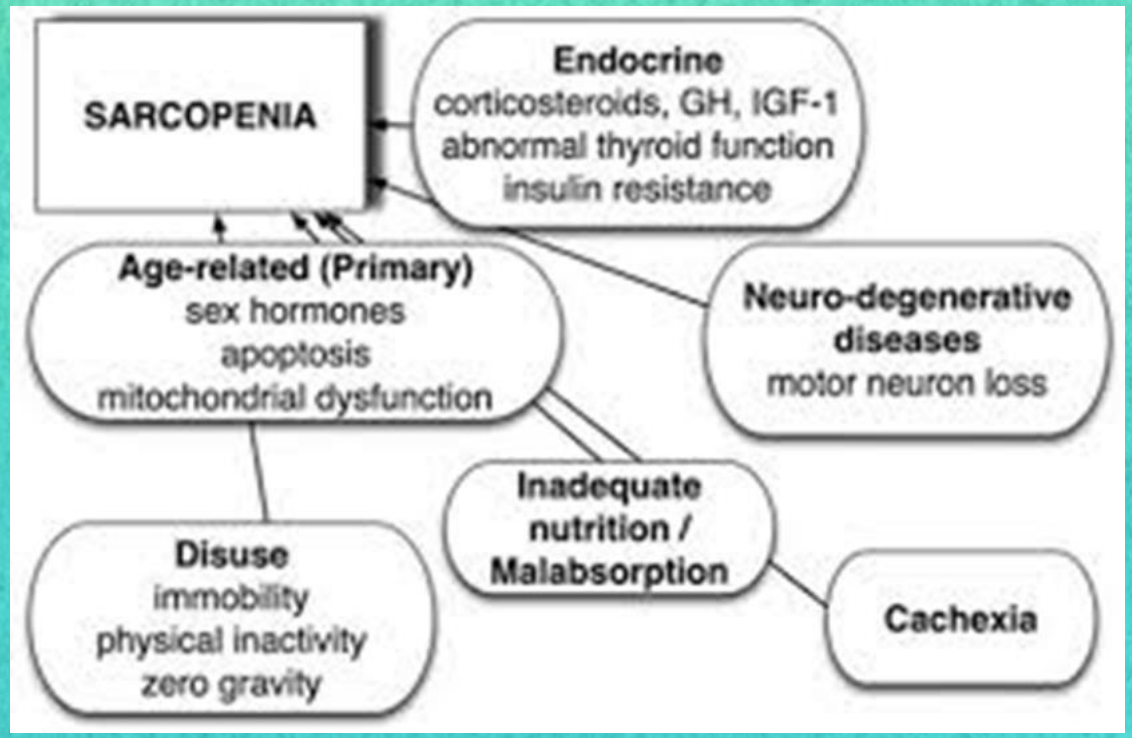
Remedial Physical Education

Remedial PE for elderly

Department of Adapted PE
and Sports Medicine 2020



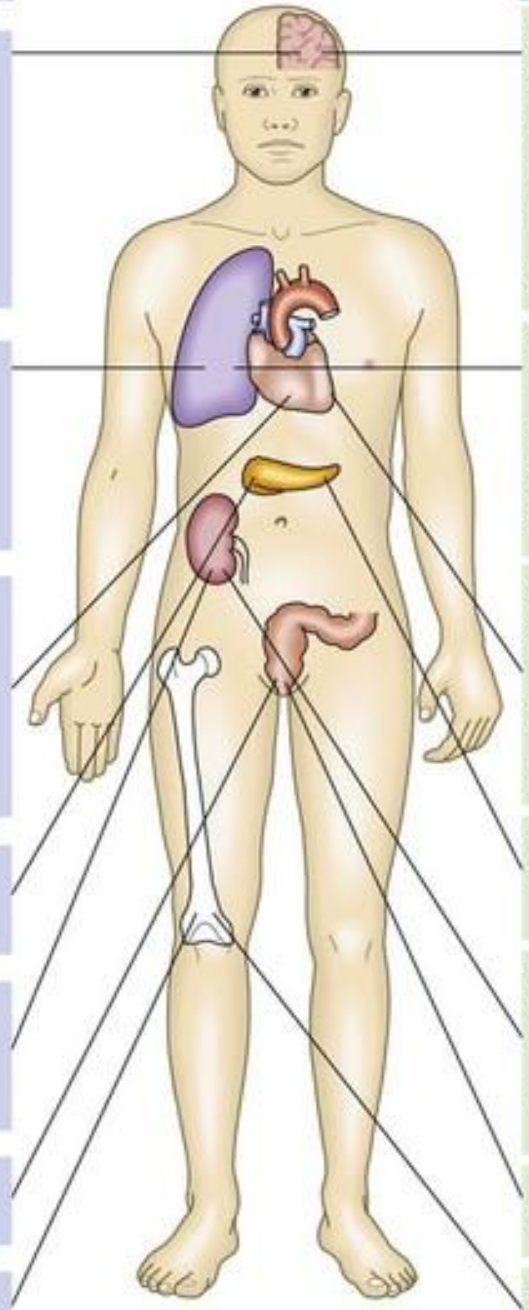
Common postural changes in older age

kyphosis
head protraction
shoulder protraction
limited movement of lower extremities
limited movement of hands

Common problems in older age

- pain of the back, joints
- decreased flexibility
- loss of muscle mass and muscle strength
- decrease in coordination and balance
- lower aerobic capacity

Changes with ageing	Clinical consequences
CNS • Neuronal loss • Cochlear degeneration • Increased lens rigidity • Lens opacification • Anterior horn cell loss • Dorsal column loss • Slowed reaction times	**CNS** • Increased risk of delirium • Presbyacusis/high-tone hearing loss • Presbyopia/abnormal near vision • Cataract • Muscle weakness and wasting • Reduced position and vibration sense • Increased risk of falls
Respiratory system • Reduced lung elasticity and alveolar support • Increased chest wall rigidity • Increased $\dot{V}/\dot{Q}$ mismatch • Reduced cough and ciliary action	**Respiratory system** • Reduced vital capacity and peak expiratory flow • Increased residual volume • Reduced inspiratory reserve volume • Reduced arterial oxygen saturation • Increased risk of infection
