

# FOR MORE INFORMATION

<https://vimeo.com/284599464>

<https://www.alexandertechniquescience.com>

Alexander Technique Concept	Related Scientific Concepts	Evidence?
<u>Positions of Mechanical Advantage</u>	Ergonomics & Biomechanics	Lots
<u>Use Affects Function</u>	Dynamic Postural Tone; Deep vs. Surface Muscles	Some
<u>Direction</u>	Intention; Motor Imagery	Some
<u>Primary Control</u>	Neck Physiology	A Little
<u>Inhibition</u>	Inhibitory Control	Lots
<u>End-Gaining</u>	Motor Preparation	Almost None
<u>Faulty Sensory Appreciation</u>	Sensation vs. Perception; Body Schema, Proprioception	Lots
<u>The Force of Habit</u>	Satisficing vs. Optimizing	Some
<u>Unity of the Self</u>	Embodied Cognition; Parkinson's disease; Neural Circuitry	Some

11th International  
Alexander Technique  
Congress

# PRESENT POSITION: UNIVERSITY OF IDAHO

Associate Professor  
Department Of Psychology & Communication

Affiliate Faculty  
Department Of Biological Sciences

Graduate Faculty  
Human Factors & Neuroscience



# COLLABORATION WITH OTHER AT SCIENTISTS

With Tim Cacciatore: theory paper and Twister grant

With Monika Gross: studies on AT for care partners and patient populations

With Molly Johnson: data comparing AT teachers to matched controls

With Gabriella Minnes-Brandes & Patrick Johnson: qualitative study

With Tim Cacciatore, Patrick Johnson, and Andrew McCann : AT Science Website

# TOPICS COVERED

Research Topic	What's new or relevant?
Inhibition & end-gaining	Relation to habitual posture Relation to movement preparation

# INHIBITION → INHIBITORY CONTROL

- Ability to withhold a response
- Important topic in
  - Neuroscience
  - Psychology
- Component of executive function
- Associated with choice

