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## A-41 Free Communication/Poster - Aging

Wednesday, May 31, 2017, 7:30 AM - 12:30 PM

Room: Hall F

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240 Board #61 May 31 9:30 AM - 11:00 AM

### Using Accelerometers to Quantify Exercise Intensity of Exercise Classes in Older Adults

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(No relationships reported)

Accelerometers offer detailed minute-by-minute information over extended periods pertaining to physical activity behavior. Furthermore, accelerometers are typically placed on the right hip. However, accelerometers placed on the hip may not determine exercise intensity during an entire workout in older adults.

**PURPOSE:** The first purpose of this study was to use accelerometers to determine the duration of time spent in certain intensities during exercise classes for older adults. The second purpose of the study was to examine the intensity level during those exercise classes as determined by accelerometers placed on the hip and wrist.

**METHODS:** A total of sixty seven older adults (age:  $73.8 \pm 14.5$  yrs, weight:  $71.0 \pm 19.0$  kg) were recruited. Twenty-five of them wore an accelerometer placed on the right hip (H) and an accelerometer placed on the right wrist (W). All individuals participated in exercise classes that included periods of cardiovascular, strength, and balance exercises. In order to quantify exercise intensity, cut points (cpm) of sedentary ( $\leq 100$  cpm), light (101-799 cpm), and moderate (800-5722) intensity were used. A two-tailed independent *t* test was used to examine differences between H and W in the amount of time spent in sedentary, light, and moderate exercise intensity. Statistical significance was set at  $p < 0.05$ .

**RESULTS:** Overall, the participants engaged in  $17.1 \pm 5.8$  minutes of light and  $12.3 \pm 8.8$  minutes of moderate intensity activities. Furthermore, the majority of the participants (91%) perceived the intensity as moderate. The average time spent in light exercise intensity was  $19.1 \pm 4.5$  and  $7.4 \pm 2.1$  minutes for the H and W accelerometers, respectively. The average time spent in moderate intensity activity was  $11.4 \pm 6.1$  and  $35.0 \pm 4.2$  minutes for the H and W accelerometers, respectively. There was a significant ( $p < 0.01$ ) difference between the accelerometers for light and moderate exercise intensity.

**CONCLUSIONS:** The data showed that very little of the activity met the moderate intensity threshold by accelerometer data, but this was dependent on the placement of the accelerometer. Furthermore, the data suggests that in order to fully comprehend the intensity of an exercise class for older adults, accelerometers must be worn on both the hip and the wrist.

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241 Board #62 May 31 9:30 AM - 11:00 AM

### A Comparison of Upper Body Strength and Body Composition Between Elderly from Costa Rica and Kansas

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(No relationships reported)

An increased lifespan and body adiposity as people age are considered risks factors for all-cause mortality. Handgrip strength is a considered a powerful predictor of cause-specific and total mortality in older disabled women and to cardiometabolic risk in aging populations. Ethnic-specific heterogeneity of risk factors calls for comparative studies to better understand competent prevention and management, which might be one of the essential steps toward elimination of ethnic disparities for several diseases.

**PURPOSE:** To compare the upper body strength and body composition in elderly from Costa Rica (CR) and Kansas (KS).

**METHODS:** Older adults from CR (men = 26, women = 52, mean age =  $68.91 \pm 4.79$  yr.) and KS (men = 35, women = 65, mean age =  $72.84 \pm 5.59$  yr.), underwent handgrip strength and body composition measurements (dual-energy X-ray absorptiometry).

**RESULTS:** Men ( $31.24 \pm 7.02$  %) had lower %BF than women ( $41.28 \pm 5.87$  %;  $p \leq 0.001$ ). Women ( $15.0 \pm 1.7$  kg/m<sup>2</sup>) had lower lean tissue mass index than men ( $18.0 \pm 1.7$  kg/m<sup>2</sup>;  $p \leq 0.001$ ). Women ( $6.2 \pm 0.8$  kg/m<sup>2</sup>) had lower appendicular lean soft tissue index than men ( $8.1 \pm 1.0$  kg/m<sup>2</sup>;  $p \leq 0.001$ ). KS participants ( $1.16 \pm 0.11$  g/cm<sup>2</sup>) had higher total bone mineral density than CR participants ( $1.08 \pm 0.11$  g/cm<sup>2</sup>;  $p \leq 0.001$ ), and men ( $1.21 \pm 0.11$  g/cm<sup>2</sup>) had higher total bone mineral density than women ( $1.08 \pm 0.09$  g/cm<sup>2</sup>;  $p \leq 0.001$ ). Significant correlations ( $p \leq 0.003$  for all) were obtained between handgrip strength and body height ( $r = 0.72$ ), body weight ( $r = 0.56$ ), arms bone mineral density ( $r = 0.67$ ), total bone mineral density ( $r = 0.56$ ), lean arms mass ( $r = 0.78$ ), total lean mass ( $r = 0.81$ ), body fat% ( $r = -0.48$ ), body fat mass index ( $r = -0.22$ ), lean tissue mass index ( $r = 0.59$ ), and appendicular lean soft tissue index ( $r = 0.69$ ).

**CONCLUSIONS:** Differences in body composition and handgrip strength were found in older adults from CR and KS. Ethnic-specific heterogeneity on biologic factors and physical-related performance allows for culturally diverse prevention programs for the elderly.

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242 Board #63 May 31 9:30 AM - 11:00 AM

### Association Of Agility With Muscle Strength, Balance, Mobility And Physical Activity Status Of Older Women

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(No relationships reported)

It has been reported that body-weight supported stepping training increases the walking speed of healthy older women. This suggests that stepping with body weight unloading improves the walking ability. We hypothesized that stepping in a sitting position is associated with the physical fitness, walking ability and the physical activity status of older people.

**PURPOSE:** The purpose of this study was to examine the association between the stepping rate (agility) and the muscle strength, balance, mobility and the physical activity status of older women.

**METHODS:** The participants included 108 healthy older women (age:  $74 \pm 5$  years; range: 65-89). The stepping rate, muscle strength (handgrip strength, knee extension strength), balance (one-leg standing time with eyes open), mobility (timed up-and-go test [TUG]), maximum walking speed) and physical activity of the participants were measured. The maximal stepping rate in 10 seconds, as measured using an industrial stepping rate counter (Stepping Counter; Yagami), was used as an index of agility. The participants were instructed to perform alternating steps with each leg as quickly as possible for 10 seconds, while in a sitting position. The total number of step for both legs was used as the participant's score. The physical activity status was measured for two weeks using a uniaxial accelerometer. A multiple regression analysis was used to evaluate the association between the stepping rate and each of the other variables.