



# Exercise as medicine



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## INTRODUCTION

PHYSICAL inactivity has an array of harmful health effects and has been described as the major public health problem of our time. Richard Horton, editor of The Lancet 2012 Series on physical activity, states: "In view of the prevalence, global reach and health effect of physical inactivity, the issue should be appropriately described as pandemic, with far-reaching health, economic, environmental and social consequences."<sup>1</sup>

Jane Martin, executive manager of the Obesity Policy Coalition (OPC) and Alcohol and Obesity Policy at Cancer Council Victoria, commented on ABC's Four Corners in April 2017, saying: "We have no national obesity strategy ... the leading public health issue in our society ... and we do not have a strategy."<sup>2</sup>

Robert Sallis, previous president of the American College of Sports Medicine and chairman of the Exercise is Medicine Advisory Board, asks: "What if there was one prescription that could prevent and

treat dozens of diseases, such as diabetes, hypertension and obesity... Would you prescribe it to your patients? Certainly!"<sup>3</sup>

There is a linear relationship between physical activity and health status, with those maintaining an active lifestyle generally being healthier and living longer.<sup>4</sup> Increasing physical activity has the potential to prevent and/or treat most of the major diseases of modern society, including heart disease, diabetes, cancer and depression.<sup>5</sup>

This How to Treat explores the barriers to exercise prescription and outlines how much exercise is necessary, the benefits of exercise, and how it should be prescribed.

## WHAT CONSTITUTES BENEFICIAL EXERCISE?

THE WHO on Diet, Physical Activity and Health provides a baseline recommendation for adults (see box 1).<sup>6</sup>

Exercise experts measure activity in metabolic equivalents (METs).

One MET is defined as the energy it takes to sit quietly, which for the average adult is about one calorie per kilogram of body weight per hour.<sup>7</sup> Moderate-intensity activities are those that burn off 3-6 times as much energy per minute, classified as 3-6 METs. Vigorous-intensity activities burn more than six METs.<sup>7</sup>

This is a technical approach to gauging effort, and for simplicity's sake, moderate-intensity exercise is often gauged using the "talk and sing" approach: if you are able to sing or talk and are not puffing, this is low-level exercise (see figure 1); moderate exercise (see figure 2) will allow you to talk but not sing; and vigorous-intensity exercise (see figure 3) means more than saying a few words will make you gasp.

Despite these guidelines, any exercise is better than none, so less than 150 minutes per week should not be discouraged. Superiority of one delivery mode over others is unclear, so individualise the type and amount of exercise for each patient based on assessment and patient preference. ▶

## INSIDE

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Figure 1. Low level exercise.

## WHY IS EXERCISE NOT PRESCRIBED?

### Patient factors

PATIENTS have reasons and excuses for inadequate physical activity such as competing demands (work/children/partner), not enough time, too tired, physical limitations, too boring or that they simply have sedentary habits (see figure 4). The challenge for doctors is to break down these barriers (see section How should exercise be prescribed?). In general, this involves motivational interviewing as a tool to make exercise a habit, not an option.

### Clinician factors

Two key barriers to prescribing exercise were identified in a 2018 Australian article from the MJA. The first is a lack of training at undergraduate level, and the second is the doctor's own level of physical activity.<sup>8</sup>

### Lack of training

There is a general lack of awareness about the evidence for the benefits of exercise, because this is not routinely taught in medical schools.<sup>9</sup> A 2013 study in the UK reported that students tend to underestimate the risks of being physically inactive and are less aware of the physical activity guidelines (compared with other lifestyle behaviours such as alcohol consumption and smoking). Nearly half the students were not confident about providing physical activity advice to patients.<sup>9</sup> A 2014 study suggests that the best evidence for overcoming this lack of knowledge and confidence is to offer students the opportunity to address their own physical activity behaviour; give them opportunities to practise physical activity counselling in either simulated or genuine patient encounters; and integrate physical activity counselling into existing programs that address behaviour change.<sup>10</sup>

### Box 1. WHO physical activity recommendations for adults 18-64<sup>6</sup>

1. "At least 150 minutes of moderate-intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous aerobic physical activity or an equivalent combination of both.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity physical activity or an equivalent combination of both.
4. Muscle-strengthening activities should be done involving major muscle groups on two or more days a week."

