

Chapman University

Chapman University Digital Commons

Student Scholar Symposium Abstracts and
Posters

Center for Undergraduate Excellence

Fall 12-2-2020

ADL (Activities of Daily Living) Differences Amongst Healthy Older and Younger Individuals, Parkinson's, and Stroke Populations

Johanna Daerendinger
Chapman University, daerendinger@chapman.edu

Bridgette Khol
Chapman University, bkohl@chapman.edu

Michael Shiraishi
Chapman University, shiraishi@chapman.edu

Rahul Soangra
Chapman University, soangra@chapman.edu

Follow this and additional works at: https://digitalcommons.chapman.edu/cusrd_abstracts

Recommended Citation

Daerendinger, Johanna; Khol, Bridgette; Shiraishi, Michael; and Soangra, Rahul, "ADL (Activities of Daily Living) Differences Amongst Healthy Older and Younger Individuals, Parkinson's, and Stroke Populations" (2020). *Student Scholar Symposium Abstracts and Posters*. 410.
https://digitalcommons.chapman.edu/cusrd_abstracts/410

This Poster is brought to you for free and open access by the Center for Undergraduate Excellence at Chapman University Digital Commons. It has been accepted for inclusion in Student Scholar Symposium Abstracts and Posters by an authorized administrator of Chapman University Digital Commons. For more information, please contact laughtin@chapman.edu.

ADL (Activities of Daily Living) Differences Amongst Healthy Older and Younger Individuals, Parkinson's, and Stroke Populations

Johanna Daerendinger¹, Bridgette Kohl¹, Michael Shiraishi², and Rahul Soangra^{2&3}

¹Schmid College of Science, Chapman University, Orange, CA

²Crean College of Health and Behavioral Sciences, Chapman University, Orange, CA

³Fowler School of Engineering, Chapman University, Orange, CA



Crean College of Health and Behavioral Sciences

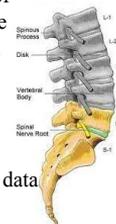
Abstract

- Goal: compare the movements of varying populations using inertial sensors during ADL and sleep
- Hypothesis: We expect that the healthy individuals will have better transitions than the Parkinson's and Stroke populations



Intro

- ADL is an important factor because:
 - + It shows the health impact the illnesses have
 - + Can be used as a predictor of the pathology of these illnesses
- Transitions will be measured by monitoring the L5/ S1 vertebrae
- The sleep transitions of Parkinson's and Stroke patients have not been previously studied before this study
- Currently no way to analyze this transition data

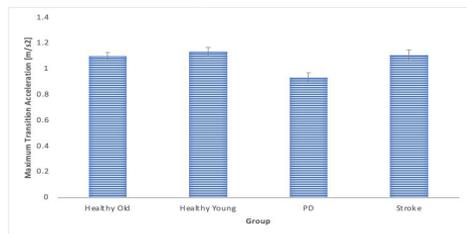


Materials and Methods

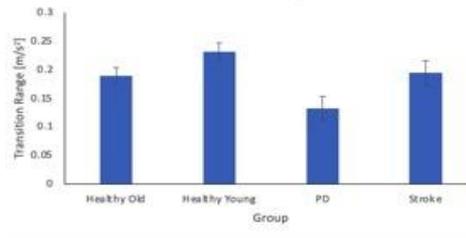
- The Dynaport (Motion Monitor+McRoberts BV, The Hague)
- Sensor is worn like a belt on the participants lower back, above the posterior iliac spine at the L5/S1 vertebrae since it an optimal positioning for measuring gait related movements
- The participants included in this study were ten healthy older individuals above the age of sixty-five and ten young adults (20 participants total)
- The sensors used were the same ones utilized by every participant



Maximum Transition



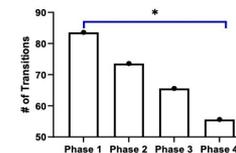
Transition Range



We found participants of PD group produced maximum transitions of lower magnitude compared to other three groups ($p < 0.01$). The transition range for PD group was significantly lower than Healthy young group ($p < 0.01$).

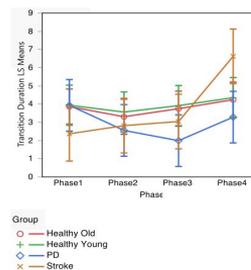
Results

Number of Transitions



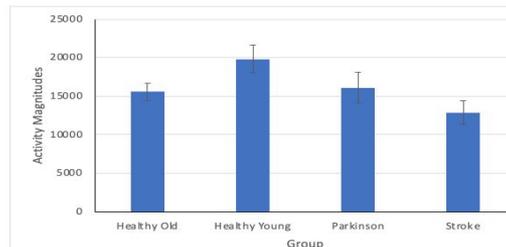
The number of transitions in sleep phase 1 were significantly higher ($p < 0.01$) than sleep phase 4 among all 4 groups (Healthy, young, old, PD and Stroke).

Transition Duration:

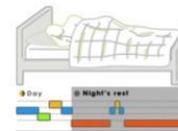


We found Healthy young and older adults had similar trends, however PD group had lower transition duration compared to other groups. Stroke individuals produced significantly higher transition durations during phase 4 of sleep ($p = 0.017$).

Daily Activity



Discussion



Group	Magnitude	SD
Healthy Old	15560	1159
Healthy Young	19821	1831
Parkinson	16096	2013
Stroke	12879	1538

- In daily living activity, Stroke individuals had the lowest activity magnitude
- There was a trend that showed that healthy old and young people would perform better than Parkinson's and stroke patients
- Parkinson's patients were better at performing activities that had a low activity level
- These results will be able to help predict an individual's health status in the future

References

Soangra, R. (2019, October 22).