

## CMEARTICLE

## Prescribing health: exercise

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*During a recent consultation, Madam Fong was exceptionally agitated. She was feeling distressed over the number of medications she had had to take for her hypertension and hyperlipidaemia for the past five years. She also shared frankly that there had been many occasions where she had to fight the impulse to simply stop all her medications. She requested that the number of medications prescribed to her at this consultation be reduced, as she felt that they could not treat her problems but were making her more lethargic. She also wanted to know whether there were any alternatives to medications.*

**HOW RELEVANT IS THIS TO MY PRACTICE?**

Physical inactivity is a growing public health concern. It causes a variety of chronic diseases and health complications, including obesity, heart disease, diabetes mellitus, hypertension and osteoporosis. The 2010 National Health Survey has found that 39.1% of Singapore residents are physically inactive and 10.8% of residents aged 18–69 years are obese.<sup>(1)</sup>

Increased physical activity has been shown to be effective in the treatment and prevention of chronic diseases, in addition to improving an individual's overall health.<sup>(2-6)</sup> Therefore, healthcare providers, including family physicians, should review and assess each patient's physical activity level at every visit. They should either prescribe appropriate physical activity or refer the patient to a certified health and fitness professional to get an exercise clearance. Exercise Is Medicine Singapore (EIMS)<sup>(7)</sup> is a public health initiative that has been set up to advocate exercise as part of the prevention and treatment of chronic diseases.

**BENEFITS OF EXERCISE**

Regular physical activity at the correct intensity:

- Reduces the risk of death by up to 40%<sup>(2,8-16)</sup>
- Lowers the risk of stroke by up to 27%<sup>(4,17,18)</sup>
- Reduces the incidence of diabetes mellitus by at least 30%<sup>(5,19)</sup>
- Reduces the incidence of high blood pressure by up to 50%<sup>(20)</sup>
- Can reduce mortality and risk of recurrent breast cancer by almost 50%<sup>(21)</sup>
- Can lower the risk of colon cancer by 27%<sup>(22-24)</sup>
- Can reduce the risk of developing Alzheimer's disease by one-third<sup>(25)</sup>
- Can decrease depression as effectively as medications or behavioural therapy<sup>(26)</sup>

A major concern when prescribing exercise is the increased risk of sudden cardiac deaths and myocardial infarction associated with vigorous physical exertion. However, the risk of cardiac events is very low in healthy individuals performing moderate-intensity activities.<sup>(27,28)</sup> Balancing the benefits of exercise, the risk of inactivity and the relatively rare yet serious side effects of exercise, almost all patients will benefit from physical activity, although some may require modifications to, or restrictions on, their exercise programme. For patients with chronic diseases, risk stratification and exercise screening should be performed prior to the implementation of an exercise regimen.<sup>(29)</sup>

**HOW TO PRESCRIBE EXERCISE?****Preparticipation health screening**

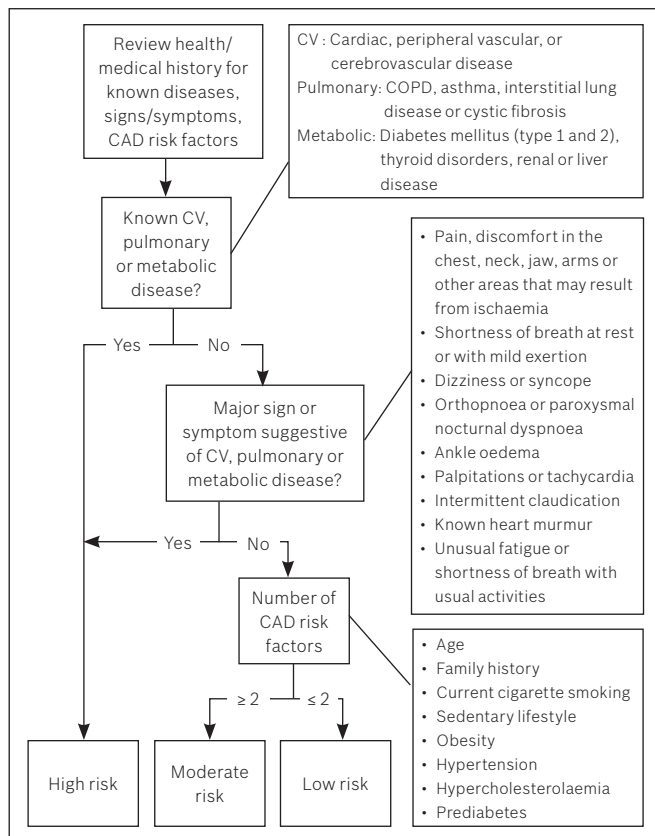
Physical Activity Readiness Questionnaire (PAR-Q)<sup>(30)</sup> is a self-guided, seven-question screening tool that can quickly identify conditions or risk factors that require further assessment. It is commonly available at sports facilities and is recommended for those who wish to start exercising. Table I is a summary of the PAR-Q. If an individual answers 'no' to all seven questions, the person is at low risk for health complications and it is generally safe to begin an exercise programme at any intensity without supervision. For those who answer 'yes' to at least one of the seven questions (e.g. most patients with chronic diseases), risk stratification is necessary before they can proceed to exercise.