The additional recommendations for adults 65 and older include:

- Adults with poor mobility should perform physical activity to enhance balance and prevent falls on three or more days per week.
- When adults of this age group cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

Source: WHO<sup>6</sup>

### Table 1. Exercise and the associated metabolic equivalents.

Light: less than 3 METs	Moderate: 3-6 METs	Vigorous: more than 6 METs
Walking slowly Standing light work • cooking, washing dishes Fishing Playing most instruments	Walking briskly (6 km/h) Cleaning • washing windows, vacuuming, mopping Mowing lawn Bicycling light effort (15 -19 km/h) Tennis doubles	Jogging at 10 km/h Carrying heavy loads Bicycling fast (20-25 km/h) Basketball game Soccer game Tennis singles Hiking

Adapted from the Harvard School of Public Health's Obesity Prevention Source<sup>7</sup>

### Doctor inactivity

According to Dr Anita Green, lead author of the 2018 MJA article: "We know that many medical students and doctors don't meet the guidelines for minimum physical activity ... it's consistently been shown that the more active a clinician is, the more likely they are to think about exercise, to bring it up with the patient, and help the patient become more active."<sup>11</sup> A 2014 study reported that physically active health professionals are 1.4 to 5.7 times more likely to promote

physical activity to their patients.<sup>12</sup>

### System factors

The wider structure of the health-care system also presents barriers to exercise prescription. GPs express frustration about time constraints, lack of personnel and cost to the patient limiting adequate long-term follow-up. They also express that a lack of government support impacts on overall management choices.<sup>13</sup> There is no Medicare rebate for most organised physical activity such



Figure 2. Moderate level exercise.

as gym memberships and classes. Organised activities can provide an excellent environment for people who require encouragement, motivation and supervision, to engage in exercise. However, unfortunately the rising costs of such activities is preventative for some people.

## WHY SHOULD EXERCISE BE PRESCRIBED?

PHYSICAL activity is a cost-effective, first-line intervention that can

prevent and treat a range of chronic diseases, injuries and disabilities.<sup>14</sup> The health benefits of physical activity are far-reaching, without the added side effects or adverse events associated with pharmacological or surgical management.

### Cardiovascular benefits

Coronary heart disease is the leading underlying cause of death in Australia, with estimates that more than 20% of coronary heart disease is due to a lack of exercise



Figure 3. Vigorous level exercise.

«PAGE 18 worldwide.<sup>15,16</sup> The benefits of exercise for patients with clinically stable cardiovascular disease include the reduction of blood pressure (anti-hypertensive), prevention of blood vessel narrowing (anti-atherosclerotic), prevention of blood clotting (anti-thrombotic), helping blood flow to the heart (anti-ischaemic) and helping maintain sinus rhythm (anti-arrhythmic).<sup>17</sup> These changes help reduce the load on the heart, which can lessen symptoms and decrease overall risk of death from cardiovascular disease.

**Respiratory benefits**

Exercise also has important benefits for the respiratory system. Though patients with chronic lung disease such as asthma and COPD often feel short of breath, they are still capable of and require physical exercise.<sup>18</sup> Exercise is widely regarded as the cornerstone of pulmonary rehabilitation in patients with COPD.<sup>19</sup> Important health benefits include decreased dynamic hyperinflation and exertional dyspnoea, improved exercise tolerance and enhanced quality of life, with fewer reported sick days and disease exacerbations.<sup>20</sup>

**Mental health benefits**

With Australians presenting to their GP with mental health conditions more often than with any other health concern, exercise has an important role to play.<sup>21</sup> Aerobic exercise has been shown to reduce depression and anxiety, through increasing blood circulation to the brain and influencing the hypothalamic-pituitary-adrenal (HPA) axis

and reactivity to stress.<sup>22,23a</sup>

Elevation in serum b-endorphin induced by exercise has also been linked to a range of psychological and physiological changes.<sup>23</sup> Psychological mechanisms that have been proposed to explain the benefits of exercise include distraction, self-efficacy and social interaction.<sup>22</sup> In addition to improving mood, self-esteem and cognitive function, exercise has a particularly important role to play in patients with schizophrenia because of the increased risk of metabolic syndrome posed by antipsychotic medication.<sup>24</sup>

**Neurological benefits**

Regular exercise is one of the best means we have of preventing Alzheimer's disease, the leading cause of dementia. It has been demonstrated as more beneficial than medication, intellectual activity, supplements or diet.<sup>25</sup> This is because exercise is associated with reduced levels of beta amyloid – a protein that forms plaques on the brain, thought to be the main cause of Alzheimer's disease.

