EXERCISE HEALTHCARE AUSTRALIA

Medicating with Exercise: The benefits and guidelines to prescription

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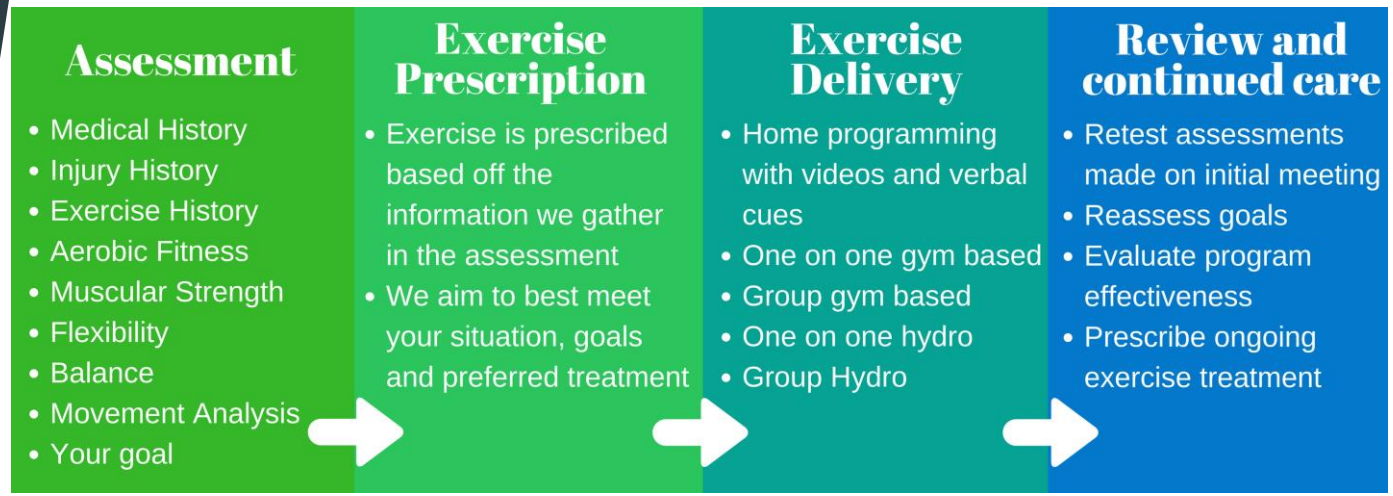
Exercise Physiology

- Experts in exercise and movement
- Treatment
  - Form a hypothesis based off assessment
  - Prescribe physical activity and exercise therapy to rehabilitate and decrease health risk
  - Facilitate behavioural change



Exercise Physiology vs Physiotherapy

- Treatment
  - Advice and Education
  - Treats all elements of health and fitness
  - Exercise
  - Facilitate behavioural change
- Active Therapy
- Experts in Chronic conditions
- Form a Hypothesis from assessment

- Treatment
  - Advice and education
  - Manual Therapy
  - Electro physical agents
  - Treat source of pain/injury
  - External Physical Aids
  - Exercise
- Passive Therapy
- Experts in Acute conditions
- Diagnose from assessment

Exercise Benefits…

Box 1.4 Benefits of Regular Physical Activity and/or Exercise

Improvement in Cardiovascular and Respiratory Function

- Increased maximal oxygen uptake resulting from both central and peripheral adaptations
- Decreased minute ventilation at a given absolute submaximal intensity
- Decreased myocardial oxygen cost for a given absolute submaximal intensity
- Decreased heart rate and blood pressure at a given submaximal intensity
- Increased capillary density in skeletal muscle
- Increased exercise threshold for the accumulation of lactate in the blood
- Increased exercise threshold for the onset of disease signs or symptoms (*e.g.*, angina pectoris, ischemic ST-segment depression, claudication)

Reduction in Cardiovascular Disease Risk Factors

- Reduced resting systolic/diastolic pressure
- Increased serum high-density lipoprotein cholesterol and decreased serum triglycerides
- Reduced total body fat, reduced intra-abdominal fat
- Reduced insulin needs, improved glucose tolerance
- Reduced blood platelet adhesiveness and aggregation
- Reduced inflammation

Decreased Morbidity and Mortality

- Primary prevention (*i.e.*, interventions to prevent the initial occurrence)
  - Higher activity and/or fitness levels are associated with lower death rates from CAD
  - Higher activity and/or fitness levels are associated with lower incidence rates for CVD, CAD, stroke, Type 2 diabetes mellitus, metabolic syndrome, osteoporotic fractures, cancer of the colon and breast, and gallbladder disease
- Secondary prevention (*i.e.*, interventions after a cardiac event to prevent another)
  - Based on meta-analyses (*i.e.*, pooled data across studies), cardiovascular and all-cause mortality are reduced in patients with post-myocardial infarction (MI) who participate in cardiac rehabilitation exercise training, especially as a component of multifactorial risk factor reduction (Note: randomized controlled trials of cardiac rehabilitation exercise training involving patients with post-MI do not support a reduction in the rate of nonfatal reinfarction).

