How to get patients active without upsetting their tendons!

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Olympic Park Sports Medicine Centre, Melbourne

Hidekichi Miyazaki, 105, imitates the pose of Usain Bolt after his record run. Picture: AFP

GOLDEN BOLT, 105, IN A CLASS OF HIS OWN

JAPAN

A FLEET-footed Japanese centenarian has won a place in the Guinness World Records and declared himself a "medical marvel" as he continues to stalk sprint king Usain Bolt.

Hidekichi Miyazaki, dubbed "Golden Bolt", clocked 42.22sec in Kyoto to set a 100m world record in the over-105 age category — one for which no mark previously existed — a day after reaching the milestone age.

"I'm not happy with the time," the pint-sized Miyazaki said.

"I started shedding tears during the race because I was going so slowly. Perhaps I'm getting old!"

So leisurely was his pace, Bolt could have run his world record of 9.58 four times, or practically completed a 400m race — a fact not lost on Miyazaki.

"I'm still a beginner, you know," he said, grinning from ear to ear.

"I'll have to train harder. I can still go faster."

WORLD

Panda killed eat

CHINA

TWO brothers and a tr face prosecution in south China for killing a pan selling its meat and pa news agency Xinhua

Wang Wenlin Wencai shot the a forest near poverty-stricke China's Yunn December, they misto panda for cies of be

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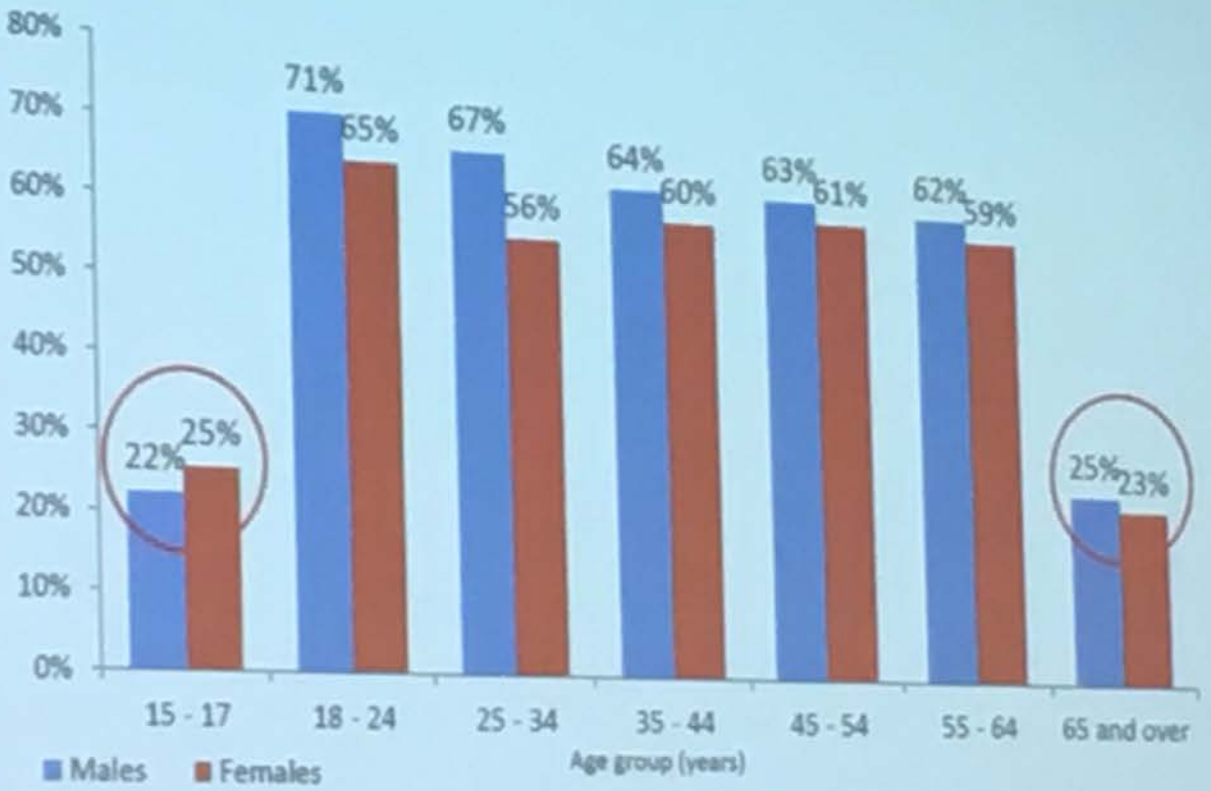
National Physical Activity guidelines 18-65yo

- Doing any physical activity is better than doing none. If you currently do no physical activity, start by doing some, and gradually build up to the recommended amount.
- Be active on most, preferably all, days every week.
- Accumulate **150 to 300 minutes** (2 1⁄2 to 5 hours) of **moderate intensity physical activity** or 75 to 150 minutes (1 1⁄4 to 2 1⁄2 hours) of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week.
- Do muscle strengthening activities on at least 2 days each week.
- SEDENTARY BEHAVIOUR
  - Minimise the amount of time spent in prolonged sitting.
  - Break up long periods of sitting as often as possible.

54% Australian adults meeting the Guidelines



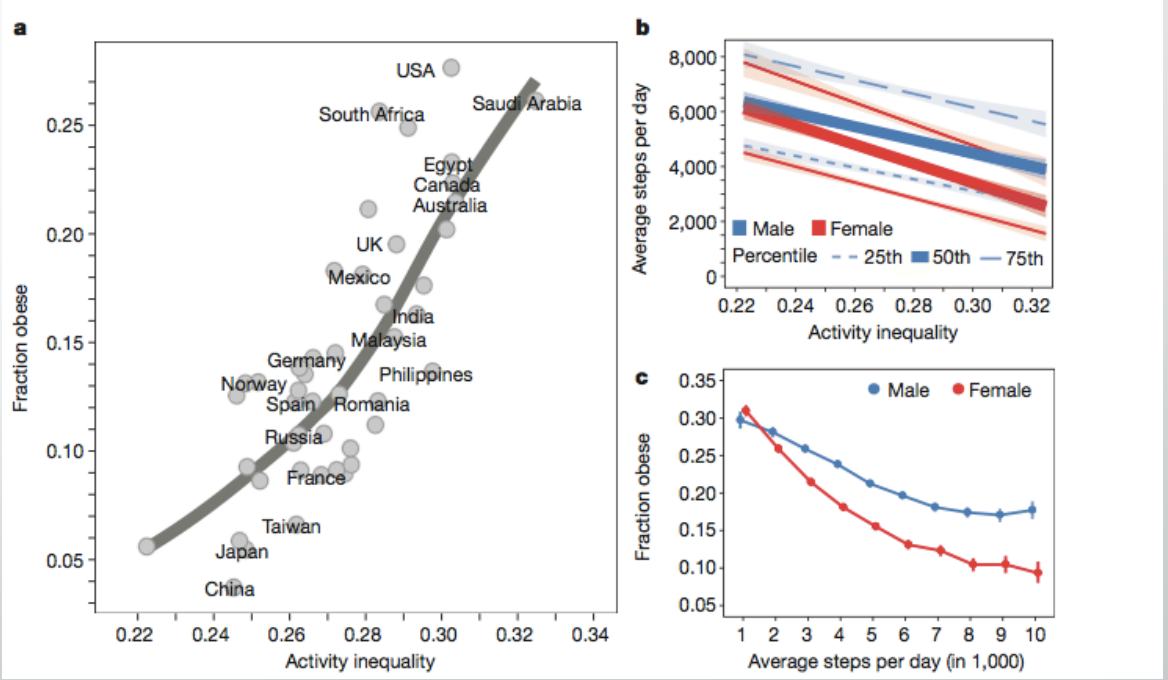
Sufficiently physical activity according to guideline equivalents are defined as:
For 15-17: at least 60 minutes of moderate intensity physical activity per day
For 18-64: at least 150 minutes of moderate intensity physical activity per week
For 65 and over: at least 30 minutes of moderate intensity physical activity per day