In Parkinson's disease, exercise helps reduce muscle rigidity and improves co-ordination, and leg strengthening programs can help stride length, walking speed and distance.<sup>26</sup>

Exercise also plays an important role in reducing the risk of stroke, as well as in post-stroke management and recovery.<sup>27</sup>

**Metabolic benefits**

A joint position statement between the American College of Sports Medicine and the American Diabetes



Figure 4. Patients with sedentary habits

Association outlines that "... participation in regular exercise improves blood glucose control and can prevent or delay type 2 diabetes, along with positively affecting lipids, blood pressure, cardiovascular events, mortality and quality of life. Structured interventions combining exercise and modest weight loss have been shown to lower type 2 diabetes risk by up to 58% in high-risk

populations".<sup>28</sup> Physical activity is thought to optimise diabetes management through improvements in insulin action, thereby reducing the risk of associated complications, including kidney, eye and vascular disease.<sup>29</sup>

**Oncology benefits**

A recent study from the US National Cancer Institute with more than 1.4

million participants found that higher levels of physical activity were associated with reduced risk of 13 of the 26 types of cancer that were investigated.<sup>30</sup> These included cancer of the oesophagus and stomach, myeloid leukemia and myeloma, as well as cancers of the colon, endometrium and breast as previously reported. It did, however, also find a slight increase in risk of prostate cancer

**Box 2. Contraindications to exercise**

**Absolute**

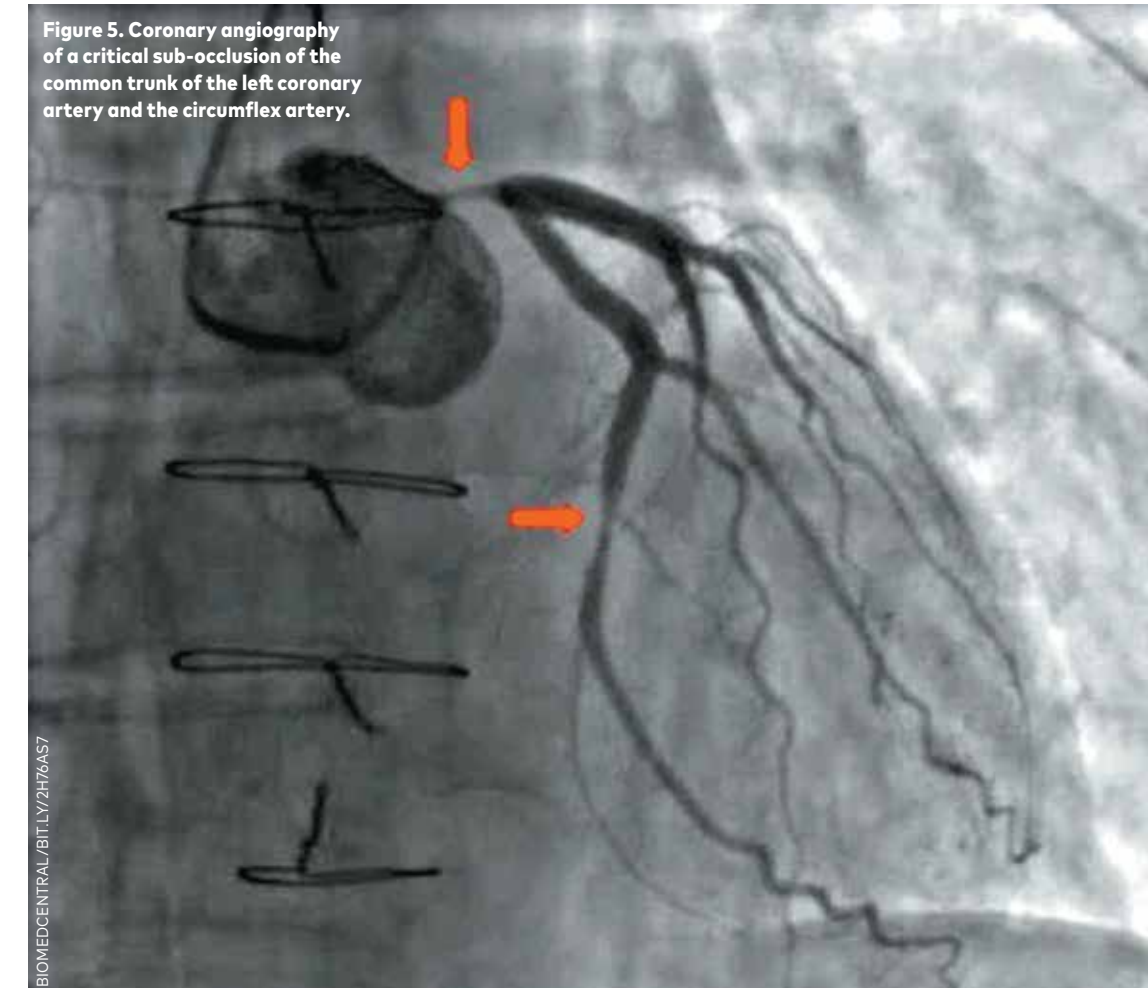
- Unstable angina
- Recent significant change in resting ECG suggesting recent myocardial infarction
- Uncontrolled cardiac dysrhythmias causing symptoms (chest discomfort, shortness of breath) with low-intensity activity
- Uncontrolled cardiac failure
- Severe aortic stenosis
- Acute myocarditis or pericarditis
- Suspected or known dissecting aneurysm
- Acute pulmonary embolism or infarction
- Acute infection or fever

