

Self-representation in spatial perspective taking relates to equilibrium in the elderly



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PURPOSE

Those who perform poorly at physical activities also performed poorly at spatial perspective taking (SPT).

A : Is this true in the elderly ?

B : Could performance on physical tasks be used to predict cognitive impairment ?

PROCEDURE

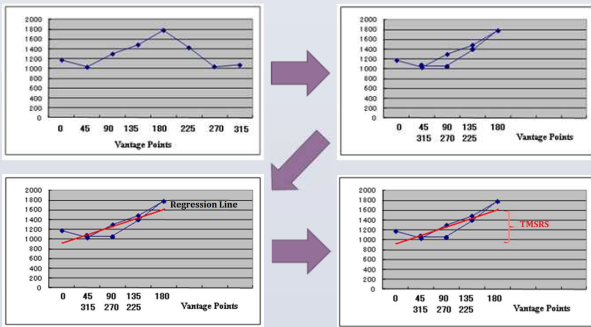
• 68 healthy older adults (mean age: 70.8 ± 5.87 years, age range: 58-86 years, 29 men), 56 of them were valid.

• **SPT task** (video game task by Watanabe, 2016)

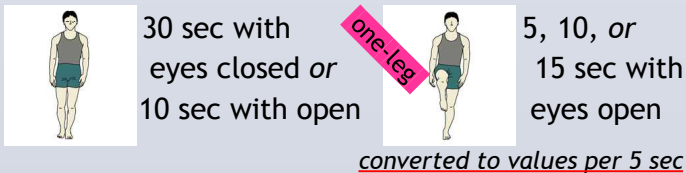


Conditions

Response times for each rotation angle were measured. Plotting them against vantage points, bell-shaped graphs were obtained. In the formula $y=ax+b$, 'a' represents theoretical mental self rotation speed (TMSRS).

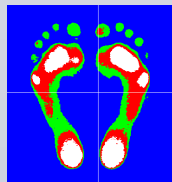


• **Postural Sway test**



Postural sway was measured under three conditions, such as standing on one leg or with eyes closed.

• **Foot shape and arch size measurement**
Foot shape and arch size were measured to determine the influence of physical features on performance during postural sway tests.



RESULTS

Multiple Regression Analysis

$$\text{TMSRS} = 0.61 \times \text{postural sway scores generated from discrepancy between eye closing \& one-leg standing (PSD)} - 0.55 \times \text{sole size} + 0.22 \times \text{toe angle} + 4217.59 \quad (R^2 = 0.787, F = 8.66, df = 3/16, p < .01)$$

Discriminant Analysis

Criterion variable: three TMSRS groups

~800, 800~1800, 1800~ sec

Explanatory variable: two kinds of postural sway

10 sec with eyes open & PSD

• standardized canonical discriminant function coefficients

	axis 1	axis 2	
10 sec with eyes open	1.21	-.32	$p < .05$
PSD	-.49	1.16	$p < .05$

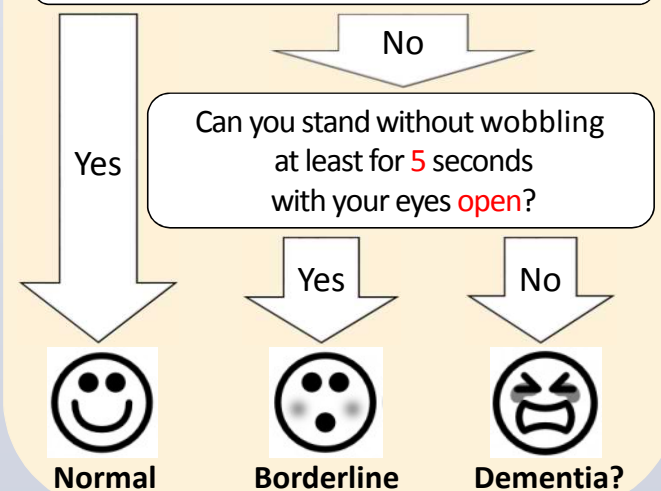
• percentage of correct classifications: 57.1%

($\chi^2 = 14.32, df = 4, p < .01$)

Real Group	Discriminant Group			Total
	~800	800~1800	1800~	
~800	15	3	4	22
800~1800	8	11	2	21
1800~	3	4	6	13

Try self check!

Can you stand still perfectly for 30 seconds with your eyes closed?



Watanabe (2016) Developmental Changes in the Embodied Self of Spatial Perspective Taking. British Journal of Developmental Psychology, 34, 212-225.