ausport.gov.au

Large-scale physical activity data reveal worldwide activity inequality

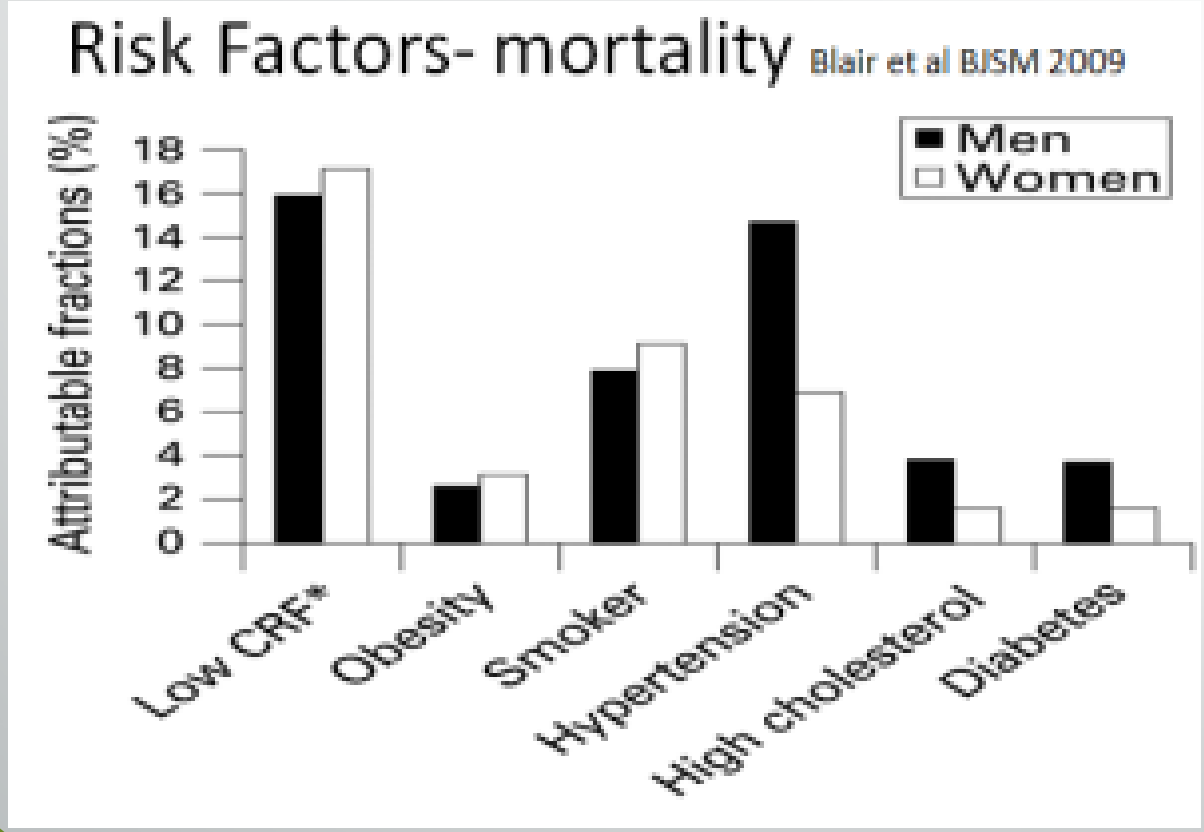
Tim Althoff[1], Rok Sosič[1], Jennifer L. Hicks[2], Abby C. King[3,4], Scott L. Delp[2,5] & Jure Leskovec[1,6]

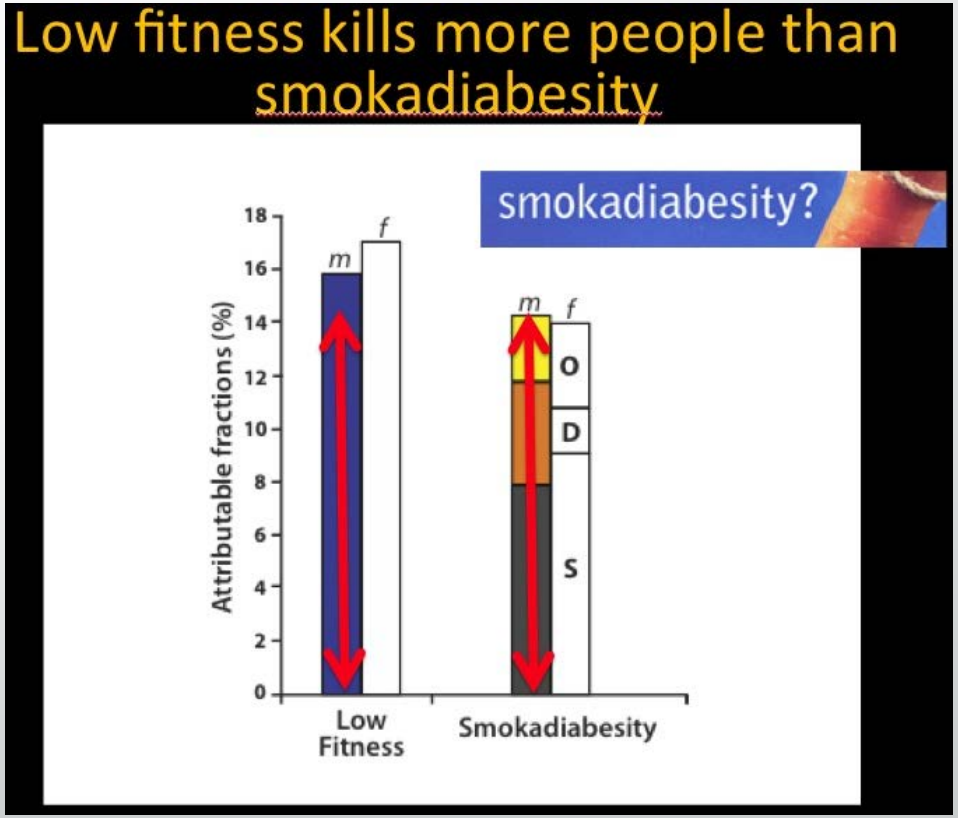
- Worldwide smartphone data
  - 68 million days of activity
  - 700,000 individuals
- Activity inequality is associated with
  - Obesity
  - Increasing gender gaps in activity