**Relative**

- Moderate stenotic valvular disease
- Complex ventricular ectopy
- Left main coronary artery stenosis (see figure 5)
- Ventricular aneurysm
- Tachydysrhythmia or bradydysrhythmias
- High-degree atrio-ventricular block
- Hypertrophic obstructive cardiomyopathy (see figure 6)
- Severe hypertension (SBP more than 180mmHg and DBP more than 100mmHg)
- Electrolyte imbalance
- Neuromotor, musculoskeletal or rheumatoid disorders that are exacerbated by exercise
- Uncontrolled metabolic disease (e.g. diabetes, thyrotoxicosis, myxoedema)
- Chronic infectious disease (e.g. HIV)

Source: American College of Sports Medicine<sup>35</sup>

Figure 5. Coronary angiography of a critical sub-occlusion of the common trunk of the left coronary artery and the circumflex artery.



and melanoma. These findings were thought to be influenced by screening bias and greater incidental sun exposure, respectively.<sup>30</sup> Exercise can provide significant benefits for adults living with cancer, whether during or after treatment. During active treatment, systematic reviews have shown that patients with all cancer types demonstrate the positive influence of exercise on their quality of life.<sup>31</sup>

**Musculoskeletal benefits**

Physical activity is recommended for the management of osteoarthritis (OA) regardless of the severity of disease or pain.<sup>32</sup> The effects of exercise are comparable to reported estimates for simple analgesics and oral NSAIDs, while having fewer side effects.<sup>32</sup> Exercise is also an important factor in recovery from lower back pain.<sup>33</sup> The belief that physical activity is harmful is thought to be an important 'yellow flag' or psychosocial barrier to recovery.<sup>34</sup>

**WHEN EXERCISE SHOULD NOT BE PRESCRIBED**

EXERCISE is not appropriate in all patients. Box 2 lists the absolute and relative contraindications to exercise from the American College of Sports Medicine's Guidelines for Exercise Testing and Prescription.

**HOW SHOULD EXERCISE BE PRESCRIBED?**

THE RACGP 2015 SNAP (smoking, nutrition, alcohol, physical activity) guideline focuses on applying the 'five As' (asking, assessing, advising, assisting and arranging) to those four risk factors (see table 2). The five As have been summarised in the table below in relation to physical activity.<sup>35</sup>

The Australian College of Sport and Exercise Physicians endorses the Canadian Academy of Sport and Exercise Medicine 2016 position statement on physical activity prescription. This advises clinicians to ask about physical activity at each

Table 2. The five As in relation to physical activity

A	Activity
ASK	... about physical activity
ASSESS	... physical activity in the GP setting quickly and efficiently using the Physical Activity Vital Sign (see online resources) This simple two-item questionnaire determines weekly minutes of moderate-intensity physical activity If patients are not meeting national physical activity recommendations, they can be managed accordingly
ADVISE	... a gradual increase to at least 150 minutes of moderate exercise per week
ASSIST	... by providing a written exercise prescription
ARRANGE	... a referral to sports and exercise physician, exercise physiologist or other specialist clinician Consider existing community resources such as certified or structured programs Consider self-managed programs that can be performed independently

consultation, just as they do for other chronic disease risk factors. For physically inactive patients, brief advice should be given, including a written exercise prescription. If more time is available, motivational interviewing techniques, such as the five As, can be utilised.<sup>37</sup>

In 2015, the American College of Sports Medicine and Kaiser Permanente (a large US healthcare consortium focused on preventative care) met to reach consensus about how to best make physical activity assessment and exercise prescription a standard of care. The most important step in the process was the implementation of a physical activity vital sign.<sup>4</sup> The physical activity vital sign used by Kaiser Permanente and others asks two questions during each outpatient visit: on average, how many days per week do you engage in moderate to strenuous physical activity (like a brisk walk), and secondly, on average, how many minutes do you engage in physical activity at this level?