**Risk stratification**

The algorithm<sup>(31)</sup> presented in Fig. 1 outlines the risk stratification process. The purpose of this process is to determine the patient's risk level based on the recommendations of the American College of Sports Medicine. Table II lists the cardiovascular risk

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**Fig. 1** Risk stratification of patients.<sup>(31)</sup>  
 CAD: coronary artery disease; COPD: chronic obstructive pulmonary disease; CV: cardiovascular

factors used in the risk stratification process.<sup>(30)</sup> Apart from high serum high-density lipoprotein (HDL), a score of 1 is added to the patient's total risk factor score for each risk factor present. A score of 1 is subtracted if the patient has high serum HDL. Patients with known cardiovascular, pulmonary or metabolic disease, or those who exhibit signs and symptoms of these diseases, are considered at 'High risk'. Patients with no signs, symptoms or prior history of disease are stratified into either 'Moderate risk' (if they score 2 or more for risk factors) or 'Low risk' (if they score less than 2 for risk factors).

Patients who are at 'Low risk' may begin exercising without further assessment, while those who are at 'Moderate risk' can safely perform light- to moderate-intensity exercises. However, patients at 'Moderate risk' should undergo further medical assessment before participating in vigorous-intensity exercise. Patients who are at 'High risk', should undergo further medical testing before starting an exercise programme.<sup>(30-32)</sup>

### COMPONENTS OF AN EXERCISE PRESCRIPTION<sup>(31,32)</sup>

When prescribing an exercise programme, it is useful to consider the FITT principle: Frequency, Intensity, Time (or duration) and Type. Fig. 2 shows a sample of an exercise prescription.

#### Frequency

This refers to the number of times the activity is performed each week. The recommended frequency for aerobic exercise is 3–5

**Table I. Physical Activity Readiness Questionnaire (PAR-Q) for people aged 15 to 69 [Source: Physical Activity Readiness Questionnaire (PAR-Q)<sup>®</sup> 2002].**

Yes	No	Questions
		1. Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
		2. Do you feel pain in your chest when you do physical activity?
		3. In the past month, have you had chest pain when you were not doing any physical activity?
		4. Do you lose your balance because of dizziness or do you ever lose consciousness?
		5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
		6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
		7. Do you know of any other reason why you should not do physical activity?

**Table II. Coronary artery disease risk factor thresholds for ACSM risk stratification.**

Risk factors	Defining criteria	Score
Age	Men ≥ 45 years, women ≥ 55 years	+1
Family history	MI/IHD/coronary revascularisation/ sudden cardiac death before 55 years age in father or any other male first degree relative (brother or son), before 65 years age in mother of any female first degree relative (sister or daughter)	+1
Cigarette smoking	Current smoke or those who quit within the previous 6 months or exposure to environmental tobacco smoke	+1
Sedentary lifestyle	Not participating in regular exercise (at least 30 minutes of moderate intensity exercise in at least 3 days of the week) or meeting the minimal national recommendations for at least 3 months	+1
Obesity	BMI ≥ 27.5 or waist girth of ≥ 90 cm for men and ≥ 80 cm for women (Asia Pacific Consensus)	+1
Hypertension	BP ≥ 140 mmHg systolic or ≥ 90 mmHg diastolic on 2 occasions or on antihypertensive medication	+1
Hypercholesterolemia	TC ≥ 5.2 mmol/L or if known LDL ≥ 3.4 mmol/L or HDL < 1.0 mmol/L or on lipid lowering medication	+1
Impaired fasting glucose	Fasting glucose ≥ 6.1 mmol/L on 2 separate occasions	+1
High serum HDL	> 1.6 mmol/L	-1

