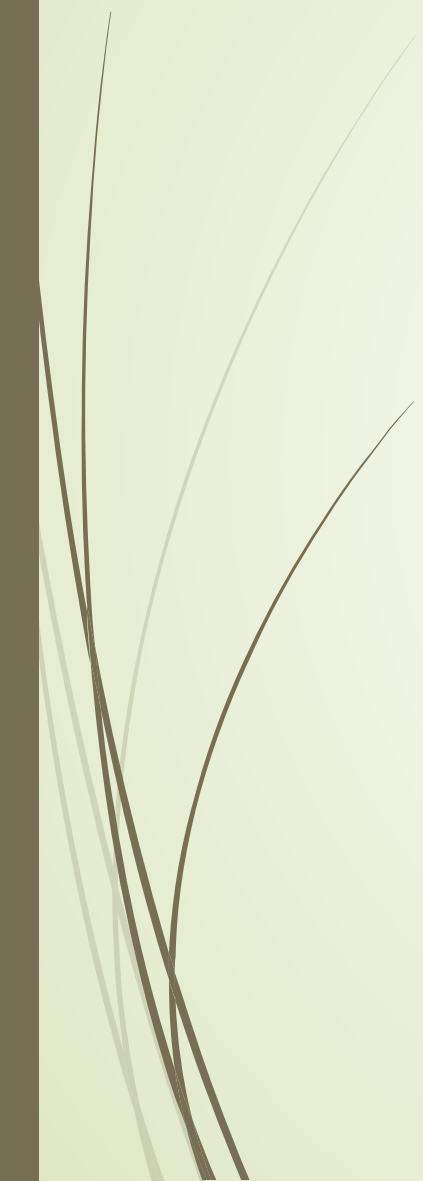
# Gua Sha

- ▶ “Coining, spooning or scraping”
- ▶ Gua sha is defined as instrument-assisted unidirectional press-stroking of a lubricated area of the body surface
- ▶ Used to create transitory therapeutic petechiae called ‘sha’ representing extravasation of blood at the subcutaneous level.
- ▶ Works to reverse blood stagnation
  - ▶ Decrease pain
  - ▶ Decrease stiffness
  - ▶ Boosts immune system





# Considerations

- Some use a version of this technique known as instrument assisted soft tissue mobilization (IASTM)
  - Avoid if:
    - On blood thinners
    - Receiving active treatment for DVT
    - Have medical conditions affecting skin/veins
    - Active skin infection
    - Active wounds
    - Tumors
  - Can cause bruising or skin tearing (not common)
- 





# Massage Therapy

- Is a hands-on method of manipulating the soft tissues of the body using the hands, fingertips, and fists.
- Can be light or deep, focusing on the underlying layers of muscle tissue.
- Useful in :
  - pain
  - Fatigue
  - anxiety

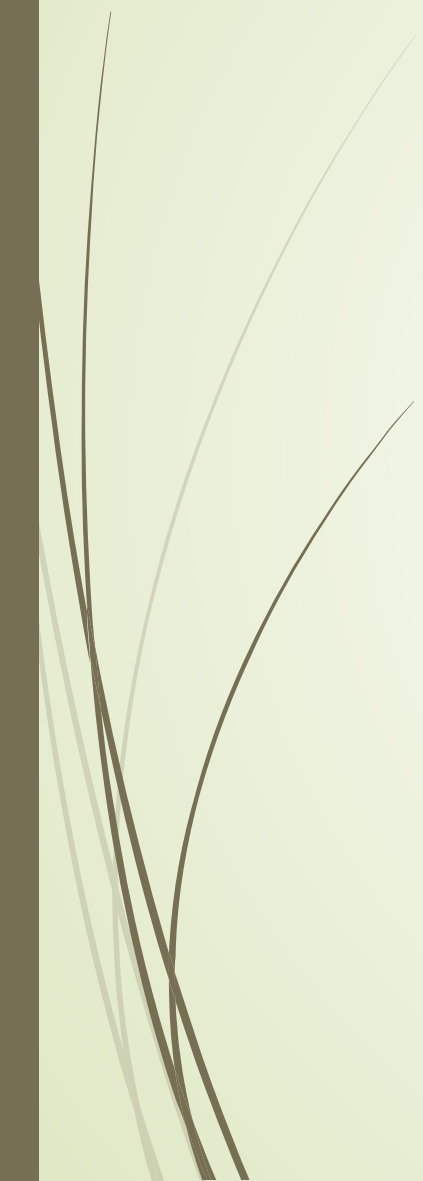


# Considerations

- ▶ Can ask for a referral
  - ▶ Increases likelihood of coverage by insurance
- ▶ Can be very useful in the treatment of musculoskeletal pain
- ▶ Some postulate that there are increases in dopamine and serotonin after massage therapy.



