

O-0303**Lack of Bottom Leg Push-off May Result in Difficulty with Stair Ambulation**

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【Purpose】 Stair ambulation is one of the most difficult and hazardous activities of daily living for older adults. This study aimed to determine if physical function measures and stair ambulation loads are associated with self-reported difficulty with stair ambulation (SRDSA).

【Methods】 164 community dwelling older adults (60-89 years) participated in the study. SRDSA was assessed using a 5-rank question and dichotomized into two categories: no (no difficulty) and yes (slight, medium, considerable and severe difficulty). Muscular strength, static and dynamic balance and muscular power measures were then tested. In addition, the subjects ambulated a one-step 30cm staircase machine consisting of 4 electronic weighing scales mounted on the top and bottom. They performed two different stepping patterns: 1) Ascending the step as quickly as possible starting with the right foot, and 2) Descending the step as softly as possible starting with the left foot in order to exert minimal load on the lower scales. Finally, logistic regression analysis was performed using SRDSA as the dependent variable, and physical function, lower limb pain and stair ambulation loads (% body weight) as independent variables.

【Results】 Physical function tests, lower limb pain and loads associated with descending stairs did not show any association with SRDSA. Meanwhile, a larger load production on the bottom left weighing scale whilst ascending the step as quickly as possible starting with the right foot was associated with SRDSA (OR, 0.97 [95% CI, 0.945-0.997]).

【Discussion】 Older adults displaying a weaker push-off with the bottom leg whilst ascending stairs were more likely to possess SRDSA. These results show insights that lack of bottom leg push-off with ascending stairs may be a contributing factor to stair ambulation difficulty in older adults. Further research is needed to determine whether a training intervention to increase lower leg push-off may reduce SRDSA.