



# Physical activity to reduce cardiovascular risk

## Summary

- People who are physically active reduce their risk of developing coronary heart disease, stroke and type II diabetes by up to 50%
- More than two-thirds of the UK population is not sufficiently active to accrue cardiovascular benefits
- Primary care practitioners should identify and advise inactive adults to aim for 30 minutes of moderate intensity physical activity on 5 or more days of the week

## Introduction

Physical activity is an important risk factor for both coronary heart disease (CHD) and stroke<sup>1</sup>. In a report summarising the evidence on the relationship between physical activity and health the Chief Medical Officer concludes “the scientific evidence is compelling”<sup>2</sup>. Despite this, more than two-thirds of the UK population is not active at a level sufficient to accrue the cardiovascular benefits of regular vigorous physical activity.

Although regular vigorous physical activity confers maximum cardiovascular benefit, it is apparent that this level of activity is unattainable and unlikely to be sustainable for the majority of the population. However, a number of studies have shown that moderate intensity physical activity benefits cardiovascular health<sup>1</sup>.

## Benefits of Physical Activity

People who are physically active reduce their risk of developing coronary heart disease, stroke and type II diabetes by up to 50% and reduce the risk of premature death by about 20-30%. Individuals who are active are almost two times less likely to die prematurely from a heart attack than their inactive contemporaries<sup>3</sup>.

Moderate-to-vigorous aerobic activities, see table, offer the greatest protection from cardiovascular diseases. There is no evidence that short duration anaerobic activity, for example 10 - 20 metre sprint, confers cardiovascular protection<sup>4</sup>.

The advantage of physical activity, over other lifestyle interventions, relates to the favourable impact physical activity has on a number of other CVD risk factors<sup>5</sup>. Regular moderate

intensity physical activity:

- Reduces adiposity, particularly in those with excess upper body and abdominal fat.
- Reduces both systolic and diastolic blood pressure in individuals with elevated blood pressure by approximately 3.8mmHg and 2.6mmHg respectively<sup>4</sup>.
- Reduces elevated plasma triglycerides.
- Increases high density lipoprotein cholesterol levels.
- Improves insulin sensitivity and glucose use and reduces the risk of type II diabetes.

## How much Physical Activity?

Healthy adults aged 18 - 65 years are recommended to participate in moderate-intensity aerobic physical activity for a minimum of 30 minutes on five days each week or vigorous-intensity aerobic activity for a minimum of 20 minutes on three days each week<sup>6</sup>. A variety of moderate and vigorous intensity activities can be combined to meet the recommendations. For example, walking briskly for 30 minutes twice a week and jogging for 20 minutes on two other days of the week. Moderate intensity aerobic activity, for example brisk walking should be at a pace that noticeably accelerates the heart rate and can be accumulated toward the 30 minute minimum from bouts lasting 10 or more minutes.

Since very few daily activities are conducted at a moderate intensity for more than 10 minutes, these recommendations should be in addition to daily activities of light intensity (e.g. self care, shopping, and casual walking) or activities lasting less than 10 minutes (e.g. walking from the car park or round the office).

Intensity	Description	Type	Example activities
Light	Activity that is 2.5 to 4.7 times as intense as when lying or sitting at rest. (2.5 to 4.7 METs*)	Aerobic	Normal walking, walking downstairs, bowling, general housework; vacuum cleaning carpets, mopping floors
Moderate	Activity that is 4.7 to 7 times as intense as when lying or sitting at rest. (4.7 to 7 METs*)	Aerobic	Brisk walking (3- 4.5 mph), lawn mowing, cycling (5-9 mph), low impact aerobic dance, social dancing, swimming
Vigorous	Activity that is more than 7 times as intense as when at rest (greater than 7 METs*)	Aerobic for some, anaerobic for others	Fast walking ≥ 5mph; cycling ≥ 10mph; high impact aerobics, playing competitive sports, circuit weight training, heavy digging or yard work; heavy housework, moving furniture

*Table. Levels of intensity for common physical activities. \*METs – Metabolic Equivalent units (1MET is the amount of energy expended at rest = 3.5 ml.kg<sup>-1</sup>.min<sup>-1</sup>). The intensity classifications are for healthy adults aged 20-39 years. Activities at a specific MET value might represent a higher relative intensity for older individuals compared with younger individuals. For example, for the ages 40 - 65, expending 4-6 times more energy than at rest provides similar benefits to someone in their 20s and 30s expending 5-7 times more energy than at rest.*

## The role of primary care

Recent public health guidance recommends that primary care practitioners should take the opportunity, whenever possible, to identify inactive adults and advise them to aim for 30 minutes of moderate intensity physical activity on 5 or more days of the week<sup>7</sup>.

Physical activity has both risks and benefits, therefore the objective for the healthcare professional is to provide guidelines that minimise risks and maximise benefits. The absolute risk of sudden death during and up to 30 minutes after vigorous activity is extremely low, even in individuals with cardiac disease (1 sudden death per 1.51 million episodes of physical exertion). Therefore, it is generally believed that the benefits of regular moderate-to-vigorous intensity physical activity far outweigh the risks except in those with the following conditions:

- Symptomatic severe aortic stenosis
- Acute pulmonary embolus or pulmonary infarction
- Acute myocarditis or pericarditis
- Suspected or known dissecting aneurysm
- Resting SBP  $\geq$  180mmHG / DBP  $\geq$  100 mmHG

- Uncontrolled / unstable angina
- Acute uncontrolled psychiatric illness
- Osteoporosis (T score  $\geq$  2.5)
- Experiences significant drop in BP during exercise
- Uncontrolled resting tachycardia  $\geq$  100 bpm
- Unstable or acute heart failure
- Uncontrolled diabetes
- New or uncontrolled arrhythmias
- Experiences chest pain, dizziness or excessive breathlessness during exertion

Sedentary individuals should be encouraged to gradually increase levels of activity as they become accustomed to being active and as physical fitness improves.

Individuals with known CHD should be encouraged to become more active to reduce their risk of disease progression and should initially be referred for supervised exercise-based cardiac rehabilitation<sup>8</sup>. Supervised exercise based cardiac rehabilitation is associated with a 31% reduction in total cardiac mortality and results in a 20% reduction in 'adverse' clinical outcomes of subsequent cardiac events<sup>9</sup>.

There are few public health initiatives that have greater potential for improving health and well-being than increasing the activity levels of the population. Being active is no longer simply an option; it is essential if people are to live healthy and fulfilling lives into old age<sup>3</sup>.

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