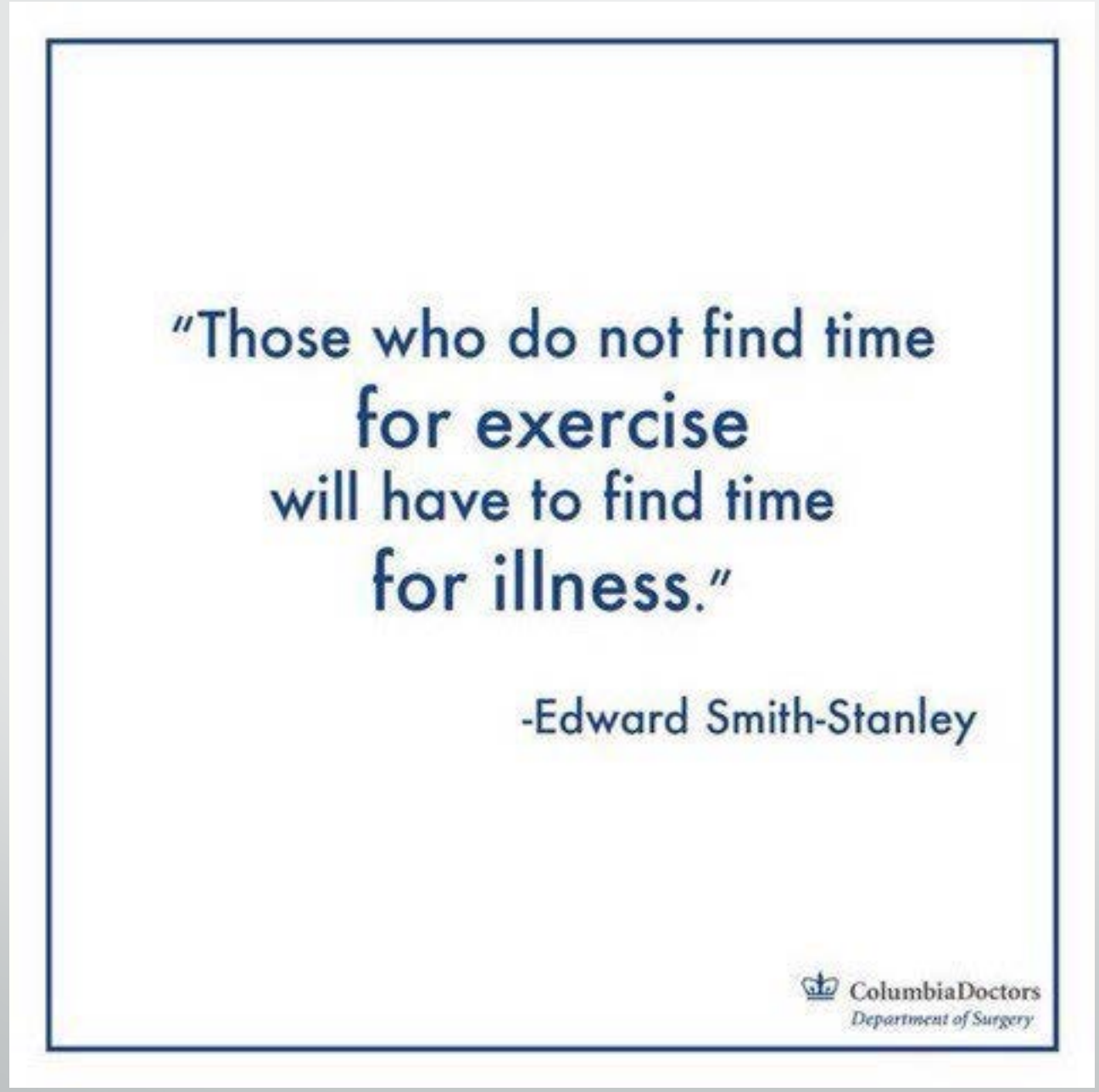


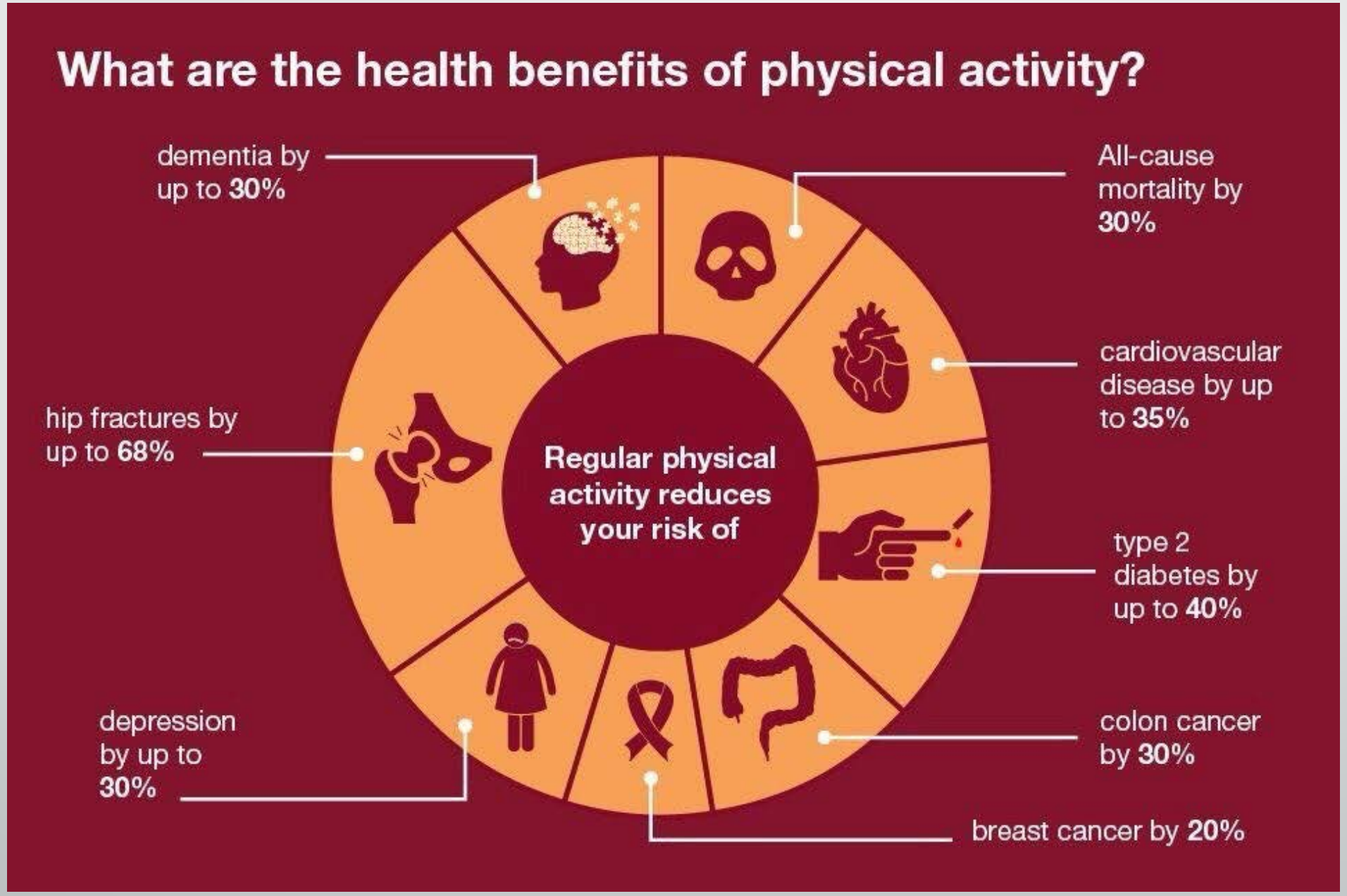
Nature 2017

All cause mortality






"Those who do not find time
for exercise
will have to find time
for illness."
-Edward Smith-Stanley
ColumbiaDoctors
Department of Surgery


What are the health benefits of physical activity?
dementia by up to 30%
All-cause mortality by 30%
cardiovascular disease by up to 35%
hip fractures by up to 68%
Regular physical activity reduces your risk of
type 2 diabetes by up to 40%
depression by up to 30%
colon cancer by 30%
breast cancer by 20%

Cost vs Benefit

- 50% of Australians have at least 1 of the major chronic diseases
  - 25% have 2 or more
  - Higher in
    - Lower socioeconomic areas
    - Regional, remote and indigenous communities
- Increase physical activity compliance →
  - Significant reduction in
    - Health costs
      - $8 million per 1% increase in adult PA levels
    - Bed stays
  - Healthier population
  - ***Those who meet PA guidelines live 7 years longer than those who are inactive***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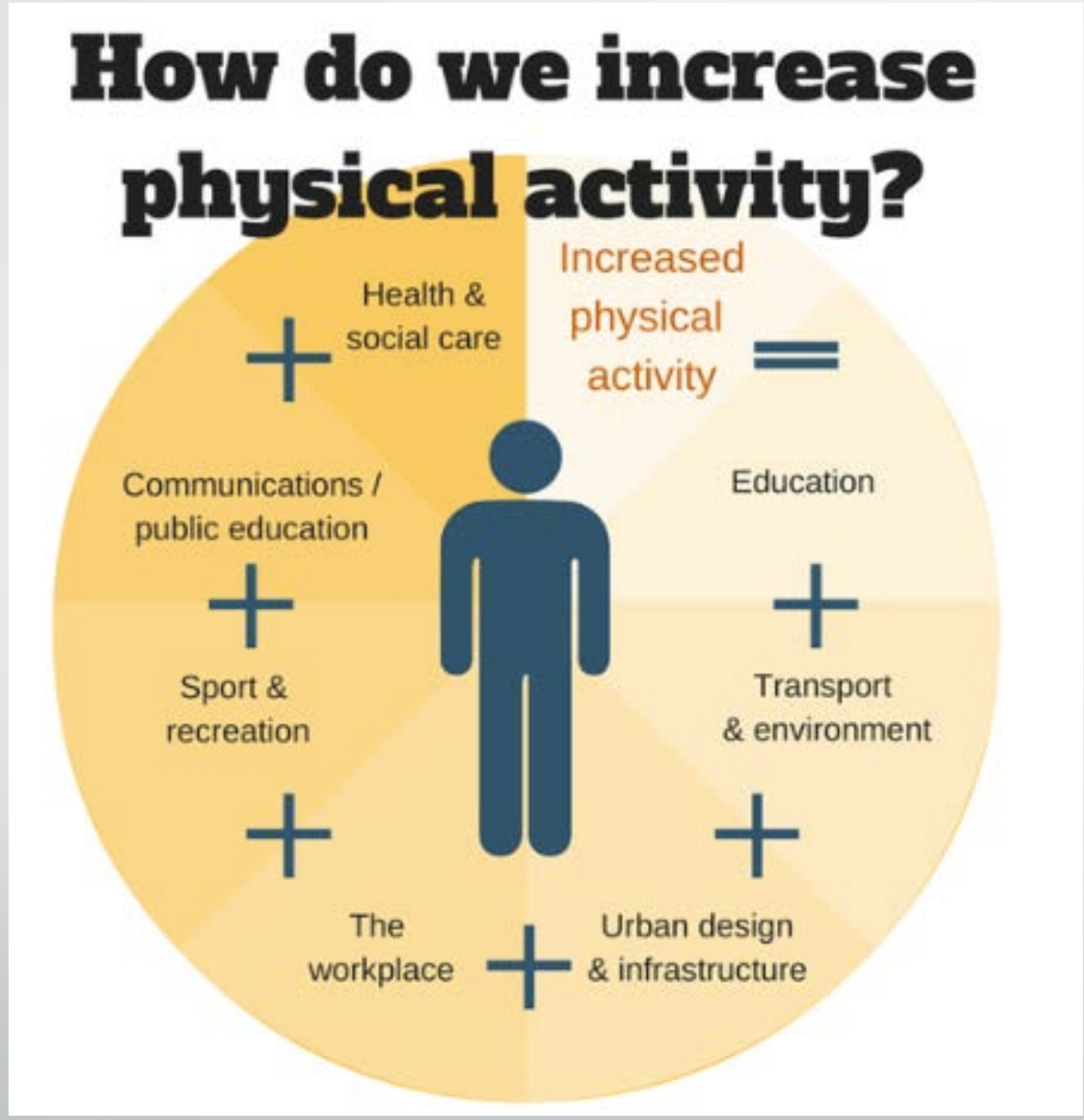
www.glasbergen.com
GLASBERGEN
"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"


