



EUROPREV Guide on Promoting Health through Physical Activity

A Guide to Physical Activity
Counselling in Daily Practice

www.euoprev.org

**EURO
OPREV**

semFYC
Sociedad Española de Medicina
de Familia y Comunitaria



EUROPREV Guide on Promoting Health through Physical Activity

A Guide to Physical Activity
Counselling in Daily Practice



EUROPREV Guide on Promoting Health through Physical Activity

A Guide to Physical Activity Counselling in Daily Practice

**Mateja Bulc, MD, PhD,
on behalf of the EUROPREV network**

Europrev Coordinator: Carlos Brotons (Spain)

Cecilia Björkelund (Sweden), Mateja Bulc (Slovenia), Ramon Ciurana (Spain), Ton Drenthen (The Netherlands), Dominique Durrer (Switzerland), Elena V. Frolova (Russia), Maciek Godycki-Cwirko (Poland), Süleyman Görpelioglu (Turkey), Frans Govaerts (Belgium), Eva Jurgova (Slovak Republic), Sirkka Keinanen-Kiukkanniemi (Finland), Eleizzer Kitai (Israel), Pilar Kloppe (Spain), Christos Lionis (Greece), Maxime Mancini (Switzerland), Carlos Martins (Portugal), Artur Mierzecki (Poland), Leo Pas (Belgium), Ingrid Pichler (Austria), Rosa Piñeiro (Spain), Liivia Pullerits (Estonia), Mario R Sammut (Malta), Donatella Sghedoni (Italy), Mary Sheehan (Ireland), Hava Tabenkin (Israel), Revaz Tataradze (Georgia), Eleftherios Thireos (Greece), Jasna Vucak (Croatia)

Website

www.euoprev.org

Email

euoprev@semfyc.es



© 2007, Europrev-Sociedad Española
de Medicina de Familia y Comunitaria

Portaferrissa, 8, pral.
08002 Barcelona
www.semfyec.es

Editorial coordination and management:

semfyec  ediciones

carrer del pi, 11, 2a pl, of 14
08002 Barcelona
ediciones@semfyec.es

All rights reserved. No part of this publication may be reproduced,
stored in a retrieval system, or transmitted, in any form,
or by any means, without the written permission of the publishers

EUROPREV Guide on Promoting Health through Physical Activity

Introduction	5
1. What are the benefits of regular physical activity?	5
2. What are the dangers of regular physical activity?	6
3. Screening and assessment of patient's fitness before advising regular physical activity	6
3.1. Physical activity readiness questionnaire (PAR-Q)	6
3.2. Tests for assessment of physical fitness	7
4. Prescribing physical activity	7
4.1. F- Frequency	9
4.2. I - Intensity	9
4.3. T- Type	12
4.4. T- Time	13
4.5. P- Progression	14
5. Exercise advice and tips	14
References	16

EUROPREV Guide on Promoting Health through Physical Activity

A Guide to Physical Activity Counselling in Daily Practice

Introduction

This booklet was developed by EUROPREV - the European Network for Prevention and Health Promotion in Family Medicine and General Practice. EUROPREV is the official network for preventive activities within WONCA-Europe, the European regional branch of WONCA, the World Organization of Family Doctors. This guide is aimed at practicing general practitioners/family physicians who need a simple, short and practical guide for counselling physical activity to their patients.

EUROPREV's objective was to cover most of the questions and dilemmas patients have while considering a change in health behaviour. We hope that this booklet will help general practitioners/family physicians to be more efficient in helping their patients change health related behaviour.

1. What are the benefits of regular physical activity?

Regular physical activity has a lot of beneficial effects. Besides making us feel better it gives satisfaction, better self-esteem and helps us stay fit and vital. It is also used as a preventive and curative tool, since it

- lowers blood pressure
- increases insulin sensitivity and lowers blood glucose level
- lowers serum LDL cholesterol level
- increases serum HDL cholesterol level
- helps to prevent some types of cancer (e.g. breast, colon and prostate cancer)

- reduces percentage of body fat
- reduces stress
- improves cardiovascular functional status and performance
- prevents osteoporosis
- prevents and treats diseases of the locomotor system
- increases life expectancy compared to sedentary people

2. What are the dangers of regular physical activity?

Sudden death is a very rare complication, happening usually in cases of pre-existing coronary vessel disease. Physical activity over 6 METs (Metabolic Equivalent units - see Section 4 for more details) could be a trigger for acute coronary syndrome, mostly when sedentary patients become physically active without undergoing a medical check-up.

