

Introduction

- A general slowing of motor function is a typical part of the aging process.
- A decreased ability to exploit speed in movement strategies is due to gradual structural changes in nerve and muscle tissues as people age.
- **Aim:** To examine whether chewing rates demonstrate a level of decline similar to other motor tasks.

Methods

Participants:

15 Healthy Young Adults ((27.7±4.8 years)

15 Healthy Older Adults (63±4.7 years)

General Protocol:

Participants were asked to chew at a specified rate and perform concurrent task at a preferred rate.

The four chewing conditions were:

- 1) No chewing (control)
- 2) Chewing at a slow rate (1Hz)
- 3) Chewing at a preferred rate
- 4) Chewing at a fast rate (2Hz)

Equipment used:

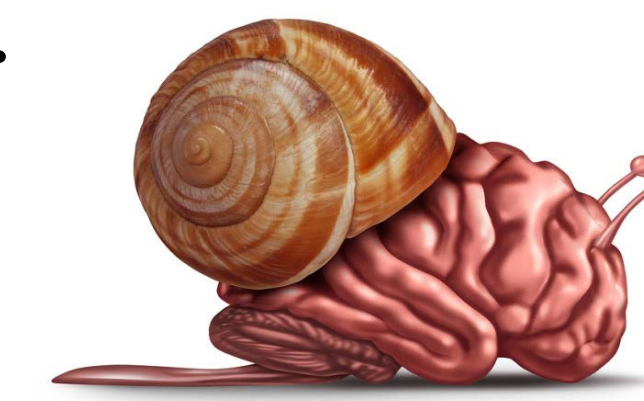
- Tri-axial accelerometers on the cheek, low back and heel
- Surface electromyography (EMG) of the masseter
- A 20-foot pressure-sensitive walkway to measure gait parameters.

