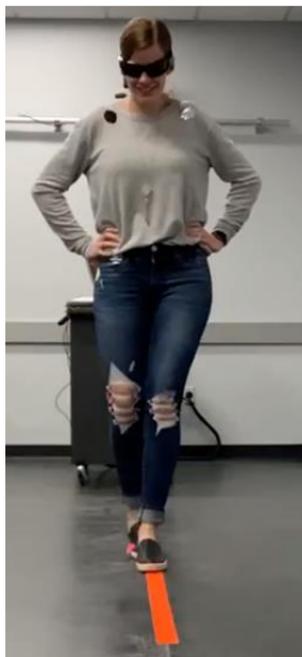


INTRODUCTION

- Walking, balance, and coordination can all be affected by different levels of vision
- As the strobe on the glasses flashed longer, we hypothesized that the walking would become more challenging, resulting in a decrease in gait speed and balance measures.
- Tandem gait is a type of walking in a heel to toe fashion. The back of the foot must touch the tip of the toes on the other foot.
- Tandem gait tests are used to screen patients for disorders, especially neurological and vestibular.
- A child, adolescent, and adult were all tested to compare how experience, vision, and muscle tone affect tandem gait.
- Senaptec Strobe glasses were used to act as visual impairments.

- Heel marker were used to evaluate gait speed
- Right and left acromion markers to evaluate frontal shoulder tilt speed
- Right and left anterior superior iliac spine markers to evaluate frontal pelvic tilt speed
- Shoulder and pelvis tilt speeds were used to measure the participant's balance.



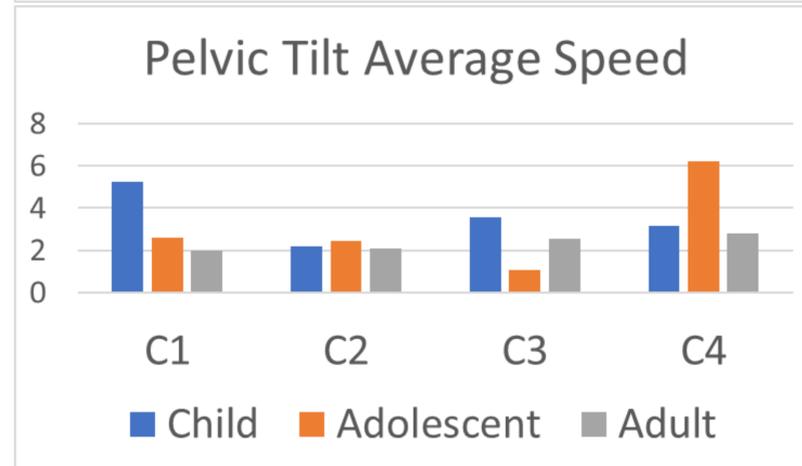
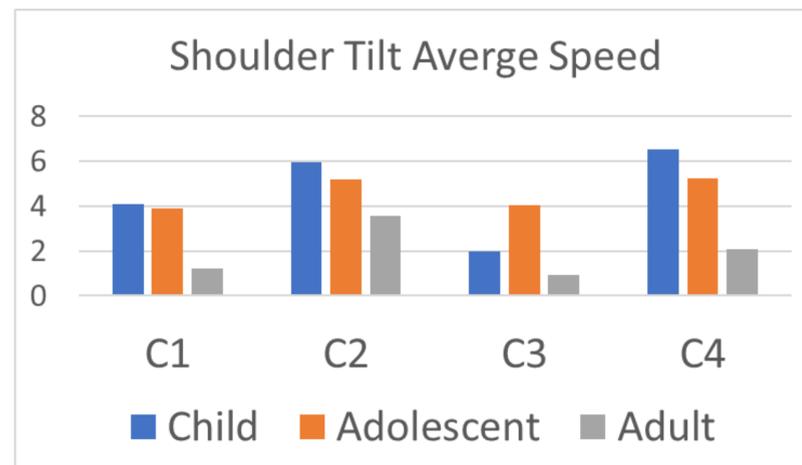
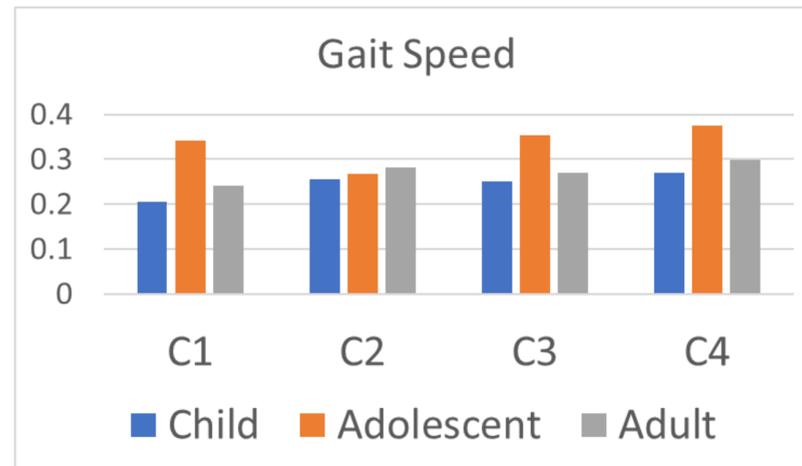
Effects of Stroboscopic Vision on Gait Speed and Balance During Tandem Walking

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METHODS AND RESULTS



- Front View/ Frontal Plane:
 - Upper Black Marker: right shoulder
 - Upper Silver Marker: left shoulder
 - Lower Black Marker: left hip
 - Lower Silver Market: right hip
- We used the app *ProMovie* to collect the data and record the participants' movements as they completed tandem gait.
- We used the software *Kinovea* to analyze the data and track the path of each joint.
- Senaptec Strobe glasses have multiple settings. As you increase the setting, the flicker of the glasses gets longer representing lower visual perception.



Condition	Frequency	Opaque
C1	0 Hz	0 s
C2	6 Hz	0.067 s
C3	3 Hz	0.233 s
C4	1 Hz	0.900 s

DISCUSSION

- The results demonstrated that as visual restriction increased, shoulder and pelvis movement speeds increased.
- Comparisons between participants indicated that age also affects the performance, suggesting that younger individuals may rely more on visual sensory information for gait while older individuals rely more on other sensory inputs such as the vestibular senses and proprioceptors.
- According to our results, experience allows gait speed and pelvic tilt to remain relatively stable even as the settings increased.
- We noticed that the child had greater variability in gait speed and shoulder tilt, whereas the adolescent showed more variability in pelvic tilt.
- The adult showed the most change in shoulder tilt.
- Our research study could be taken farther by incorporating weather conditions that cause a decrease in vision ability such as rain, fog, snow, and darkness.
- There have been some research studies that have stated that vision loss could have a drastic impact on walking speeds, making them slower than the average person.

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