

平成 20 年度 博士課程学位論文要旨

学位論文題名 (注: 学位論文題名が欧文の場合は和訳をつけること)

Influence of aging change in visual system on postural control

加齢による視覚機能の変化が姿勢制御に与える影響

学位の種類: 博士 (保健科学)

保健科学研究科 博士後期課程 保健科学専攻 地域保健科学分野

学籍番号 05957608

氏名: 塩田 琴美

(指導教員名: 池田 誠教授)

注: 1,000 字程度 (欧文の場合 300 ワード程度) で、本様式 1 枚 (A 4 版) に収めること

The purpose of this study was to clarify how age related changes in the visual system contribute to declining postural stability. Fourteen healthy, elderly subjects (mean age, 67.75 ± 6.11 years) with no history of falls and who had normal vision were recruited along with 14 young controls (mean age, 19.14 ± 0.53 years). Postural stability when standing was assessed during anterior-posterior translations of a force plate accompanied by visual misinformation where a plain white wall was tilted towards the subjects as they swayed. Concurrent visual data was documented by an eye mark recorder and also assessed. A significant difference between age groups was found in Equi-test data for rectangle area of postural sway, and in vision data for fixation point duration, pupil diameter, convergence angle, and % eye movement velocity. For area of length, a significant difference between age groups was found only for left eyes. In the elderly, the center of gravity was larger as eye movements increased. The elderly subjects made more frequent saccadic eye movements resulting in shorter durations of point fixations causing blurred reflexive images on the retina. As the control of body movement is strongly linked to visual cues which are hindered by aging changes, performance of gait and balance changes in response to visual cues, and associated strategies to negotiate the visible environment, differ between young and elderly. We suggest that the elderly may benefit from intervention including training to control direction of gaze and other factors related to visual information processing to reduce the risk of falls.