Results

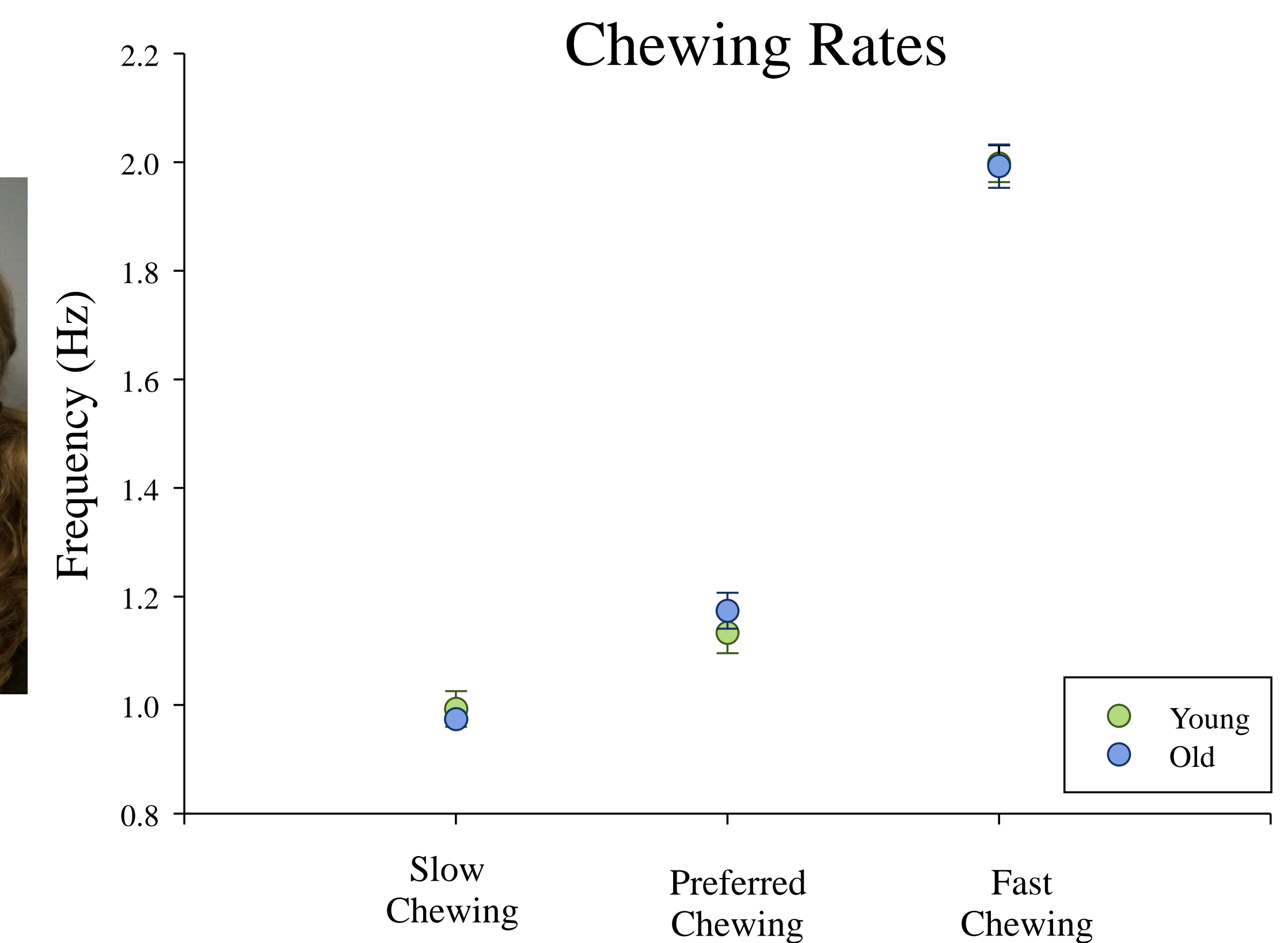
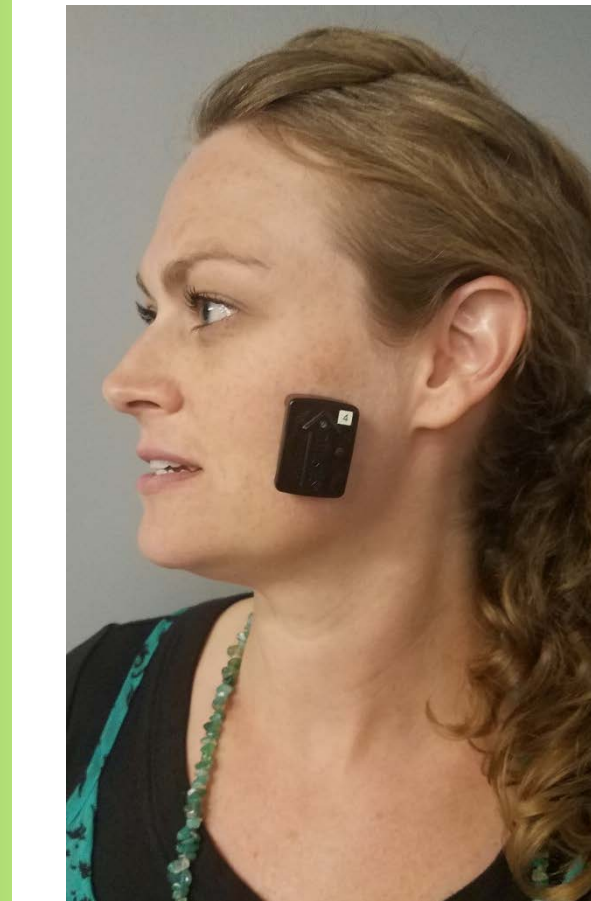
- Chewing speed did not differ between age groups across all conditions.
- Walking speed was slower for older adults across all conditions.
- Older adults consistently exhibited longer path lengths than younger adults during static standing.
- Simple reaction time was longer, indicating slower responses, for the older adults for all conditions.
- Preferred finger tapping speed was slower during the chewing condition for all ages. An age-related difference in finger tapping speed was enhanced during fast finger tapping.

