PHYSICAL ACTIVITY FOR THE ELDERLY

THEORY
Contents

1. Benefits of physical activity
2. The problem
3. How to increase physical activity?
THE BENEFITS OF PHYSICAL ACTIVITY
Physical Activity (PA)

“Any bodily movement associated with muscular contraction that increases energy expenditure above resting levels”

→ Leisure-time PA
→ Occupational PA
→ PA at or near the home
→ PA connected with transport
BENEFITS OF PHYSICAL ACTIVITY

Primary Prevention

Secondary Prevention

Management of the disease
Advantages of Physical Activity

Prevents
- Diabetes
- Colon cancer
- Breast cancer
- Osteoporosis
- Falls and fractures
- Cognitive decay

Prevents and heals
- Hypertension
- Coronary disease
- Stroke
- Obesity

Brukner PD et al, MJA 2005
### Loss of functional capacity with ageing

<table>
<thead>
<tr>
<th>Category</th>
<th>Loss Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle resistance</td>
<td>1-2% per anno</td>
</tr>
<tr>
<td>Muscle force</td>
<td>3-4%</td>
</tr>
<tr>
<td>Aerobic capacity</td>
<td>3-4% per anno</td>
</tr>
<tr>
<td>Bone density male</td>
<td>1%</td>
</tr>
<tr>
<td>Bone density female</td>
<td>2-3%</td>
</tr>
<tr>
<td>Flexibility and balance</td>
<td></td>
</tr>
<tr>
<td>Proprioception and coordination</td>
<td></td>
</tr>
<tr>
<td>Kinesthetic Perception</td>
<td></td>
</tr>
<tr>
<td>Temperature Regulation</td>
<td></td>
</tr>
</tbody>
</table>
Improvement of quality of life

Physical exercise capacity

Physically Active

Physically Inactive

Minimum necessary to perform activities of daily living

Adapted from Young (1986)
The Problem
Physical activity
One of the most important human functions

Civilization reduces the need for

- Human force
- Movement
  - Agriculture
  - Buildings
  - Transport
Physical activity
One of the most important human functions

Today

- In great measure eliminated
- We ignore its importance for health and well-being
The Problem

- 40 – 60 % of the EU adult population leads a sedentary lifestyle
- 23.5 % is completely sedentary

Table 13. Time spend walking on a usual day by age

<table>
<thead>
<tr>
<th>Time spent walking</th>
<th>15-25 years %</th>
<th>26-44 years %</th>
<th>45-64 years %</th>
<th>65 + years %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No walking for at least 10 minutes</td>
<td>16.7</td>
<td>21.4</td>
<td>21.6</td>
<td>23.5</td>
</tr>
<tr>
<td>30 minutes or less</td>
<td>42.1</td>
<td>38.1</td>
<td>34.6</td>
<td>36.5</td>
</tr>
<tr>
<td>31 to 60 minutes</td>
<td>21.2</td>
<td>20.7</td>
<td>22.7</td>
<td>22.9</td>
</tr>
<tr>
<td>61 to 90 minutes</td>
<td>4.6</td>
<td>5.3</td>
<td>6.9</td>
<td>6.1</td>
</tr>
<tr>
<td>91 to 120 minutes</td>
<td>7.0</td>
<td>6.2</td>
<td>6.4</td>
<td>5.0</td>
</tr>
<tr>
<td>More than 120 minutes</td>
<td>1.4</td>
<td>1.7</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>DK</td>
<td>7.1</td>
<td>6.5</td>
<td>6.1</td>
<td>4.4</td>
</tr>
</tbody>
</table>
No Physical Activity
- Poor muscle tone
- Risk of fractures
- Obesity
- Diabetes
- Premature Ageing
Energy Cost

1 MET = 3.5 mL • kg⁻¹ • min⁻¹ \( V_{02} \)

- Sleeping: 0.9 METs
- Cooking: 2.0 METs
- Slow walking on a flat surface: 3.0 METs
- Running quickly on a flat surface: 12.0 METs
Relationship PA and mortality

MET = Energy cost

Kaplan-Meier survival curves (age-adjusted) for the VSAQ.

INCREASING PHYSICAL ACTIVITY
Guidelines (1)

World Health Organisation

The objective

- Goal is to achieve a minimum of 30 minutes of moderate-intensity physical activity 5 days a week or at least 20 minutes of vigorous-intensity physical activity 3 days a week

Recommended in short bursts of 10-15 minutes
Guidelines (2)

- 30 minutes a day → prevention of chronic diseases
- 60 minutes a day → weight management
How to increase physical activity?

