The Change of Rest-Activity Patterns In Older Community-Dwellers With Pre-Frailty

Yu Kume[1)], Hiroki Maekawa[2)]
1) Akita University, Graduate School of Health Sciences
2) Akita University, Master's program of Rehabilitation

＜Introduction＞

"Frailty" is commonly recognized as a risk factor to increase the incident of various diseases (e.g. cardiovascular disease, stroke, depression and insomnia) in the context of population ageing.
We hypothesized that the characteristics in older individuals with frailty might be immanent in the change of lifestyle including rest-activity patterns in their daily life, but a relationship between frailty and rest-activity patterns in their daily life remains unclear. **The aim of this study was to examine rest-activity patterns in older individuals with frailty. This is an interim report.**

＜Methods＞

Participants were recruited from community-dwellers over 60 years old in Akita prefecture, JAPAN.
The procedure and analyses of this study indicate in the **Figure 1**.
The participants wore the **Actiwatch-Spectrum (Philips Respironics)** for seven days in their living environment. The Rest-Activity Parameters (van Someren et al., 1996) were also measured using actigraph's data for seven days, including **Stability, Fragmentation and Relative amplitude** of rest-activity rhythms.

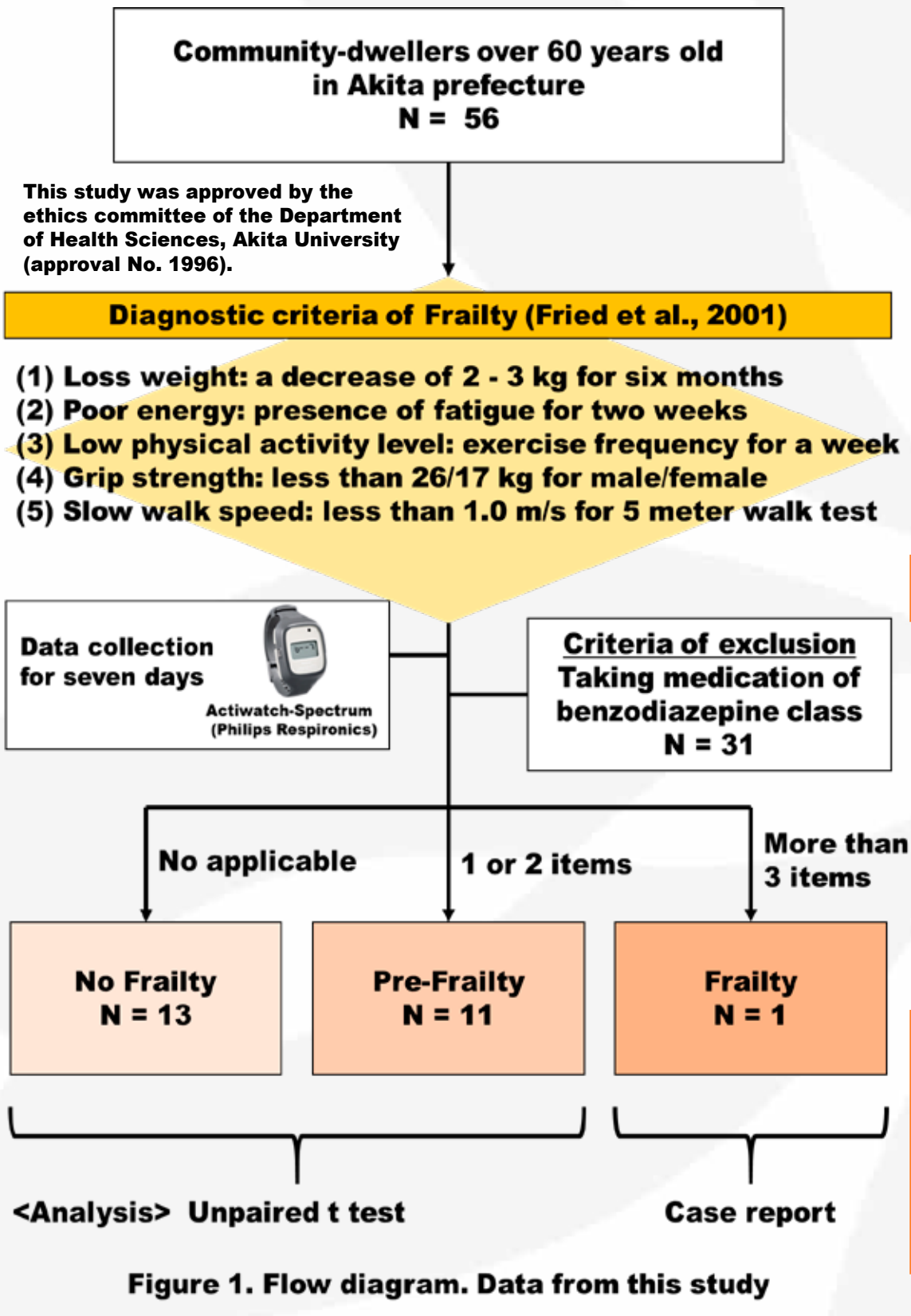

Figure 1. Flow diagram. Data from this study

Table 1 Comparison of demographic data and rest-activity parameters between no frailty and pre-frailty

	No Frailty (n = 13)		Pre-Frailty (n = 11)		