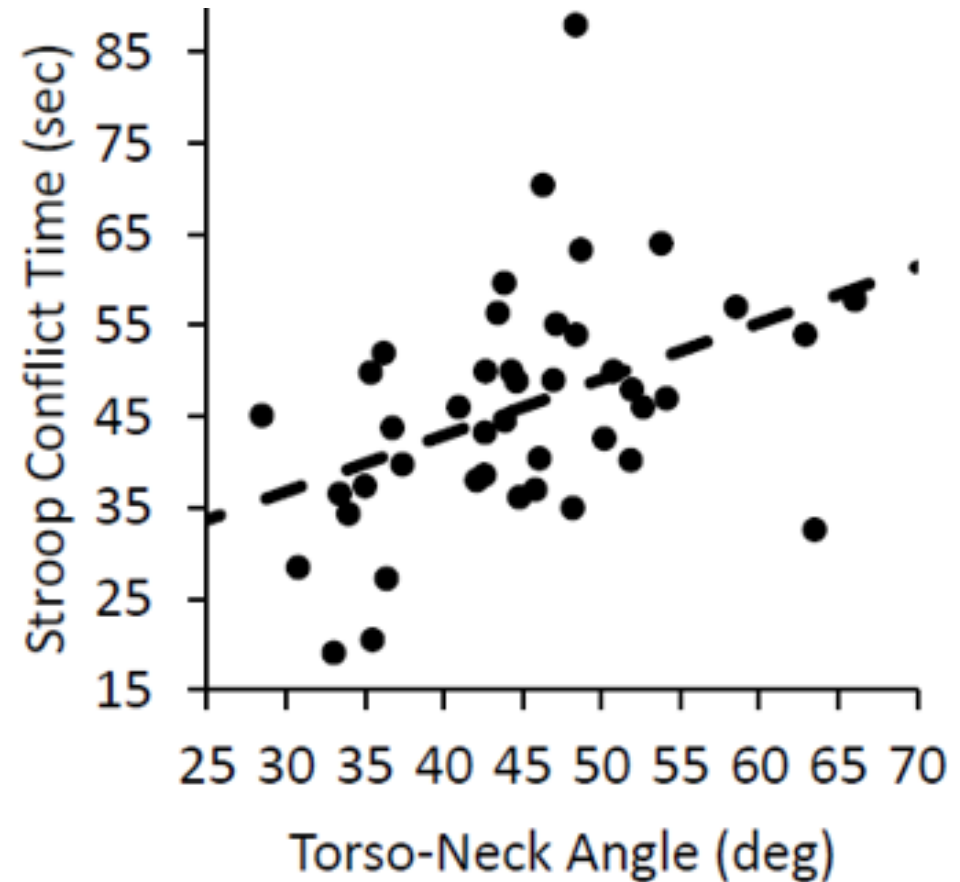


# INHIBITORY CONTROL IS RELATED TO HABITUAL HEAD CARRIAGE

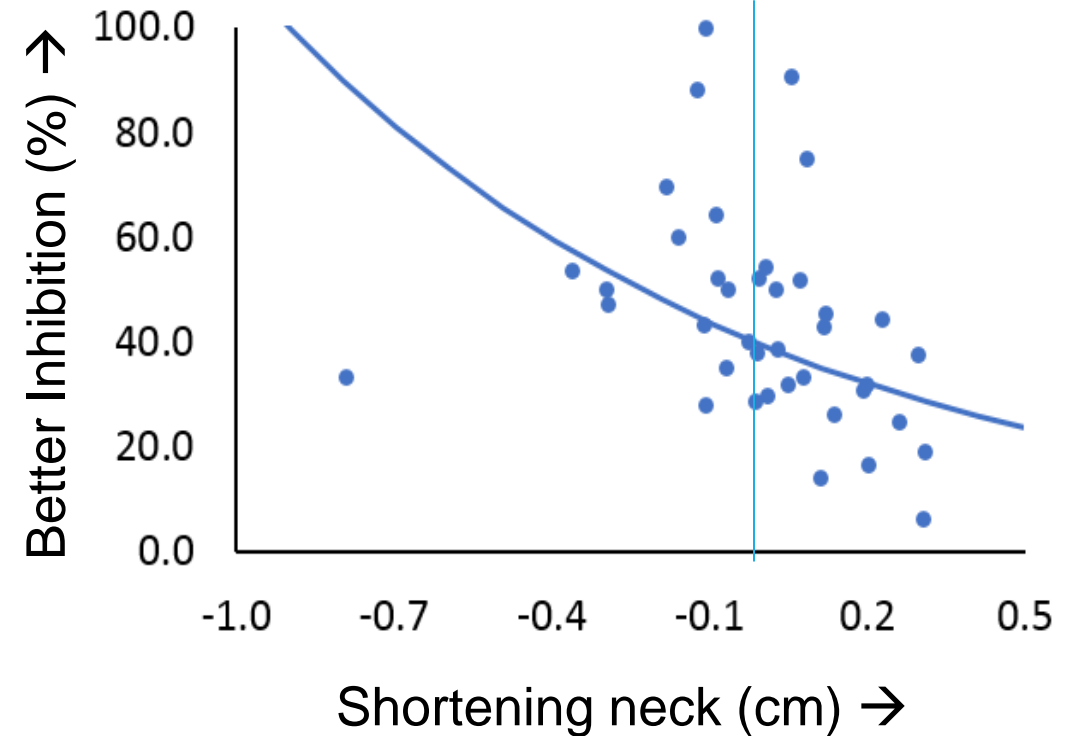
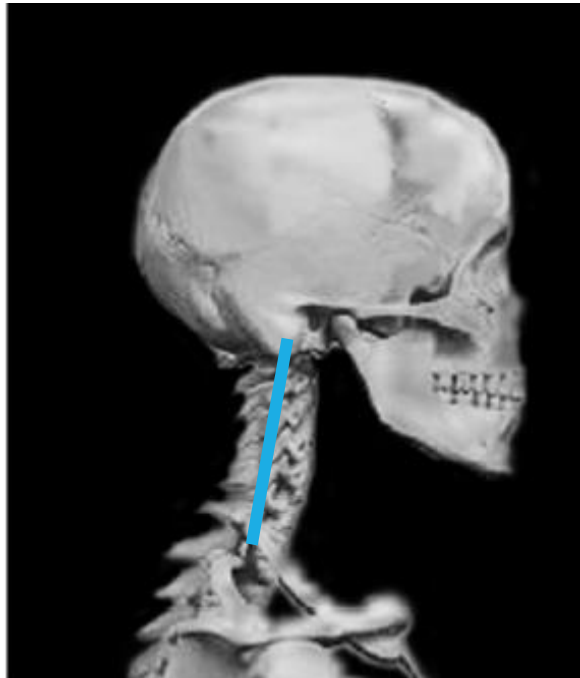
## Stroop Conflict

Name the Colors

Green Black Red Purple Blue



# END-GAINING & INHIBITION



Subjects with poor inhibitory control shortened their necks before walking.

