Glittreklinikken

Comparison of two strength training modes in COPD

Anita Grongstad, MSc Exercise Physiology/Sport Sciences

Jan Hoff, Professor of Medicine, Norwegian University of Science and Technology.

Background:

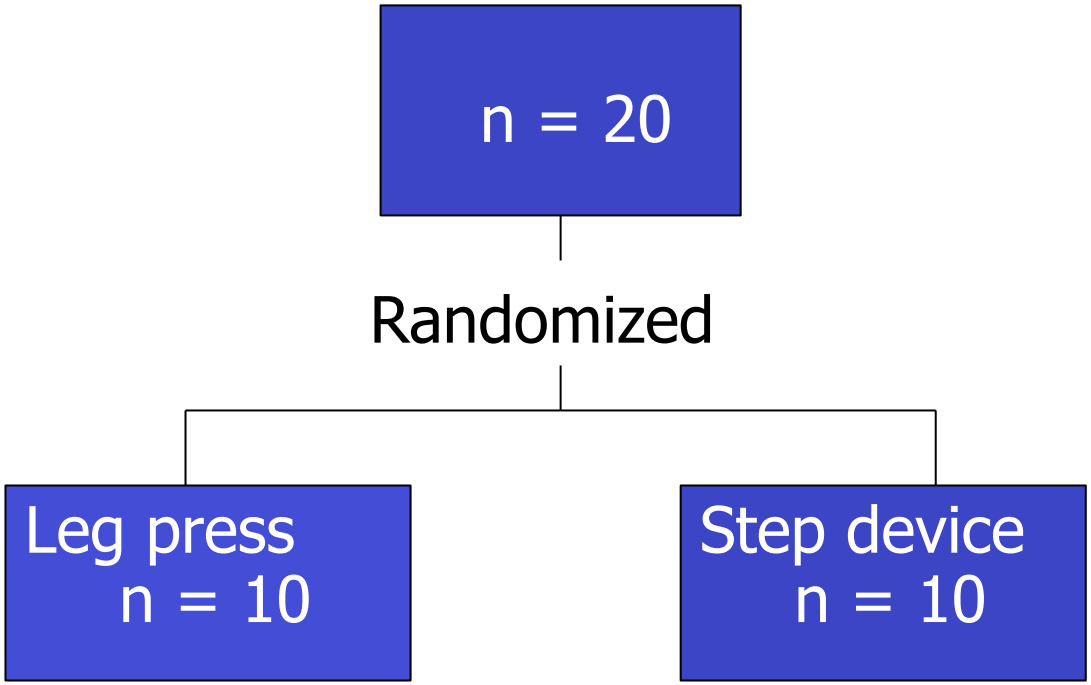
- Strength training is an important component in a rehabilitation program.
- Muscle of ambulation is the most important target muscle group.
- The challenge is how to maintain the effects achieved during a rehabilitation program?

The aim of the study was to compare:

Leg press (LP)

Step device (SD)

Study design



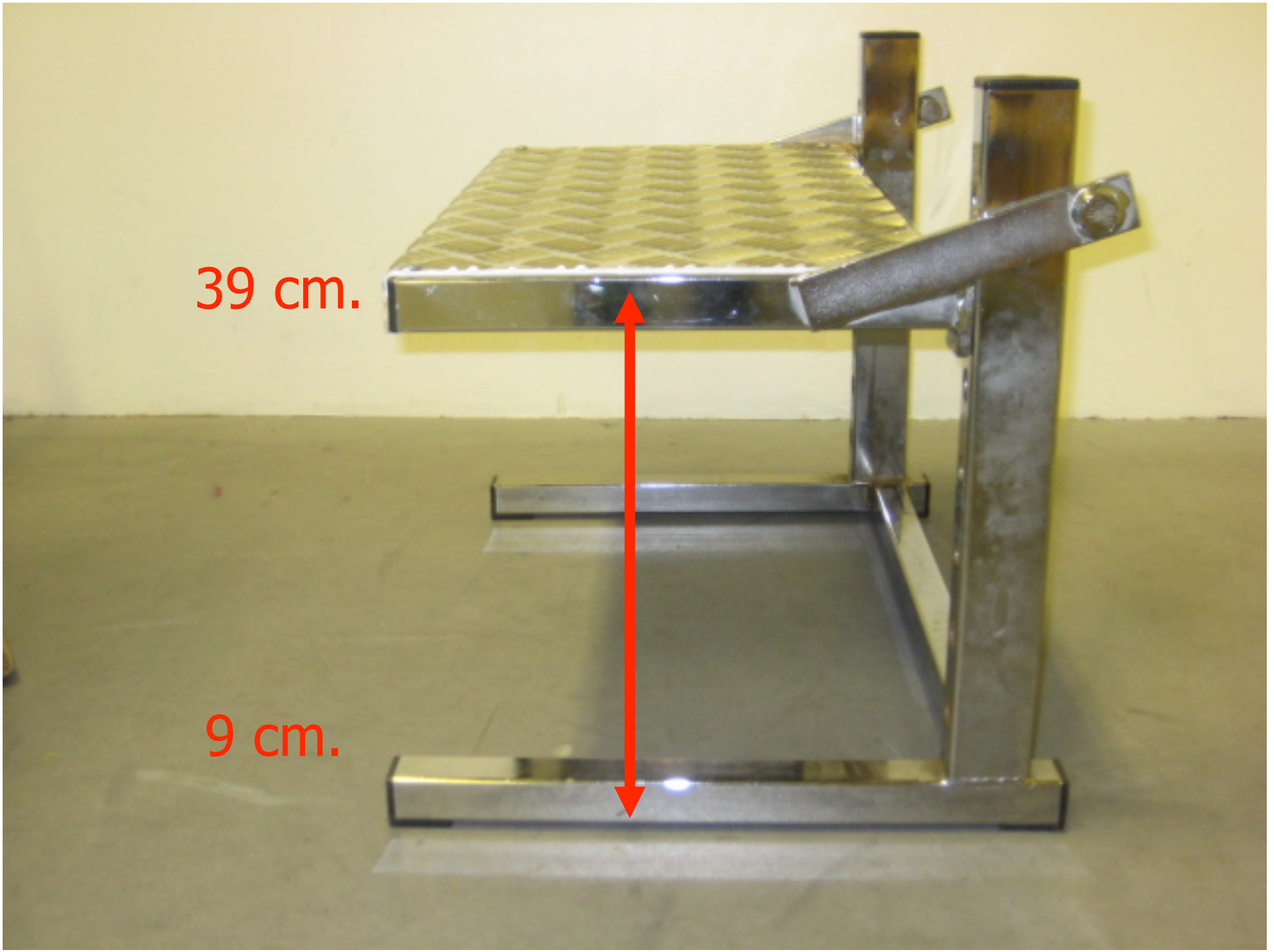
Inclusion criterias:

- Patients coming to participate in a 4-weeks in-patients rehabilitation program
- Diagnosis of COPD (FEV_1 /FVC < 0.70, $FEV_1 \leq$ 80 % pred.)
- Ex. smokers

Intervention

- Maximal strength training
- Intensity: 5 RM x 4 sets
- Progression: LP: ↑ loads SD: ↑ height
- 5 sessions a week – 4 weeks
- Supervised

Both groups participated in a multidisciplinary rehabilitation program


39 cm.
9 cm.

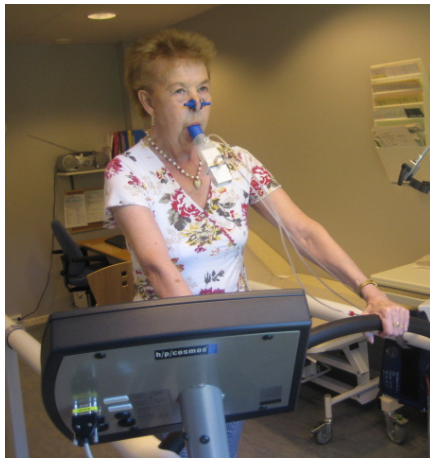
Outcome measures:

1. Maximal muscle strength,

   One repetition maximum (1RM)

2. Work economy

   VO_2 at daily walking speed on a treadmill



3. FEV_1

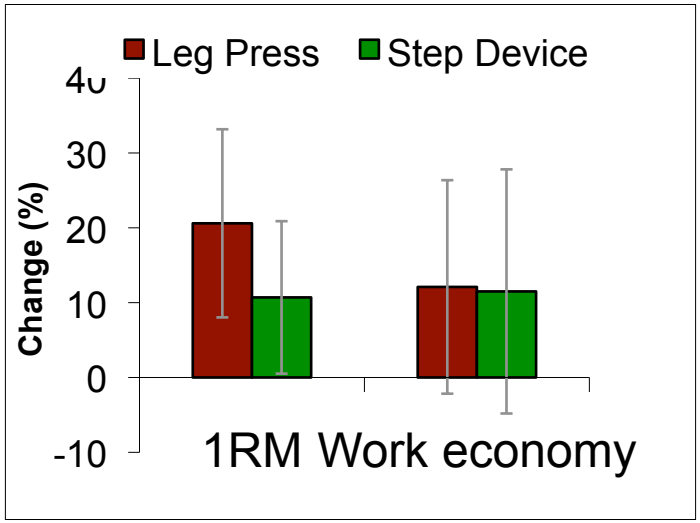
Baseline characteristics

	Leg Press (LP) n = 10	**Step Device (SD) n = 10**
Age (yr)	65 (8.7)	69 (6.2)
M/F	7/3	6/4
BMI (kg ·m 2)	25 (4.7)	26 (3.5)
FEV1/ FVC (%)	48 (11)	50 (15)
1RM (kg)	143 (56)	127 (45)

Results

	Leg Press	Step Device
• 1RM (%)	20 (13) **	10 (10) *
• Work economy (%)	12 (14) *	11 (16) *
• FEV1	9 (11)	2 (17)

(pre-post: * p<0.05, ** p< 0.005)



Conclusions

- Both LP and SD gave significant improvements in muscle strength (1RM) and work economy.
- Equipment like a step device seems to be an useful tool for physiotherapist and patients to improve and/ or maintain strength in muscles of ambulation.