Cardiovascular system • Reduced maximum heart rate • Dilatation of aorta • Reduced elasticity of conduit/ capacitance vessels • Reduced number of pacing myocytes in sinoatrial node	**Cardiovascular system** • Reduced exercise tolerance • Widened aortic arch on X-ray • Widened pulse pressure • Increased risk of postural hypotension • Increased risk of atrial fibrillation
Endocrine system • Deterioration in pancreatic β-cell function	**Endocrine system** • Increased risk of impaired glucose tolerance
Renal system • Loss of nephrons • Reduced glomerular filtration rate • Reduced tubular function	**Renal system** • Impaired fluid balance • Increased risk of dehydration/overload • Impaired drug metabolism and excretion
Gastrointestinal system • Reduced motility	**Gastrointestinal system** • Constipation
Bones • Reduced bone mineral density	**Bones** • Increased risk of osteoporosis



https://basicmedicalkey.com/ageing-and-disease-2/

In older age, we may experience above-mentioned problems but exercise can be helpful. Why?

- Benefits of regular physical activity
  - ✓ improved mobility
  - ✓ improved cardiac and pulmonary function
  - ✓ improved lipid metabolism
  - ✓ weight control
  - ✓ ability to perform activities of daily living (functional and work capacity)
  - ✓ enhanced feeling of well-being (QL)
  - ✓ decrease of anxiety and depression

Long-term independence!

What kind of exercise?

