Do patients with lung cancer benefit from physical exercise?

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**Background**

*Lung cancer patients characterized by:*

- Poor prognosis – especially for inoperable lung cancer
- Poor quality of life
- Vicious circle

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**Background**

*Choice of rehabilitation program:*

Target:

- Dyspnoea coping
- Exercise tolerance

COPD patients are characterized by similar symptoms

Well documented effect of a 7-week COPD rehabilitation program

- In COPD patients…
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Purpose:

“To investigate whether, a well documented COPD rehabilitation program, could improve the physical fitness of patients with pulmonary cancer.”
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**Method:**

**Exercise program:**
- 7 weeks- twice a week- 90 minutes.
- Daily diary based training
- Introduction to respiratory therapy

**Focus for training intervention:**
- Room for discussion
- Warm-up
- Walking training according to ISWT and ESWT (85%)
- Dyspnoea coping (6 x 2 min: Bike, Step, Chair-to-stand)
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Participants:

* Included from out-patient clinic

Patients in treatment as well as patients in post treatment surveillance

Patients included on the basis of ability and motivation to exercise.

Minimum gait distance of at least 50 meters

No cognitive deficits

No serious cardiac disease

Physical examination by physiotherapist
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Patient flow:

- 45 referred from Out-patient clinic
- 14 drop-outs prior to the intervention
- 7 excluded by physiotherapist
- 3 accomplished >65%
- 4 incomplete test data

- 31 initiated training intervention
- 24 included in training intervention
- 21 accomplished full intervention
- 17 all tests included
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### 24 patients initiating the exercise program:

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Women (n=10)</th>
<th>Men (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>67 (48-76)</td>
<td>64 (55-77)</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>160 (158-169)</td>
<td>177 (166-194)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>67 (52-120)</td>
<td>82 (68-100)</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>25 (19-48)</td>
<td>26 (21-36)</td>
</tr>
<tr>
<td>FEV1 (liters)</td>
<td>1.3 (0.8-2.0)</td>
<td>1.9 (1.3-3.0)</td>
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<tr>
<td>FEV1/pred. (%)</td>
<td>63 (38-80)</td>
<td>51 (39-85)</td>
</tr>
<tr>
<td>Smoking status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Former</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Previously surgically treated</td>
<td>2</td>
<td>3</td>
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<tr>
<td>NSCLC</td>
<td>8</td>
<td>11</td>
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<tr>
<td>SCLC + Mixed</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>
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**Effect:** ISWT: Improvement for 12 of 17 patients (p=0.021)
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**Effects:** ESWT: Improvement for 15 of 17 (p=0.002)

- Median improvement: 5 min.
- Maximum improvement: almost/approx 18 min.
- Maximum regression: 2 min.
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*Supplement medical treatment:*

• Chemo therapy, before and during intervention.
• Radiation, before and during intervention.
• Dendritt-vacc., before and during (1 during intervention).
• Tarceva, before and during intervention (1 and 3).
• Surgery.

*No significant changes in pulmonary function.*
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Patient feedback:
• Improved empowerment
• Training - unvaried, mundane and not exciting enough
• Intervention too short
• Focus on discussion and team spirit

Therapeutic experiences:
• Time consuming testing
• Very different levels of exercise tolerance / aerobic capacity
• Planning was fragile
• Follow-up showed poor continuance of training after intervention
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Conclusion:

• Significant improvement in their physical fitness level and gait distance measured by ISWT and ESWT.

• Number of drop-outs, and limited number of patients who continued training after the intervention, indicated that this was not the optimal form of training for pulmonary cancer patients.
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Perspective

New study:

- Evidence based training principles (like we always do...)
- Booster periods to prolong contact with physio and group (3-3-3 weeks)
- Reduced test battery (ESWT removed)
- Variation in training - introduction to different activities
  - Spinning type interval bike training
  - Varied exercise modes for circle training – i.e. indoor rowing
  - Different games
- Team spirit
- Offering counseling/intro to exercise at the right time for the patient
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**Acknowledgement:**

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<tr>
<th>Physiotherapy</th>
<th>Nurses</th>
<th>Doctors</th>
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<tr>
<td>Hanne Vagner</td>
<td>Henriette Heilemann</td>
<td>Bente Holm</td>
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<td>Merete Stensen</td>
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<td>Peter Junge</td>
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<td>Hanne F. Skall</td>
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