# Tai Chi

- ▶ is an exercise that combines slow, graceful movements with meditation and breathing techniques.
  - ▶ Is sometimes called "moving meditation."
  - ▶ helps prevent the flow of qi from being blocked.
  - ▶ Can help with depression, anxiety, pain
- 



# Considerations

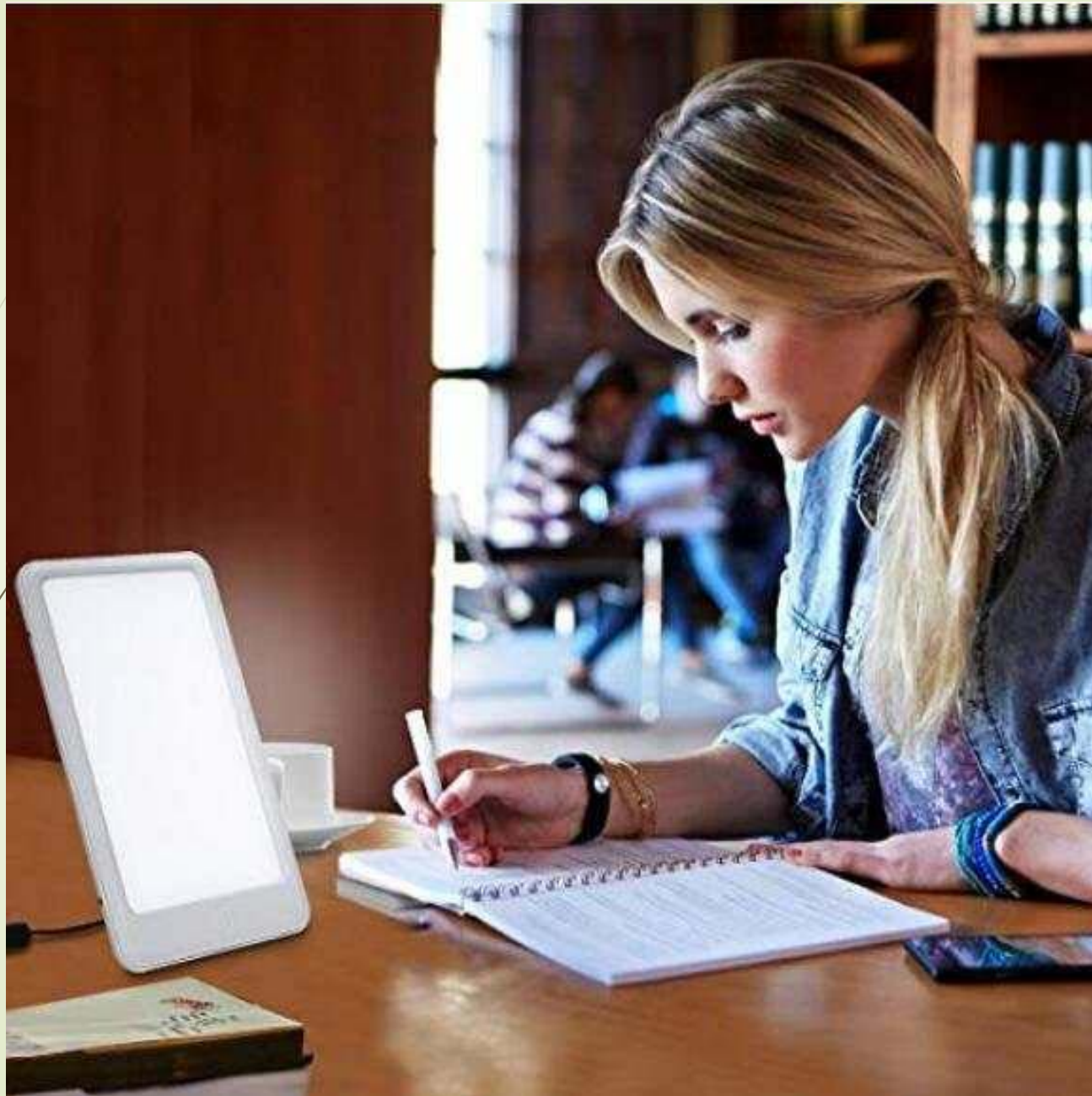
- ▶ Start slow and work your way up
- ▶ Can use modified Tai Chi if you are unable to stand
  - ▶ Modified from the chair.





