

# **“Survival of the fittest?”**

## **The evolving case for physical activity in the prevention and management of CVD**

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# Wadjuk Noongar Boodjar





# Exercise Physiology 101

- **Physical activity** – any bodily movement produced by skeletal muscles that requires energy expenditure. Includes exercise, but also activities daily living, like walking, playing, working, or household chores.
- **Exercise** - activity that is planned, structured, and repetitive, with a specific goal of improving or maintaining fitness.
- **Cardiorespiratory fitness** – maximal oxygen consumption ( $\text{VO}_2\text{max}$ ) measured or estimated during an exercise test.
- **METS** – metabolic equivalent. 1 MET = 3.5ml/kg/min of oxygen consumption.



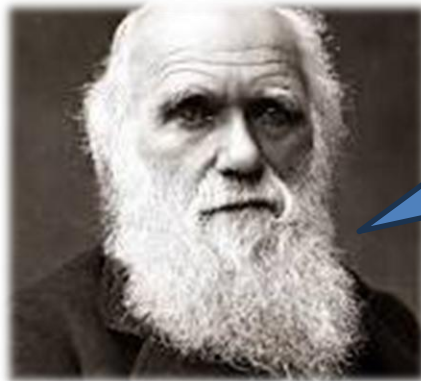


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# Survival of the fittest?



**Charles Darwin:**

*"...the species that survives is the one that is able best to adapt and adjust to the changing environment..."*

**Hippocrates**

*"Walking is Man's best medicine!"*



**Bob Marley**

*"Only the fittest of the fittest shall survive"*



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# What are the health benefits of being active?

