

## Background

Previous studies have demonstrated the beneficial effect of spinal manipulative therapy on forward head posture [2] and provided a link between postural alignment and cognitive function [1]. This investigation aims to build on existing literature and enhance the understanding of how loss of cervical lordosis impacts cervical and overall range of motion as well as its potential association with psychiatric conditions.



**Picture 1.** Cervical spinal manipulative therapy. Acquired from iStock images.

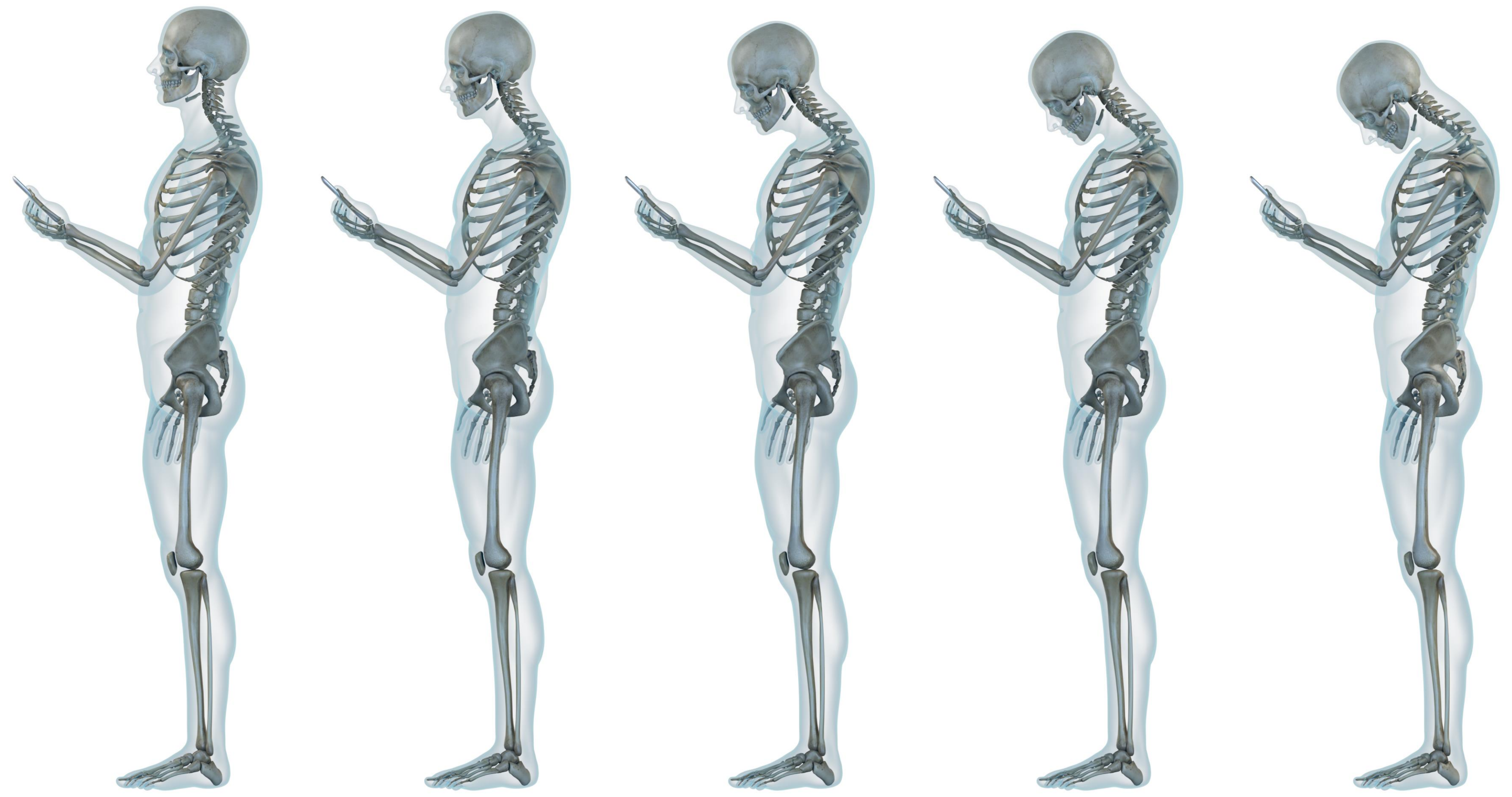
## Objective

- To explore the correlation between abnormal forward head posture, cervical range of motion, and psychiatric disorders
- Specifically, we aim to examine the relationships between the loss of cervical lordosis and anxiety, depression, and ADHD
- These outcomes have the potential to reveal new possibilities for integrated therapeutic interventions addressing both physical and mental health domains

## Limitations

- Accuracy and precision of Goniometer PRO and APECS applications
- Differences in patient positional set up
- Difficulty of separating or excluding populations or subjects between treatment and control—presence or absence of variables of interest that are ubiquitous in the United States
- Hawthorne effect: subjects may try to correct posture during measurements leading to false data
- Presence and amount of prior SMT treatment
- Current pain or psychiatric medications