# Light Therapy

- 2,500-10,000 LUX lamps
- Uses bright, non-full spectrum light (instead of UV light or narrow band wavelengths)
- Thought to assist with:
  - restoration of brain neuro-chemicals (serotonin levels)
  - Resetting of circadian rhythm cycle
- Helps with depression, headaches, insomnia





# Considerations

- ▶ No need to “look into the light”
  - ▶ Just keep it on in the room!
- ▶ Monitor for eye strain, headaches, euphoria
  - ▶ Consider reducing treatment time, moving farther from your light box, taking breaks during long sessions or changing the time of day you use light therapy.
- ▶ Use caution with medications that cause light sensitivity (St John Wort), or if you have skin conditions that are sensitive to light like lupus.
- ▶ Use caution with bipolar disorder
  - ▶ Can induce mania





# Spiritual healing

- ▶ Important in TBI given the void created with new functional deficits.
  - ▶ Prayer rooted in faith, hope, higher purpose
  - ▶ Can assist with creating a support system
- ▶ “While interacting with doctors, patients do not cease to be human beings with deep and wide-ranging needs.”



# FICA Spiritual Assessment tool

- ▶ **F - Faith and Belief**

- ▶ Do I have a spiritual belief that helps me cope with stress? With illness? What gives my life meaning?

- ▶ **I - Importance**

- ▶ Is this belief important to me? Does it influence how I think about my health and illness? Does it influence my healthcare decisions?

- ▶ **C - Community**

- ▶ Do I belong to a spiritual community (church, temple, mosque or other group)? Am I happy there? Do I need to do more with the community? Do I need to search for another community? If I don't have a community, would it help me if I found one?

- ▶ **A - Address in Care**

- ▶ What should be my action plan? What changes do I need to make? Are there spiritual practices I want to develop? Would it help for me to see a chaplain, spiritual director, or pastoral counselor?



# Aromatherapy



- Therapeutic use of essential oils extracted from organic material
- Used as relaxation therapy
- Thought to stimulate various areas of the brain
  - Send impulses to areas of the brain responsible for memory and emotion
  - Can have effects on autonomic system
  - Can increase analgesic substances in the body
- Can assist with anxiety, depression, and insomnia







# Considerations

- ▶ Look for PURE essential oil label
  - ▶ Avoid “mixed” or “blend”
  - ▶ Look for “organic” label (not made with chemicals)
  - ▶ NO eating/drinking essential oils
- ▶ Look for a certified Aromatherapist
- ▶ Do a trial on your skin to assess for irritation
- ▶ Use caution if you have
  - ▶ Asthma
  - ▶ Respiratory allergies
  - ▶ Chronic lung disease
  - ▶ Skin allergies