# TOPICS COVERED

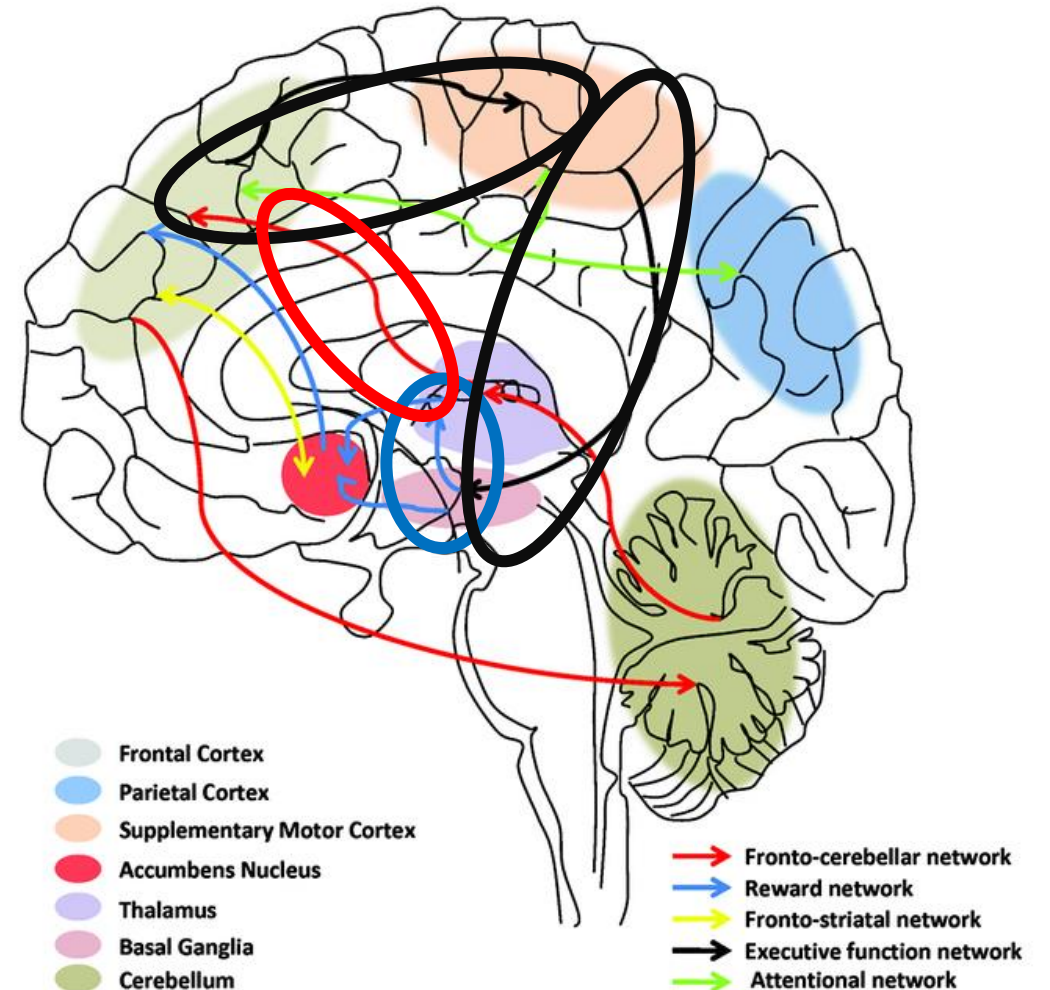
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Parkinson's disease as opposite of Alex tech	Brainstem-basal ganglia-cortical connections

[Conclusion](#)



# MOVEMENT IS NOT SEPARATE FROM THOUGHT

- “Cognitive centers” and “movement centers” are deeply interconnected
- This is most obvious in neurological disorders such as Parkinson’s



# PARKINSON'S DISEASE AS OPPOSITE OF ALEXANDER TECHNIQUE

- Second-most common neurodegenerative disorder (1% over age 60)

- Cardinal Symptoms

- Slow

- Rigid

- Stooped

- Tremor

- Non-motor symptoms

- Executive functions (e.g. inhibition)

- Motivation

- Proprioception/Kinesthesia



Cognitive & Motor Symptoms

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Parkinson's disease as opposite of Alex tech	Brainstem-basal ganglia-cortical connections
Direction / Postural Intention	Effects on tone, balance, and mobility

[Conclusion](#)