Inactivity contributes to

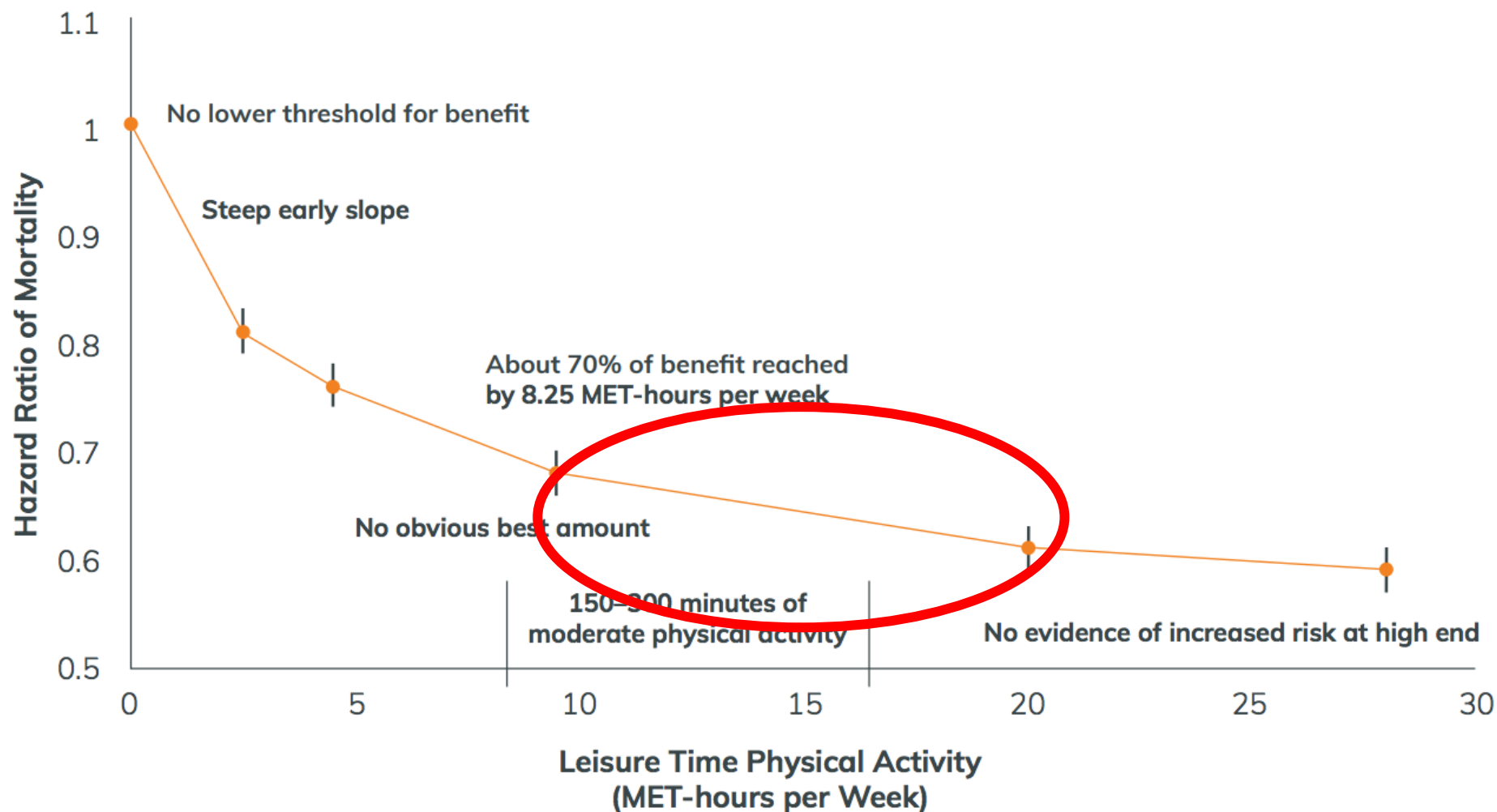
**1 in 10**

premature deaths





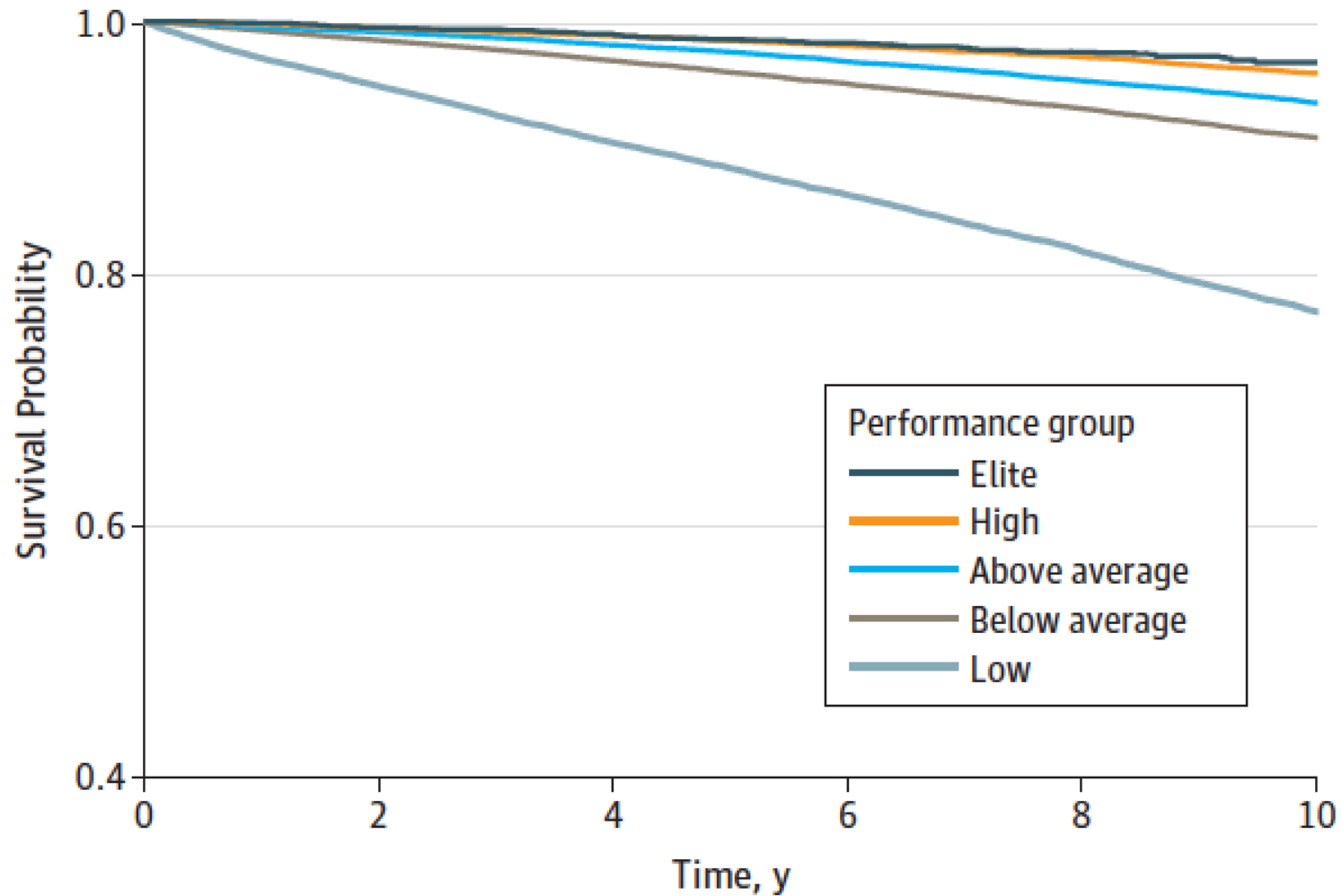
# Physical activity and survival





# Fitness and survival

N= 120,000, 10 year follow-up

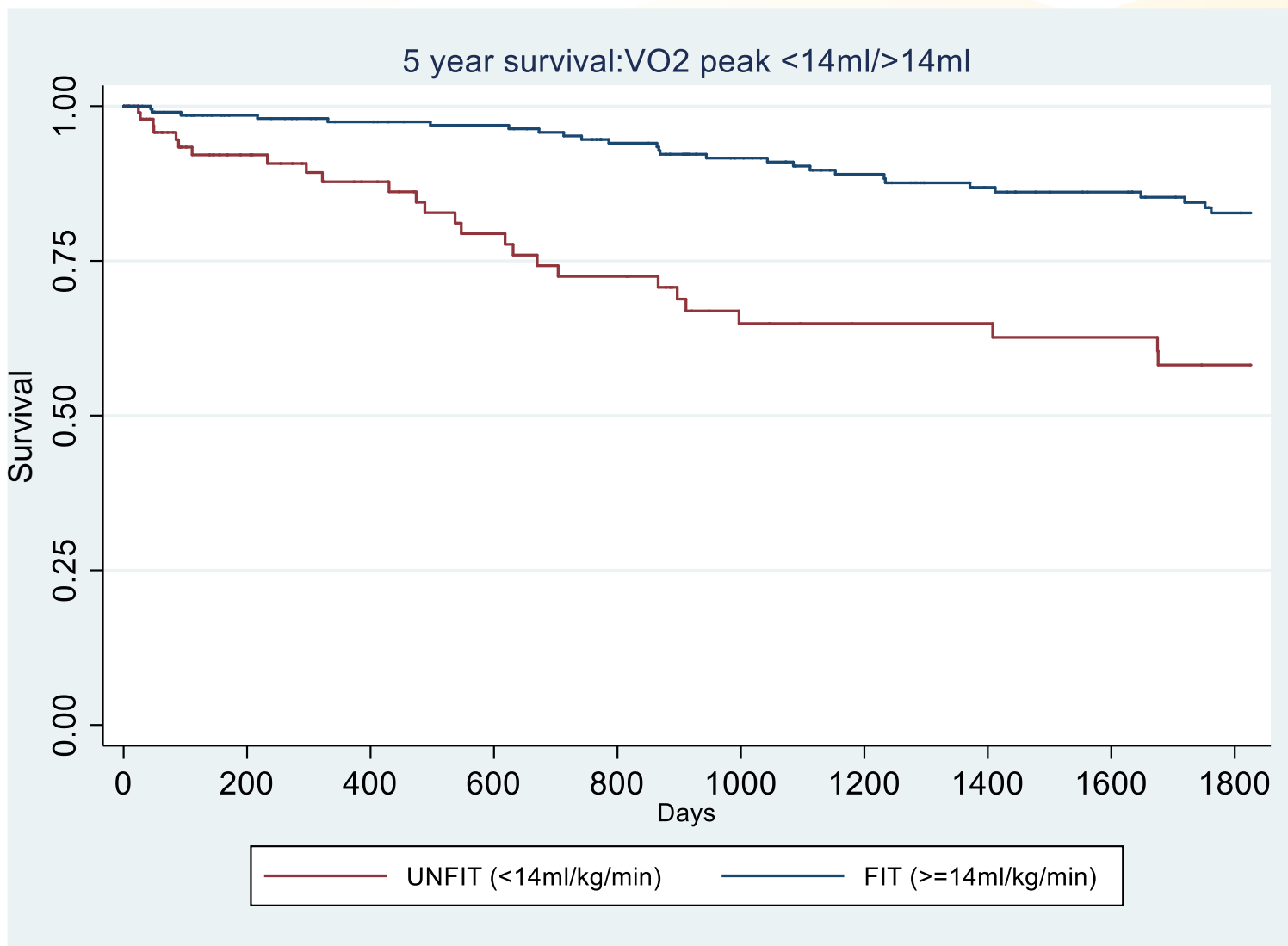






# Fitness and survival: patients with HF

- 312 patients with HF (82% males, NYHA Class I-IV), CPET between 1998 and 2015