Discussion

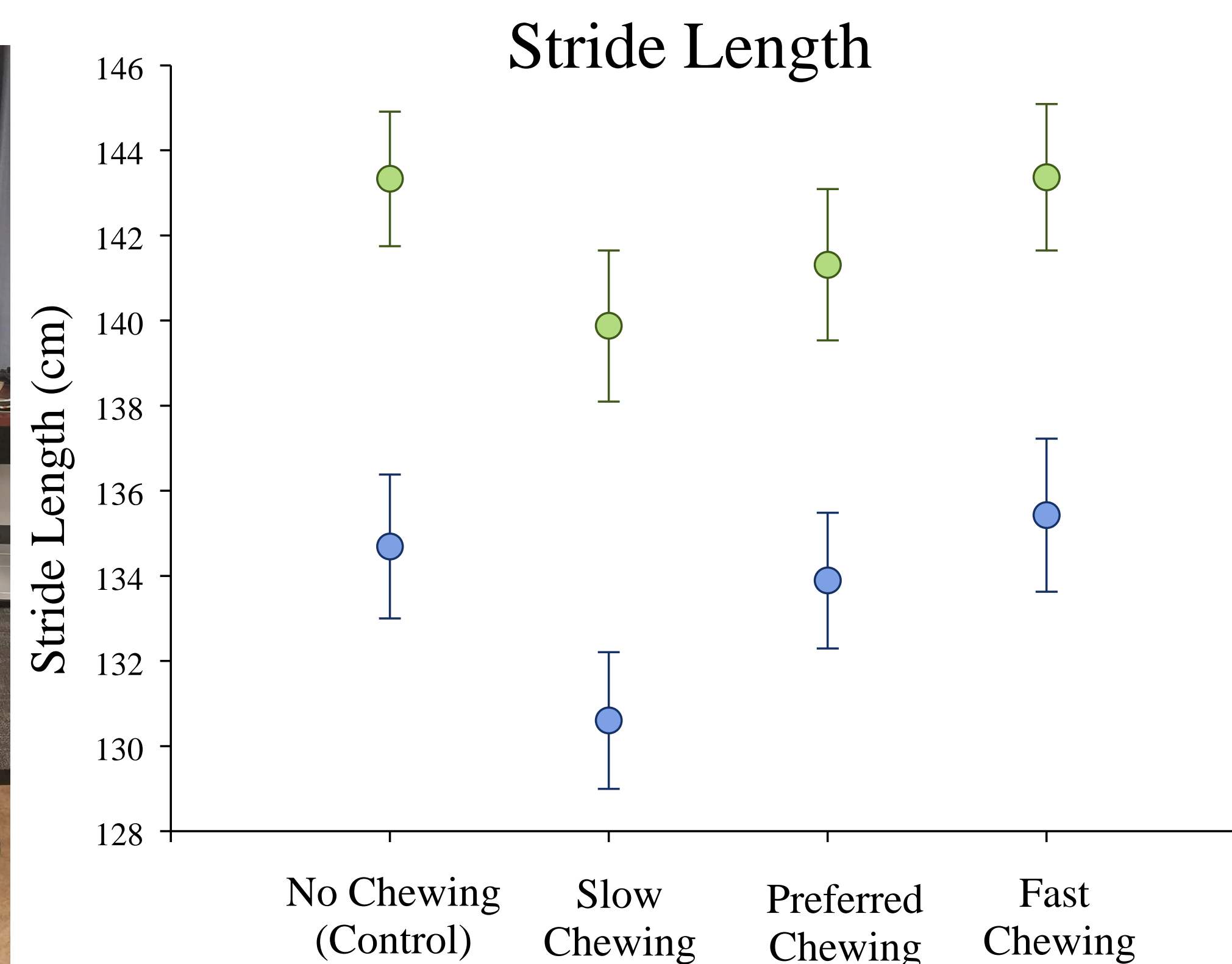
- Results reveal that older adults demonstrate a gross slowing of movement apart from chewing speed which appears to be preserved with aging.
- Masticatory muscles receive ipsilateral and contralateral inputs from the motor cortices, whereas limb muscles receive mainly unilateral innervation from the contralateral cortex.
- The neural redundancy may preserve chewing rate despite age-related degradation of the system.