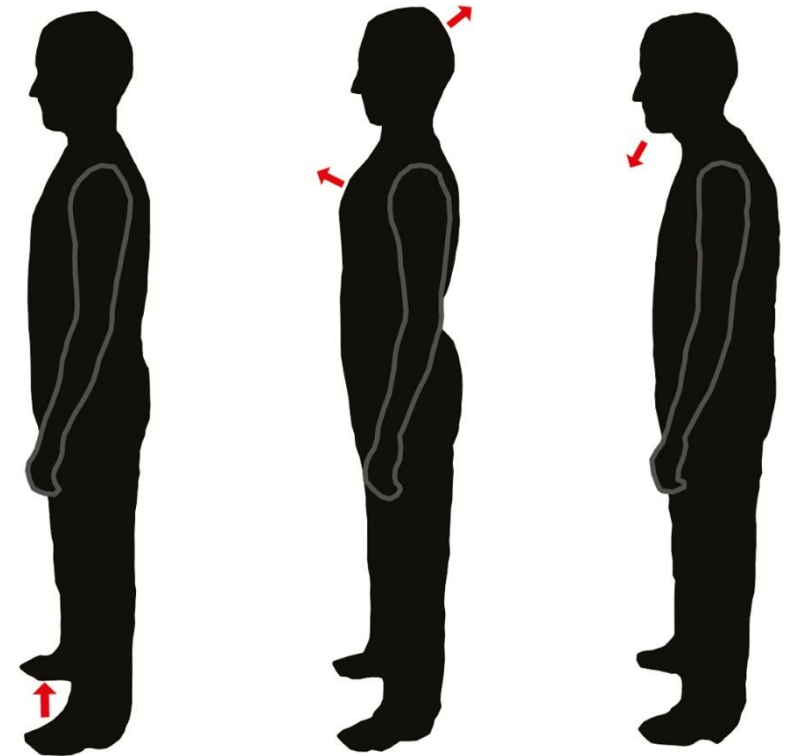
# DIRECTION AS POSTURAL INTENTION

- Can psychomotor intentions have global effects on the whole self, including posture and movement?



# CAN POSTURAL INTENTIONS MODIFY BALANCE, TONE, AND MOBILITY?

- Conditions
  - A. “Light” – Allow your bones to send you up.
  - B. “Effortful” – Use muscular effort to pull yourself up tall.