How do we increase physical activity?
Health & social care
+
Increased physical activity
=
Communications / public education
+
Education
+
Sport & recreation
+
Transport & environment
+
+
The workplace
+
Urban design & infrastructure

Physical activity

Any bodily movement produced by one or more large skeletal muscle groups

- Leisure
  - **Exercise** – generally involves structured activity to improve a certain aspect of fitness
  - **Sport** – one form of delivery of PA and exercise
  - Recreational activities – bushwalking, surfing, golf, mountain biking, skiing
- Transport
  - Walking, cycling, scooter, skateboard
- Occupation
  - Paid / unpaid work
  - Lifting, carrying, farming, digging

Rating of Perceived Exertion (RPE)

RPE Scale	Rate of Perceived Exertion
10	**Max Effort Activity** Feels almost impossible to keep going. Completely out of breath, unable to talk. Cannot maintain for more than a very short time.
9	**Very Hard Activity** Very difficult to maintain exercise intensity. Can barely breath and speak only a few words
7-8	**Vigorous Activity** Borderline uncomfortable. Short of breath, can speak a sentence.
4-6	**Moderate Activity** Breathing heavily, can hold short conversation. Still somewhat comfortable, but becoming noticeably more challenging.
2-3	**Light Activity** Feels like you can maintain for hours. Easy to breathe and carry a conversation
1	**Very Light Activity** Hardly any exertion, but more than sleeping, watching TV, etc

Intensity

- Light - easy breathing, can carry a conversation
  - Yoga
  - Pilates
  - Tai-Chi
- Moderate – breathing heavily, can hold short conversation
  - Brisk walking
  - swimming
  - Social tennis
  - dancing
- Vigorous – short of breath, can speak a short sentence
  - Running
  - Aerobics
  - Competitive sport

Physical activity prescription: a critical opportunity to address a modifiable risk factor for the prevention and management of chronic disease: a position statement by the Canadian Academy of Sport and Exercise Medicine

Jane S Thornton,[1] Pierre Frémont,[2] Karim Khan,[3] Paul Poirier,[4] Jonathon Fowles,[5] Greg D Wells,[6] Renata J Frankovich[7]

CASEM ACMSE

AUSTRALASIAN COLLEGE OF SPORT AND EXERCISE PHYSICIANS

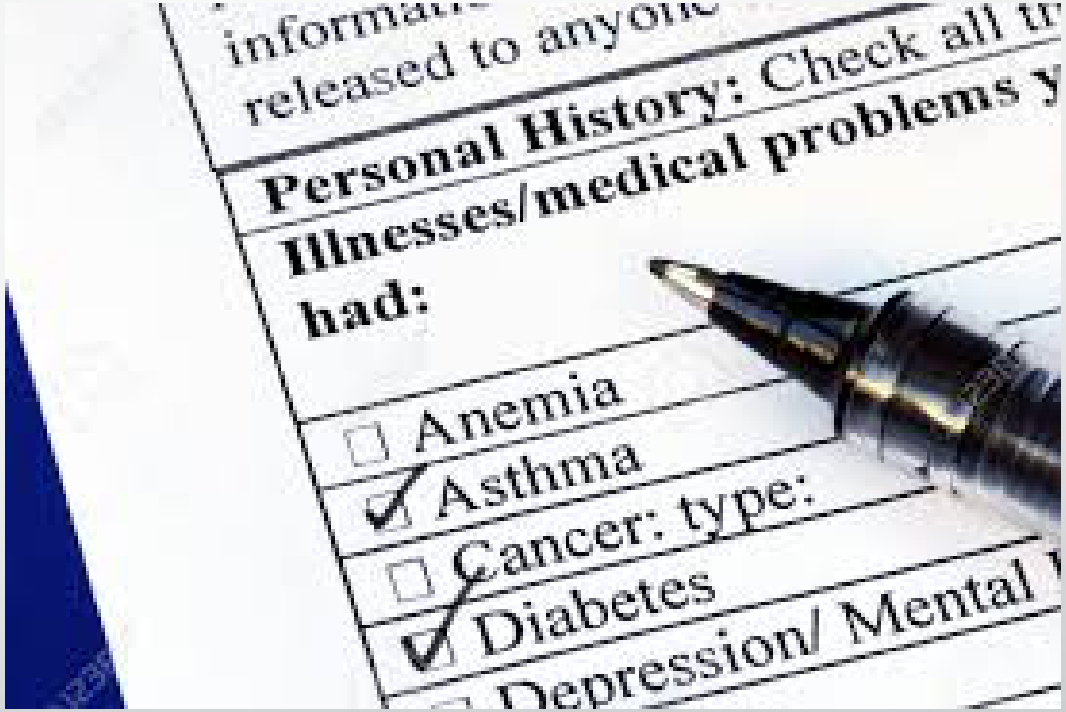
- EXERCISE AS A VITAL SIGN
  - A. On average, how many days/week do you engage on moderate or greater physical activity?
    - Like a brisk walk at talking pace
  - B. On those days, how many minutes do you engage in activity at this level?
  - EVS = A x B
  - Aim for 150 minutes +/ week
  - Simply ACTIVE / INACTIVE

Physical activity

- Sports / exercise / activity
- Aerobic / resistance
- Work – active / sedentary
- Drive or commute
- Kids
- Pets
- PHx – sports / exercise

Past medical history

- Cardiovascular
  - IHD
  - HT
- Cancer
- DM
- OA
- Not to be missed
  - Eating disorders
  - OCD
  - Fibromyalgia / CFS



Medications

- Beta-blockers
- Metformin
- Statins
- Insulin
- Prednisolone

Surgical history

- Orthopaedic
- Cancer
- Abdominal
- Recent childbirth
  - Natural
  - LUSCS

Examination

- Vitals – HR, BP, temp
- Functional assessment
  - Lower limbs
    - Calf raise
    - Squat
    - Hop
  - Shoulders

Investigations

- If clinically indicated
  - WB xrays
  - Bloods
  - Special tests
    - Cardiac
    - Cancer
    - Diabetics
    - Asthma / COPD

Goals

- Event
- Trip
- Lifestyle change
- Feel better
- Treat existing disease
- Prevent chronic disease

Activity

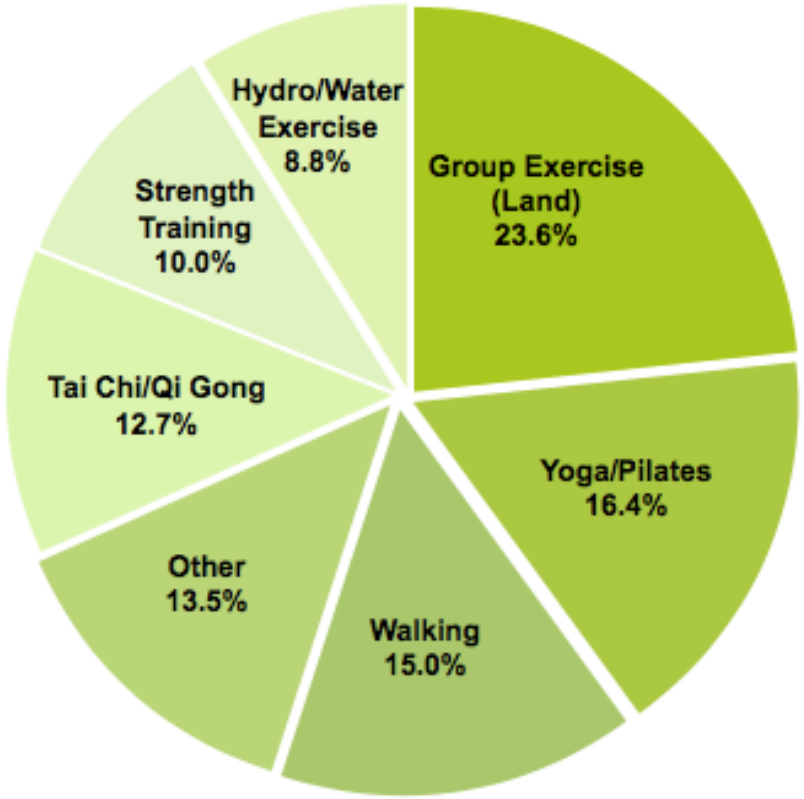
- Solo / group / team
- Organised / spontaneous
- Indoor
  - gym
  - Treadmill
  - squash
- Outdoor
  - running
  - cycling
  - Walking / hiking
  - Swim