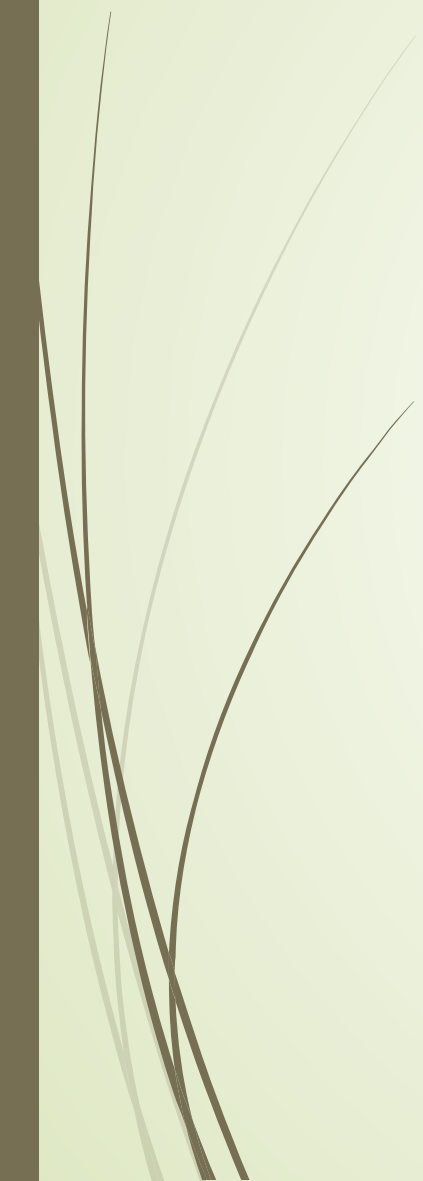
# Meditation



- ▶ Two main types
  - ▶ Concentrative: Focus on single sound, word, mantra
  - ▶ Mindful: Focus on all the thoughts running through the mind (feelings, sounds, images).
- ▶ Usually involved slow regular breathing and quite sitting.
- ▶ Anxiety, stress, high blood pressure, depression, and pain.



# Considerations

- No significant harm when associated with conventional therapies/treatment.
  - Should not replace conventional treatment in acute medical circumstances.
- 



# Guided Imagery

- ▶ Thoughts or suggestions direct a patient's imagination to a more relaxed and focused state.
- ▶ Body responds as if what is being imagined is actually happening
- ▶ This relaxed state can help with assist with:
  - ▶ Learning
  - ▶ Performing
  - ▶ Lowering blood pressure
  - ▶ Reducing stress
- ▶ No specific risks associated its use
  - ▶ Don't try while driving/cooking



VISION





# Music therapy

- ▶ Use of live or recorded music to help provide distraction from symptoms and side effects and to promote relaxation
- ▶ Can be passive listening or active music making
- ▶ Can assist with:
  - ▶ increase feelings of well-being
  - ▶ reduce anxiety
  - ▶ reduce physical symptoms such as pain and nausea

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# Considerations

- No specific risks
- Can be combined with movement therapy





# Biofeedback



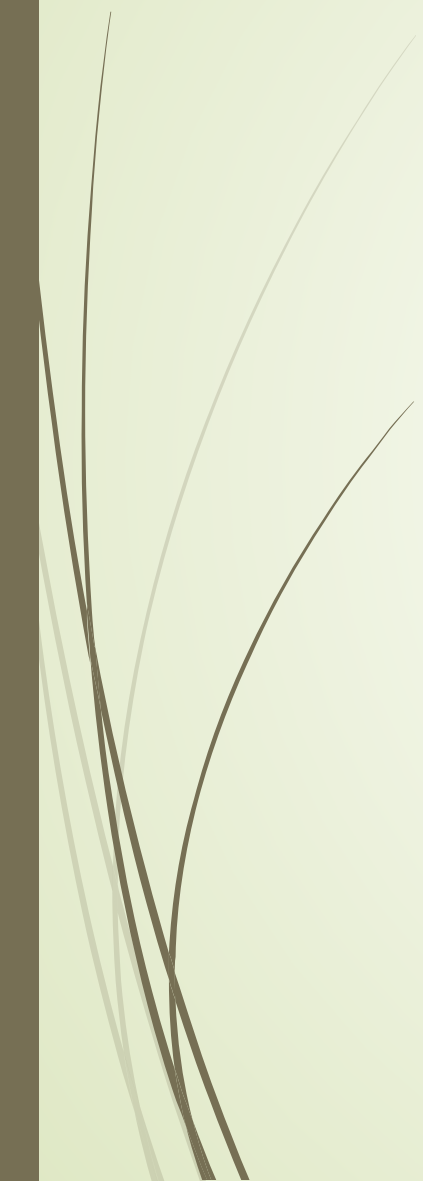
- Is when an individual utilizes physical/mental exercises to consciously control a bodily function normally autonomically regulated.
- Measured and displayed on monitors DURING treatment (which demonstrates the desired self control).
- Utilizes EMG or limb temperature

- Requires instructor led sessions to learn competence
- Typically done in group sessions
- No major risks





# Aqua-therapy

- Activities performed in water to assist with rehabilitation.
  - Used to assist with muscle relaxation, improving joint motion and reducing pain.
- 





# Considerations

- ▶ Excellent form of aerobic exercise
  - ▶ Less joint pain
- ▶ Check with local “YMCA” or gyms for programs
- ▶ Avoid pools if you have issues with seizures, active infections, Tracheotomy, incontinence.
- ▶ Balneotherapy (aqua-therapy without exercise)
  - ▶ Used for arthritis