  - C. “Relaxed” – Stand as if you feel tired and heavy.
- Protocol
  - Brief instruction followed by performance of tasks
  - All subjects performed in all conditions
- Participants
  - 20 adults with Parkinson’s disease
  - 20 healthy older adults

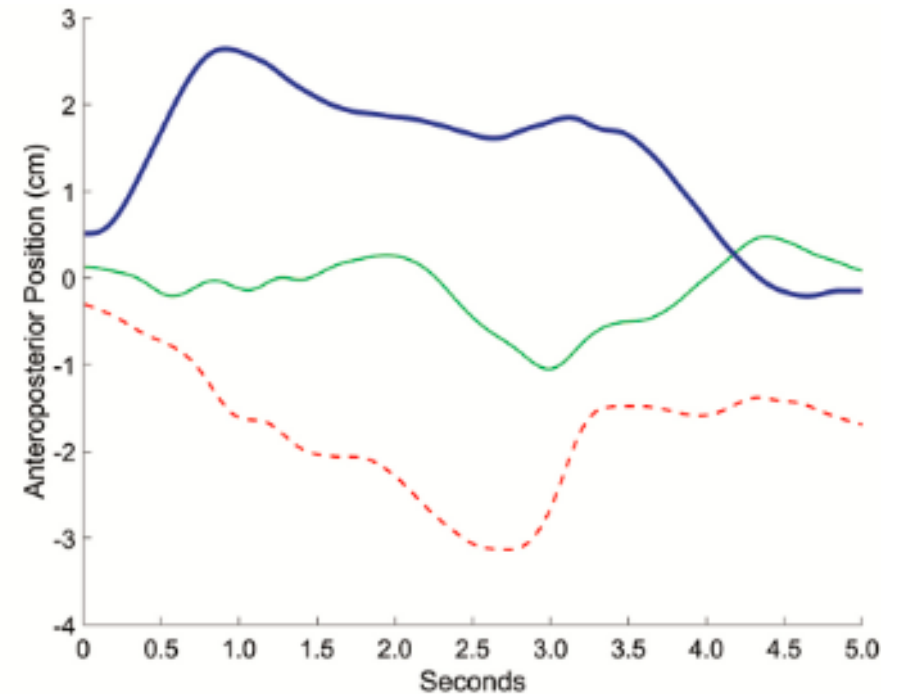
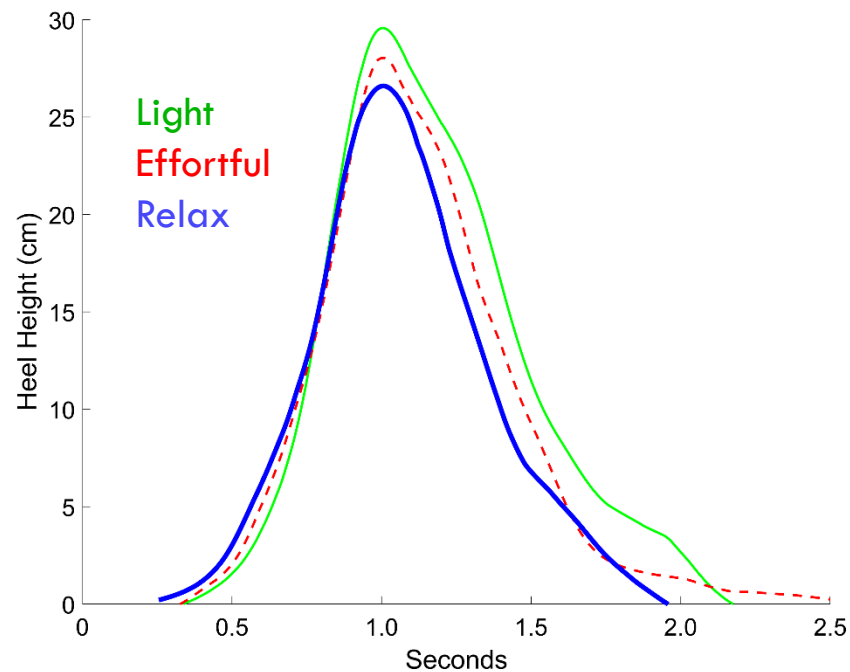
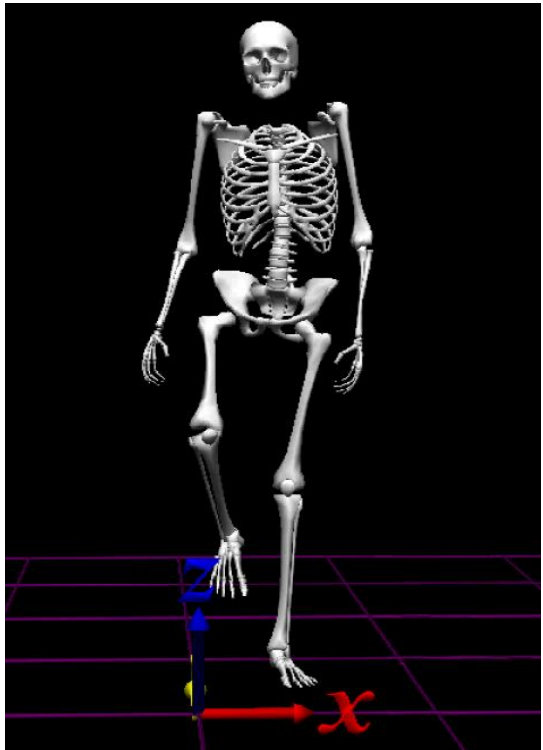


