Daily physical activity levels in cardiac rehabilitation program participants

Makoto AYABE

Doshisha University

Wake Forest University

JAPAN

11th Mar
Tsunami
Earth quake

Seoul

Kyoto

Appreciate for your helps

# Core Competencies for Cardiac Rehabilitation/Secondary Prevention Professionals:2010 Update

Physical activity counseling

Ability to perform the following:

- Assess current physical activity level using both questionnaires and ***available activity-monitoring devices***

- Assist patients in setting realistic incremental goals for future physical activity

- Recommendations for increasing the level of safe and appropriate daily physical activity and structured exercise

- Assess physical and metabolic requirements for activities of daily living, occupational, and recreational activities

- Communication/behavioral strategies that will improve compliance with regular physical activity recommendations

- Measure and report outcomes for physical activity at the conclusion of rehabilitation
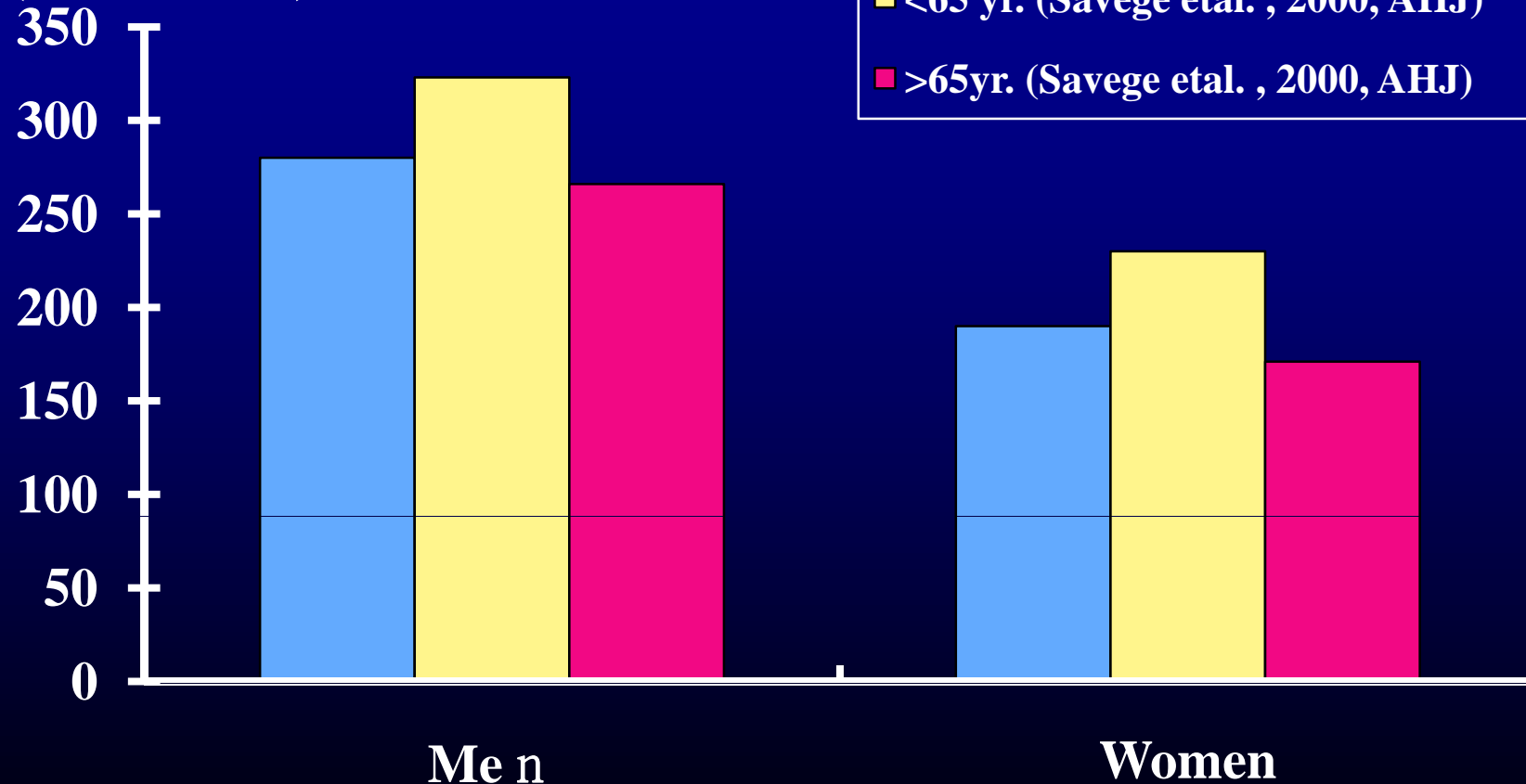
Associations between average exercise energy expenditure per session and total cholesterol *(top)* and LDL cholesterol *(bottom)* in women.