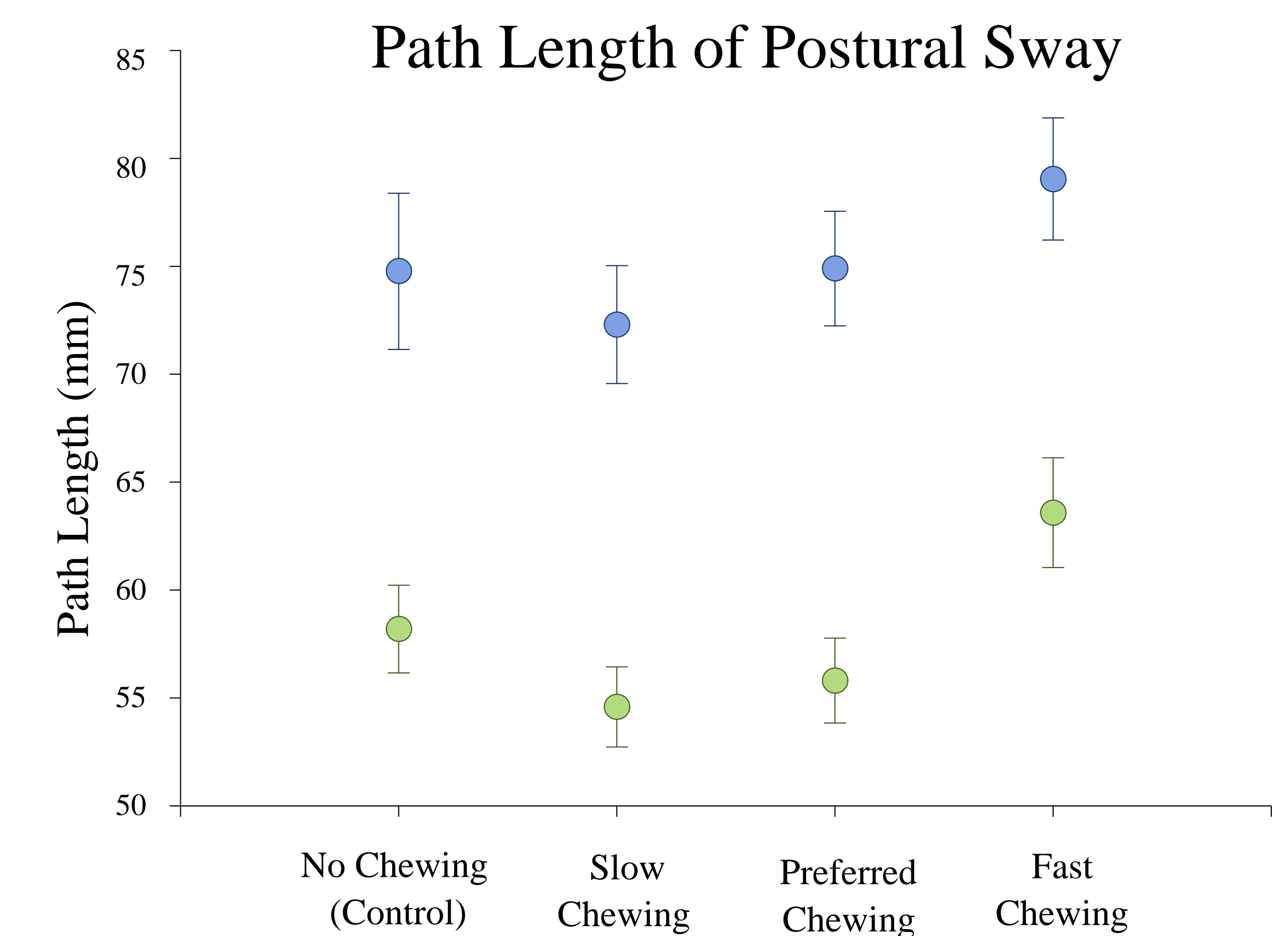
Chewing



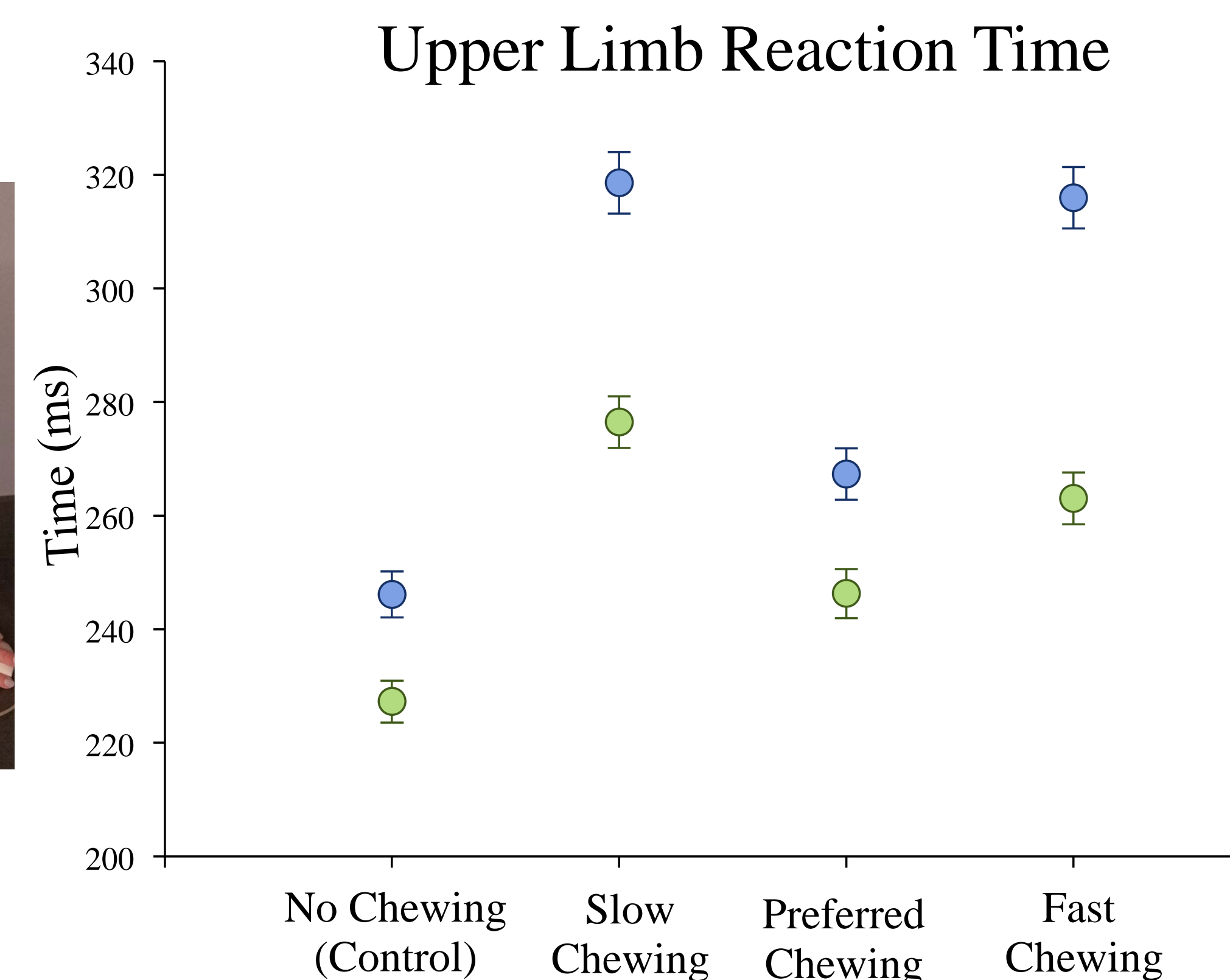