ACSM: American College of Sports Medicine; BMI: body mass index; BP: blood pressure; HDL: high density lipoprotein; IHD: ischaemic heart disease; LDL: low density lipoprotein; MI: myocardial infarction; TC: total cholesterol

times a week, coupled with resistance training 2 times or more a week.

#### Intensity

This refers to the level of vigour at which the activity is performed. Intensity of exercise may be measured in terms of

Exercise Prescription		
Name :	Madam Fong XX	
NRIC :	S1234567F	
Date of birth:		
<b>Rx</b>		
<b>AEROBIC (CARDIOVASCULAR) EXERCISE</b>		
Type of exercise	Brisk walking	
How many times a week	Five times a week	
Number of minutes per day	30 minutes	
How intense	'Can talk but cannot sing'	
Total number of minutes per week	150 minutes	
<b>RESISTANCE (STRENGTH) EXERCISE</b>		
Type of exercise	Free weights at the gym for arms and weight machines for the legs	
How many times a week	Twice a week, with a space of at least 2 days in between sessions	
Number of sets and repetitions	Two sets for arms and two sets for legs each session. For each set, do 8 repetitions.	
<b>SPECIAL INSTRUCTIONS / PRECAUTIONS</b>		
Stop if you experience any chest pain, giddiness or palpitations. Do not exercise on days you are unwell		
Name stamp of Doctor	Signature Dr Wong KS	Date 23 May 2013

Fig. 2 Sample exercise prescription.

the following: (a) the percentage of the patient's maximal heart rate, i.e. HR Max, using the formula, 220 minus the patient's age (220-age); (b) metabolic equivalents (METs), which represent the absolute energy expenditure as compared to a person's resting metabolic rate; or (c) the 'talk test', which is the simplest but least objective measure of intensity. Tables III and IV illustrate the different measures of exercise intensity and common physical activities with their associated intensity in METs, respectively.<sup>(33-35)</sup>

### Time

This refers to the length of time that the activity is performed. Bouts of exercise that lasts for 10 minutes are acceptable if the individual accumulates enough to give a total time of at least 20–60 minutes on a given day.

### Type

Aerobic (cardiovascular) exercises include walking, jogging, cycling, swimming, dancing and inline skating. A total of 150 minutes<sup>(36)</sup> of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity aerobic exercise per week is recommended for most adults. To promote or maintain weight loss, 300 minutes per week of moderate exercise or 150 minutes of vigorous exercise per week is recommended. Performing intermittent sessions of 10 minutes to accumulate the minimum duration is an effective alternative to continuous exercise.

Table III. Measures of exercise intensity for aerobic activities.

Intensity	Talk test (subjective measure)	Maximal HR % (physiological measure)	METs (absolute measure)
Light	Talk and sing	< 64	< 3
Moderate	Talk but can't sing	64–76	3–6
Vigorous	Difficult talking	> 76	≥ 6

HR: heart rate; METs: metabolic equivalent units (1 MET = 3.5 mL.kg /min)<sup>(13)</sup>

Table IV. General physical activities defined by level of intensity (modified from the guidelines of US Centers for Disease Control and Prevention<sup>(33)</sup>).