Incidental activity

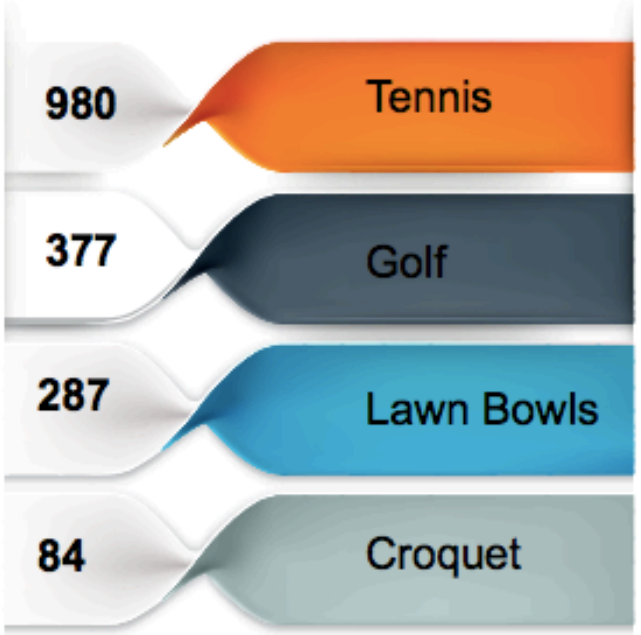
- Car park – park furthest from shops
- Stairs / hills
- Work – farm / active labour
- Get off bus / train early and walk extra
- Walk kids to school
- Help with kids sport
- Office end of hallway – day in clinic 7000 steps/day
- Babies – progressive resistance program

Victorian Active Ageing Partnership (VAAP)

Physical Activity Audit and Gap Analysis



Types of structured physical activity programs



Total 1,728

Available leisure activities commonly frequented by older people

Issues / barriers

- Body image
- Mental health – anxiety / depression
- Illness
  - Discuss with treating specialist
    - Oncologist
- Affordability
  - Equipment
  - Concessions / Private health
  - Chronic health care plan
    - 5 x allied health sessions/year
      - Exercise physiologists
- Time
- Motivation

#howfitfeels

Exercise therapy for functional capacity in chronic diseases: an overview of meta-analyses of randomised controlled trials

Tero Pasanen, Samppa Tolvanen, Ari Heinonen, Urho M Kujala

BJSM 2017

- Exercise therapy appears to be safe for patients with non-communicable chronic diseases.

Exercise therapy should be recommended for all patients with non-communicable chronic diseases to prevent the decline of functional capacity and to improve it further.

Exercise prescription

- Type
- Dose
  - Duration
  - Intensity – moderate vs high vs HIIT
  - Frequency
- Importance of
  - Strength training
  - Rest days
- Principles of loading – return from relative inactivity / injury

Green Rx

Introduction to GRx

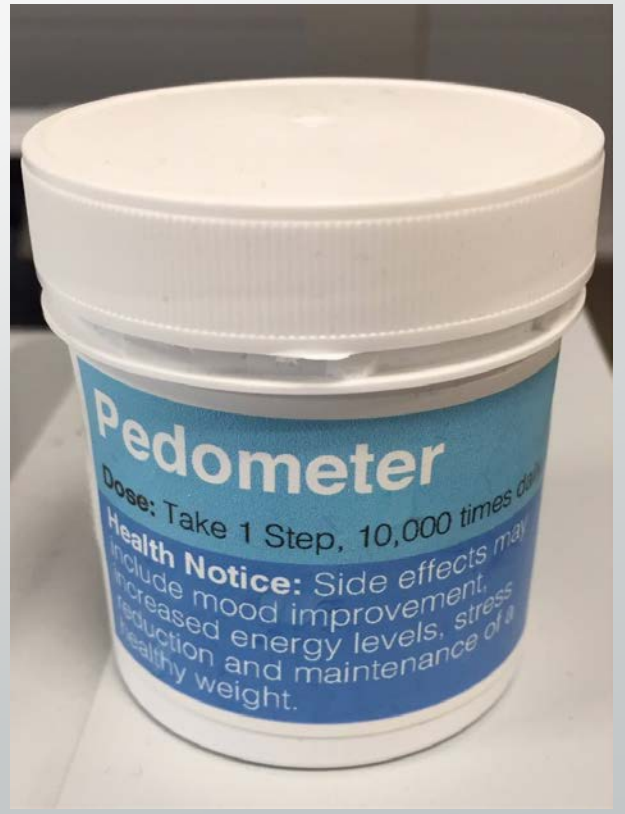
- A Green Prescription (GRx) is a health professional's written advice to a patient to be physically active, as part of the patient's health management.
- An Example of Success.
  - Stopped monthly hospital visits of up to one week.
  - Is no longer depressed.
  - Off insulin.
  - Walks half marathons.
  - Has a part-time job.

"I now feel like I have my life back."

GRx Patient.

Manpo-kei

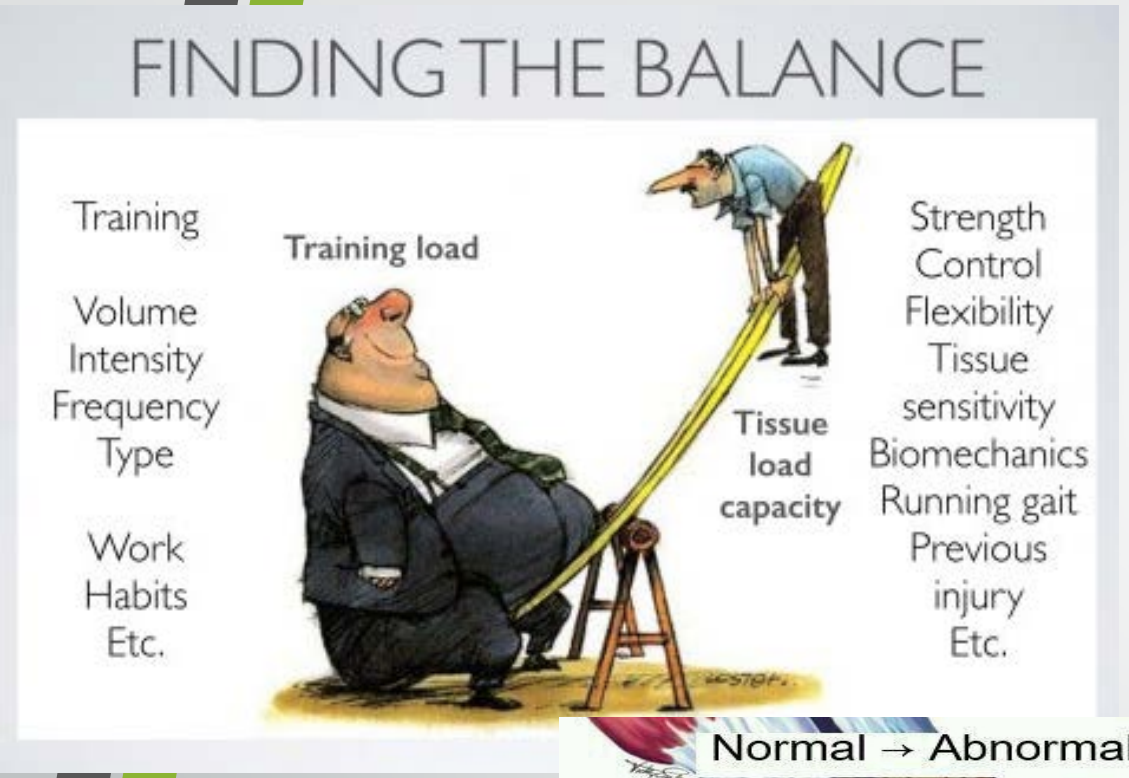
- Japan 1960's - 10,000 steps
  - coupled with other healthy behaviours it can lead to reduction in chronic diseases
  - If all did this a significant drop in healthcare budget
    - Most sedentary people 3000-4000 steps/day
  - NB/ Does not factor in
    - intensity
    - non impact exercise (cycling, swimming, gym)