The product of these answers determines the total number of minutes per week the patient performed at least moderate-intensity physical activity. This is entered into the patient's electronic health record

and embedded alongside other relevant lifestyle information like BMI and smoking status. For patients not meeting the recommended 150 minutes per week, clinicians can recommend patients increase their weekly physical activity level to the recommended amount. They also may consider asking about barriers or challenges that prevent patients from being more physically active. This allows the clinician to engage in counselling specific to the patient's individual situation and/or refer patients to resources in the community. At Kaiser Permanente, this was associated with increased exercise-related progress notes, more frequent exercise counselling by physicians, and reductions in patient weight and HbA1c levels.<sup>4</sup>

While these guides provide an important framework to help clinicians increase their patients' physical activity, they represent a more traditional approach to prescribing exercise; attempting to persuade patients of the health benefits to increase their participation. Clinicians' understanding of the health benefits of exercise has resulted in the compelling case for its prescription to all members of society. However, this traditional

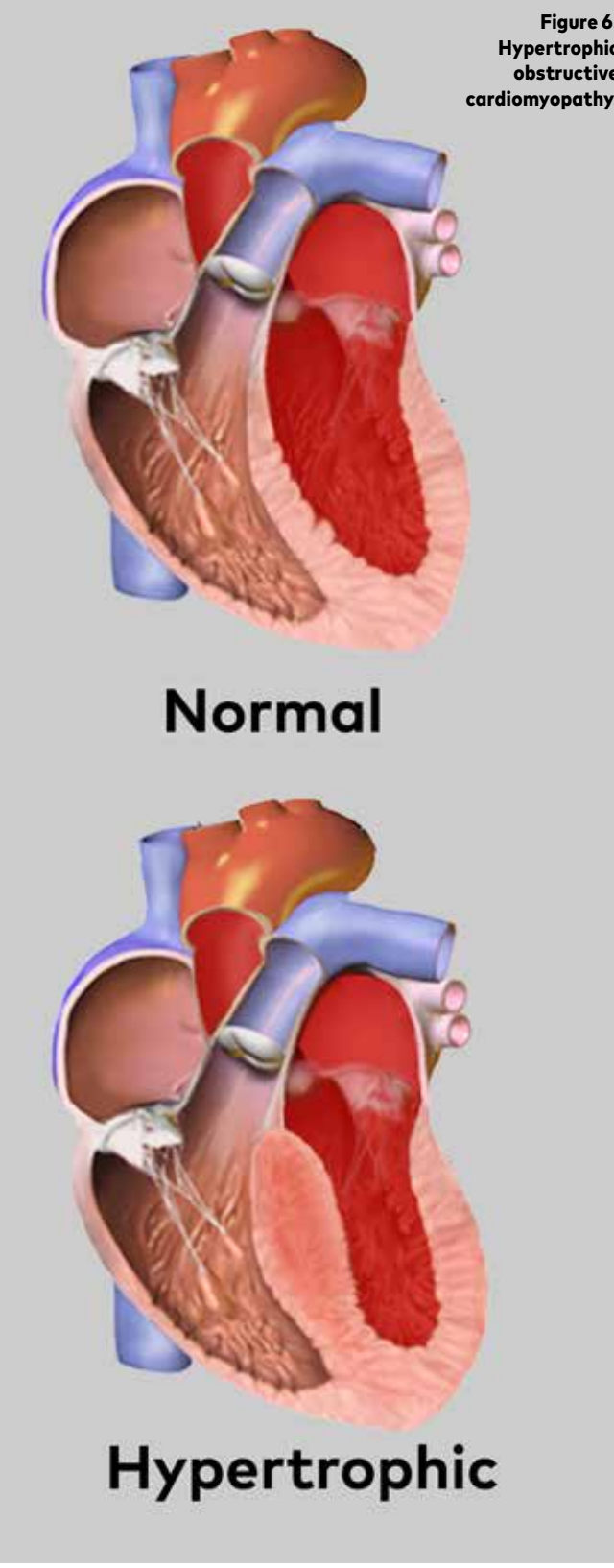


Figure 6. Hypertrophic obstructive cardiomyopathy.

◀ approach of encouraging exercise “as medicine” may not be the most relevant and compelling approach from the patients’ perspective.

A 2016 article called for a fundamental shift in the way that clinicians communicate about exercise. Rather than treating physical activity as a medical “vital sign” with physical and mental health benefits, it suggests physical activity be aligned with what matters most to patients.<sup>38</sup>

The authors propose a number of evidence-based methods around decision making, motivation, consumer behaviour and meaningful goal pursuit, to help clinicians transition from exercise as a “vital sign” to “vitality” (see in box 3).

### THE ROLE OF THE ACCREDITED EXERCISE PHYSIOLOGIST

ACCREDITED exercise physiologists (AEPs) are allied health professionals who are qualified to evaluate, design and deliver safe and effective exercise interventions for people with acute or chronic diseases, conditions or disabilities. A major focus is achieving lifestyle modification and behavioural change through education, advice and support. They provide a tailored exercise plan based on assessment information to ensure optimal outcomes are achieved. AEPs often work within multidisciplinary clinics and collaborate with dietitians, physiotherapists, physicians and other therapists to optimise patient outcomes.