Counselling methods:
- Individually or in groups
- In person, by telephone or via internet
- Brief or intensive
- Physical activity only or multiple behaviour changes (including smoking and diet)
Behaviour Change

- Explain risks
  - Motivate: why change?
    - Goal setting: How to change?
Problem Solving Treatment

Goal setting:

**S**pecific: increase physical activity

**M**easurable: 3 times a week for 30 minutes, 2 weekdays and one weekend day

**A**chievable: walking alone

**R**elevant: walking

**T**imetable: in the next week

“*Walk for 30 minutes three times a week*”
Optimal is not achievable

→ Optimum

■ 3-4 times a week, 30-60 minutes a day
■ High intensity

→ Not achievable so:

■ “Something” is better than “nothing”
■ Moderate intensity for a long period is better than high intensity for short
■ Find something you can achieve eg. Walking, cycling
■ Incorporate PA into your daily life, eg. Walk to the shop instead of going by car

Ask your doctor to help you
How to increase physical activity?

- Type of PA: choose an activity you enjoy → greater effect
- PA in daily life: use the stairs instead of the lift
- All types of PA are effective: cycling, walking, tennis, golf etc
- Try to keep a balance: 2-3 times a week, every week
- Try to find family or friends to join you
Overall improvement in health

- Increase physical activity
- Decrease dietary intake
- Involve family and friends in your behaviour change → they have to change too
HOW TO CHANGE PHYSICAL ACTIVITY?

1. Initial evaluation of possible risks and contro-indications
   - (PAR-Q Questionnaire Aptitude for Physical Activity)

2. Define an improvement plan with measurable objectives (PASA)
FACTORS TO TAKE INTO CONSIDERATION

- TYPES OF EXERCISE
  - Cardiovascular resistance
  - Strength
  - Balance
  - Flexibility

- FREQUENCY AND TIME: see recommendations
  - WHO (World Health Organisation)
  - ACSM (American College of Sports Medicine)

- INTENSITY: Borg Scale
MODERATE PHYSICAL EXERCISE

- Swimming
- Cycling
- Race cycling
- Gardening
- Housework
- Ping Pong
- Rowing
- Dancing
- Golf
MORE INTENSE ACTIVITY

- Going upstairs, going for an uphill walk or in the hills/mountains
- Swimming lengths of a pool
- Going trekking in the mountains

- Going for a trip to the mountains
- Skiing
- Tennis
- Horseriding
### Examples of resistance activities

**Examples of resistance activities with moderate effort for the average elderly person**

**Moderate:**
- Swimming
- Going for a bike ride
- Exercise bike
- Gardening (digging, raking)
- Quick walking on a flat surface
- Sweep or wash the floor
- Tennis (in doubles)
- Volleyball
- Row
- Dance

**Resistance activities with more intense effort.**

**Vigorous:**
- Climb the stairs or a slope
- Shovel snow
- Cycle up a hill
- Tennis (singles)
- Cross country skiing
- Slope skiing
- Running
STRENGTH AND BALANCE
Examples
STRENGTH AND BALANCE
Examples

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FLEXIBILITY
FLEXIBILITY
FREQUENCY AND DURATION

OBJECTIVE

- 30 MINUTES of moderate physical activity
- 5 days per week
- 20 MINUTES of intense physical activity
- 3 days per week

PROGRESSION

- gradually increase the frequency and duration
INTENSITY

BORG SCALE

Least effort
6
7 Very very easy
8
9 Very easy
10
11 Easy
12
13 More or less difficult
14
15 Difficult
16
17 Very difficult
18
19 Very very difficult
20
Most effort

Resistance activity

Strength activity
**GENERAL INSTRUCTIONS FOR USE OF THE SCALE (Rating of perceived exertion)**

- While performing these exercises, we would like you to measure your perceived effort – how difficult the exercise seems to you overall, not for any particular part of your body.
- While doing a physical activity, look at the scale which goes from 6 “no effort” to 20 “maximum effort”.
- Choose the number which best describes the intensity level of your effort. This will give you a good idea of the intensity of effort that you are carrying out, and you can use this scale to raise or lower the intensity of exercise so as to gain the required intensity.
- Try to evaluate your level of effort as honestly as possible without thinking about the physical effort – it is your feeling of effort that counts, not how you compare to others.
- Look at the scale and the numbers which correspond to the levels of intensity, then choose a number.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Most effort</td>
</tr>
<tr>
<td>19</td>
<td>Extremely difficult</td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Very difficult</td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Difficult</td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>A little difficult</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Light</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Little effort</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Very little effort</td>
</tr>
<tr>
<td>6</td>
<td>No effort</td>
</tr>
</tbody>
</table>
**Borg Scale**