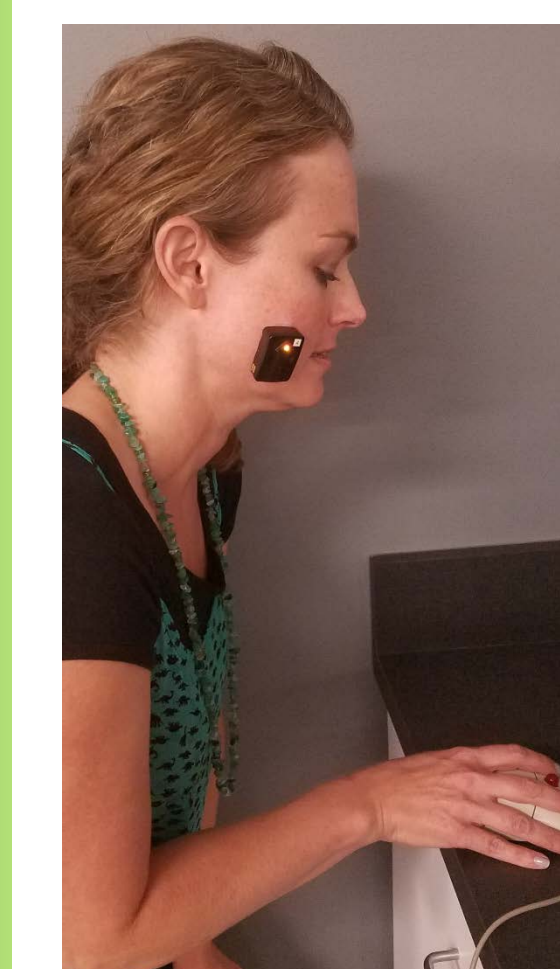
Gait



Postural Sway



Reaction Time



Finger Tapping