Other Benefits

- Decreased anxiety and depression
- Improved cognitive function
- Enhanced physical function and independent living in older individuals
- Enhanced feelings of well-being
- Enhanced performance of work, recreational, and sport activities
- Reduced risk of falls and injuries from falls in older individuals
- Prevention or mitigation of functional limitations in older adults
- Effective therapy for many chronic diseases in older adults

CAD, coronary artery disease; CVD, cardiovascular disease.

Adapted from (45,70,94).

Pescatello, L. S. (2014). *ACSM's guidelines for exercise testing and prescription.* 9th ed. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins Health.

How do we achieve this?

What do the guidelines say?

- 210 mins a week of moderate physical activity or 125 mins of vigorous physical activity
- No more than 2 consecutive days without physical activity
- 2 or more resistance training sessions a week included in the 210 or 125 mins a week
- Multi-joint resistance exercise
- *Exercise programs should be written and delivered by individuals with appropriate experience and qualifications* (Hordern et al., 2012)

Pescatello, L. S. (2014). *ACSM's guidelines for exercise testing and prescription.* 9th ed. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins Health.

But who follows the guidelines?

56% of Australian adults don't meet the Australian Physical activity guidelines

75% of Australian adults over 65 don't meet Australian Physical activity guidelines

Australian Institute of Health and Welfare 2017. Impact of physical inactivity as a risk factor for chronic conditions: Australian Burden of Disease Study. Australian Burden of Disease Study series no. 15 Cat. No. BOD 16. Canberra: AIHW.

So why don't we?

- Poor health or injury
- Not enough time
- Cost

Australian Institute of Health and Welfare 2017. Impact of physical inactivity as a risk factor for chronic conditions: Australian Burden of Disease Study. Australian Burden of Disease Study series no. 15 Cat. No. BOD 16. Canberra: AIHW.

How do we overcome these?

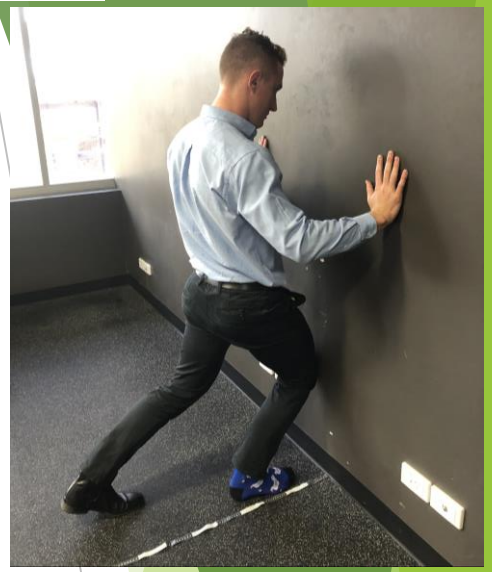
Poor Health, Injury and Pain

- The barrier for
  - 1 in 5 Australian Adults or 1 in 2 over 65
- Improving biomechanics
  - Knee valgus and knee varus alignment increases the rate of OA progression
    - Teach them how to stand up
  - Improve hip flexion, ankle dorsiflexion and thoracic extension
    - Risk factor for numerous muscle, bone or joint injuries
    - Stretching and strengthening exercises
- Exercise is relative
  - Guidelines are general
  - “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.” (Australian Physical Activity and Sedentary Behaviour Guidelines)

Sharma, L., Song, J., Felson, D. T., Cahue, S., Shamiyeh, E., & Dunlop, D. D. (2001). The role of knee alignment in disease progression and functional decline in knee osteoarthritis. *Journal of the American Medical Association*, *286*(2), 188–195. https://doi.org/10.1001/jama.286.2.188