Savage et al. *AHJ* (2000)
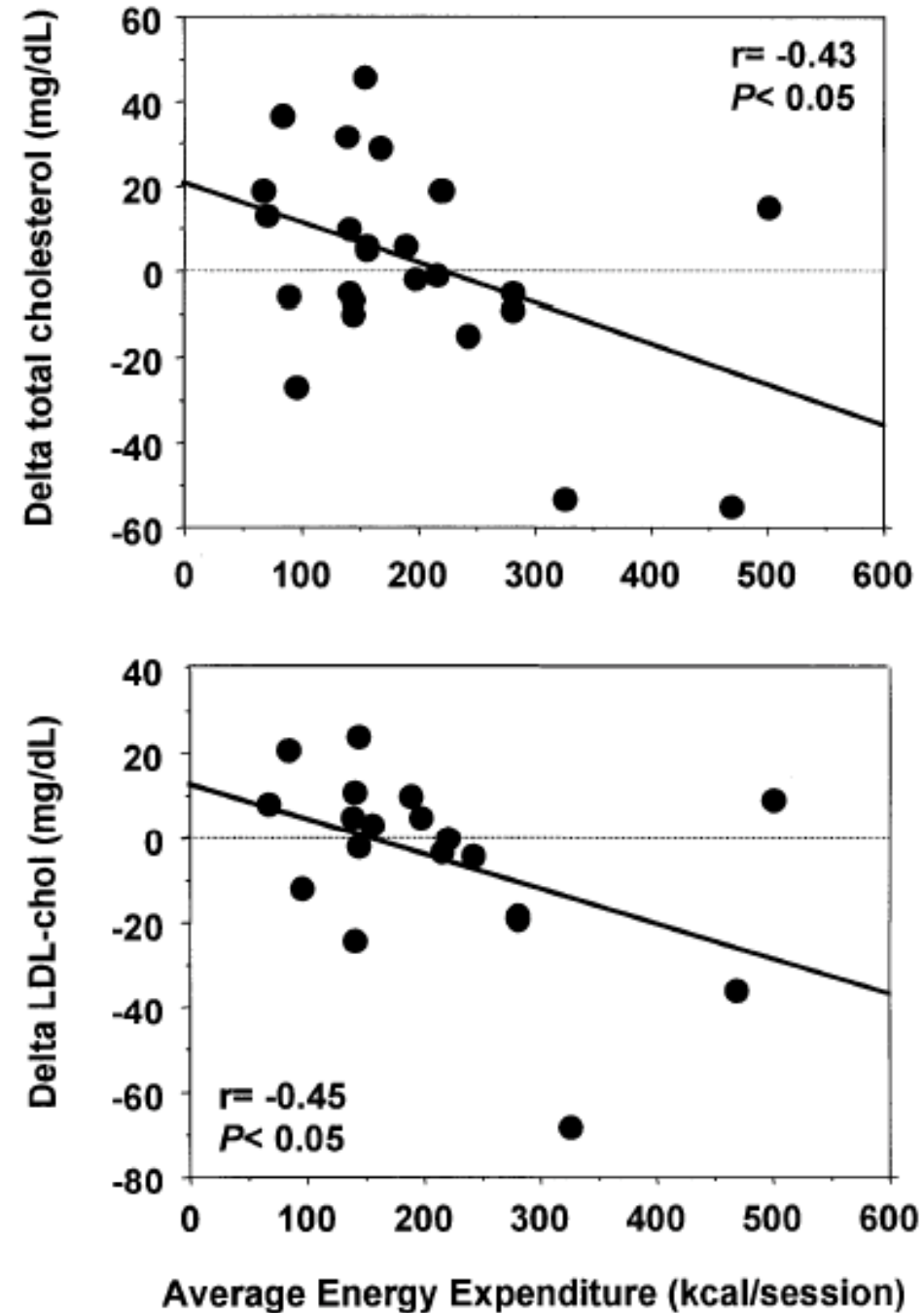
Energy expenditure per session in CRP is not enough to obtain maximal benefits

Energy Expenditure (kcal/session)

Legend:
- ■ 64.8 yr. （Schairer etal., 1998, JCR.)
- ■ <65 yr. (Savege etal. , 2000, AHJ)
- ■ >65yr. (Savege etal. , 2000, AHJ)