<table>
<thead>
<tr>
<th>French</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>très très facile</td>
<td>very, very light</td>
</tr>
<tr>
<td>très facile</td>
<td>very light</td>
</tr>
<tr>
<td>assez facile</td>
<td>fairly light</td>
</tr>
<tr>
<td>un peu difficile</td>
<td>somewhat hard</td>
</tr>
<tr>
<td>difficile</td>
<td>hard</td>
</tr>
<tr>
<td>très difficile</td>
<td>very hard</td>
</tr>
<tr>
<td>très très difficile</td>
<td>very, very hard</td>
</tr>
</tbody>
</table>

**Effort and Resistance**

- Effort increases from left to right.
- Resistance increases from bottom to top.
Go to your doctor if...

- You have chest pain
- You feel dizzy
- Excessive breathlessness
- Irregular heartbeat

Worrying symptoms
According to the levels of physical activity, we can divide people into three groups. A different intensity level is recommended for each group.

- **Sedentary (at the moment does not do physical activity)**
  - from 7 to 9 on the Borg Scale

- **Partially Active (some physical activity but not that recommended by the WHO/ASCM)**
  - from 10 to 13 on the Borg Scale

- **Active (follow WHO/ASCM recommendations)**
  - from 13 on the Borg Scale

It is important to gradually increase the intensity!
BEGINNER
(Example of Sedentary Profile)

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resistance 20 min. Walk From 7 to 9 Borg</td>
<td></td>
<td>Resistance 20 min. Walk From 7 to 9 Borg</td>
<td></td>
<td>Resistance 20 min. Walk From 7 to 9 Borg</td>
<td></td>
</tr>
</tbody>
</table>
## INTERMEDIATE
(Example of Partially Active Profile)

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strength/Balance 15 min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stretching for the legs</td>
<td>Stretching for the arms</td>
<td>Stretching for the legs</td>
<td>Stretching for the arms</td>
<td>Stretching for the legs</td>
<td></td>
</tr>
</tbody>
</table>
## ADVANCED
(Example of Active Profile)

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resistance 30 min</td>
<td>Resistance 30 min</td>
<td>Resistance 30 min</td>
<td>Resistance 30 min</td>
<td></td>
<td>Resistance 30 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stength/ Balance From 15 – 20 min</td>
<td></td>
<td></td>
<td>Stength/ Balance From 15 – 20 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stretching 10 min</td>
<td>Stretching 10 min</td>
<td>Stretching 10 min</td>
<td>Stretching 10 min</td>
<td></td>
<td>Stretching 10 min</td>
</tr>
</tbody>
</table>
PRACTICAL PART
Practical Part (1)

- **Activity in multidisciplinary groups:**
  - Groups of approx. 10 people
  - Three sessions of 10 minutes
  - One group leader for each group (a doctor, nurse, pharmacist or other expert)

- In groups, the participants discuss a **case from real life**.
  - An example is provided for every group (beginner, intermediate, advanced). They are asked to decide whether the subject of the case study is a **beginner, intermediate or advanced level**.
  - Distinguishing any **risk factors** they must then prepare an **weekly programme adapted** to their needs, with objectives, stages exercised to do and so on.
  - See Handbook for additional details and solutions for Cases A, B and C.
Case-study

- **Case Study A:** A woman of 65. She is in good health and takes no medicine. She played volleyball regularly until the age of 25 and then gradually reduced her exercise. For the last 20 years she has hardly exercised. Her motivation to start exercising again is that she has noticed a gradual weight gain over the last five years.

- **Case Study B:** A man aged 72. Slightly high blood pressure which is treated with medicines. He has always played sport and trained for it and has exercised irregularly for the last 20 years. He has decided to take up a regular programme of exercise to better control his blood pressure.
Case Study

Case Study C: A man aged 66. He is in good health and takes only oral hypoglycemic agent for a light. He has always played competitive sport in the past and still trains regularly, going to the swimming pool (twice a week) and to the gym (twice a week). He is motivated to follow a personalised exercise programme to improve the results obtained.
Successful Ageing

A physically and mentally active life