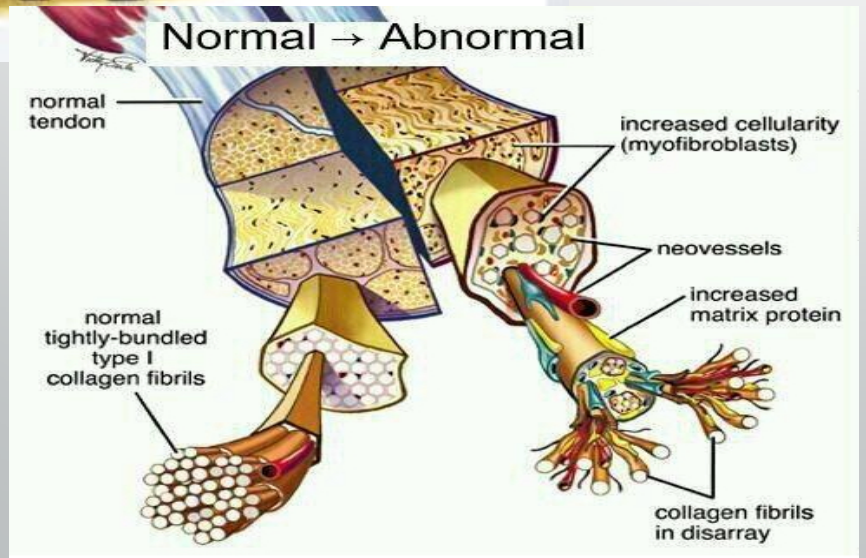


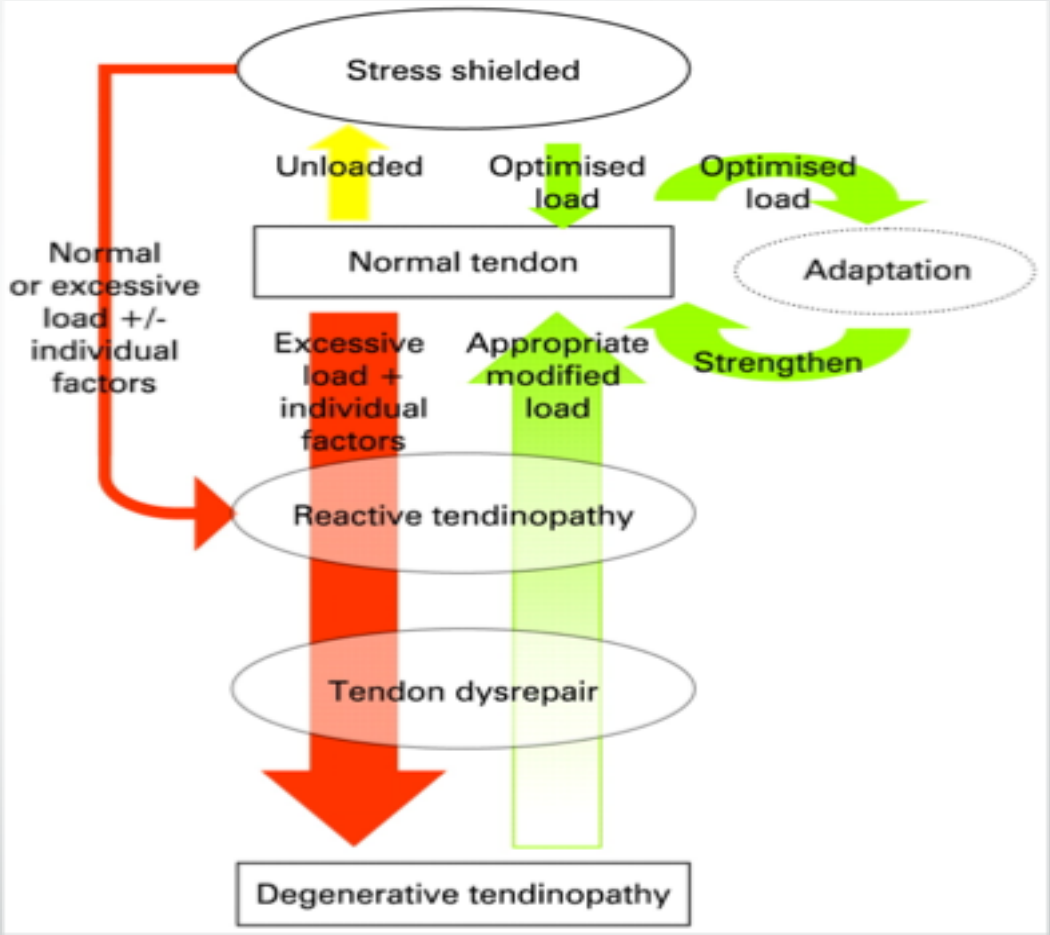
Avoiding injury

- Footwear – comfortable
  - Replace every 6/12 or 500km
- Comfortable clothing
- Avoid consecutive day high impact loading
- Monitor fatigue / pain – wait until settle before resume
- Progression 10%/week