Sit to stand

Knee to wall

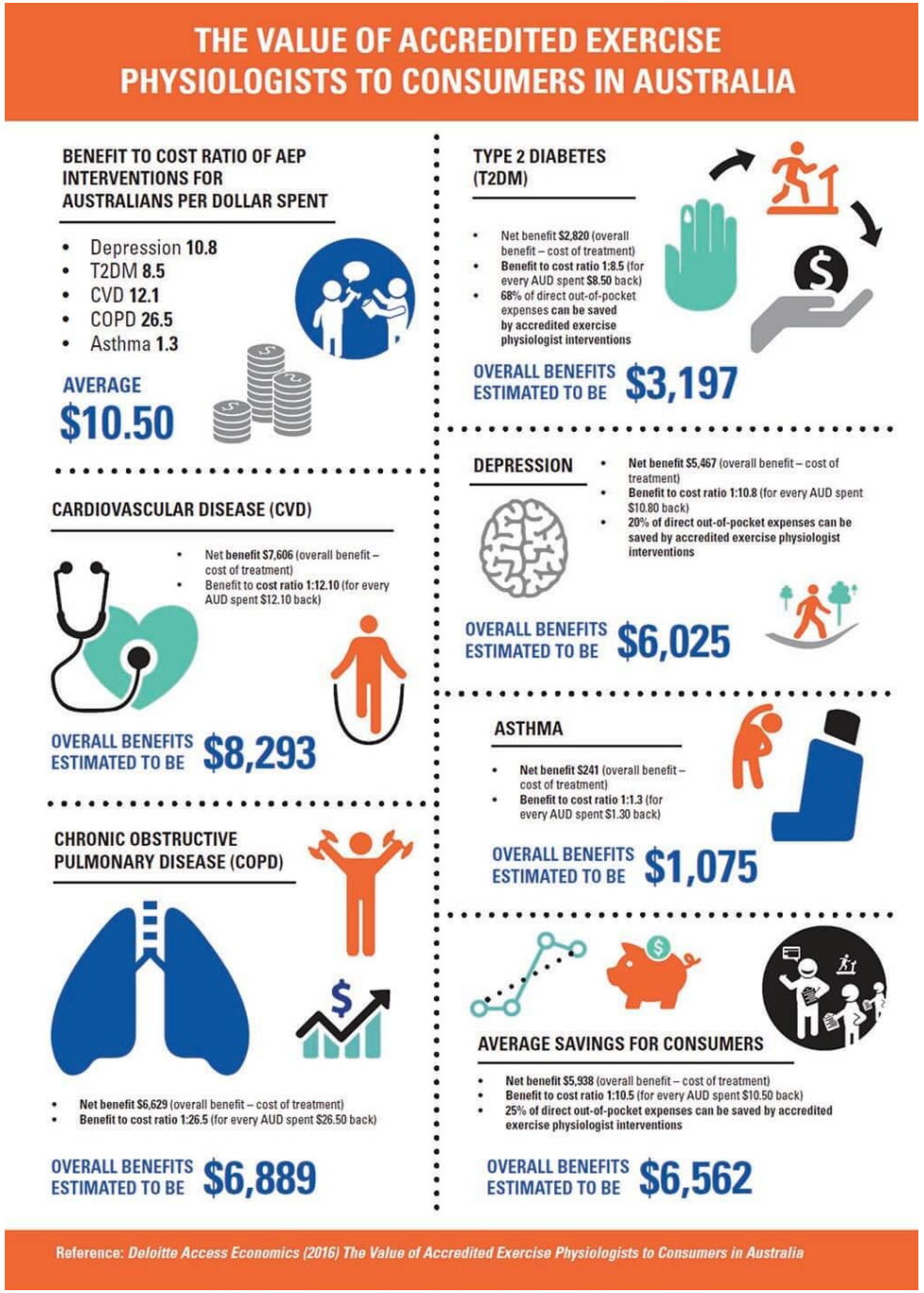


Modified Sit and reach

Scarecrow

Cost

- Medicare avenues to exercise
  - 5 x 1 on 1 sessions each calendar year
  - 1 x EP Assessment PLUS 8 x Supervised group exercise sessions (T2DM only)
- Private health rebates
- The benefits associated with regular exercise and physical activity can save people with diabetes $447 each year
- “Evidence suggests that exercise interventions, as delivered by accredited exercise physiologists, are efficacious and highly cost effective to both prevent and manage type 2 diabetes.” (Deloitte, 2015)



Deloitte Access of Economics (2016): Value of Accredited Exercise Physiologists in Australia

Lack of time

- High Intensity Interval Training
  - As little as 5 bouts of 6s to 4min
  - Shown to have as good if not more effective results on improving cardiorespiratory fitness and reducing fat mass

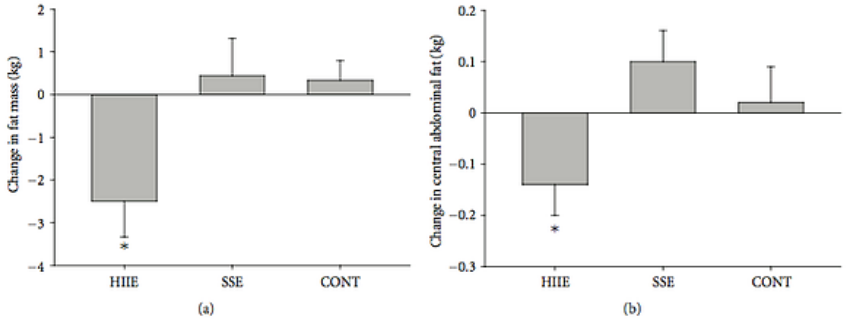


Figure 2: Subcutaneous (a) and abdominal fat loss (b) after 15 weeks of high-intensity intermittent exercise. HIIE: high-intensity intermittent exercise, SSE: steady state exercise, Cont: control. *Significantly different from control and SSE groups ($P < .05$). (Adapted from Trapp et al. [5]).

- Circuit Training
  - Decreased rest between exercises allows for a shorter session
  - Effective in decreasing fat mass and insulin resistance and increasing strength and lean muscle mass

Take home points

- Guidelines are general – we need to gradually build up to this amount, but should aim to get there eventually
- Perceived barriers of exercise can be overcome
  - Promote good movement in your patients
  - Look into all options and referral pathways
  - Use EP services for programming to work around peoples schedules
  - Help your patients to FEEL better
- Exercise IS medicine!