Waterloo Research in Aging Participant Pool (WRAP)

University of Waterloo

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- WINTER 2015 NEWSLETTER -

Thank you from us!

We would like to thank you for your contribution of time in participating in our research studies to assist in furthering our knowledge of the aging process. With the help from individuals like yourself we can investigate the differences between healthy aging and disease processes such as (but not limited to) stroke, Parkinson and Alzheimer's disease.

Do you know someone what might be interested in joining WRAP?

We are currently looking for more volunteers like yourself to participate in studies. If you know of someone that may be interested in participating please have them contact the WRAP Co-coordinators: Bethany Delleman & Sara Scharoun, at 519-888-4567 ext. 37776

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Waterloo Research in Aging Participant Pool

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"linking the senior community with university research"

-RESEARCH HIGHLIGHTS-

The effect of aging on movement strategies during stooping and crouching tasks

Michal Glinka, MSc, Tyler Weaver, MSc & Dr. Andrew Laing, PhD

Introduction

Stooping and crouching (SC) postures are integral to many daily tasks, such as retrieving objects from the floor and reaching to low shelves, yet nearly one in four community-dwelling older adults (24%) report having significant difficulty or being completely unable to perform these movements. Little is known about how older adults differ from younger adults in the manner by which they perform stooping and crouching. The ***objective of this work was to describe age-related differences*** in terms of how individuals moved their bodies and controlled their balance during stooping and crouching tasks.

Methodology

Two groups of participants, 12 younger and 12 older, performed a series of object-retrieval tasks – varying by initial lift height, level of precision, and duration – that required them to bend over or reach toward the floor. We collected kinematic measures, which described the participants' movements; postural control measures, which described how participants' were controlling their balance; and measures of lower limb isometric strength, passive range of motion (ROM), and balance confidence to describe the physical and behavioural health of each individual.

Results

Compared to younger participants, older participants ***moved slower*** into and out of self-selected postures, and ***did not position their bodies as low*** to the ground throughout the tasks. Specifically, older adults demonstrated ***slower velocities*** in the hip, knee, and ankle joints, and ***higher whole body centre of mass heights*** during the moment of object retrieval. This was the result of bending less, compared to younger participants, at the hip, knee, and ankle joints.

Older participants also had ***smaller, more centralized anterior-posterior (AP) centre of mass excursions*** and ***slower horizontal COM velocities***, but ***higher centre of pressure (COP) activity compared to younger participants***. This meant that while their ***body mass was not moving as much*** above their foot support area, their postural muscles were ***working comparatively harder*** to control the position of their body mass. Varying task constraints (i.e., lower initial lift height or longer duration) elicited ***greater postural changes in younger*** compared to older participants, potentially reflecting a ***diminished ability in older adults to make appropriate task-specific adaptations***. In particular, younger participants were ***4 times more likely than older participants to adopt a lower to the floor, forefoot crouching posture***, especially during longer duration tasks. Older participants also had ***decreased leg strength and less passive range of motion*** compared to younger participants.

Implications

Overall, the results of this thesis demonstrate that despite moving ***slower through shorter distances***, older adults displayed ***higher COP activity***, which may have reflected a heightened effort to control COM position, during SC tasks. This study compliments existing works describing age-related differences in movement strategies and balance control during lifting and sit-to-stand tasks. Further work exploring ***relationships between specific physiological and behavioural*** factors (i.e., strength, range of motion, balance confidence, medications, physical activity levels, etc) and SC task performance measures is needed to help guide therapeutic intervention strategies.

Figure – Younger participants (left) tended to adopt a deep crouching posture, especially during longer tasks, in which they demonstrated higher flexion (bend) in the ankle, knee, and hip, compared to older adults (right).

RIDDLES

1. What starts with the letter "t," is filled with "t" and ends in "t"?

2. What has a head but never weeps, a bed but never sleeps, can run but never walks, and a bank but no money?

3. What has 88 keys but can't open a single door?

4. What has hands but can not clap?

5. How do you make the number one disappear?

6. What travels around the world but stays in one spot?

7. I'm tall when I'm young and I'm short when I'm old. What am I?

8. What occurs once in a minute, twice in a moment and never in one thousand years?

9. What goes up when rain comes down?

-RESEARCH HIGHLIGHTS-

Associative Recognition of Word Pairs

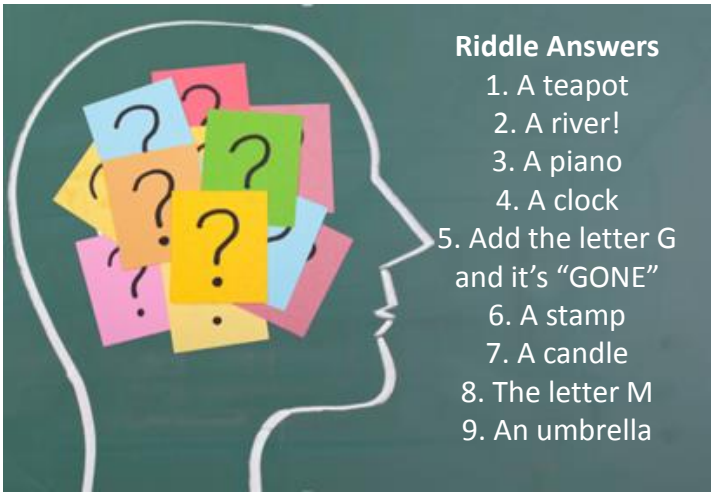
Fahad Ahmad & Myra Fernandes, PhD

This study examined if unitization could benefit associative memory in Older adults. Researchers such as Naveh-Benjamin (2000) have shown older adults have more difficulty than younger adults in combining unrelated information such as unrelated word pairs (grape stool) and subsequently retrieving the pairs in an associative task. Unitization refers to process of integrating two items into one. Thus could be by a sentence that combines two unrelated words in a word pair into one single unit. For my two experiments I used compound words presented as compound word pairs (e.g. brain storm) and unrelated word pairs (e.g. grape stool). In the first experiment, young and older adults studied compound word and unrelated word pairs. At test, a studied or non-studied word pair was presented. Participants had to indicate if they had seen the word pair. I found older adults showed higher associative recognition for compound word than unrelated word pairs. However, there was no benefit for younger adults. In second experiment, with a forced choice test (i.e. multiple choice type of test) both older and young adults showed better associative recognition for compound word than unrelated pairs. Therefore, unitization of pre-experimental associations such as compound word pairs benefits older adults' associative memory and reduces the age-related associative deficit.

BRAIN JOKES

1. What does a brain do when it sees a friend across the street?
2. What do you get when you cross a thought with a light bulb?

ANSWERS: 1. Gives a brain wave 2. A bright idea



Riddle Answers

1. A teapot
2. A river!
3. A piano
4. A clock
5. Add the letter G and it's "GONE"
6. A stamp
7. A candle
8. The letter M
9. An umbrella

For more information please see our webpage : www.wrap.uwaterloo.ca

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Are you a WRAP volunteer? Please share this newsletter with any family and friends who you think might be interested in taking part in research studies

Interested in becoming a WRAP volunteer? Please contact us to find out more!!