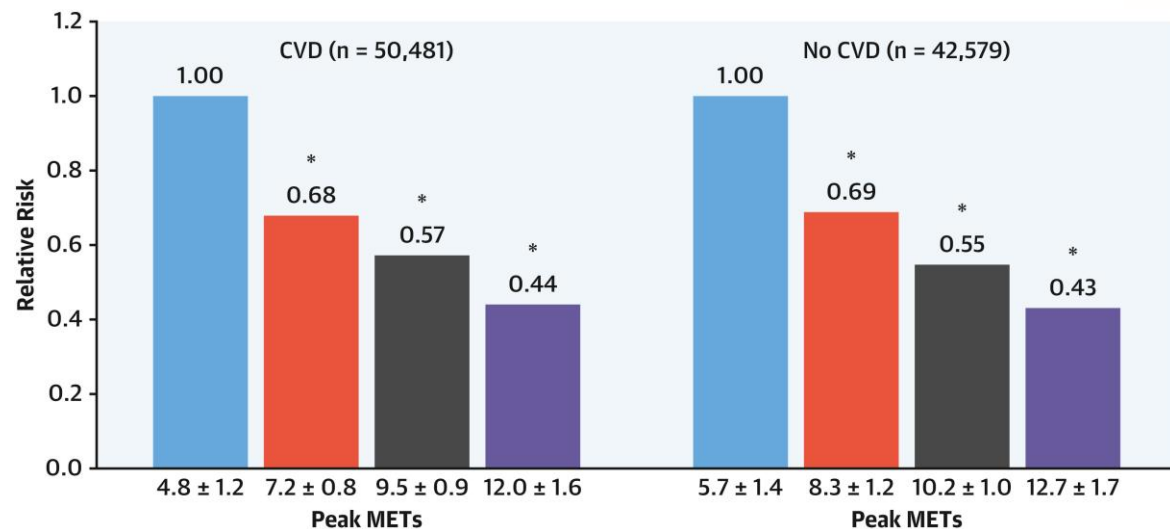




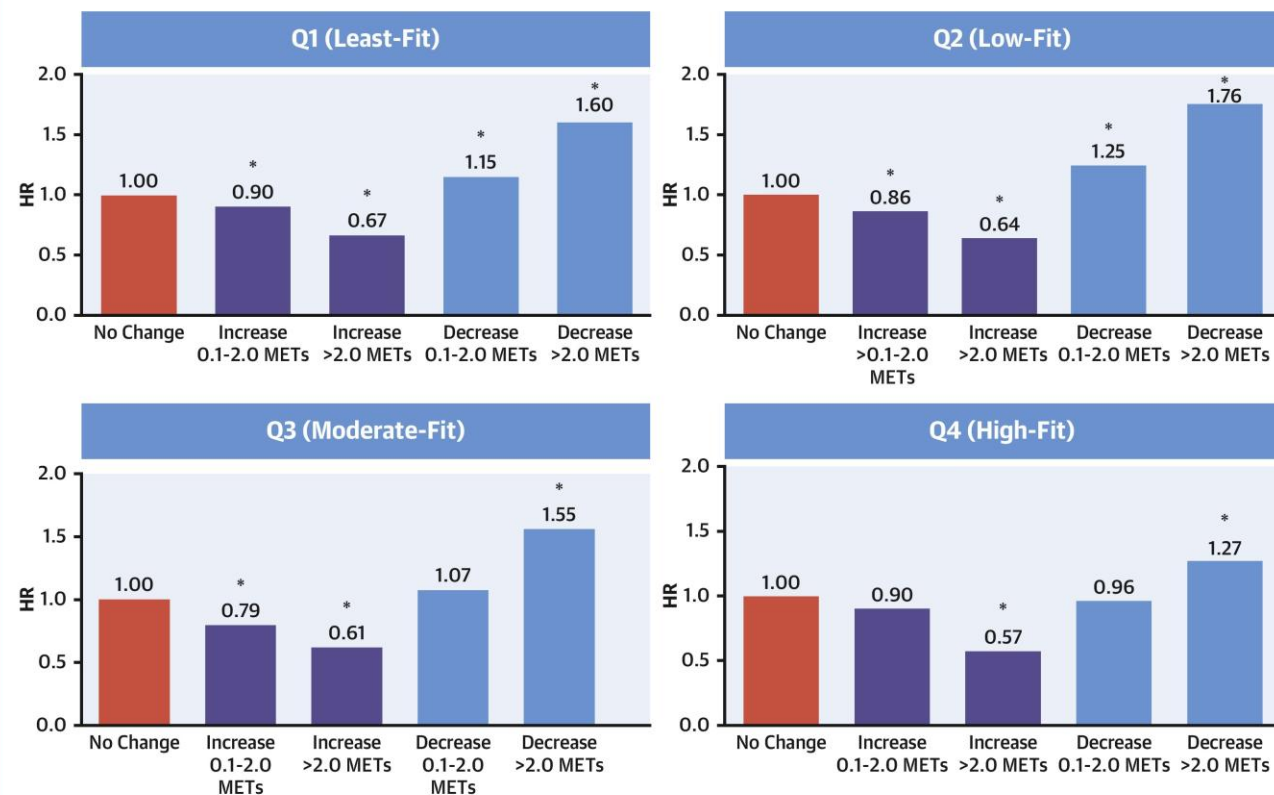
# Does improving fitness improve survival?

## Methods:

- N = 93,060, 30-95 years (mean  $61.3 \pm 9.8$  yrs).
- 2 treadmill exercise tests, mean  $5.8 \pm 3.7$  yrs apart
- Participants assigned to age-specific fitness quartiles based on peak METS on the baseline test.
- 18,302 participants died during follow-up



## CENTRAL ILLUSTRATION: Mortality Risk According to Changes in Cardiorespiratory Fitness Categories



Kokkinos P, et al. J Am Coll Cardiol. 2023;81(12):1137-1147.



# Does improving fitness improve survival?

- Changes in fitness of  $\geq 1.0$  MET (increases or decreases) are associated with progressive changes in mortality risk (Kokkinos et al, JACC, 2023).
- In patients with heart failure: even modest improvements were associated with mortality benefits – 6%  $\uparrow$  in  $\text{VO}_2$  peak confers 7%  $\downarrow$  in mortality (HF Action Trial) O'Conner et al. JAMA, 2009)



# Interim summary...

- Greater levels of physical activity and higher fitness are associated with better survival
- Increasing fitness results in improved survival
- Benefits can be achieved with relatively modest changes!

