BREATH OPTIMIZATION

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Breath Optimization – Breathing for Optimal Health and Performance

Brain Injury Protocol - Concussion or Traumatic Brain Injury (TBI)

Brain Injuries and CO2 Regulation:

- In the first 5 days after a brain injury (concussion or Traumatic Brain Injury (TBI)), the body intentionally makes the person hypocapnic (low Carbon Dioxide (CO2)) as a protective mechanism
- This hypocapnia helps reduce inflammation and bleeding in the injured brain
- Over time, the body will slowly allow the CO2 levels to return to normal in TBI cases, but not always in concussions

Assessing and Addressing Brain Injury Breathing:

- The first step is to help the client differentiate between normal blood flow/perfusion sensations and the painful, hypersensitive sensations they experienced immediately after the injury
- Use negative practice to slowly desensitize them to the normal blood flow feelings, which they may initially interpret as a sign of impending pain/headache
- Once they can tolerate the normal perfusion sensations, you can then work on restoring their open healthy breath (OHB) patterns

Factors Affecting Recovery:

- People who were already hypocapnic prior to the brain injury tend to have worse long-term deficits compared to those who were eucapnic (optimal CO2) beforehand
- The brain tries to maintain the hypocapnic state that was present during the initial injury, creating a "state-dependent learning" that is hard to overcome
- Emotional triggers and habits around breathing can also significantly impede recovery

Key Strategies:

- Use biofeedback technology to monitor results in real time
- Start by addressing the client's ability to tolerate normal blood flow/perfusion sensations without panic
- Slowly reintroduce them to the full range of respiratory muscle use and smooth transitions in the breath
- Work on restoring their overall open healthy breath (OPH) pattern, being very gentle and titrating changes slowly
- Address any emotional or habitual factors that may be perpetuating the dysfunctional breathing patterns