

# P1752.2

## Cardiorespiratory Subgroup Teleconference

Working Group Sponsored by IEEE Engineering in  
Medicine & Biology Standards Committee

December 15, 2022  
17:00 UTC

# P1752.2

## Cardiorespiratory Subgroup

### Agenda

Dec 15, 2022

#### Attendance

Consider approval of minutes from Nov 17, 2022

Prior slides / submitted for posting

#### Discussion:

- ✓ Presentation:

- Multiscale/multivariate data/metadata schema considerations*

- ✓ Use cases: Health -> Aging and “pre”-disease -> Disease

- ✓ Value statement document for key stakeholders & collaborators

#### Other business

- ✓ Schema timeline / initial draft target

- ✓ Next meeting : 3rd or 4th Thursday each month *at what time ?*

# Physical Activity / Exercise

## Cardiorespiratory

### Intensity

Movement

Light Activity

Aerobic Exercise

Vigorous Exercise

### Recovery

### Rest State

### General Classifications



\* Examples

### Variables of Interest\*

#### Hemodynamics

BP, P, TPR, Q

#### Respiratory

BP, P, TPR, Q

#### Gas Exchange

RR, TV, Ventilation

#### Autonomics

HR, HRV metrics

#### Symptoms

Rate perceived exertion



# Physical Activity

## Overview

1. What happens during physical activity?
2. What happens during recovery from physical activity?
3. What are we capturing with mobile health?

### Example:

AHA & PAA : HL7 FHIR

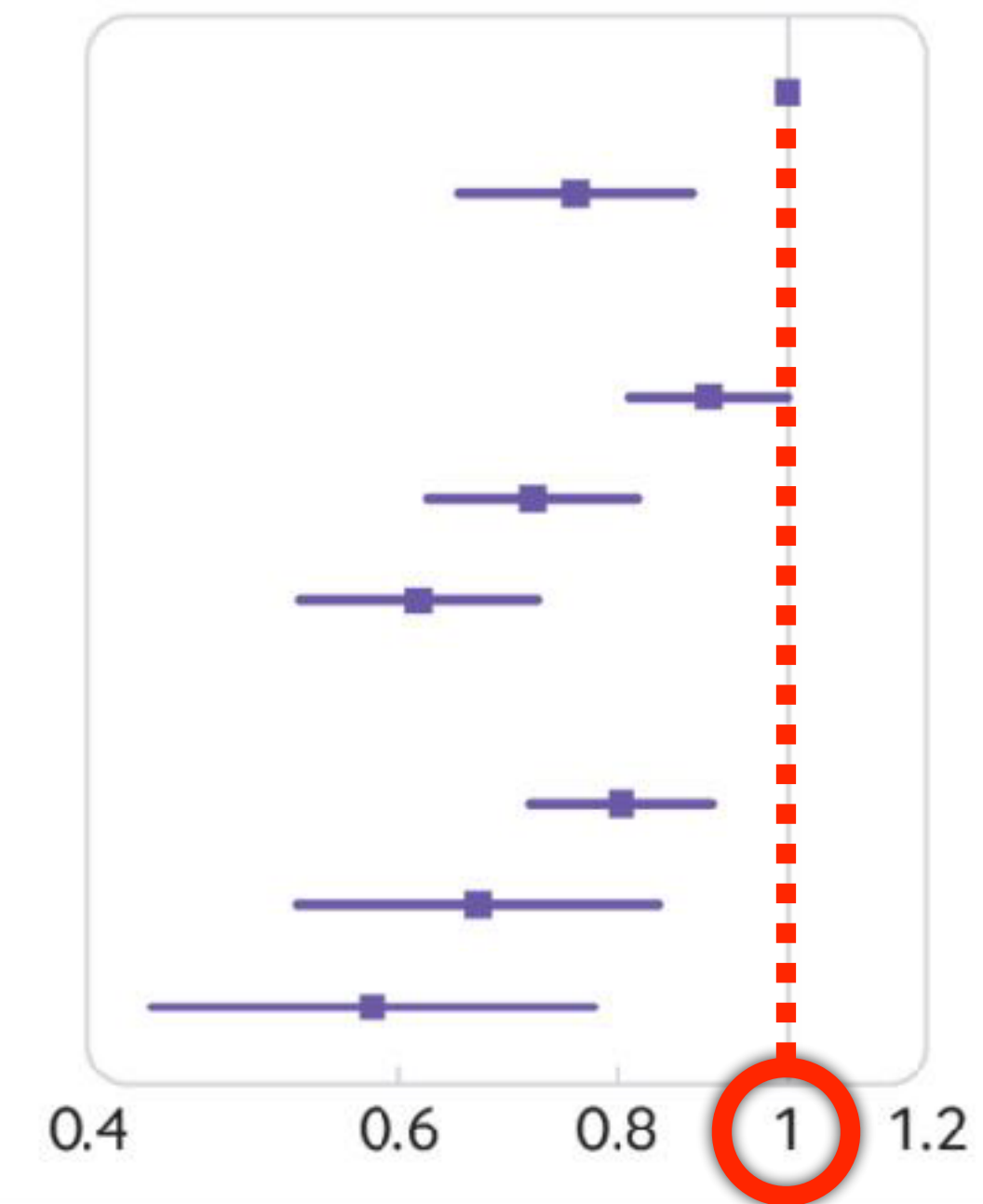
*“Physical Activity Implementation Guide”*