**What can we do to help people improve their fitness?**





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# Supporting people to improve fitness: cardiac rehabilitation







# Aussie-FIT (Fans in Training) *for men with or 'at risk' of CVD*

- ~50% education, 50% physical activity
- Delivered by **trained football coaches** in footy clubs supported by an Exercise Physiologist
- Draws on **appeal of sport**
- Uses **behaviour change, motivation** and education strategies



"Being at the club and being a set time, it felt like teamwork"

"The Fitbit has been a great motivator. Goal setting was very helpful"

"A fantastic programme!"

"You did not feel alone, others experienced similar problems to yourself"

"Interesting subjects, terrific instructors & camaraderie in the group"





# Co-designing culturally appropriate exercise with First Nations communities





# **“Build it and they will come”**

## **Heart Health: for our people, by our people**



Dimer et al. Aust Health Review. 2013 Feb;37(1):79-82.

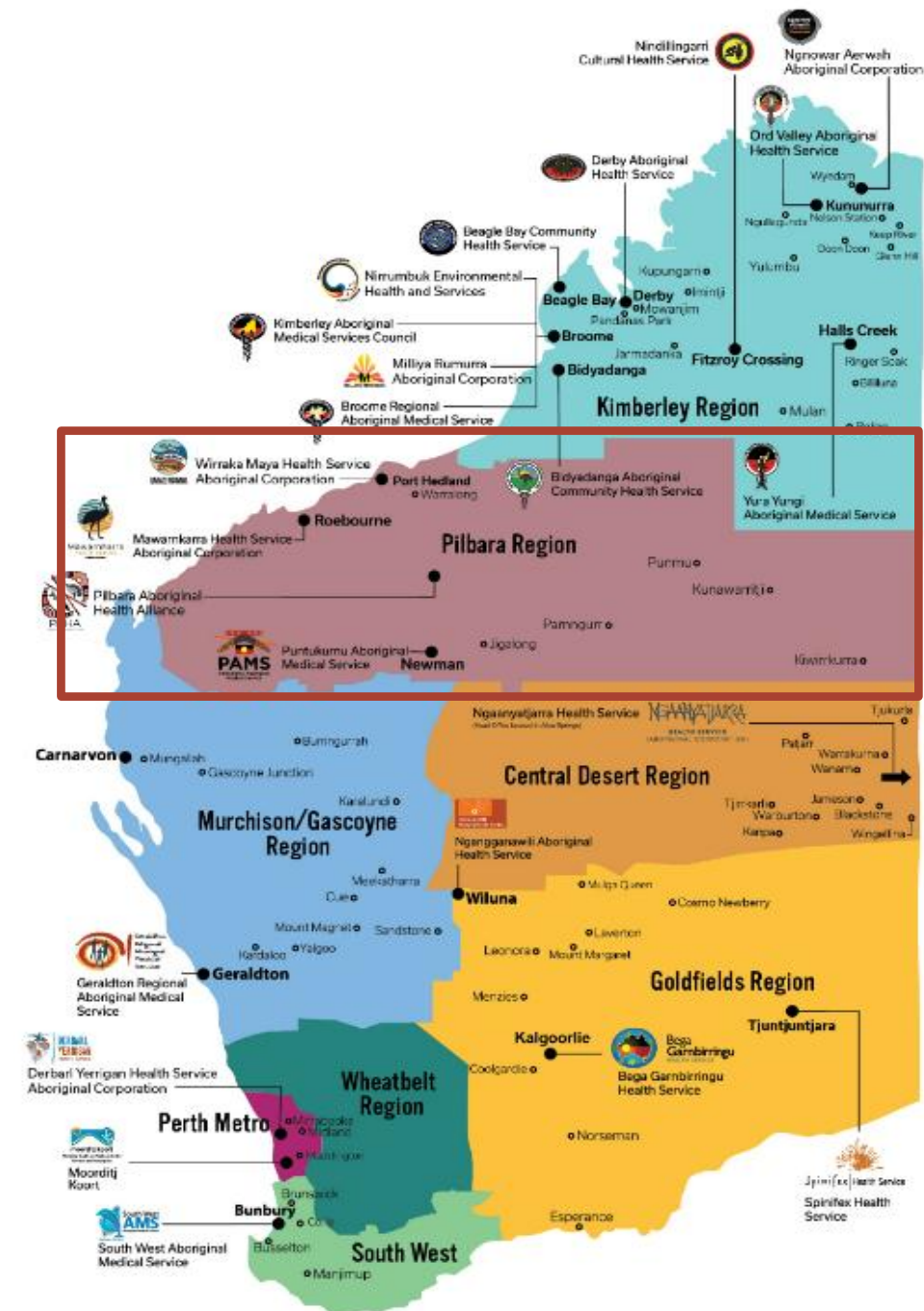


# Co-designing culturally appropriate exercise programs

- Community-led
- Programs must be consistent with community priorities, cultural protocols and methodologies