Tendinopathy = load > capacity







Cook J L , Purdam C R Br J Sports Med 2009;43:409-416

COOK AND DOCKING 2015

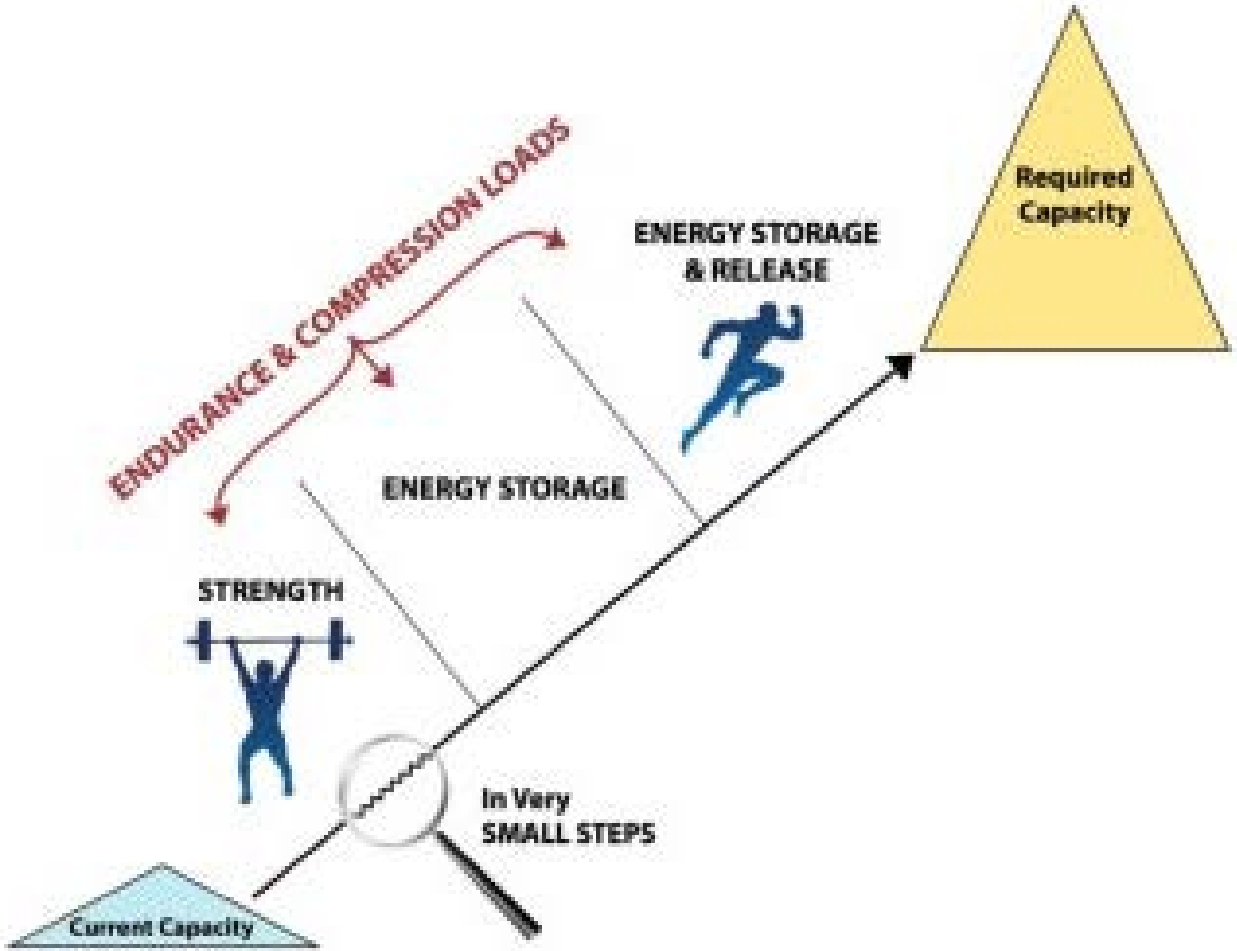
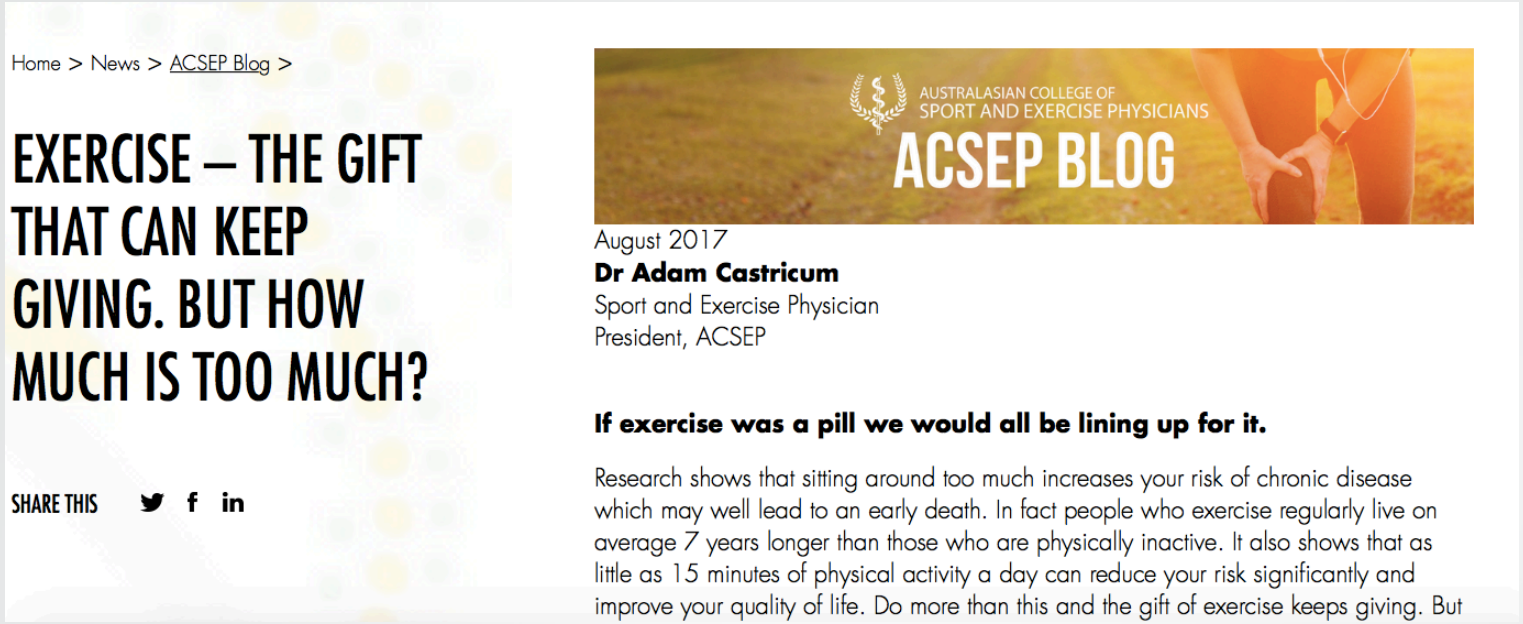


Figure 1 Schematic of tendon rehabilitation, improving tendon capacity with progressive loads. Introduction and progression of endurance and compressive loads are critical within each stage. The start and end points of rehabilitation will vary between individuals.

Tendinopathy management

- **Dos**
  - Tendon like load – keep loading them
    - Stimulates mechanoreceptors – build collagen
    - Respond best on alternate days to high impact loading
  - Strengthening
    - Isometrics for early reactive tendinopathy
    - Can't hop if you can't calf raise and can't run if you can't hop
    - Like help along the entire kinetic chain
  - Appreciate weight loss if obese / overweight
    - Reduces total load
    - Reduces inflammatory environment
  - Appreciate time to adapt

- **Don'ts**
  - Always need US / MRI
    - Diagnosis should be clinical
    - Beware catastrophic language – fear!
  - Heal overnight
  - Revert to normal structure
  - Like being touched / compressed
    - Don't like stretching
  - Like sudden changes in load
    - Avoid consecutive day high impact loading in the deconditioned patient
  - Need to be completely painfree before reloading
  - Like cortisone injections
  - Get better with PRP / stem cell injections



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EXERCISE – THE GIFT THAT CAN KEEP GIVING. BUT HOW MUCH IS TOO MUCH?

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AUSTRALASIAN COLLEGE OF SPORT AND EXERCISE PHYSICIANS

ACSEP BLOG

August 2017

Dr Adam Castricum
Sport and Exercise Physician
President, ACSEP

If exercise was a pill we would all be lining up for it.

Research shows that sitting around too much increases your risk of chronic disease which may well lead to an early death. In fact people who exercise regularly live on average 7 years longer than those who are physically inactive. It also shows that as little as 15 minutes of physical activity a day can reduce your risk significantly and improve your quality of life. Do more than this and the gift of exercise keeps giving. But

- 15 mins/day moderate intensity activity will decrease all cause mortality by 15%
- >5 x recommended PA levels no further improvement in all cause mortality, may increase risk injury and illness
  - Treat each individual on their merits
  - Beware exercise addiction
- >10 x recommended PA levels, start to reversal of benefits – certainly not recommended

Those who meet PA guidelines live 7 years longer than those who are inactive

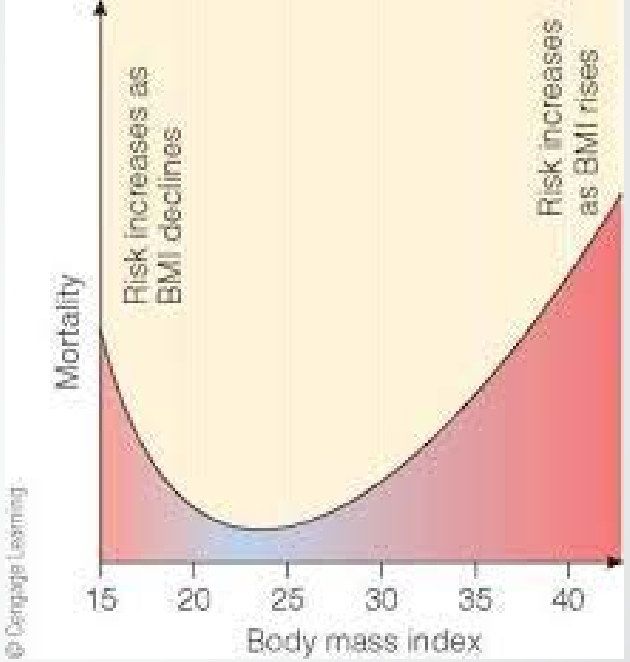
Wearable devices

- Fit bit
- Garmin
- iWatch
- 20% of Australians (10% > 65yo)
- Evidence
  - In US – 1/3 of users no longer wearing them after 6 months – why????
  - SR – wearable technologies used in physical activity interventions → significant increase in overall activity levels (Lewis et al, 2015)
  - Overall effect on health ?????
  - Increase in daily step count from 4500 to 8800 in >55yo, associated with 1 less day in hospital for each 3 years of life (Ewald et al, 2017)

