



# Physical performance in older and late middle-aged persons with mental illness

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## Purpose

- Physical performance is defined as the ability to perform muscular work satisfactorily. Physical performance indicators such as walking speed, sit-to-stand motion, and standing balance are able to measure an individual's lower limb strength and endurance.
- Individuals with mental illness have accelerated physical aging compared with the overall population. Thus, the question of whether reduced physical performance would emerge during the late middle-aged period among patients with mental illness is deserved to be investigated.

Table 1 Characteristics of participants (n = 264)

Variables	Total	Age ≥ 65 (n=63)	Age 55-64 (n=201)	P value
Age, years, mean (SD)	61.39 (4.42)	67.9 (3.08)	59.32 (2.95)	
Sex, n (%)				0.56
male	109 (41.3)	26(41.3%)	83(41.3%)	
female	155 (58.7)	37(58.7%)	118(58.7%)	
BMI, mean (SD)	24.39 (4.06)	23.87(3.75)	24.55(4.14)	0.25
Nutrition status, mean (SD)	12.46 (1.40)	12.65(1.26)	12.40(1.44)	0.22
Fall History, n (%)				0.29
0-1 times	173 (65.5)	39(61.9%)	134(66.7%)	
≥ 2 times	91 (34.5)	24(38.1%)	67(33.3%)	
Fatigue level, mean (SD)	25.55 (14.67)	22.25(14.49)	26.58(14.61)	0.04
Depressive severity, mean (SD)	13.76 (10.25)	13.02(10.74)	14.00(10.11)	0.51
Cognitive function, mean (SD)	8.66 (2.14)	8.52(2.36)	8.70(2.07)	0.58

Table 2 Frailty components according to age group

Frailty components	Total	Age ≥ 65	Age 55-64	P value
Low gait speed, n (%)	66 (25.0)	19(30.2%)	47(23.4%)	0.18
Chair rise test, n (%)	36 (13.6)	11(17.5%)	25(12.4%)	0.21
Impaired Balance, n (%)	61 (23.1)	11(17.5%)	50(24.9%)	0.15

## Methods

- Balance:** balance was measured by the standing balance in different foot positions including semi-tandem stand (i.e., heel of one foot against side of big toe of the other), feet together side-by-side, and tandem stand (i.e., feet aligned heel to toe). Balance test begin with a semi-tandem stand. The test requires participants to maintain each position for 10 seconds. Participants who were not able to complete all of the three position tests were identified as impaired balance.
- Gait speed:** gait speed was measured via the four-meter walking time. Participants were asked to walk with their usual pace. Moreover, participants were allowed to use usual walking aid for this test. Participants who were not able to complete the task of four-meter walking within 4.8 seconds were identified as low gait speed.
- Sit-to-stand motion:** sit-to-stand motion was measured via the chair stand test. Participants were required to perform five rises from a chair to an upright position without stopping in between as fast as possible. Participants who were not able to stand up from a chair without the use of the arms or unable to finish the test within 15 seconds were identified as failed in the chair stand test.

## Take Home Message

Given that there were no significant differences between the older and late middle-aged patients with mental illness for physical performance. Our results indicate that the reduced ability to perform physical performance may be emerged in the late middle-aged period in this population.

## Results

- Data of 264 patients with mental illness were analyzed. 41.3 % of the participants were male. Participants with a mean age of 61.39 years (SD: 4.42, range: 55-75) and 23.9 % of the participants were older than 65 years.
- 66 patients reported low gait speed (25.0 %), 61 patients reported unbalanced (23.1%), and 36 patients reported failed in chair stand test (13.6 %).
- There were no significant differences in the percentage of number of each component between patients with 55-64 years old and those older than 65 years.
- After adjustment for age, sex, BMI, nutrition status, fall history, depression and fatigue level, cognitive function significantly associated with the ability to perform sit-to-stand motion and gait speed.

Table 3 Multivariable logistic regression model of physical performance

Variables	Low gait speed			Chair rise test			Impaired Balance		
	OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value
Age	1.043	0.975-1.115	0.220	1.113	1.021-1.213	0.015	0.988	0.922-1.059	0.734
Sex	2.595	1.353-4.976	0.004	1.558	0.688-3.525	0.287	1.182	0.642-2.176	0.591
BMI	0.961	0.876-1.053	0.395	1.136	1.019-1.267	0.022	1.055	0.968-1.149	0.223
Nutrition status	0.950	0.734-1.230	0.696	0.877	0.631-1.221	0.438	0.885	0.691-1.134	0.335
Fall History	0.775	0.413-1.456	0.429	1.038	0.452-2.384	0.929	0.583	0.313-1.086	0.089
Fatigue level	1.009	0.984-1.034	0.476	0.981	0.949-1.014	0.254	1.022	0.998-1.048	0.078
Depressive severity	1.007	0.973-1.042	0.680	1.009	0.966-1.055	0.680	0.992	0.958-1.028	0.675
Cognitive function	0.817	0.718-0.930	0.002	0.742	0.639-0.861	0.000	0.862	0.754-0.984	0.029