Light < 3 METs	Moderate 3-6 METs	Vigorous > 6 METs
Light walking	Brisk walking	Fast walking Jogging
<b>Household &amp; occupation</b>	<b>Household &amp; occupation</b>	<b>Household &amp; occupation</b>
<ul style="list-style-type: none"> <li>Watering plants</li> <li>Doing light household tasks such as lightly cleaning the sink and toilet</li> <li>Making the bed</li> <li>Ironing</li> <li>Food preparation</li> </ul>	<ul style="list-style-type: none"> <li>Mopping the floor</li> <li>Hand-washing the car</li> <li>Vacuuming the carpet</li> <li>Cycling to work or for pleasure</li> <li>Walking the dog</li> <li>Gardening and raking the leaves, light shoveling, weeding while standing or bending</li> <li>Scrubbing the floor or bathtub while on hands and knees</li> </ul>	<ul style="list-style-type: none"> <li>Carrying heavy (12 kg or more) loads, e.g. groceries up a flight of stairs</li> <li>Moving, shifting or pushing heavy (35 kg or more) objects, e.g. furniture</li> </ul>
<b>Leisure time &amp; sports</b>	<b>Leisure time &amp; sports</b>	<b>Leisure time &amp; sports</b>
<ul style="list-style-type: none"> <li>Billiards</li> <li>Playing musical instruments</li> </ul>	<ul style="list-style-type: none"> <li>Line dancing</li> <li>Ballroom dancing</li> <li>Cycling on flat ground</li> <li>Badminton, recreational doubles</li> <li>Recreational swimming</li> <li>Tennis, recreational doubles</li> </ul>	<ul style="list-style-type: none"> <li>Cycling on steep, uphill terrain</li> <li>Stationary cycling using vigorous effort</li> <li>Jumping jacks</li> <li>Rollerblading</li> <li>Volleyball</li> <li>Vigorous cycling</li> <li>Aerobic dancing (moderate to high impact) or step aerobics</li> <li>Most competitive sports such as football, basketball, soccer and rugby</li> </ul>

Resistance (strength) training includes using weight machines at a gymnasium, using free weights, lifting one's body weight against gravity and using elastic cords.

Flexibility exercises include static stretching, which is recommended in any exercise-training programme for all adults and should be performed at least 2–3 times a week for at least 10 minutes.

### Progression

Progression involves increasing any of the FITT components. The recommended rate of progression depends on the individual's

health status, exercise tolerance and exercise programme goals. Frequency, intensity and duration of exercise are gradually adjusted over the next 4–8 months, or over a longer period for elderly or deconditioned patients. Progression should be made gradually so as to avoid injury. Any adverse effects of the increased volume should be monitored and adjustments should be made if the exercise is not well tolerated.

### Motivation

Mobilising motivation is the most difficult part in the process of exercise prescription. In order to engage the patient in behavioural changes, it is important to understand the six stages of change (i.e. precontemplation, contemplation, preparation, action, maintenance and termination) and act accordingly in order to achieve success and prevent relapse. One way to set effective targets is through the use of the SMART (specific, measurable, achievable, realistic and time-framed [i.e. with a target date set]) goal method.<sup>(37)</sup>

*Madam Fong was risk-stratified as 'Moderate risk', and prescribed a moderate-intensity exercise programme, which consisted of brisk walking for 30 minutes, 5 times a week (for a total of 150 minutes per week), starting with shorter sessions (10–15 minutes) and adding 5-minute increments every 2–4 weeks. She was also advised to do resistance exercises twice a week using light weights at the community centre gymnasium, starting with 1–2 sets of 8–12 repetitions per set, with a weight that she could lift comfortably 12–15 times. She focused on the major muscle groups in her upper and lower limbs. She chose to do resistance exercises on Tuesdays and Fridays, which ensured that there was a minimum 48-hour rest period in between sessions. All these measures helped avoid injury and muscle soreness.*

*Warm-up and cool down exercises lasting 5–10 minutes were performed before and after each session of aerobic or resistance exercises. Stretching exercises were performed after cool-down exercises. She was advised on 'red flags' to watch out for when exercising. These include giddiness, chest pain and palpitations. She was also advised on dietary modification.*

*At her review 3 months later, Madam Fong saw an improvement in her blood pressure and a weight reduction of 3 kg. Her serum LDL-cholesterol improved to an optimal level. She was very happy with the improvements and promised to maintain this healthy lifestyle. She even volunteered to promote exercise at community events.*

### TAKE HOME MESSAGES

1. Physical inactivity is a leading risk factor for global mortality.
2. Increasing physical activity has proven to be effective in the treatment and prevention of chronic disease, in addition to improving one's overall health.