Cohen et al, 2016

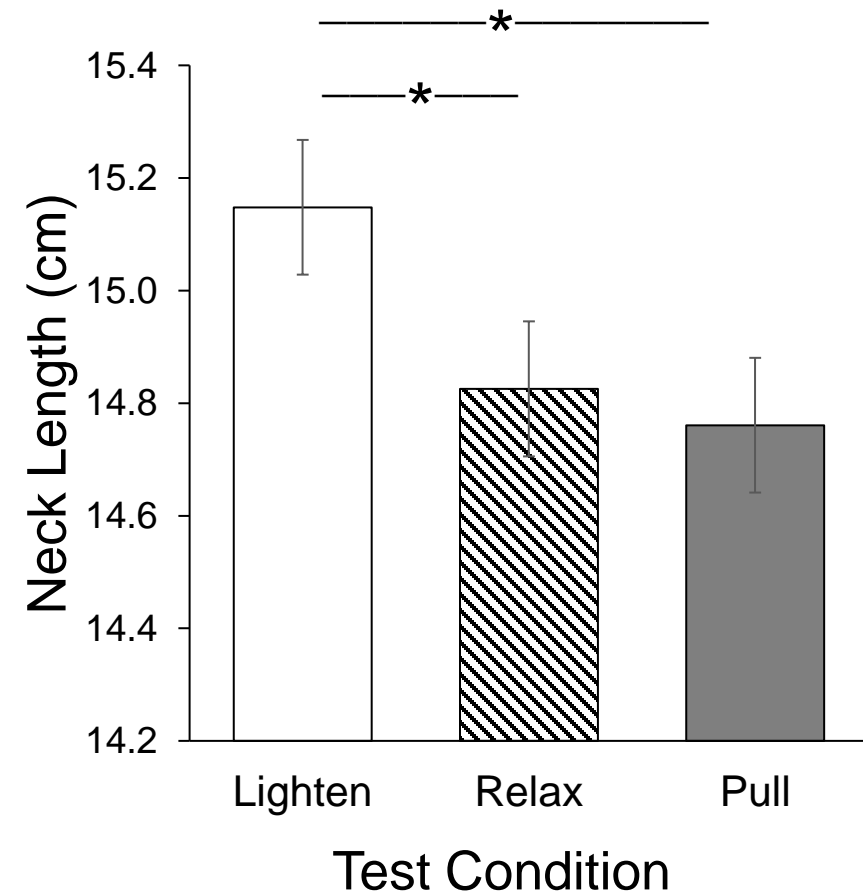
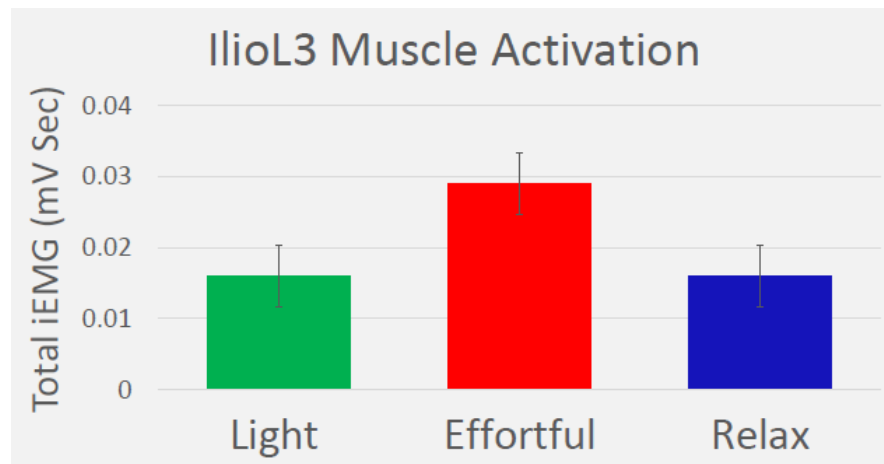
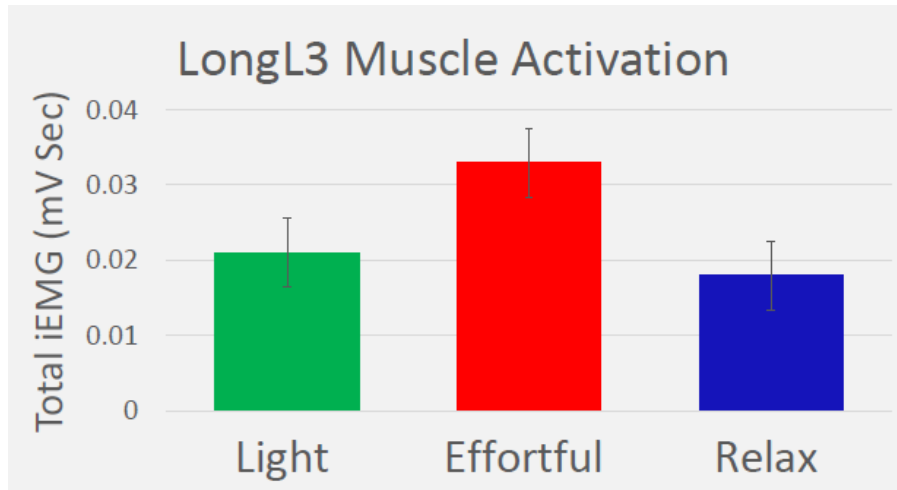
Cohen et al, 2020

# POSTURAL INTENTION AFFECTS BALANCE

“Light” → Longest time in air & least balance disturbance



# INTENTIONS AFFECT MUSCLE ACTIVITY AND SPINAL COMPRESSION



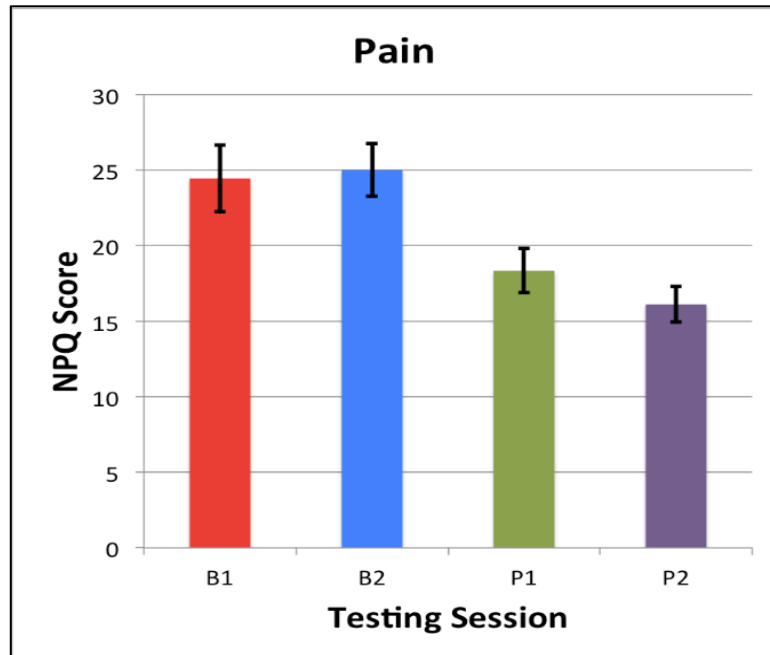
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Parkinson's disease as opposite of Alex tech	Brainstem-cortical connections
Direction / Postural Intention	Intention changes postural tone and mobility
Distribution of muscle tone following AT class	Group intervention for neck pain Comparison to exercise