Exercise and Sports Science Australia’s scope of practice for AEPs outlines the ways in which an AEP can assist patients. This includes improved fitness status and cardiovascular health, obesity and weight-loss management, improved chronic conditions, control of diabetes and prevention of progression of pre-diabetes, overcoming injury with effective rehabilitation and rehabilitation following a cardiac event.

Patients do not need a referral to see an AEP, and most private health funds offer a rebate. However, if AEPs are registered with Medicare, the Department of Veterans’ Affairs or Workcover, and the patient wishes to claim a Medicare rebate (e.g. as part of a chronic disease management plan), a referral is necessary. If a chronic disease management plan is organised, patients are entitled to Medicare rebates on five sessions per calendar year if their condition is one that has been, or is likely to be, present for at least six months.

### CASE STUDIES

#### Case study one

MARY, 50, has a six-month history of disabling bilateral knee pain.

She had enjoyed running sports, tennis and snow skiing but now cannot participate in these activities. She complains of associated pain with activities of daily living. In addition, she has gained 7kg since the symptoms began, has insomnia and reports symptoms of anxiety. There is no significant past medical history and no regular medication. NSAIDs and paracetamol have not significantly relieved her pain.

Clinical examination and X-rays of both knees demonstrate bilateral knee moderate tri-compartmental osteoarthritis (see figures).

The GP refers Mary to a physiotherapist, who recommends an accredited exercise physiologist. The latter implements strategies to decrease swelling and pain in her knees and then progresses to simple pain-free lower limb exercises to increase lower limb muscular strength, flexibility and range of motion of her joints (spine, pelvis/hips, knees and ankles/feet).

Mary then progresses to a structured scientific exercise program in her local gym, developed by her exercise physiologist. The specific exercise prescription is designed so it does not aggravate her knee osteoarthritis.

Over several months Mary’s functional lower limb strength increases, her sleep improves, she sheds 5kg, her anxiety resolves and her knee pain disappears.

Three years after the initial intervention, Mary is pain free. The exercise physiologist reviews her exercise program six-monthly. She no longer runs or plays tennis but is able to ski pain free and enjoys walking and her gym-based strength program. The two activities that keep her knees pain free are spin classes and regular yoga (see figures).

#### Case study 2

ANNA, 70, has severe progressive Parkinson’s disease and is cared for at home by her husband. She presents to her GP complaining of worsening gait disorder,

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### Box 3. Methods to transition from vital sign to vitality

#### Clinician goals are irrelevant to what motivates patients

- A clinician’s goal to improve patient health through physical activity is often irrelevant to the benefits that will adequately motivate patients.
- Rather than emphasise medically focused goals, e.g. better health outcomes and disease management, physical activity must be sold through consumer-focused branding, highlighting the ways in which it will help consumers achieve their own goals and aspirations, e.g. success and happiness.

#### Autonomous motivation increases participation

- Research has shown that fostering autonomous motivation, whereby patients feel a sense of ownership over a behaviour and the pleasure it brings, increases participation.<sup>39</sup>
- This was demonstrated in a 2014 study that randomised overweight women into two groups, both having to walk a one-mile course. One group was told to walk “for exercise” and the other to walk “for fun”. The group whose walk was framed as “having fun” reported less fatigue and better mood following the walk, and subsequently consumed fewer calories from high-sugar foods.<sup>40</sup>

#### ‘Health’ may not be the best motivator

- While clinicians seek to increase their patients’ physical activity for the sake of improving their health, the value of health must be seen from the patient perspective. Health may not be the end goal, but rather the vehicle to providing the energy and vitality that people need to live and achieve their goals.
- Behavioural economics show that people are motivated by immediate rewards, rather than gradual gains.<sup>41</sup> Therefore, the positive feelings and revitalisation that stem from physical activity are likely to be more motivating and more valued than the longer-term physiological benefits such as weight loss or improved cholesterol.

#### Moving away from exercise dosage

- Clinicians may take a prescriptive approach to exercise recommendations, offering a ‘one-size-fits-all’ prescription to promote ideal doses of physical activity.
- In reality, the pleasure generated from exercise is often inversely proportional to the intensity of that exercise.<sup>42</sup> This means that, particularly for overweight and obese patients, prescribing optimal doses of exercise may not be an effective way to foster the autonomy and positive experiences required to sustain physical activity.

#### Selling exercise as a gift worth buying

- Exercise must be transformed from a chore to a gift, which requires a strong marketing approach. Promoting exercise as a behaviour that can bring pleasure and energy is in line with research showing what consumers actually desire from being physically active.<sup>43</sup>
- Exercise must be sold in a way that makes patients want to buy it, which must ultimately be individually tailored and focused on a patients’ particular goals and needs.