3. Most patients should be encouraged to participate in at least 150 minutes of moderate-intensity physical activity per week.
4. Physicians should routinely review and assess each patient's physical activity level at every visit.
5. Physicians should either prescribe the appropriate physical activity or refer the patient to a certified health and fitness professional to get exercise clearance.
6. A short PAR-Q can be used as a screening tool. If one answers 'no' to all items on the questionnaire, it is safe to exercise; otherwise, risk stratification should be done.
7. The patient's risk level (low, moderate or high) will determine the intensity of exercise that is safe, whether further assessment prior to exercise commencement is needed, and whether supervision while exercising is required.
8. The FITT principle is used to determine how often, how hard, how long and what kind of activity the patient should perform in order to build health and fitness.
9. Mobilising motivation is crucial in getting patients to increase their physical activity level.
10. The SMART goal method is a way to set effective targets.

**ABSTRACT** The healthcare challenges in developed countries centre around the rise of chronic conditions and obesity. There is a call to shift the focus toward the primary prevention of these conditions. Clinicians will need to move beyond the comfort of prescribing pharmaceuticals and expand the scope to prescribing health, i.e. exercise. We discuss an easy-to-follow exercise prescription to highlight some essential principles and useful tools that can help busy family practices achieve this.

*Keywords:* EIMS, exercise prescription, primary care, Singapore, SMART

### REFERENCES

1. Epidemiology and Disease Control Division, Ministry of Health, Singapore. National Health Survey 2010 [online]. Available at: [http://www.moh.gov.sg/content/dam/moh\\_web/Publications/Reports/2011/NHS2010%20-%20low%20res.pdf](http://www.moh.gov.sg/content/dam/moh_web/Publications/Reports/2011/NHS2010%20-%20low%20res.pdf). Accessed June 10, 2013.
2. Kodama S, Saito K, Tanaka S, et al. Cardiorespiratory fitness as a quantitative predictor of all-cause mortality and cardiovascular events in healthy men and women: a meta-analysis. *JAMA* 2009; 301: 2024-35.
3. Knowler WC, Barrett-Connor E, Fowler SE, et al; Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002; 346:393-403.
4. Hu FB, Stampfer MJ, Colditz GA, et al. Physical activity and risk of stroke in women. *JAMA* 2000; 283:2961-7.
5. Wei M, Gibbons LW, Mitchell TL, et al. The association between cardiorespiratory fitness and impaired fasting glucose and type 2 diabetes mellitus in men. *Ann Intern Med* 1999; 130:89-96.
6. Morris JN. Exercise in the prevention of coronary heart disease: today's best buy in public health. *Med Sci Sports Exerc* 1994; 26:807-14.
7. Exercise is Medicine Singapore (EIMS). Available at: [www.eims.sg](http://www.eims.sg). Accessed June 10, 2013.
8. Wen CP, Wai JP, Tsai MK, et al. Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *Lancet* 2011; 378:1244-53.
9. Blair SN, Kohl HW 3rd, Paffenbarger RS Jr, et al. Physical fitness and all-cause mortality. A prospective study of healthy men and women. *JAMA* 1989; 262:2395-401.



