Populations with chronic stroke inherently tend to take less steps each day than a healthy individual of similar age. Proper walking rehabilitation in stroke patients can help to prevent further health risks such as heart disease. Many rehabilitation techniques have been introduced to this area, and researchers try to determine which has the best outcome. One of these techniques is the promotion of a daily step goal. We will use data that collected step counts for every minute across multiple days to analyze the distribution of steps through a day and how similar those patterns are across days using non-linear analysis. From this data, we will determine if a correlation is present between the similarity of patterns across days for a subject and their mean daily steps, which could influence clinical treatments for chronic stroke patients by encouraging step goals or patterned behavior. Because the non-linear analysis that we will use, Jensen-Shannon Divergence (JSD), will provide a lesser value for more similar patterns across days, we hypothesize that there will be a negative correlation between these JDS values and mean daily steps, representing a positive correlation between daily walking activity and inter-day walking patterns.

**RESULTS**

The above graph compares JSD values to mean daily steps values over a constant period of six days for 148 subjects. Using linear regression analysis, our results showed a significant negative correlation was found between JSD and mean daily steps (p = 5.25x10^-10, R^2 = 0.7878, and y = 2.3762 - 9.3x10^-9x).

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