◀ PAGE 22 increased frequency of falls and deconditioning, and low back, bilateral hip and knee pain.

Co-morbidities include type 2 diabetes, anxiety, mild reactive depression and osteoarthritis. Anna is on levodopa and benserazide 100mg/25mg TDS, venlafaxine 75mg daily and motilium 10mg TDS, and has a deep brain stimulator. She is not on any medication for her diabetes.

Anna is fully assessed and X-rays of her spine, hips and knees reveal degenerative changes.

The GP, in consultation with Anna's neurologist and a sport and exercise physician, advises a structured graded land and water-based exercise program.

Anna is referred to a local private hospital with a rehabilitation unit that has physiotherapists, a fully equipped gym and a hydrotherapy pool. A small home gym is set up so there is daily access to exercise equipment.

The exercise physiologist reviews Anna's progress three-monthly. Her gently progressive exercise prescription is further developed in consultation with the team at the rehabilitation unit, the GP, neurologist and sport and exercise physician.

After 12 months, Anna's pain, gait disorder and mood have all significantly improved. The doses of effexor and motilium were halved and Anna's HbA1c is stable. An exercise bicycle and cross-trainer are the modalities noted to be best for improving



NOTE: PATIENTS HAVE PROVIDED CONSENT FOR THE USE OF THEIR IMAGES.

functional strength and well-being. Anna claims the integration of regular exercise into her daily life has greatly enhanced the quality of her "mind, body and life".

## CONCLUSION

PHYSICAL activity is a cheap and effective way of preventing and managing a wide array of chronic

diseases. Despite this, many patients do not undertake an adequate amount. Monitoring patients' levels of physical activity and utilising motivational interviewing techniques have the potential to significantly improve patient health and well-being. Working together with other health professionals can assist in increasing adherence

## Box 4. If exercise/physical activity were in MIMS

**Generic name:** physical activity

**Other brand names:** walking, jogging, hiking, rolling, swimming, aerobics, biking, tennis, basketball, soccer, dancing, gardening, etc.

**Dosage:** optimum 150 minutes per week in adults; 60 minutes per day in children has proven efficacy. Even low doses have been shown to have benefit. Advise to start with low dose and advance as tolerated.

**Pregnancy and lactation:** completely safe. Good for mother and baby.

**Indications and usage:**

- Prevent obesity and mitigate its risks
- Reduce development and improve management of diabetes
- Prevent and treat heart disease
- Lower risk of cancer (breast and colon)
- Treatment of hypertension
- Prevent osteoporosis and fractures
- Manage depression and anxiety
- Reduce risk of dementia
- Recreational uses
- Decrease risk of premature death

**Side effects:** decreased BP, pulse and blood sugar; stronger muscles and bones, weight loss; improved mood, confidence, self-esteem and concentration; bowel and sleep habits improved; look and feel better.

**Adverse reactions:** sweating, injury (overdose), sudden death (extremely rare).

**Administration:** self-administer or with others. Start off slowly, add minutes and intensity PRN. Change formulations to decrease boredom and improve compliance. Take outdoors or indoors any time of day.

to guidelines for optimal physical activity (see box 4).

## ONLINE RESOURCES

- **News.com.au Medicare to fund a new Heart Health Check from April**  
[https://www.news.com.au/national/medicare-to-fund-a-new-heart-health-check-from-](https://www.news.com.au/national/medicare-to-fund-a-new-heart-health-check-from-april-1/news-story/d7b4fc98638a3023ee57de17ad7bb735bit.ly/2E5RNEr)

[april-1/news-story/d7b4fc98638a3023ee57de17ad7bb735bit.ly/2E5RNEr](https://www.news.com.au/national/medicare-to-fund-a-new-heart-health-check-from-april-1/news-story/d7b4fc98638a3023ee57de17ad7bb735bit.ly/2E5RNEr)

## FURTHER READING

- **World Health Organization: Global Recommendations on Physical Activity for Health**  
<https://www.who.int/dietphysicalactivity/publications/9789241599979/en/bit.ly/2OG9hfl>
- **Royal Australian College of General Practitioners HANDI (Handbook of Non-Drug Interventions)**  
[https://www.racgp.org.au/clinical-resources/clinical-guidelines/handbook-of-non-drug-interventions-\(handi\)bit.ly/2I8YAKk](https://www.racgp.org.au/clinical-resources/clinical-guidelines/handbook-of-non-drug-interventions-(handi)bit.ly/2I8YAKk)
- **Exercise & Sports Science Australia Accredited exercise physiologist scope of practice**  
[https://www.essa.org.au/wp-content/uploads/2018/04/AEP-scope-of-practice\\_2018.pdfbit.ly/2UsBmMK](https://www.essa.org.au/wp-content/uploads/2018/04/AEP-scope-of-practice_2018.pdfbit.ly/2UsBmMK)
- **Physical Activity Vital Sign questionnaire**  
[http://www.exerciseismedicine.org/assets/page\\_documents/The%20Physical%20Activity%20Vital%20Sign%20without%20Strength\\_2015\\_07\\_09\\_PDF.pdfbit.ly/2DzZkCD](http://www.exerciseismedicine.org/assets/page_documents/The%20Physical%20Activity%20Vital%20Sign%20without%20Strength_2015_07_09_PDF.pdfbit.ly/2DzZkCD)