- Who is my client?
- What are his/her possibilities?
- What is the environment (outside vs. inside, big gym vs. small gym etc.)
- What is the aim of exercise? Do we need to work on: cardio fitness, muscle power, flexibility, balance…?
- Will they exercise alone or under a leadership?
- Summer time vs winter time?
- Will we use specific aids?

- stretching
- strengthening
- relaxation
- aerobic activities
- sport / ball games
- gymball exercise
- dance
- psychomotorics and cognitive training
- SM system – spiral stabilization
- Yoga, Feldenkrais, Pilates…

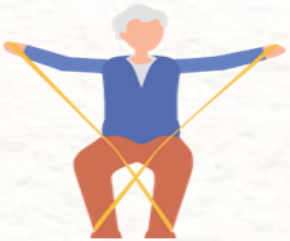
Recommended Types of Exercise

Endurance / Aerobic

Endurance/Aerobic exercises increase your breathing and heart rate, **keeping your circulatory system healthy**

Think **fast paced walking, jogging, dancing, or yard work**

These exercises include 2 categories: Moderate intensity and vigorous intensity activities



Strength

Strength exercises help **build and maintain muscles**

Some examples of strength or resistance training exercises are: **lifting weights, using resistance bands**

Balance

Balance exercises are an important factor in **fall prevention**

Participating in activities such as **Tai Chi or other low-impact movement exercises are beneficial to balance**

Flexibility

Flexibility exercises consist mainly of **stretches and yoga** to **help to keep your muscles limber**

This helps keep you lean and in good shape

eugeria

https://www.eugeria.ca/en/blog/recommended-exercises-for-the-elderly-the-right-way-to-stay-active

Exercise guidelines

- according to actual health status and competencies of the clients
- at least 1 hour after meal, comfortable clothes, shoes?
- ideally lower exercise positions (supine, on the ground), not to change positions very often, gradually increase the load on posture
- good posture / position at the beginning of the exercise (pillow or overball under the head?)
- easy exercises
- speak in a loud voice

- breathing during exercise
- gradual increase of the load and exercise duration
- concentration on exercising, perception
- slow exercise, controlled movement, stretching, strengthening
- do not overcome pain
- checking clients during exercise
- motivation, education, patience

Safety considerations

- **Contraindications = exercise :**

- acute illness - infectious disease
- severe / unstable heart disease or respiratory insufficience
- blood pressure at rest > 160 /95
- decompensation of chronic disease
- certain positions in case of joint replacement
- stop exercise if the person feels any „warning sign“ or a discomfort

Also important:

- weather conditions

Safety considerations - during exercise

Stop exercise when feeling
- discomfort
- pain /esp. chest pain/
- shortness of breath
- nausea
- dizziness
- lightheadness
- fatigue

Be aware of :
- irregular heart beat
- ST depression, elevation
- hypertonic reaction
- BP decrease in exercise
- neck extention

Do not forget :
- warm-up period
- cool-down period
- regular breathing
- fluid replacement

Think twice (?!) – rather to exclude:
- static strengthening
- highly emotional exercise (e.g. competition)
- maximal intensity exercise

Inspiration for exercise with elderly

In Czech, but you can just watch and you will understand

- https://www.seniorum.cz/videoserial-cviceni/barevne.html

In English – you can explore a lot of exercises

- https://www.uni-muenster.de/ProjectWhole/category/physical-activity/exercise/
- https://www.med.unc.edu/aging/cgec/exercise-program/videos/
- https://projectenhance.org/about-us/

Exercise while sitting for people who cannot exercise on the ground

- https://www.youtube.com/watch?v=SaYDK_LH_uk
- https://www.youtube.com/watch?v=8BcPHWGQO44

Tasks for distance study

Please go through the **presentation including the „web links“.**

Please make up an exercise program for a „reconditioning camp“ for elderly. The camp should be 6 days long and should held somewhere in nature. The number of participants would be between 20 and 30 people above 65 years of age, plus 3 instructors. Please describe roughly a group program for the 6 days.