



EXERCISE IN THE HEART FAILURE PATIENT'S CARE

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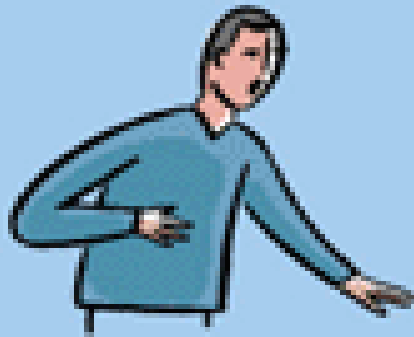


Heart Failure



- syndrome, where a heart can't keep sufficient circulation for the body's needs
- not an independent diagnosis; a patient with heart failure has some other circulation or heart disease
- when possible, the treatment is focused on the basic diagnosis like high blood pressure, cardiac ischemia, valvular disease or rhythm disturbance

Typical symptoms



Shortness of breath



Swelling of feet & legs



Chronic lack of energy



Difficulty sleeping at night due to breathing problems



Swollen or tender abdomen with loss of appetite



Cough with frothy sputum



Increased urination at night



Confusion and/or impaired memory

Treatment



- drug treatment: ACE-blockers, diuretics, betablockers
- life style modification
- invasive treatment when needed
- pacemakers, resyncronization, ICD
- heart transplantation

Drugless therapy of heart failure

- **Life-style modification**
 - Avoiding overweight
 - Decreasing salt usage
 - Regular exercise
 - Limited fluid usage (1.5–2 l) in severe heart failure (NYHA III–IV)
 - Smoking cessation
 - Moderate alcohol consumption
 - Avoiding infections

- **Treating other diseases that can worsen heart failure** (eg. infections, anemia, diabetes, thyroid gland diseases, renal failure, COPD)

- **Treating the basal reason of heart failure** (revascularization in coronary artery disease, valvular surgery, sinus rhythm returnig)

- **Organizing meetings with the patient and health care staff** (Including the heart failure nurse`s, physiotherapist`s and home nursing services to follow up system)

Heart failure after cardiac surgery



- ❑ Atrial fibrillation (AF) is the most common reason for heart failure after heart surgery
 - ❑ age, preoperative NT-pro-BNP and duration of bypass operation correlates with AF

- ❑ Early postoperative left ventricular dysfunction (cardiac output syndrome)
 - ❑ age, LVEF and lactate release during reperfusion correlates with low output after heart operation

ESC heart failure guidelines 2008



- Firmly recommend regular physical activity and structured exercise training
 - Based on the fact that exercise training improves exercise capacity and quality of life, does not adversely affect left ventricular remodelling and may reduce mortality and hospitalization in patients with mild-to-moderate chronic heart failure



Improvement in the oxygen intake of skeletal muscles is the most important effect of exercise training and has no pharmacological alternative



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POSITION STATEMENT

Exercise training in heart failure: from theory to practice. A consensus document of the Heart Failure Association and the European Association for Cardiovascular Prevention and Rehabilitation

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Patient selection



- Benefits of exercise in NYHA I-III are well documented
- In acute HF early mobilization through an individualized exercise programme may prevent further disability and lay good foundations for the formal exercise training plan

Acute HF (new HF or worsening of chronic HF)



- Clinical stabilization

- > screening for contraindications

- > gradual mobilization, calisthenic training, strength training of small muscle groups

- > functional evaluation (if no intolerance or contraindications of exercise)

- > exercise testing or 6 minute walking test

- > selecting exercise modality and intensity

The patient can begin/ continue exercise when



- Speaking is possible without dyspnea
- Resting heart rate is under 100/min
- Weight has stayed stable and the patient has no significant swellings
- No severe/ uncontrolled arrhythmias
- The patient is taking his drugs according to physician's order

Exercise modalities



- Endurance /aerobic (continuous and interval)
- Strength/ resistance
- Respiratory

Endurance aerobic training

- 20-60 min/day, 3-5 times/wk
- 40-70% HRR (calculated using Karvonen-formula)
- Borg/ RPE 10-14

- Karvonen-formula:
resting heart rate +
 $x\%(\text{maximal heart rate} - \text{resting heart rate})$