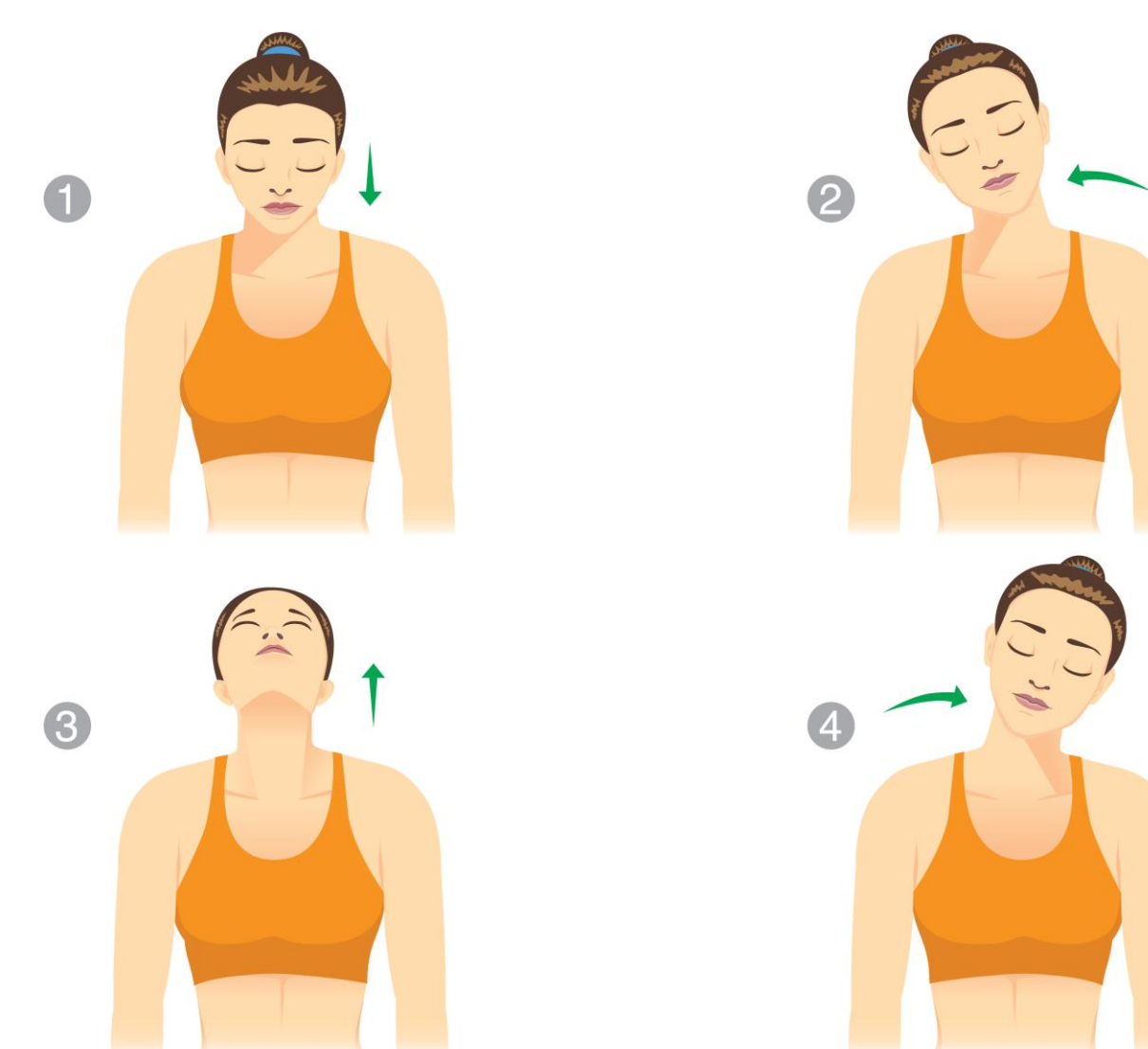
## Could posture impact your mood?



**Picture 2.** The evolution of forward head posture. Increased electronic use could be a source of postural decompensation. Acquired from iStock images.

## Methods

- A short questionnaire will be completed by each subject to gather demographic information, history of psychiatric conditions, shoulder or neck conditions, and migraine/headache history.
- Participants' baseline posture and cervical range of motion will be assessed using the ruler method, a posture screening application called APECS, and a cervical range of motion measurement application called Goniometer Pro.
- Psychiatric testing and evaluation will be conducted to explore the connection between study subjects' physical and psychiatric symptoms using Creyos software.
- The study will consist of two phases: an initial testing phase and a six-month intervention period.
  - During the intervention period, participants exhibiting a loss of cervical lordosis will undergo spinal manipulative therapy at the Migraine & Neuro Rehab Center.
  - Monthly post-treatment assessments will be performed using the same measurement tools engaged during the initial screening to evaluate the link between cervical lordosis and psychiatric symptoms and the effectiveness of the intervention in treating these symptoms.



**Picture 3.** 1. Flexion, 2. Right lateral flexion, 3. Extension, 4. Left lateral flexion. Acquired from iStock images.

## References

1. Cohen, R.G., et al., Mobility and Upright Posture Are Associated with Different Aspects of Cognition in Older Adults. *Front Aging Neurosci*, 2016. 8: p. 257.
2. Fathollahnejad, K., A. Letafatkar, and M. Hadadnezhad, The effect of manual therapy and stabilizing exercises on forward head and rounded shoulder postures: a six-week intervention with a one-month follow-up study. *BMC Musculoskelet Disord*, 2019. 20(1): p. 86.