- Fitness assessment as ‘vital sign’
- P1752.2 schema component metrics

## Emphasis 1: Impact

# Physical Activity Trajectories and Mortality

Physical activity trajectory	Baseline PAEE (SD)	Most recent PAEE (SD)	No	Person years	Deaths	Adjusted mortality rate	Potential deaths averted (%)	Hazard ratio (95% CI)	Hazard ratio (95% CI)
<b>Low</b>									
Maintain	0 (0)	0 (0.4)	2207	23 613	842	2433	Reference		1.00
Increase	0 (0)	6.4 (3.2)	1127	13 270	210	1905	70 (10)		0.76 (0.65 to 0.88)
<b>Medium</b>									
Decrease	5.5 (1.6)	1.0 (1.9)	2606	29 727	709	2270	48 (7)		0.90 (0.81 to 1.00)
Maintain	5.5 (1.6)	5.3 (1.8)	1923	23 032	290	1811	143 (21)		0.72 (0.62 to 0.82)
Increase	5.5 (1.6)	10.0 (3.0)	1631	19 852	206	1583	169 (25)		0.62 (0.53 to 0.72)
<b>High</b>									
Decrease	11.9 (2.8)	5.0 (3.8)	2482	29 605	452	2081	104 (15)		0.80 (0.71 to 0.91)
Maintain	11.9 (2.8)	11.0 (2.7)	818	9987	81	1678	75 (11)		0.67 (0.53 to 0.84)
Increase	11.9 (2.8)	14.4 (3.1)	566	6988	50	1439	69 (10)		0.58 (0.43 to 0.78)



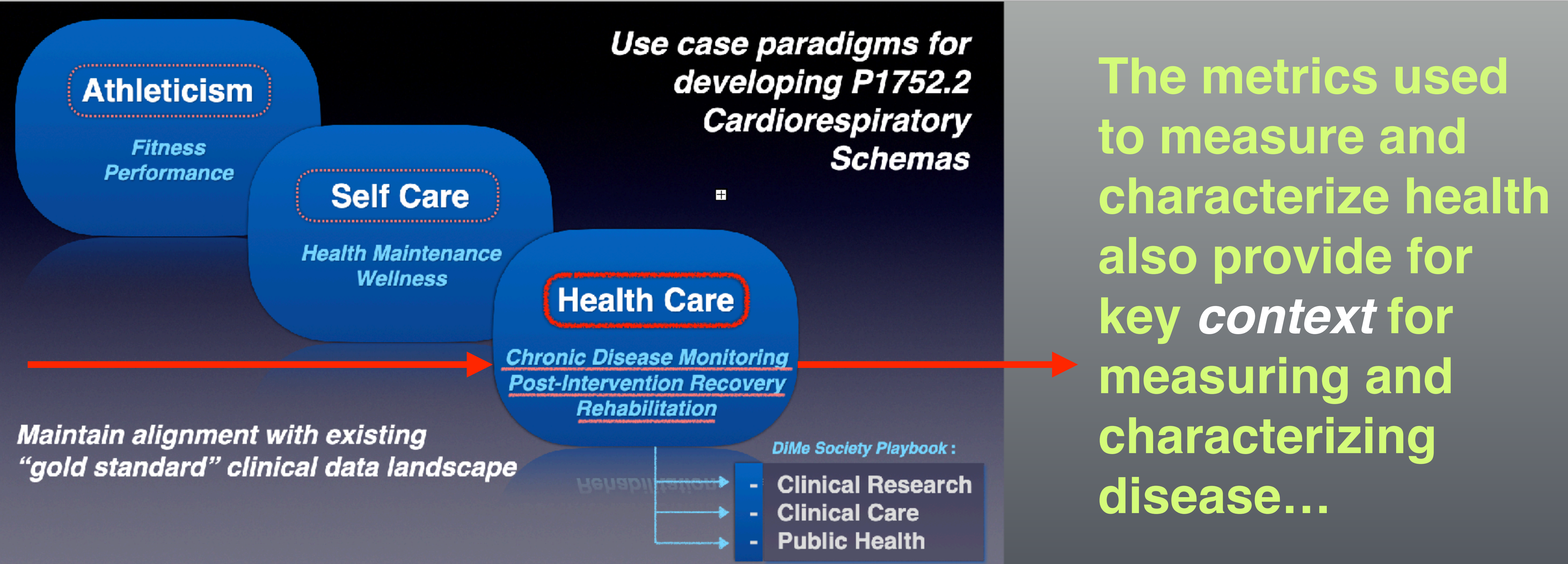
WHO minimum physical activity (PA) guidelines (150 mins/week of moderate-intensity PA)  $\approx$  PAEE of 5 kJ/kg/day  
 WHO recommendations for additional health benefits (300 mins/week of moderate-intensity PA)  $\approx$  PAEE of 10 kJ/kg/day

BMJ 2019; 365 doi: <https://doi.org/10.1136/bmj.l2323> (Published 26 June 2019)



Emphasis 2: Utility

# Physical Activity Trajectories and Mortality





# ***Physical Activity Metrics***

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- *Fitness & performance*
  - *Health maintenance & wellness*
  - *Chronic disease...*
- 

Example:

*Cardiomyopathy  
& heart failure  
(Metric deviations)*





# Timeline / Stakeholder Engagement

- *MedTech Industry*
- *Data Industry*
- *Advocacy Organizations*
- *Professional Organizations*

ACC Scientific Sessions (March 4-6, 2023, in New Orleans)

EHRA Scientific Sessions (April 16-18, 2023, in Barcelona)

HRS Scientific Sessions (May 19-21, 2023, in New Orleans)

IEEE EMBS Conference (July 24-28, 2023, in Sydney)

ESC Congress (August 25-28, 2023, in Amsterdam)

HRX Conference (September 21-23, 2023, in Seattle)

AHA Scientific Sessions (November 11-13, 2023, in Philadelphia)

*Initial  
Draft*

?





*Next meeting :*  
**January 2023**

... **3rd vs 4th Thursday** of the month - **(17:00 → 16:00 UTC) ?**