Interval endurance training

- Has been proposed to be more effective than continuous exercise in improving exercise capacity
- **High intensity:** 4x4min exercise periods, 90-95% from exercise capacity, 3 min recovery periods, 5-10 min warm up and cool down
- **Low intensity** 10-30s exercise periods , 60-80s recovery 50 % from max work load, 10-12 work phases

Resistance training, minimum recommendations

Training programme	Training objectives	Stress form	intensity	repetitions	Training volume
Step 1 Pre-training	To learn and practice the correct implementation	dynamic	<30% 1RM RPE < 12	5-10	2-3x/wk 1-3 circuits during session
Step 2 Resistance	To improve local aerobic endurance and intermuscular coordination	dynamic	30-40% 1RM RPE 12-13	12-25	2-3x/wk 1 circuit/session
Step 3 Strength training	To increase muscle mass and improve intramuscular coordination	dynamic	40-60% 1RM, RPE < 15	8-15	2-3x/wk 1 circuit/session

Patients with a very low exercise tolerance, resistance training can be safely applied if small muscle groups are trained, short bouts of work are applied and the number of repetitions is limited, work/recovery duration at least 1/2

Respiratory training



- Inspiratory muscle training can improve exercise capacity and quality of life
- Start: 30% of the maximal inspiratory mouth pressure (P_{imax}), readjust the intensity every 7-10 days up to 60% of P_{imax}
- 20-30min/session, 3-5 times/wk

Exercise training prescription according to 6 MWT

(Esc position statement 2011)

6 MWT	< 65 years		> 65 years	
	active	sedentary	active	sedentary
< 300m	CT RT RST LIT	CT RT RST LIT	CT RT RST LIT	CT RT LIT
300-450m	CT RT RST IT	CT RT RST	CT RT RST	CT RT
>450m	CT RT RST HIT	CT RT RST HIT	CT RT RST HIT	CT RT RST HIT

CT= continuous endurance training
 LIT= low intensity interval endurance training
 HIT= high intensity interval endurance training
 IT= interval endurance training
 RST= resistance/ strength training
 RT= respiratory training

1 exercise session includes



- Warm-up 10-15min
- Exercise: endurance and/ or resistance exercise, as interval – or continued exercise
- Cool-down 5-10min (light exercise or stretching)

Implementation of the guidelines in North Savonia

In North Savonia

1 University Hospital (in Kuopio)

20 communal health centers

population: 250 000

Vision:

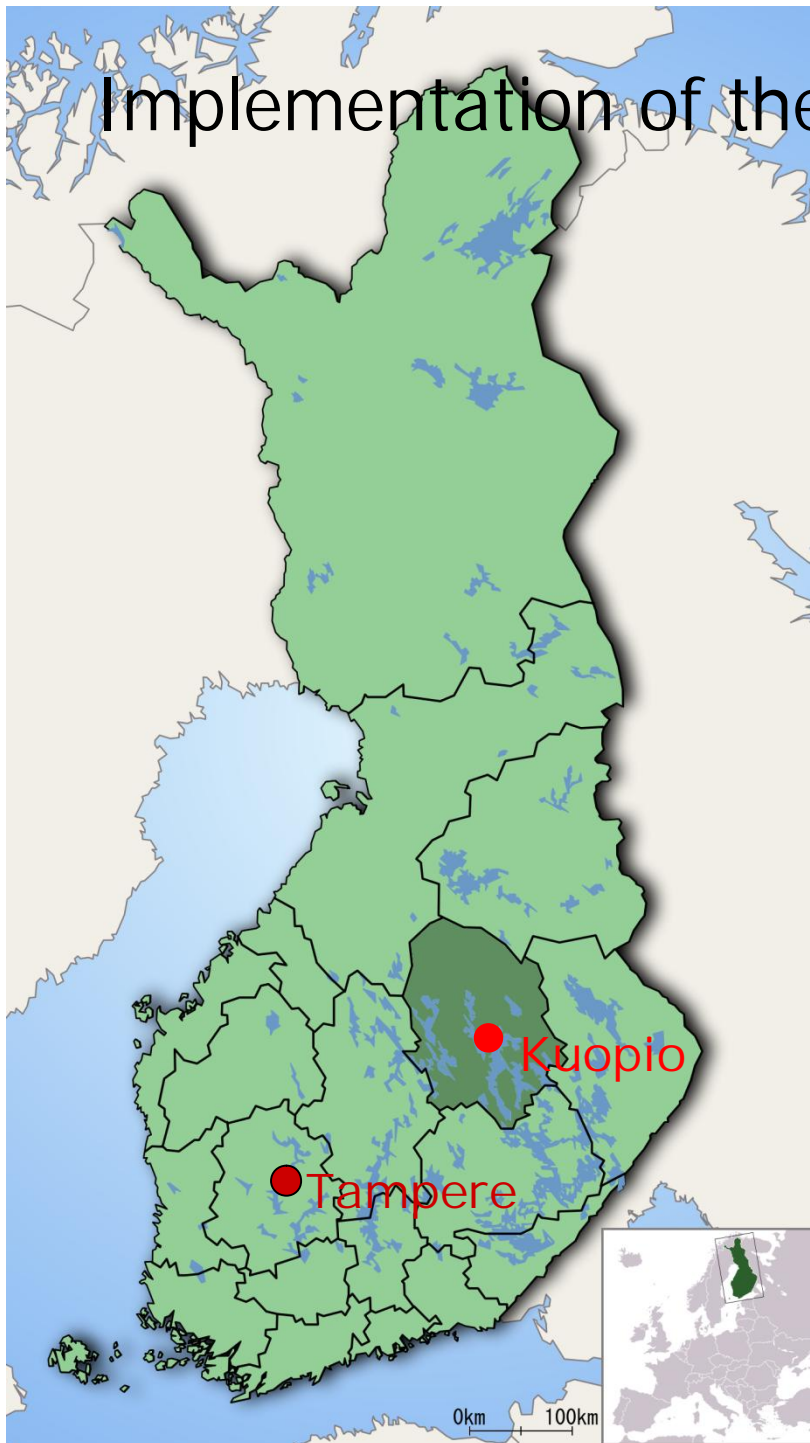
The patient can treat himself with support of communal health care

-> worsening periods and need for hospitalization will decrease

-> treatment of heart failure will be similar in whole North Savonia area

-> patient's quality of life will increase

-> costs of health care will decrease



Heart failure team

(cardiologist, heart failure nurse, physiotherapist)

- visited every communal health center
 - ▣ informed about principles and goals of treating heart failure
 - ▣ planned the treatment programme together with the center staff
 - ▣ made commitment to follow the treatment programme
- made educational materials
 - ▣ Self-care manual
 - ▣ Web-material on KUH web-pages for health care professionals
 - ▣ Published treatment programme in national Terveysportti webpages
- organized professional and personal support for communal health care staff in University Hospital
 - ▣ phone, e-mail address, visits, regular education

Physiotherapy in the diagnosis phase, in hospital

The goal: a patient will manage at home with basic self care skills and knows where to get help and when

Physiotherapy

- mobilization, motivation, education (what to do, what not to do)
- 6 MWT
- exercise programme for the first month according to patient's condition and personal goals
- Self care manual
- Organizing follow-up visits in communal health care

Education/ information after the diagnosis phase in communal health care

Physiotherapy

- 6 MWT and other functional tests if needed
- Controlling the exercise programme according to exercise diary, updating the programme
- Rehabilitation/ group exercise plan
- Planning the control visits
- co-working with KUH physiotherapist and heart failure nurse when needed

Self care manual of heart failure



Take this manual with you always when you visit health care staff

Knowledge about treatment programme in communal health centers

Do you know the heart failure treatment programme in North Savonia?

Kysymykseen vastanneet: 68 (ka: 1,3)



Has the treatment programme been useful if you have used it?

Kysymykseen vastanneet: 26 (ka: 1,1)



More information

- **ESC guidelines for the diagnosis and treatment of chronic heart failure. 2008**
- **AHA Scientific Statement :A Statement for Healthcare Professionals From the Cardiovascular Nursing Council of the American Heart Association. Circulation. 2000;102:2443-2456**
- **A Statement From the American Heart Association Committee on Exercise, Rehabilitation, and Prevention. Circulation.2003;107:1210-1225**



Thank you