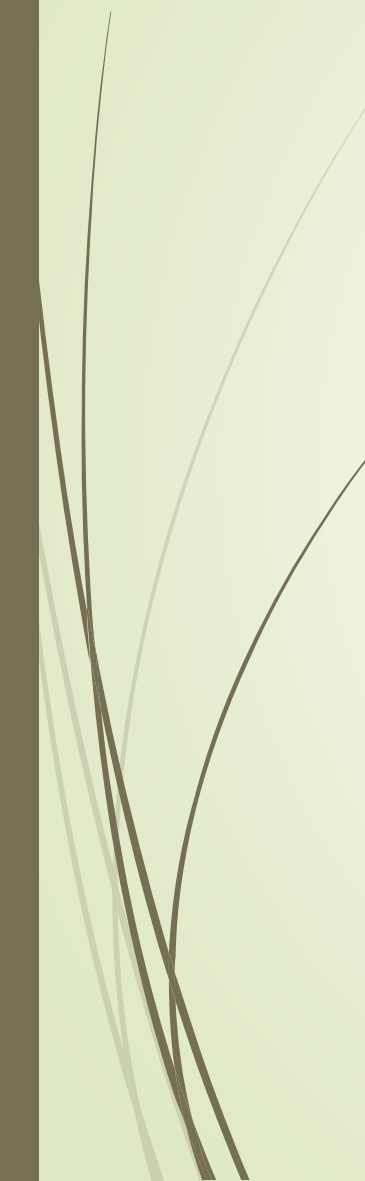
# Neuromodulation

- ▶ is technology that acts directly upon nerves. It is the alteration—or modulation—of nerve activity by delivering electrical or pharmaceutical agents directly to a target area.
- ▶ Vast amount of devices available
  - ▶ But use typically limited by cost



# Cephaly

- an External Trigeminal Nerve Stimulation device for migraines.
- A self-adhesive electrode is placed on the forehead and the Cefaly device is magnetically connected to this electrode.
  - Precise micro-impulses are sent through the electrode to the upper branch of the trigeminal nerve to either relieve the headache pain during a migraine attack or to prevent future migraine attacks.
- Acute and preventative settings available
- Can undergo trial through UWMC headache clinic





# Vagal nerve stimulation

- ▶ GammaCore was recently FDA approved for migraine headaches, can also be used for cluster headaches.
- ▶ Involved direct stimulation of the vagal nerve through the skin (non-invasive)
- ▶ Not covered by insurance yet, can be costly
  - ▶ Also requires assistance from trained provider
- ▶ Can undergo trial through UWMC headache clinic


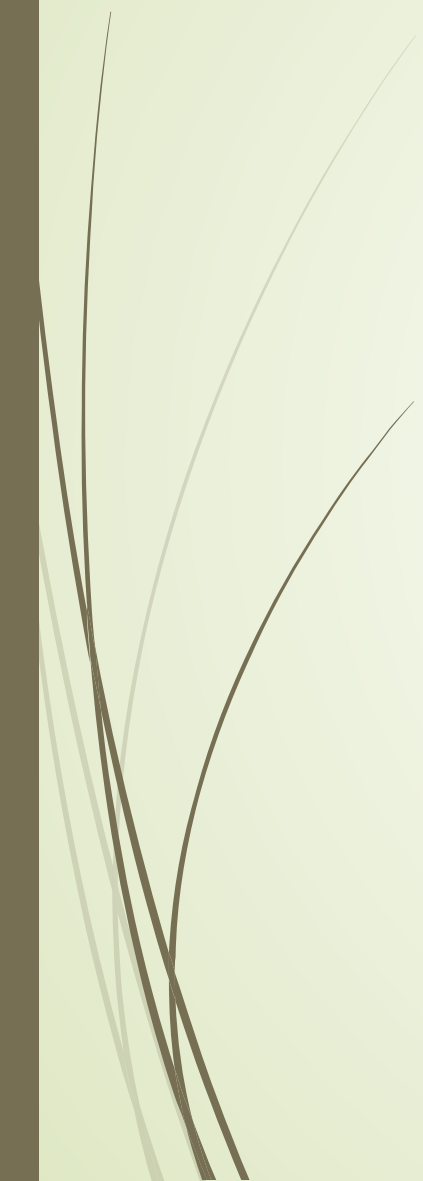






# Hyperbaric Oxygen

- ▶ Delivers 100% oxygen under pressure
  - ▶ Increases amount absorbed in the blood
  - ▶ Increases amount that reaches tissue
- ▶ Atmospheric pressures at 1-3 in hyperbaric chamber
  - ▶ Sessions last for 30-90 minutes
  - ▶ Recommendations for an average of 100 sessions
    - ▶ Cost per session: \$200-\$400
    - ▶ Not approved by medicare/private insurance companies