Y-axis: 0, 50, 100, 150, 200, 250, 300, 350

X-axis categories: Me n, Women

# Accelerometer; Objective assessment of amount and intensity of daily physical activity
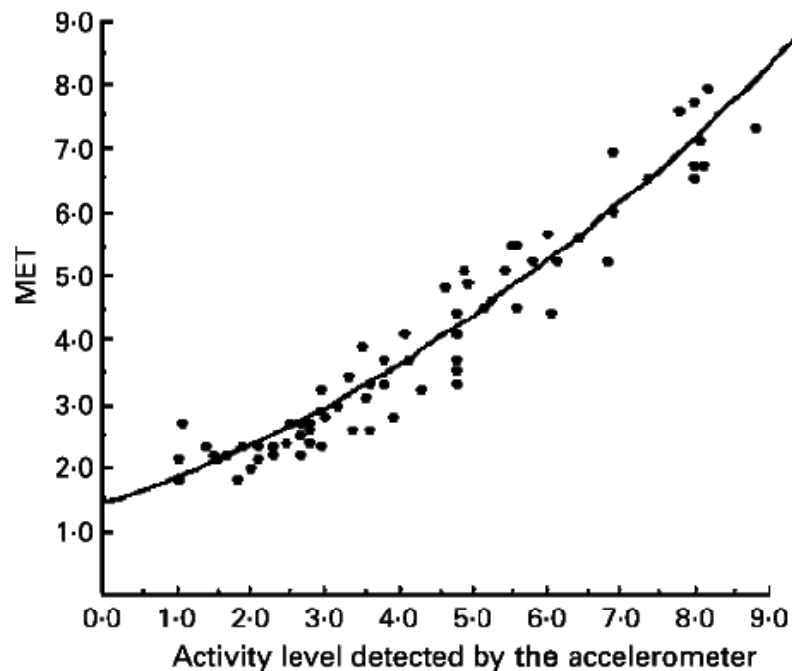
Fig. 5. The relationship between measured metabolic equivalents (MET) and the activity levels recorded by the accelerometer (Lifecorder; Suzuken Co. Ltd, Nagoya, Japan) at a velocity ranging from 2·4 to 7·8 km/h (n 10) (study 2). For details of subjects and procedures, see Table 1 and p. 237. The quadratic equation regression was calculated as follows: r^2 0·929; $P < 0.001$, standard error of the estimate 0·46 MET.

LifeCorder can accurately assess intensity and amount of daily physical activity.

Kumahara et al. Br J Nutr (2004)

Accelerometer;
Objective assessment of amount and intensity of daily physical activity

Feedback system
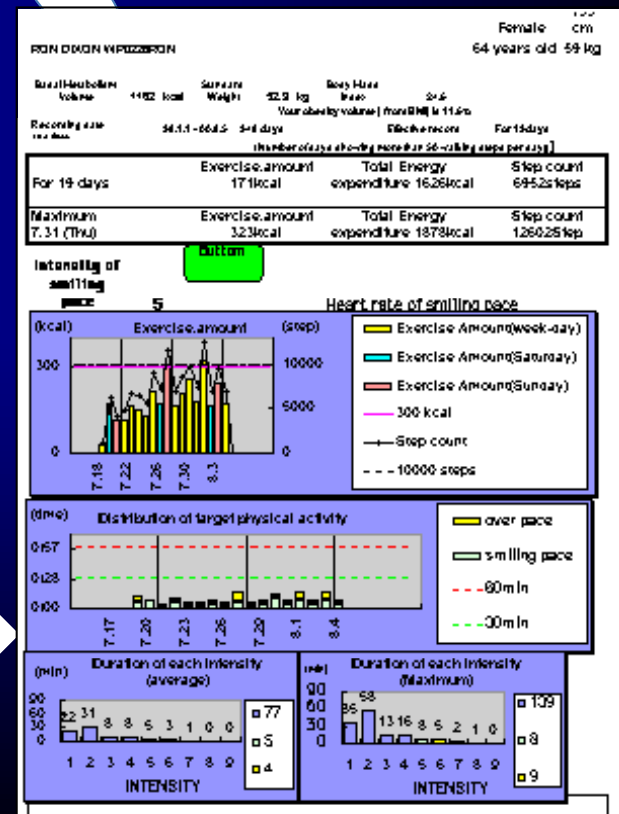
The Physical Activity Patterns of Cardiac Rehabilitation Program Participants

Table 2 • THE AMOUNT AND INTENSITY OF DAILY PHYSICAL ACTIVITY IN CARDIAC REHABILITATION PARTICIPANTS

	All (n = 77)		Men (n = 53)		Women (n = 24)	
	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
Amount*, kcal/day	228 (121)	57–651	254 (125)	91–651	171 (89)	57–453*
Light, min/day	54 (18)	24–103	55 (19)	24–103	51 (14)	28–77
Moderate, min/day	17 (15)	0–80	19 (15)	1–80	14 (12)	0–41
Vigorous, min/day	1 (2)	0–11	1 (2)	0–11	1 (1)	0–5

Amount, amount of physical activity; Light, time spent for light intensity physical activity corresponding to < 3 METs; Moderate, time spent for moderate intensity physical activity corresponding to 3 to 6 METs; Vigorous, time spent for vigorous intensity physical activity corresponding to > 6 METs.
*Significant difference between men and women at $P<.05$.