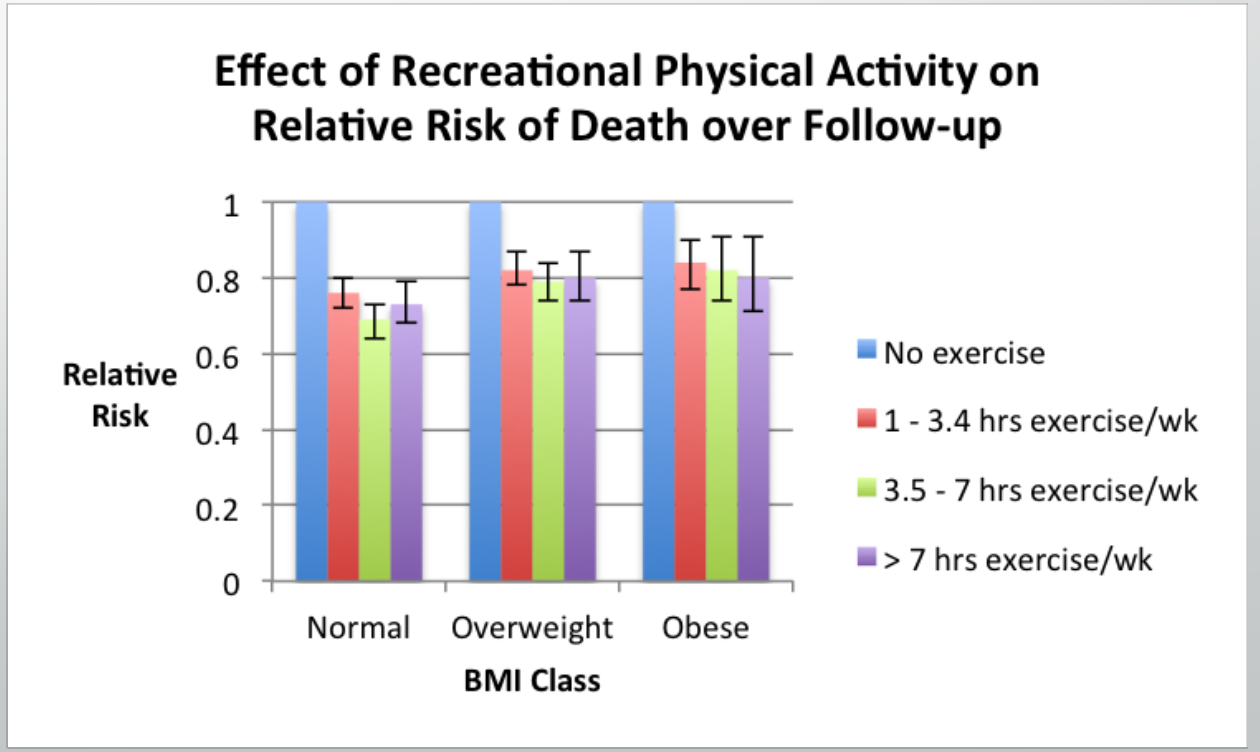
Apps

- Best trackers – share data
  - Pedometer
  - Runkeeper
  - Strava
  - Couch to 5km
  - 7 minute workout
- Also
  - Human support
    - Friends
    - Health professionals
  - Prompts – texts / notifications – coach
  - Incentives – flybuy points
  - Also track
    - Steps (overestimate by 10-15%)
    - HR (error rates 5-10%)
    - Nutrition
    - Calories (poor accuracy - often overestimated)

BMI vs activity vs mortality



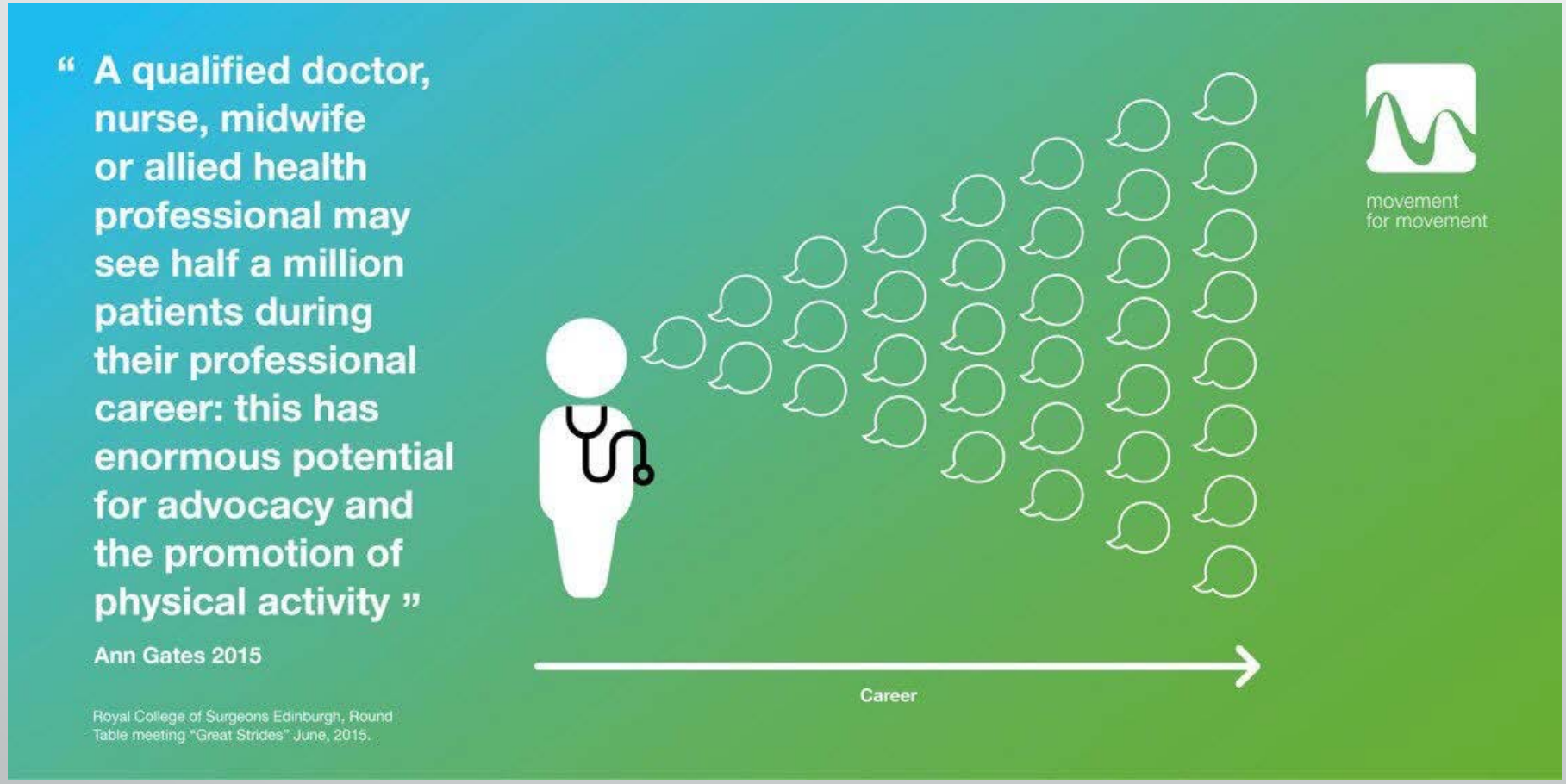
- Compared to normal weight fit individuals UNFIT individuals have higher mortality regardless of BMI
- OVERWEIGHT and OBESE fit individuals similar mortality risks as normal weight fit individuals



Weight

- Helps pain relief and reducing risk of injury
  - 10% weight loss reduces OA pain by 30-50%
- Physical activity and dietary counselling more effective at weight loss than PA alone
- Better to be active rather than dieting to lose weight only
- Obese or overweight losing 3kg could reduce national disease burden by 14% by 2020 (AIHW, 2016)

Make every consult (and step) count



‘Buurtzorg’. The Dutch word that could revolutionize healthcare

"The old adage of ‘prevention is better than cure’ is the central principle underpinning the Buurtzorg model."

Empowers nurses in community setting to deliver all the care that patients need
40% reduction in health care costs with 50% reduction in total hours of care need (KPMG, 2012)

Take home messages

- Take an exercise history for all patients
  - Type / preferences
  - Exercise Vital Sign – ACTIVE vs INACTIVE
- Are they using a wearable device? App?
  - Monitor average steps/day in last week? Last month?
- Based on medical history and functional assessment can then advise ***gradual*** increase in PA levels up to PA guidelines
  - Beware overloading deconditioned tendons
  - NB/ Conditions that require modification
    - Cardiac
    - Cancer – check with oncologist
    - Diabetes
    - Obese
- Consider barriers
- Utilise the multi-disciplinary medical and allied health team
- Practice what you preach – be active, be healthy!

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#ACSEP18
Gold Coast
Feb 9-11, 2018