Department of Sports and Health Sciences	Key words	Fall risk, ADL, physical fitness, infants, cognition, judgement, and reaction ability

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Education

Nippon Sport Science University, The Faculty of Physical Education
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Kanazawa University, Graduate School of Natural Science and Technology (Doctoral Program)

Professional Background

Teacher at Shirayuri Gakuen Elementary School, Sports department manager at the Kaga City, Board of Education, Ishikawa Prefecture (serving concurrently as a lecturer at the Kaga Nursing School, Ishikawa Prefecture) / Commended for an excellent presentation given at the Japanese Society of Test and Measurement in Health and Physical Education in 2015

Consultations, Lectures, and Collaborative Research Themes

Increasing the healthy life expectancy of the elderly in Local communities (Consultations, collaborative research, and lectures), Evaluation of response to stimulation in infants (sex and age differences, etc.) (consultations, collaborative research, and lectures)

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Main research themes and their characteristics

「Developing the evaluation system for testing the cognitive, judgment, and reflex abilities of the toddlers and the elderly.」

In recent years, there has been an increase in accidental child injury. Also, the risk of falling and dementia among the elderly which resulted from their declining physical function and ADL capability has increased.

To ameliorate the risk, it is critical to measure and evaluate their cognitive, judgment, and reflex abilities.

To date, there are devices made based on the rule of rock-paper-scissors to measure Choice Reaction Time in order to evaluate cognitive, judgment, and reflex abilities for toddlers and the elderly (Photo 1).

However, considering the price and portability of this device, we do not expect it to be widely accessible in the future.

Therefore, we are building a new system using personal computers to measure their cognition, judgment, and reflex abilities.

We were currently improving the system's feedback and evaluation criteria based on subjects' age differences.

(Photo 2).

Going forward, it is vital to collect more data to perfect the evaluation system.

Photo1. Proto type

Photo2. PC type

Furthermore, with the completion of the new system, we expect to see nursery schools and local governments (community halls and various groups) help their local residences to improve their healths at a lower cost.

To develop a practical measuring device, we have proceeded and successfully developed software that can be operated on a personal computer, but we are still in the process of producing a system to show the evaluation results.

In order to solve this task, we have to collect more data using the new system.

Evaluation method (1) Five-level evaluation method (For the toddlers and the elderly)

Five standard evaluation values created based on the formula in Figure 1 and Table 1.

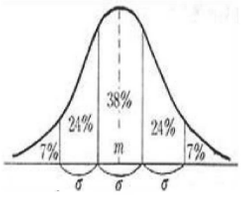

Fig.1 Five-grade evaluation

Tab.1 Five Level

Results			Five Levels	%
	~	M−1.5 SD	5	7
M−1.5 SD	~	M−0.5 SD	4	24
M−0.5 SD	~	M+0.5 SD	3	38
M+0.5 SD	~	M+1.5 SD	2	24
M+1.5 SD	~		1	7

M:mean SD:standard deviation

Major academic publications

Tomohisa.YOKOYA, Shinichi.DEMURA, and Susumu.SATO
"Relationships between Physical Activity,ADL Capability and Fall Risk in Community-Dwelling Japanese Elderly Population"
Environmental Health and Preventive Medicine,Vol.12, No.1,January,2007

Tomohisa.Yokoya, Shinichi.Demura, Susumu.Sato
"Fall Risk Characteristics of the Elderly in an Exercise Class"
Journal of PHYSIOLOGICAL ANTHROPOLOGY ,27:25-32,2008

Tomohisa.Yokoya, Shinichi.Demura, Susumu.Sato
"Three-year Follow-up of the Fall Risk and physical Function Characteristics of the Elderly Participating in a Community Exercise Class"
Journal of PHYSIOLOGICAL ANTHROPOLOGY ,28:55-62,2009