Ayabe et al. JCR *(2004)*

The Physical Activity Patterns of Cardiac Rehabilitation Program Participants

CRP
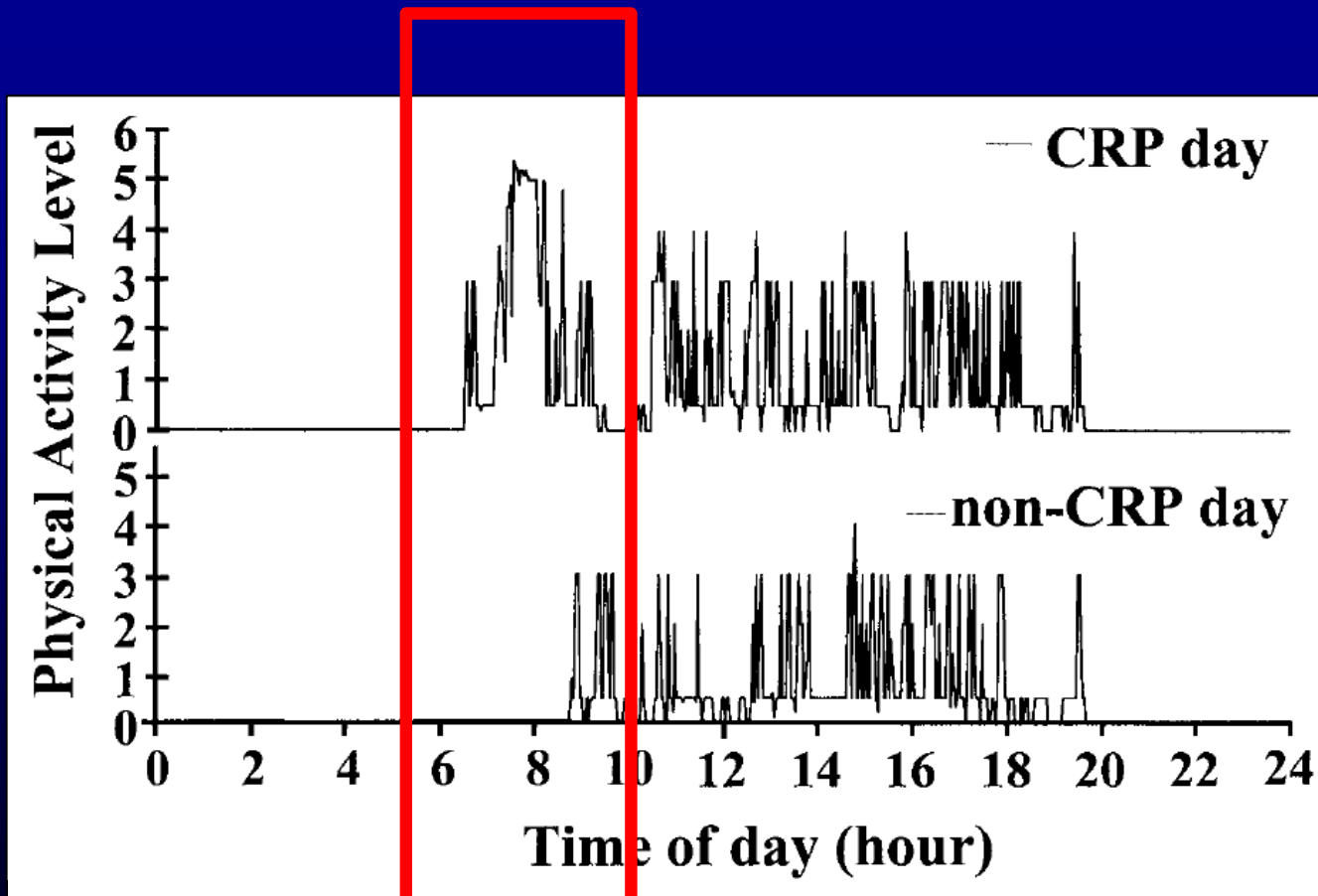
Variation of physical activity levels by accelerometer averaged every 2 minutes over a 24-hour period on a cardiac rehabilitation program day and a non-CRP day.