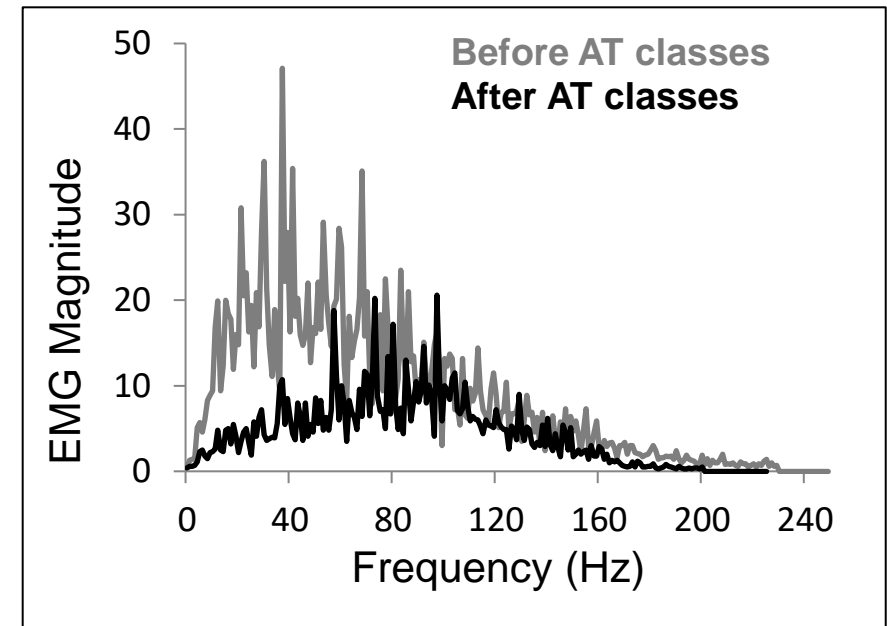
[Conclusion](#)