10. Manini TM, Everhart JE, Patel KV, et al. Daily activity energy expenditure and mortality among older adults. *JAMA* 2006; 296:171-9.
11. Franco OH, de Laet C, Peeters A, et al. Effects of physical activity on life expectancy with cardiovascular disease. *Arch Intern Med* 2005; 165:2355-60.
12. Manson JE, Hu FB, Rich-Edwards JW, et al. A prospective study of walking as compared with vigorous exercise in the prevention of coronary heart disease in women. *N Engl J Med* 1999; 341:650-8.
13. Leitzmann MF, Park Y, Blair A, et al. Physical activity recommendations and decreased risk of mortality. *Arch Intern Med* 2007; 167:2453-60.
14. Gregg EW, Cauley JA, Stone K, et al; Study of Osteoporotic Fractures Research Group. Relationship of changes in physical activity and mortality among older women. *JAMA* 2003; 289:2379-86.
15. Paffenbarger RS Jr, Hyde RT, Wing AL, et al. The association of changes in physical-activity level and other lifestyle characteristics with mortality among men. *N Engl J Med* 1993; 328:538-45.
16. Andersen LB, Schnohr P, Schroll M, Hein HO. All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work. *Arch Intern Med* 2000; 160:1621-8.
17. Reimers CD, Knapp G, Reimers AK. Exercise as stroke prophylaxis. *Dtsch Arztebl Int* 2009; 106:715-21.
18. Wendel-Vos GC, Schuit AJ, Feskens EJ, et al. Physical activity and stroke. A meta-analysis of observational data. *Int J Epidemiol* 2004; 33:787-98.
19. Jeon CY, Lokken RP, Hu FB, van Dam RM. Physical activity of moderate intensity and risk of type 2 diabetes: a systematic review. *Diabetes Care* 2007; 30:744-52.
20. Barlow CE, LaMonte MJ, Fitzgerald SJ, et al. Cardiorespiratory fitness is an independent predictor of hypertension incidence among initially normotensive healthy women. *Am J Epidemiol* 2006; 163:142-50.
21. Holmes MD, Chen WY, Feskanich D, Kroenke CH, Colditz GA. Physical Activity and Survival After Breast Cancer Diagnosis. *JAMA* 2005; 293:2479-86.
22. Boyle T, Keegel T, Bull F, Heyworth J, Fritschi L. Physical activity and risks of proximal and distal colon cancers: a systematic review and meta-analysis. *J Natl Cancer Inst* 2012; 104:1548-61.
23. Wolin KY, Yan Y, Colditz GA, Lee IM. Physical activity and colon cancer prevention: a meta-analysis. *Br J Cancer* 2009; 100:611-6.
24. Slattery ML, Potter JD. Physical activity and colon cancer: confounding or interaction? *Med Sci Sports Exerc* 2002; 34:913-9.
25. Larson EB, Wang L, Bowen JD, et al. Exercise is associated with reduced risk for incident dementia among persons 65 years of age and older. *Ann Intern Med* 2006; 144:73-81.
26. Dunn AL, Trivedi MH, Kampert JB, Clark CG, Chambliss HO. Exercise treatment for depression: efficacy and dose response. *Am J Prev Med* 2005; 28:1-8.
27. Albert CM, Mittleman MA, Chae CU, et al. Triggering of sudden death from cardiac causes by vigorous exertion. *N Engl J Med* 2000; 343:1355-61.
28. Whang W, Manson JE, Hu FB, et al. Physical exertion, exercise, and sudden cardiac death in women. *JAMA* 2006; 295:1399-403.
29. Nelson ME, Rejeski WJ, Blair SN, et al. Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc* 2007; 39:1435-45.
30. Physical activity preparticipation screening guidelines. In: Liguori G, et al eds. *ACSM's Resources for the Health Fitness Specialist*. Philadelphia: Lippincott Williams & Wilkins, 2013: 20-25.
31. General principles of exercise prescription. In: Thompson WR, Gordon NF, Pescatello LS, eds. *ACSM's Guidelines for Exercise Testing and Prescription*. 8th ed. Philadelphia: Lippincott Williams & Wilkins, 2009: 152-82.
32. The Exercise Prescription. In: Jonas S, Philips EM, eds. *ACSM's Exercise is Medicine: A Clinician's Guide to Exercise Prescription*. Philadelphia: Lippincott Williams & Wilkins, 2006: 100-20.
33. General physical activities defined by level of intensity in accordance with CDC and ACSM guidelines [online]. Available at: [http://www.cdc.gov/nccdphp/dnpa/physical/pdf/PA\\_Intensity\\_table\\_2\\_1.pdf](http://www.cdc.gov/nccdphp/dnpa/physical/pdf/PA_Intensity_table_2_1.pdf). Accessed June 10, 2013.
34. Ainsworth BE, Haskell WL, Leon AS, et al. Compendium of physical activities: classification of energy costs of human physical activities. *Med Sci Sports Exerc* 1993; 25:71-80.
35. Ainsworth BE, Haskell WL, Whitt MC, et al. Compendium of Physical Activities: An update of activity codes and MET intensities. *Med Sci Sports Exerc* 2000; 32(9 Suppl):S498-504.
36. Health Promotion Board, Singapore. *National Physical Activity Guidelines: Professional Guide*. August 2011 [online]. Available at: [http://www.hpb.gov.sg/HOPPortal/content/conn/HOPUCM/path/Contribution%20Folders/uploadedFiles/HPB\\_Online/Health\\_Topics/Physical\\_Activity/More\\_information\\_for/NPAG\\_Professional\\_Guide.pdf](http://www.hpb.gov.sg/HOPPortal/content/conn/HOPUCM/path/Contribution%20Folders/uploadedFiles/HPB_Online/Health_Topics/Physical_Activity/More_information_for/NPAG_Professional_Guide.pdf). Accessed June 10, 2013.
37. Centers for Disease Control and Prevention. *Writing SMART Objectives*. In: Centers for Disease Control and Prevention [online]. Available at: [http://www.cdc.gov/dhdspp/programs/nhdsp\\_program/evaluation\\_guides/docs/smart\\_objectives.pdf](http://www.cdc.gov/dhdspp/programs/nhdsp_program/evaluation_guides/docs/smart_objectives.pdf). Accessed June 10, 2013.

## SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME

(Code SMJ 201306A)

1. Physical inactivity causes a variety of chronic diseases and health complications, including obesity, heart disease, diabetes mellitus, hypertension and osteoporosis.
2. Exercise is effective in the treatment and prevention of chronic diseases.
3. All physicians should review and assess each patient's physical activity level at every visit.
4. All physicians should be able to either prescribe appropriate physical activity or refer the patient to a certified health and fitness professional to get exercise clearance.
5. Regular exercise at the correct intensity can reduce depression as effectively as medication or behavioural therapy.
6. The risk for sudden cardiac death and myocardial infarction is high in healthy individuals performing moderate-intensity activities.
7. For patients with chronic diseases, risk stratification and exercise screening should be performed prior to starting an exercise programme.
8. If a patient answers 'no' to all questions in the Physical Activity Readiness Questionnaire (PAR-Q), the patient can safely begin an exercise programme at any intensity without supervision.
9. Based on the recommendations of the American College of Sports Medicine (ACSM), patients with known cardiovascular, pulmonary or metabolic diseases are considered at high risk.
10. Patients who are at high risk, based on the ACSM's recommendations, are not required to undergo further medical testing before starting an exercise programme.
11. Metabolic equivalents represent the absolute energy expenditure as compared to a person's resting metabolic rate.
12. The 'talk test' is the most objective way to measure exercise intensity.
13. Brisk walking is an example of a moderate intensity exercise.
14. Aerobic exercises include walking, jogging, cycling and weight lifting.
15. Flexibility exercises are recommended in any exercise-training programme for adults and should be performed at least 2–3 times a week for at least 10 minutes.
16. A total of 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity aerobic exercise per week is recommended for most adults.
17. To promote or maintain weight loss, 300 minutes per week of moderate exercise is recommended.
18. Progression of exercise should be made gradually to avoid injury.
19. Mobilising motivation is the easiest part in the process of exercise prescription.
20. The SMART goal method is a way to achieve effective targets.

True	False
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### Doctor's particulars:

Name in full : \_\_\_\_\_  
 MCR number : \_\_\_\_\_ Specialty: \_\_\_\_\_  
 Email address : \_\_\_\_\_

### SUBMISSION INSTRUCTIONS:

(1) Log on at the SMJ website: <http://www.sma.org.sg/publications/smjcurrentissue.aspx> and select the appropriate set of questions. (2) Provide your name, email address and MCR number. (3) Select your answers and click "Submit".

### RESULTS:

(1) Answers will be published in the SMJ August 2013 issue. (2) The MCR numbers of successful candidates will be posted online at the SMJ website by 29 July 2013. (3) Passing mark is 60%. No mark will be deducted for incorrect answers. (4) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council. (5) One CME point is awarded for successful candidates.

**Deadline for submission: (June 2013 SMJ 3B CME programme): 12 noon, 23 July 2013.**