Ayabe et al. JCR *(2004)*

The Physical Activity Patterns of Cardiac Rehabilitation Program Participants
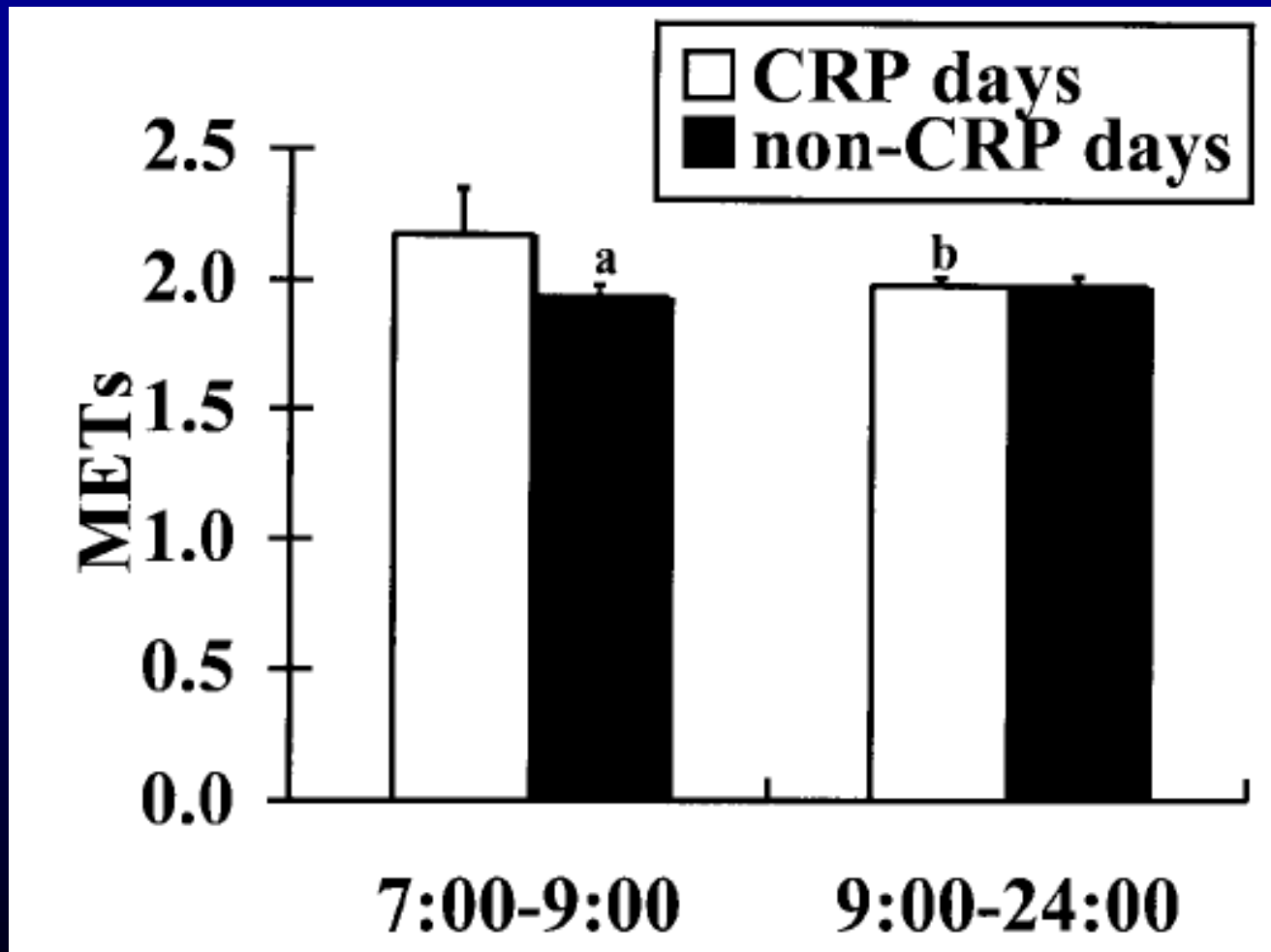
Comparison MET) between CRP period (7 to 9 AM) and the non-CRP period (9 AM to midnight).