- Strength-based approach
- Embrace Aboriginal ways of knowing, being and doing, acknowledging both traditional and western concepts of health

# Challenges facing Martu communities

- Geographical distance
- Cultural and linguistic barriers
- Health workforce instability
- Lack of facilities
- Extreme environment





# Healthy Connections Mobile Medi-Kit: Bringing the clinic to the Community





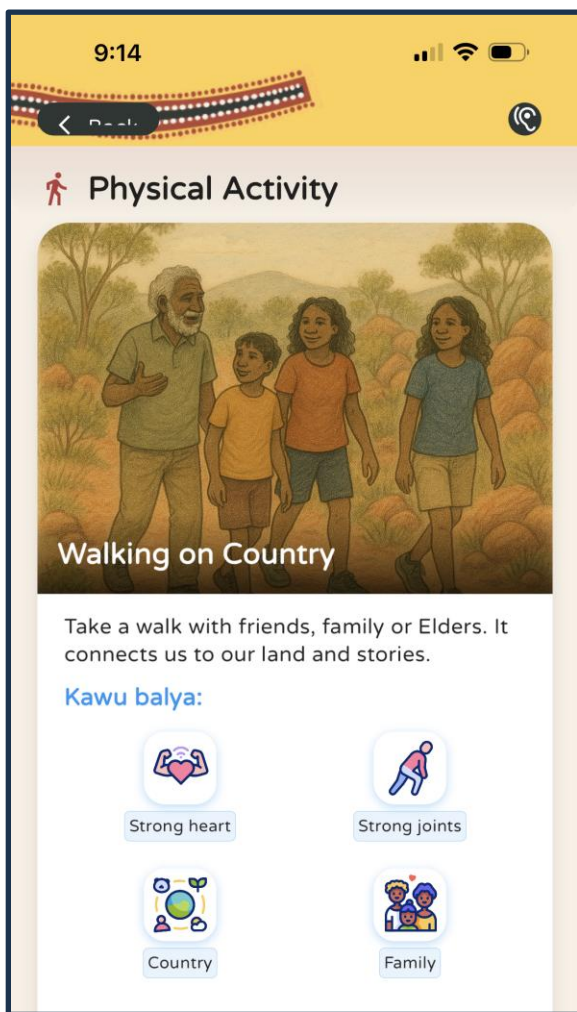


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# Kawu Balya: "Your health, your story"



"The Martu were last out of the desert... but that doesn't mean we can't be leaders with technology"  
*Martu Elder*





## Summary

- Increasing physical activity and fitness are important public health objectives.
- Need to ensure equity of access to health and lifestyle programs to build active communities for all.
- Working with diverse communities to develop activity programs that meet their needs and expectations.



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~~Survival of the fittest???~~

Survival of the fortunate!



**Thanks for listening**

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