3. Screening and assessment of patient's fitness before advising regular physical activity

The safest way is to assess health status in all patients as healthy and not healthy before prescribing regular physical activity.

Patients with:

- a history of cardiovascular disease
- high coronary risk
- obesity
- diabetes mellitus
- other serious medical problems
- a history of complete inactivity

should be checked before starting an intensive exercise program!

Clinical status, coronary risk and medication have to be taken into account, as well as the patient's habits and desires.

In such assessment several tools can be used:

3.1. Physical activity readiness questionnaire (PAR-Q)

This questionnaire serves to recognise patients who would need additional cardiovascular investigation if their answer to any of the questions is "YES" or "DON'T KNOW" (80% specific, 100% sensitive).

Physical activity readiness questionnaire			
	Yes	Don't know	No
Have you ever had cardiac disease or diabetes?			
Have you ever had high blood pressure?			
Have you ever had chest pain during exercise or at rest?			
Are you currently taking any medication for blood pressure, heart disease, etc.?			
Have you ever had vertigo, dizziness or lost consciousness?			
Have you been seriously ill or admitted to hospital in the last year?			
Are you over 65 and not accustomed to physical activity?			
Have you ever had joint or bone problems, made worse by exercise?			
Do you have a viral infection (e.g. influenza) right now?			
Do you get asthma or shortness of breath while walking?			
Is there any other reason you should not be physically active?			

Adapted from Coaching NI Professional Instructors Award Training Manual (2066, p 61)

3.2 Tests for assessment of physical fitness

→ **2 km walking test (UKK 2 km)**

This is very useful in population preventive programs, testing both subjective and objective health status and cardiovascular fitness during 2 km of brisk walking. The patient's individual fitness is calculated by using a computer system to measure blood pressure and heart rate before and after exercise.

→ **Cycloergometrical assessment**

This is a clinical test, usually performed by cardiologists, which gives the most objective appraisal of a patient's cardiovascular fitness. Since it is not fully available in GP/FM, it is recommended for:

- cardiac patients
- sedentary adults (men over 40, women over 50 years), who would like to start intensive physical activity for the first time in their life.

4. Prescribing physical activity

Physical activity should always be prescribed on an INDIVIDUAL basis, depending on several factors:

- what is the **goal**? (to become fit, to lose weight, to improve health, etc.)
- what intensity of physical activity are we are **capable** of?
- how physically **active** have we been **so far**?
- are any **health problems** present?
- how **fit** are we?
- **age**
- **interests**
- **lifestyle**

The plan for physical activity should be based on the caloric threshold. According to the American College of Sport Medicine, the **minimal** caloric threshold is 1000 kcal/week:

- 200 kcal/day 4 times a week
- or
- 300 kcal/day 4 times a week.

The **optimal** caloric threshold for a healthy adult is 2000 kcal/week.

Calories spent in physical activity can be calculated from:

$$\frac{\text{MET} \times 3.5 \times \text{BW}}{200} = \text{kcal/min}$$

BW = body weight (kg)
 1 MET = metabolic equivalent unit = 3.5 ml O₂/kg/min

Intensity of different physical activities, expressed in METs:	
resting	1 METs
eating, dressing	2 METs
walking (4.8 km/h), fishing, billiards	3 METs
brisk walking (5.6 km/h)	4 METs
tennis (doubles), climbing stairs, cricket	5 METs
tennis (singles)	6 METs
basketball	7 METs
running (8 km/h), aerobics, mountaineering	8 METs

In prescribing physical activity we use the **FIT (TP) formula**:

F - frequency (how many days per week)

I - intensity (mild, moderate, intense)

T - time (quantity of physical activity/day)

T - type of activity (aerobic, anaerobic, for strength, stretching...)

P - progression

4.1 F- Frequency

It is advisable that the patients are active **every day**, no matter what type of activity they choose. Physical activity gives beneficial effects when done regularly, the minimum being 30 minutes for 3-5 days per week (European recommendation).