Ayabe et al. JCR *(2004)*

The Physical Activity Patterns of Cardiac Rehabilitation Program Participants

Comparison of the calorie expenditure, the time spent in physical activity at light and moderate-to-vigorous intensity between CRP days and non-CRP days.
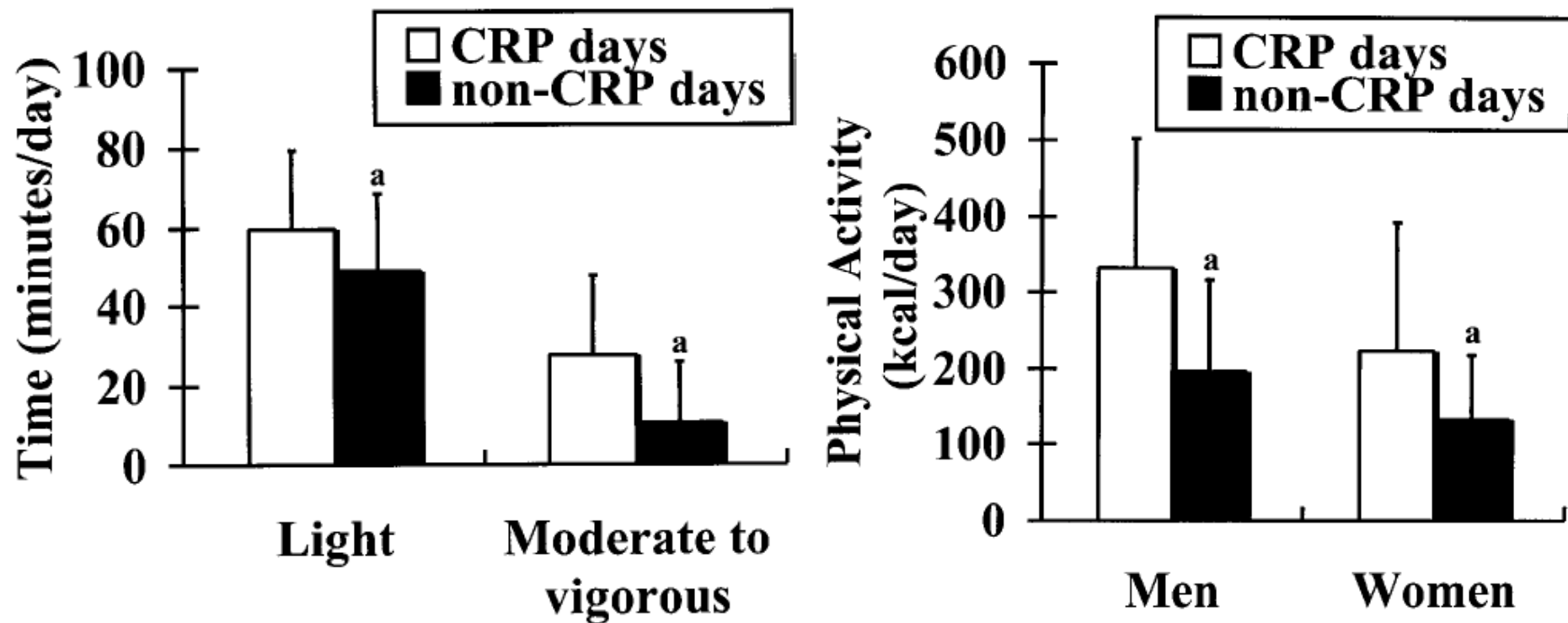
The Physical Activity Patterns of Cardiac Rehabilitation Program Participants

- The amount of physical activity was generally adequate on CRP days, but failed to reach target levels on non-CRP days.
- CRP participants, when it is medically appropriate, should be encouraged to incorporate lifestyle physical activity, additional exercise, or both on non-CRP days to supplement their caloric expenditure from CRP exercise sessions.

Ayabe et al. JCR *(2004)*

Target Step Count for the Secondary Prevention of Cardiovascular Disease
Steps; Alternative assessment of MVPA?

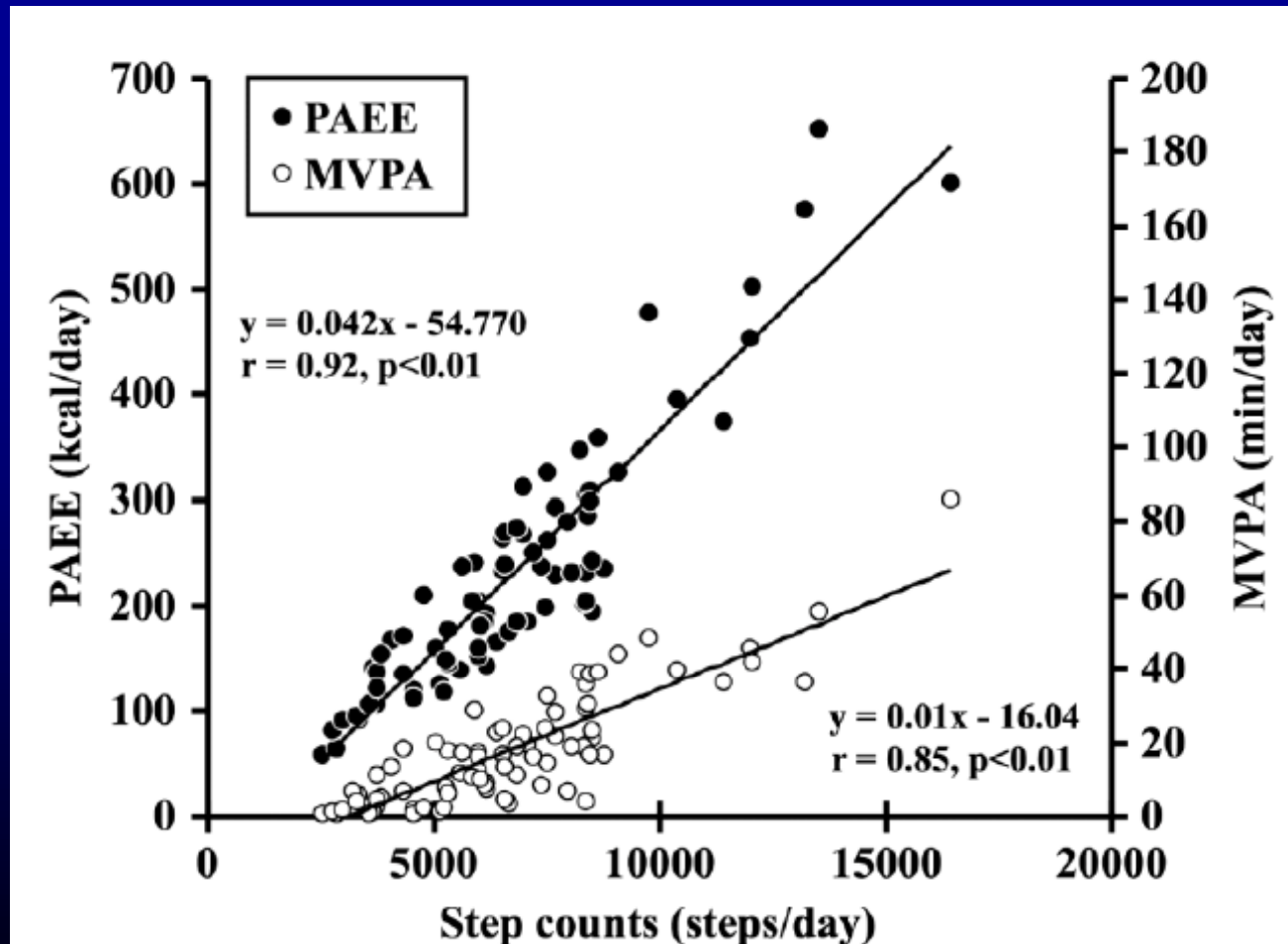|	Accelerometer	Pedometer
Intensity of PA	☆	
Amount of PA	☆	☆
Accuracy	☆	
Cost		☆
Data treatment		☆
User-friendly		☆

