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Pulse Wave Velocity in Youth With Visual Impairments

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Arterial stiffness (AS) is an early indicator of cardiovascular disease (CVD). AS increases naturally with age, but also with disease and lifestyle choices. Individuals with visual impairments (VI) are highly at risk for developing CVD, potentially as a result of significant barriers to physical activity and subsequent limitation to sedentary behavior. **PURPOSE:** To conduct a preliminary investigation on pulse wave velocity (PWV) in youth with VI. **METHODS:** Youth with VI (N=30) including 21 males (14.1 ± 2.0 yrs, 164.3 ± 13.2 cm, 61.9 ± 20.5 kg) and 9 females (12.0 ± 2.3 yrs, 146.1 ± 15.1 cm, 38.9 ± 11.8 kg) voluntarily participated in the research during a weeklong sports camp for youth with VI. Carotid-femoral PWV was measured non-invasively. While supine, a thigh cuff was secured to the right thigh, after which the participant palpated the femoral pulse. Distances were then measured using a tape measurer from the sternal notch to the carotid pulse, the sternal notch to the top of the thigh cuff, and the femoral pulse to the top of the cuff. Carotid pulse was then palpated and recorded using a tonometer. The thigh cuff inflated as the tonometer was used to record carotid pulse, and once 10 seconds of consistent carotid and femoral waveforms were simultaneously acquired the cuff deflated and data were collected. **RESULTS:** Age group quartiles were created and a 2 x 4 ANOVA to compare sex and age groups was performed. T-tests were also run to compare differences between those identifying as blind (B1) and those identifying as visually impaired (B2-B4). PWV for the 9-10 yr. group was 3.2 ± 0.66 m/s, for 11-12 yr. was 3.59 ± 0.88 m/s, for 13-14 yr. was 3.73 ± 0.84 m/s, and for 15+ yr. was 3.99 ± 0.88 m/s. There were no significant differences between sex, age, or extent of VI. **CONCLUSION:** As expected, PWV increased with age for both males and females yet there is an emergent trend that AS increases at a greater rate among females. However, average PWV values were still within a healthy range. It is possible that because females enter puberty before their male peers hormonal changes may contribute to the PWV differences between sexes. Future research should examine physical activity and sedentary behavior in male and female adolescents with VI. Also, it may be helpful to compare PWV to age-matched sighted peers.