- 
- 
- ▶ The Undersea and Hyperbaric Medical Society released a position paper on the use of HBOT for chronic brain injury, traumatic and non-traumatic.
    - ▶ This paper concluded that “the weight of the currently available scientific literature is not felt to support an endorsement of HBOT for chronic brain injury”.
    - ▶ More studies underway



# Considerations

- There is no literature that supports its use in TBI
  - Prior studies looked at acute setting use
- Risks:
  - Seizures (1-2% in non-neurological population)
  - Lung injury (Aspiration, infiltrates, direct baro-trauma in 20-30%)
  - Ear or Oto-trauma (pain, rupture of tympanic membrane in 10-20%)
- HBO centers are not regulated and would be considered off label for TBI patients.



# Summary





# Summary



- ▶ CAM therapies can be of great value if used appropriately.
- ▶ Shy away from treatment options that are excessively expensive and have not been proven to consistently help.
- ▶ There needs to be more research in the area of CAM therapy use in the TBI population.
- ▶ It is important to keep your healthcare providers informed of all medications, supplements, and CAM interventions you are using.
- ▶ Call the Washington Brain Injury Resource Center / BIAWA Resource Center
  - ▶ 877-982-4292



**THANK  
YOU!**



# References

- Brain Injury Medicine : Principles and Practice, edited by Nathan D. Zasler, et al., Demos Medical Publishing, 2007. ProQuest Ebook Central,<http://ebookcentral.proquest.com/lib/washington/detail.action?docID=306092>.
- <https://www.mayoclinic.org/tests-procedures/light-therapy/about/pac-20384604>
- Frass M, Strassl RP, Friehs H, Müllner M, Kundi M, Kaye AD. Use and acceptance of complementary and alternative medicine among the general population and medical personnel: a systematic review. *Ochsner J.* 2012;12(1):45–56.
- Siddiqui MJ, Min CS, Verma RK, Jamshed SQ. Role of complementary and alternative medicine in geriatric care: A mini review. *Pharmacogn Rev.* 2014;8(16):81–87. doi:10.4103/0973-7847.134230
- Oldham MA, Ciraulo DA. Bright light therapy for depression: a review of its effects on chronobiology and the autonomic nervous system. *Chronobiol Int.* 2014;31(3):305–319. doi:10.3109/07420528.2013.833935
- Sharma, M., & Haider, T. (2015). Tai Chi as an Alternative and Complimentary Therapy for Anxiety: A Systematic Review. *Journal of Evidence-Based Complementary & Alternative Medicine*, 20(2), 143–153. <https://doi.org/10.1177/2156587214561327>
- Nasri H, Baradaran A, Shirzad H, Rafieian-Kopaei M. New concepts in nutraceuticals as alternative for pharmaceuticals. *Int J Prev Med.* 2014;5(12):1487–1499.
- Linde K, Allais G, Brinkhaus B, et al. [Acupuncture for migraine prophylaxis](#). *Cochrane Database of Systematic Reviews.* 2009;(1):CD001218. Accessed at [www.thecochranelibrary.com](http://www.thecochranelibrary.com) on July 2, 2014.
- Linde K, Allais G, Brinkhaus B, et al. [Acupuncture for tension-type headache](#). *Cochrane Database of Systematic Reviews.* 2009;(1):CD007587. Accessed at [www.thecochranelibrary.com](http://www.thecochranelibrary.com) on July 2, 2014.
- Vickers AJ, Linde K. Acupuncture for chronic pain. *JAMA.* 2014;311(9):955–956. doi:10.1001/jama.2013.285478
- Cho MY, Min ES, Hur MH, Lee MS. Effects of aromatherapy on the anxiety, vital signs, and sleep quality of percutaneous coronary intervention patients in intensive care units. *Evid Based Complement Alternat Med.* 2013;2013:381381. doi:10.1155/2013/381381