Accelerometer with software

Pedometer

Target Step Count for the Secondary Prevention of Cardiovascular Disease
Steps; Alternative assessment of MVPA?

Relationship of the step counts with physical activity energy expenditure (PAEE) and the time spent in moderate to vigorous intensity physical activity (MVPA) by participants in a cardiac rehabilitation program.

Ayabe et al. *Cir J* (2008)
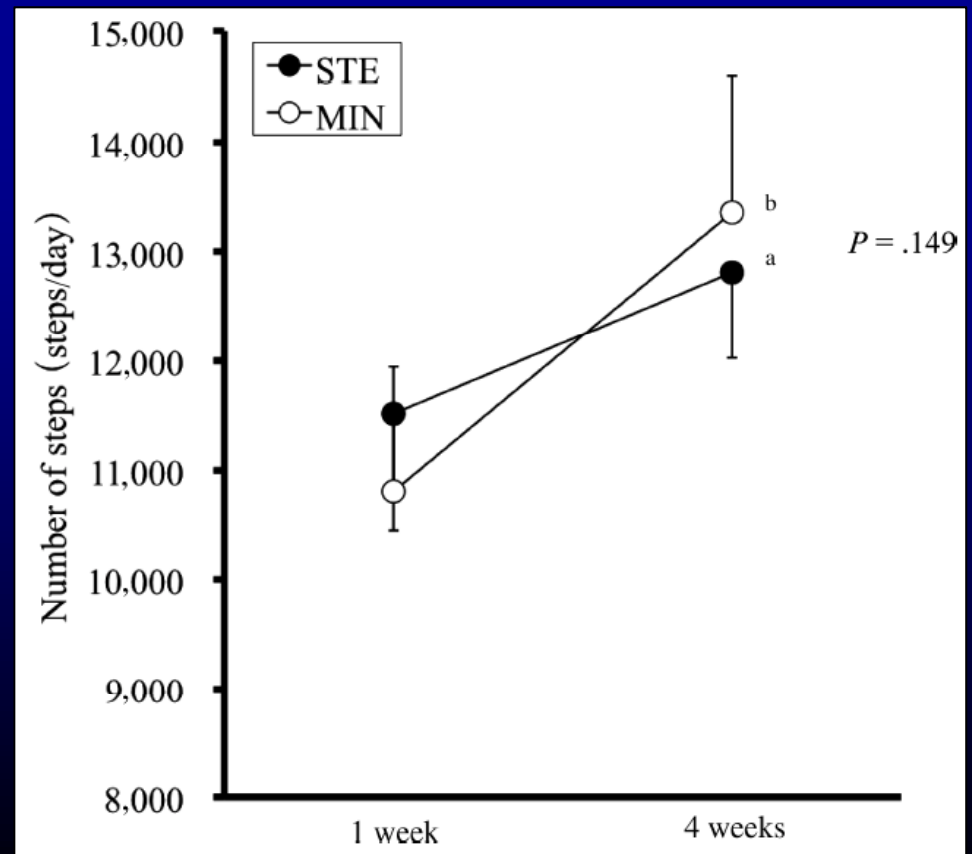
How do patients accumulate MVPA?