## References

Available on request from [howtotreat@adg.com.au](mailto:howtotreat@adg.com.au)

## Key points

- There is currently an epidemic of inactivity.
- Irrefutable evidence exists for the health benefits of exercise.
- There is insufficient focus on physical activity. Patients should aim for 150 minutes of moderate intensity exercise per week.
- Health professionals can assist by encouraging a patient focused, motivational approach to exercise prescription.

# How to Treat Quiz.

## EXERCISE AS MEDICINE



GO ONLINE TO COMPLETE THE QUIZ [www.ausdoc.com.au/howtotreat](http://www.ausdoc.com.au/howtotreat)

### 1. Which TWO are WHO physical activity recommendations for adults aged 18-64?

- a At least 150 minutes of moderate-intensity aerobic physical activity throughout the week.
- b Aerobic activity should be performed in bouts of at least 20 minutes duration.
- c For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week.
- d Muscle-stretching activities should be done involving major muscle groups on two or more days a week.

### 2. Which THREE are moderate exercise?

- a Mowing lawn.
- b Walking slowly.
- c Tennis doubles.
- d Cleaning (e.g. washing windows, vacuuming, mopping).

### 3. Which THREE are barriers to the implementation of physical activity?

- a Clinicians not believing the evidence for the benefits of exercise.
- b Patients claiming they are too tired.
- c Patients have sedentary habits.
- d Lack of clinician training at undergraduate level.

### 4. Which TWO statements regarding the implementation of physical activity are correct?

- a Evidence for the benefits of exercise is not routinely taught in medical schools.
- b Physically active health professionals are less likely to promote physical activity to their patients.
- c A suggested method of overcoming students' lack of knowledge and confidence about physical activity is to provide them with current guidelines.
- d Organised activities can provide an excellent environment for people who require encouragement, motivation and supervision, to engage in exercise.

### 5. Which THREE benefits does exercise confer on the cardiovascular system?

- a Anti-thrombotic.
- b Anti-atherosclerotic.
- c Decreased exertional dyspnoea.
- d Anti-arrhythmic.

### 6. Which TWO statements regard-

### ing the benefits of exercise are correct?

- a Exercise is widely regarded as the cornerstone of pulmonary rehabilitation in patients with COPD.
- b Exercise is more beneficial than medication, intellectual activity, supplements or diet in preventing Alzheimer's disease.
- c Aerobic exercise has not shown to reduce depression and anxiety.
- d Exercise and modest weight loss have been shown to lower type 1 diabetes risk by up to 58% in high-risk populations.

### 7. Which THREE statements regarding the benefits of exercise are correct?

- a Exercise has been related to a slight increase in risk of prostate cancer and melanoma.
- b Exercise is recommended for the management of osteoarthritis.
- c Exercise is also an important factor in recovery from lower back pain.
- d Exercise helps reduce muscle rigidity and improves co-

ordination in multiple sclerosis.

### 8. Which TWO are absolute contraindications to exercise in patients with cardiovascular disease?

- a Electrolyte imbalance.
- b Cardiomyopathy.
- c Recent myocardial infarct.
- d Acute infection or fever.

### 9. Which ONE lists the five As?

- a Ask, assess, advise, advocate and arrange.
- b Ask, acknowledge, advise, assist and arrange.
- c Ask, assess, advise, assist and arrange.
- d Ask, assess, adjudicate, assist and arrange.

### 10. Which THREE statements regarding methods to transition from vital sign to vitality are correct?

- a Patients usually respond positively to a physician's goal of improving patient health through physical activity.
- b Fostering autonomous motivation increases participation in physical activity.
- c Exercise must be transformed from a chore to a gift, which requires a strong marketing approach.
- d The pleasure generated from exercise is often inversely proportional to the intensity of that exercise.

## CPD POINTS

- We have a new How to Treat website ([www.ausdoc.com.au/howtotreat](http://www.ausdoc.com.au/howtotreat)) where you can read this article and take the quiz to earn CPD points.
- Each article has been allocated 2 RACGP QI&CPD points and 1 ACCRRM point.
- RACGP points are uploaded every six weeks and ACCRRM points quarterly.