# EFFECTS OF AT GROUP COURSE ON NECK PAIN AND NECK MUSCLE ACTIVITY

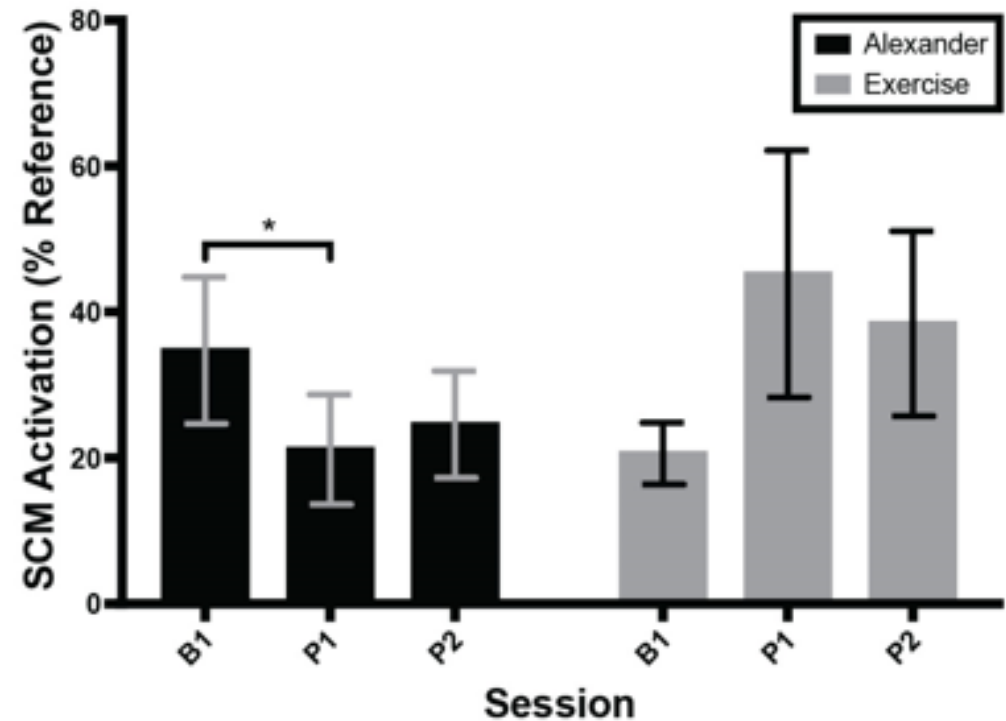
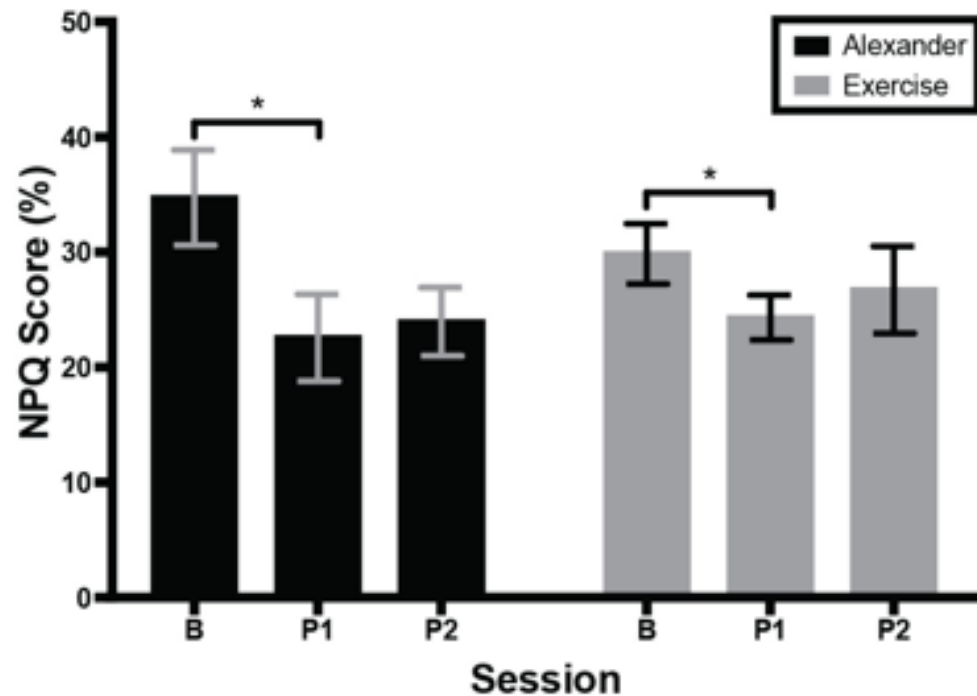


**Pretest 1 (B1)**  
**Pretest 2 (B2)**  
**Posttest 1 (P1)**  
**Posttest 2 (P2)**



Alexander group classes reduce neck pain and activity of surface neck muscles.

# REPLICATION & COMPARISON TO EXERCISE



AT group classes reduced reliance on surface neck muscles.

Exercise did not.

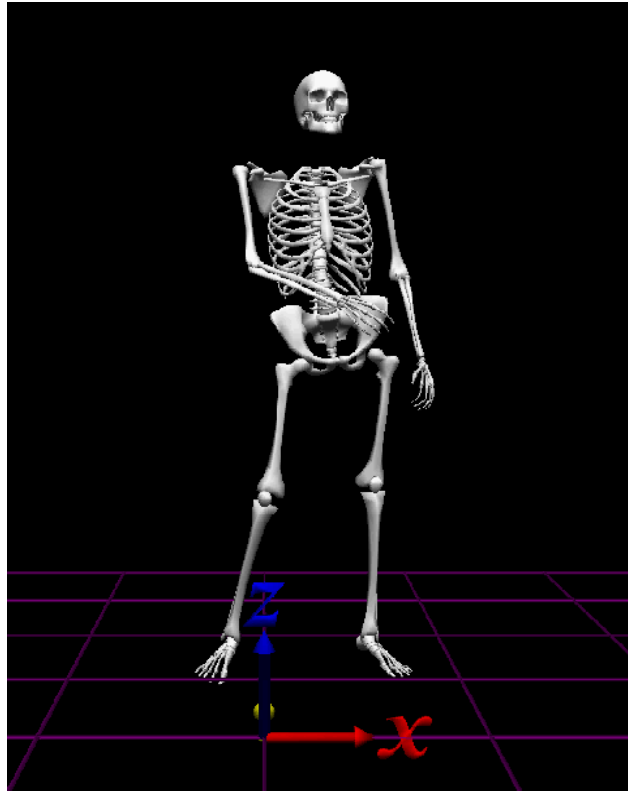
If true, AT principles are out there  
in the world to be discovered.

Now is an opportune moment for  
AT experts to join the conversation.

We need to show up.



# THANKS TO MY RESEARCH FUNDERS



**University of Idaho**  
College of Letters, Arts and Social Sciences