Self-monitoring moderate-vigorous physical activity versus steps/day is more Effective in chronic disease exercise programs

Simple MVPA monitor (MIN○) vs Pedometer (STE●)

Baseline (1 week) and follow-up (4 weeks) group levels
of steps/day for self-monitored minutes of moderate- to vigorous intensity physical activity versus steps/day.

Both group significantly improved steps.
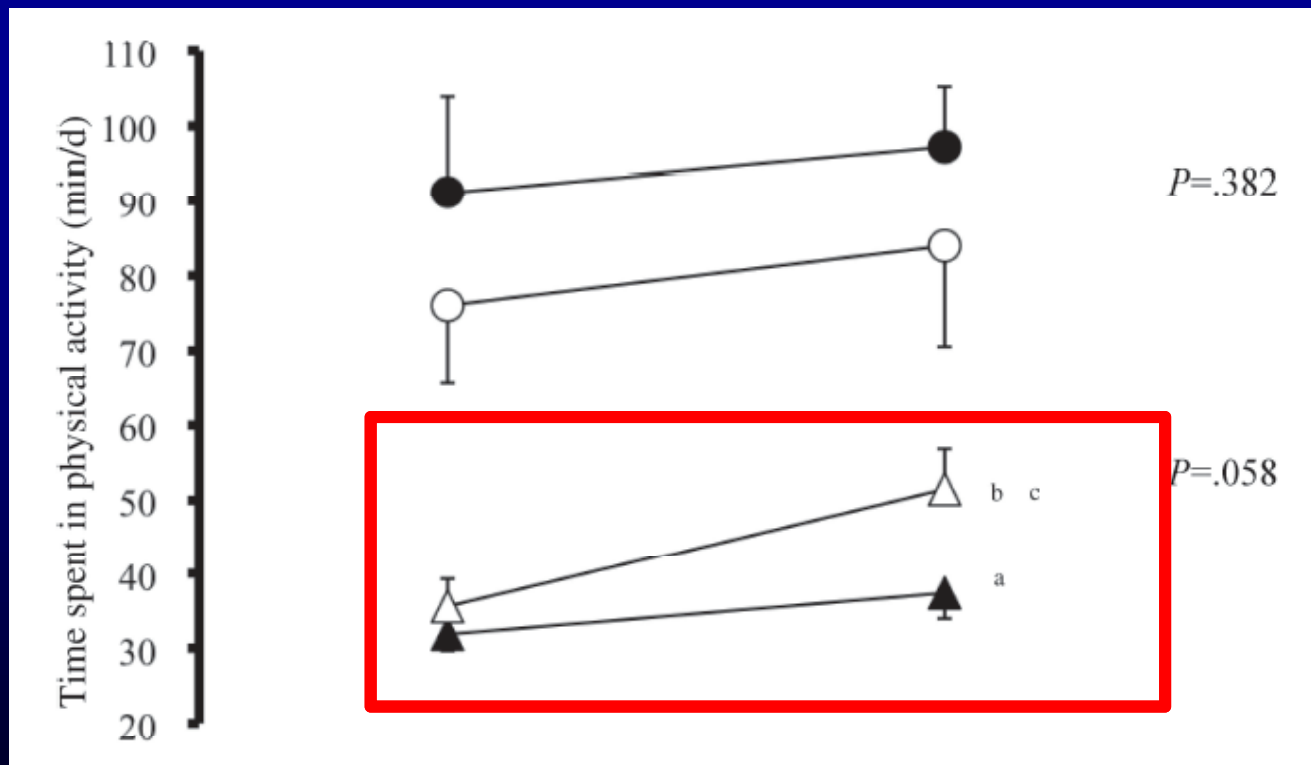
Ayabe et al. *JCRP* (2010)

How do patients accumulate MVPA?

Self-monitoring moderate-vigorous physical activity versus steps/day is More Effective in chronic disease exercise programs

Simple MVPA monitor (MIN△) vs Pedometer (STE▲)

The MIN significantly improved MVPA, but not in STE.

Ayabe et al. *JCRP* (2010)

How do patients accumulate MVPA?

Self-monitoring moderate-vigorous physical activity versus steps/day is More Effective in chronic disease exercise programs

- Individuals with chronic disease conditions can more effectively increase levels of physical activity, expressed as both MVPA/day and steps/day, by self-monitoring MVPA rather than STE.

Ayabe et al. *JCRP* (2010)

Conclusion

- The CRP participants generally failed to reach target levels of PA due to the lower PA levels in non-CRP days.
- The activity monitors (pedometers, accelerometer, etc) would be an useful optional tool to maximize current guidelines of PA.

Acknowledgements

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