	Mean	S.D.	Mean	S.D.	p value
Age (years)	76.0	4.6	79.3	5.2	0.12
Gender (%female)	77		82		0.77
Loss weight (%Yes)	0		45		0.01*
Poor energy (%Yes)	0		36		0.02*
Low physical activities (%Yes)	0		9		0.46
Grip strength (kg)	25.7	5.4	21.6	6.5	0.10
5 meter walk speed test (m/s)	1.8	0.3	1.6	0.3	0.31
Stability (score range: 0-1)	0.67	0.10	0.57	0.17	0.08
Fragmentation (score range: 0-1)	0.87	0.16	1.13	0.33	0.02*
Relative amplitude (score range: 0-1)	0.87	0.05	0.86	0.08	0.67
Average AC for L5 (counts)	1506	487	1226	927	0.25
Average AC for M10 (counts)	21779	5147	16605	5919	0.03*

* p < 0.05, AC, activity counts; L5, the least active 5-hours across an average 24-hour profile; M10, the most active 10-hours across an average 24-hour profile.

<Results>

<Case report>
Age: 85 years old
Gender: Female
[Criteria of Frailty]
(2) Poor energy
(4) Grip strength: 17 kg
(5) Walk speed: 0.7 m/s
[Parameters]
Stability = 0.39
Fragmentation = 1.34
Amplitude = 0.76
L5 = 1009, M10 = 7234

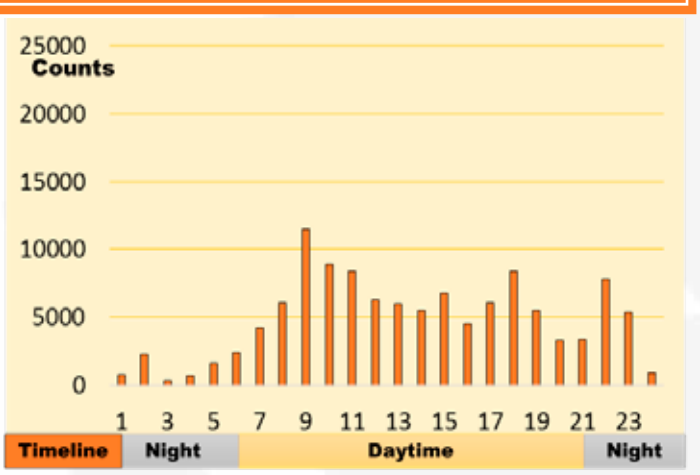

Figure 2. Rest-activity status across an average 24-hour profile in Frailty

＜Discussion & Conclusion＞

This interim report demonstrates **the fragmentation of rest-activity rhythm** and **a decrease of physical activity on daytime in older individuals with pre-frailty**. Although few reports are available on the rest-activity rhythm in frailty, this interim report raises **the possibility that frail adults are likely to have a change of rest-activity rhythm** as well as low activity in their daily life.

Conflicts of interest: The authors declare no conflict of interest.