4.2 I - Intensity

According to physiological parameters, 3 levels of intensity exist:

(a) Mild:

This refers to any activity that burns less than 3.5 calories per minute (kcal/min). These levels are equal to what a healthy individual might burn while strolling, walking slowly, doing moderate housekeeping, etc. The heart rate (pulse) in mild exercise is **less than 50% of the maximal pulse** (see sub-section A below for more details).

(b) Moderate:

Moderate-intensity physical activity refers to any activity that burns 3.5 to 7 calories per minute (kcal/min). These levels are equal to what a healthy individual might burn while walking briskly, mowing the lawn, dancing, swimming for recreation, bicycling, walking for pleasure, gardening and working in the yard, housekeeping, dancing and performing recreational activities such as tennis, racquetball, soccer, basketball and touch football. In moderate physical activity our heart rate (pulse) is **50-70% of the maximal pulse**.

Moderate-intensity activities, if performed daily, have many long-term health benefits. They help lower the risk of cardiovascular diseases.

(c) Intensive:

Such physical activity refers to any activity that burns more than 7 calories per minute (kcal/min). These levels are equal to what a healthy individual might

burn while jogging, engaging in heavy yard work, participating in high-impact aerobic dancing, swimming continuous laps, or bicycling uphill. In very intensive exercise one's heart rate (pulse) is **more than 70% of the maximal pulse**.

Intensity assessment

There are several ways to assess the intensity of physical activity. One can count his/her heart beats or observe his/her reaction to exercise.

A. Pulse (heart rate) measurement

By measuring the heart rate (beats per minute) we can tell how hard the heart is working. One can check his/her heart rate by counting the pulse for 15 seconds and multiplying the beats by 4. Maximal, recommended and target pulses can be calculated using the following equations:

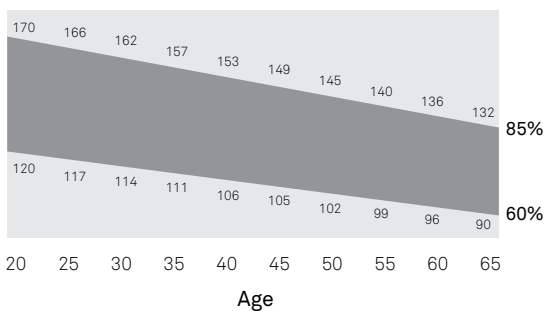
maximal pulse = $Fr_{max} = 220 - \text{age}$
recommended pulse = $Fr_{recom.} = Fr_{max} - Fr_{rest}$
target pulse for 50-85 % intensity: = $((Fr_{max} - Fr_{rest}) \times 0.50 \text{ and } 0.85 + Fr_{rest})$

Legend: Fr = frequency

When just beginning an exercise program, one should aim for the lower target heart rate (60%). As the fitness improves, one can exercise harder to get the heart rate closer to the top number (85%).

The chart below shows the target heart rates for people of different ages:

Target heart rates



(familydoctor.org)

B. Subjective reaction to physical activity:

1. Scale of RPE (rate of perceived exertion)

“How do you feel during physical activity?” (Please tick one box)	
1. I have no problems	<input type="checkbox"/>
2. It was easily done	<input type="checkbox"/>
3. I can do more	<input type="checkbox"/>
4. I'm starting to feel breathless	<input type="checkbox"/>
5. I'm rather breathless	<input type="checkbox"/>
6. I'm very breathless	<input type="checkbox"/>
7. I feel tired	<input type="checkbox"/>
8. I feel very tired	<input type="checkbox"/>
9. I can't breathe	<input type="checkbox"/>
10. I feel exhausted	<input type="checkbox"/>

1-3: not intensive enough
4-6: intensive enough
>6: too intensive

2. Observing techniques

The exercise is safe as long as:

- we are still able to talk while being active
- muscular pain (“muscle fever”) after the exercise lasts less than a day
- at the end of the exercise we feel we could repeat the activity

The exercise is too intensive and not safe if signs of alarm are present:

- we are not able to finish the activity
- we can't talk while exercising
- we are exhausted after training
- we experience chronic tiredness
- sleeping disorders are present
- we feel pain in the joints
- chest pain (angina pectoris) appears during the exercise
- we feel breathless (dyspnoea) while exercising or resting
- we get nausea, dizziness during/after exercise
- we can't breathe when lying down (orthopnoea) or we have paroxysmal nocturnal dyspnoeas
- we feel palpitations or quickened heart beats (tachycardia)
- ankle swelling (oedema) appears
- because of strong pain in the legs during exercise (intermittent claudication) we have to stop

4.3. T- Type

Some activities improve flexibility, some build muscular strength and some increase endurance. Anaerobic exercise comprises brief, strength-based activities such as sprinting or bodybuilding, whereas aerobic exercise is centred on endurance activities such as marathon running or long-distance cycling. However, the early stage of all exercise is anaerobic.

A. Aerobic exercise

This is generally an activity performed over a long period of time, typically 20 minutes or more. It is used to tone the body, make it leaner, and improve endurance by keeping the cardiovascular system healthy. Technically, aerobic exercise is exercise that mainly uses energy from the body's muscle cells doing aerobic respiration. Aerobic respiration of a cell is when the cell uses oxygen to burn energy (aerobic means "requiring air/oxygen"). This is unlike anaerobic respiration where the cell does not use oxygen when it burns energy.

Cellular aerobic respiration can potentially be 18 times more efficient than anaerobic respiration, and aerobic respiration produces fewer toxins in the cell. Because of this, the cell will try to do aerobic respiration whenever it can, but it will do anaerobic respiration to get energy when it lacks oxygen.

Exercise that is less intense but lasts longer allows the body to give the muscles oxygen as they are using it up, and keep them doing aerobic respiration. More intense exercise uses up the oxygen in the cells faster than it can be replaced, so the cells divert to anaerobic respiration to get the energy they need. Continuous activities, which involve using the large muscles in the arms or legs, are called **endurance or aerobic** exercise. They help the heart by making it work more efficiently during exercise and at rest.

Types of aerobic exercise are: swimming, dancing, walking, running, climbing stairs (sustained for 20 minutes or more), rowing, chopping wood (sustained for 20 minutes or more), cross country skiing, hiking, jogging, cycling, etc.

B. Anaerobic exercise

Anaerobic means "without air", and refers to the energy exchange in living tissue that is independent of oxygen. **Anaerobic exercise** is brief, high intensity activity where anaerobic metabolism is taking place in muscles. Any exercise that consists of short exertion, high-intensity movement is an anaerobic exercise. Anaerobic exercise is typically used by athletes in non-endurance

sports to build power and by body-builders to build muscle mass. Muscles that are trained under anaerobic conditions develop biologically differently giving them greater performance in short duration-high intensity activities.

Examples of anaerobic exercise include: weight lifting, sprinting, jumping, etc.

In primary prevention the rule of **balanced physical activity** should be followed:

50% = 4-7 days a week: endurance exercise - aerobic activity

25% = 2-4 days a week: anaerobic activity for muscular strength

25% = 4-7 days a week: exercise for flexibility (stretching plus relaxation)

Preferably one should start the exercise session with a gradual **warm-up** period. During this time (about 5 to 10 minutes), one should slowly stretch muscles first, and then gradually increase the level of activity. For example, one should begin walking slowly and then pick up the pace. When the exercise is finished, one should **cool down** for about 5 to 10 minutes, stretch the muscles and let the heart rate slow down gradually. The same stretches as in the warm-up period can be used.

4.4. T- Time

There are several different recommendations on the duration of physical activity:

ACSM (American College of Sports Medicine) recommendation: 20-60 minutes per day
European recommendation: 3-4 days /week for 30 minutes of 50-80% Fr max or all days in a week for 30 minutes of < 50% Fr max

Fr max = maximal frequency (maximal pulse)

4.5. P- Progression

Healthy adults can achieve 3 stages: start, improvement and maintenance.

Stage	Week	Frequency-F (times/week)	Intensity-I (%)	Time-T
Starting	1	3	40-50	12
	2	3	50	14
	3	3	60	16
	4	3	60-70	18
	5	3	60-70	20
Improvement	6-9	3-4	70-80	21
	10-16	3-4	70-80	24
	17-19	4-5	70-80	28
	20-27	4-5	70-80	30
Maintenance	28 and more	5-6	70-85	30-45

5. Exercise advice and tips

Here are some tips that will help you start and stick with an exercise program:

- Start by **talking with your doctor**. This is especially important if you haven't been active, if you have any health problems, or if you're pregnant or elderly. **Start out slowly**. If you've been inactive for years, begin with a 10-minute period of light exercise or a brisk walk every day and gradually increase how hard you exercise and for how long.
- Enjoy it! **Choose the activity you like to do**. Make sure it suits you physically, too. For instance, swimming is easier on arthritic joints.
- **Get a partner**. Exercising with someone else can make it more fun.
- **Vary your routine**. You may be less likely to get bored or injured if you change your routine. Walk one day. Bicycle the next. Consider activities like dancing and racquet sports, and even chores like chopping wood.
- **Choose a comfortable time of day**. Don't work out too soon after eating or when it's too hot or cold outside. Wait until later in the day if you're too stiff in the morning.
- **Don't get discouraged**. It can take weeks or months before you notice some of the changes from exercise.

- **Forget "no pain, no gain"**. While a little soreness is normal after you first start exercising, pain isn't. Stop if you hurt.
- **Make exercise fun**. For example, read, listen to music or watch TV while riding a stationary bicycle. Find fun things to do, like taking a walk through the zoo. Go dancing. Learn how to play tennis.
- Use **appropriate clothes and footwear**.
- Drink plenty of **fluids**.
- **Warm up** before starting, start slowly and increase frequency and time gradually! Do not forget to **cool down and stretch** at the end of your exercise!

References

1. AHA Scientific Position Statement: Statement on Exercise (1996), #71-0087 Circulation. 1996; 94:857-862
2. Exercise (Physical Activity) Counselling AHA 2006. URL: <http://www.heart.org/presenter.jhtml?identifier=4534>, acc. March 29, 2007
3. Beitz R, Doren M. Physical activity and postmenopausal health. J Br Menopause Soc. 2004; 10(2):70-4.
4. Fras Z. Prescribing of physical activity. Zdrav Var 2002; 41: 27-34 (in Slovene).
5. Blinc A, Bresjanac M. Telesna dejavnost in zdravje (Physical activity and health). Zdrav vestn 2005; 74: 771-7.
6. Borer KT. Physical activity in the prevention and amelioration of osteoporosis in women: interaction of mechanical, hormonal and dietary factors. Sports Med. 2005; 35(9):779-830.
7. George BJ, Goldberg N. The benefits of exercise in geriatric women. Am J Geriatr Cardiol. 2001; 10(5):260-3.
8. Huang N. Motivating patients to move. Aust Fam Physician. 2005; 34(6):413-7.
9. King AC. Interventions to promote physical activity by older adults. J Gerontol A Biol Sci Med Sci. 2001; 56 Spec No (2) : 36-46.
10. Livingstone MB, Robson PJ, Wallace JM, McKinley MC. How active are we? Levels of routine physical activity in children and adults. Proc Nutr Soc. 2003; 62(3):681-701.
11. Wikipedia contributors. Anaerobic exercise. Wikipedia, The Free Encyclopedia. URL: http://en.wikipedia.org/w/index.php?title=Anaerobic_exercise&oldid=91021333, acc. March 29, 2007
12. Micallef-Stafrace K. The role of regular exercise in cardiovascular health. The Synapse 2005:14.
13. Scrutinio D, Bellotto F, Lagioia R, Passantino A. Physical activity for coronary heart disease: cardioprotective mechanisms and effects on prognosis. Monaldi Arch Chest Dis. 2005; 64(2):77-87.
14. Vanhees L, Lefevre J, Philippaerts R, Martens M, Huygens W, Troosters T, Beunen G. How to assess physical activity? How to assess physical fitness? Eur J Cardiovasc Prev Rehabil. 2005; 12(2):102-14.
15. Wike J, Kernan M. Sudden cardiac death in the active adult: causes, screening, and preventive strategies. Curr Sports Med Rep. 2005; 4(2):76-82.