

COPD and O₂

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Overview

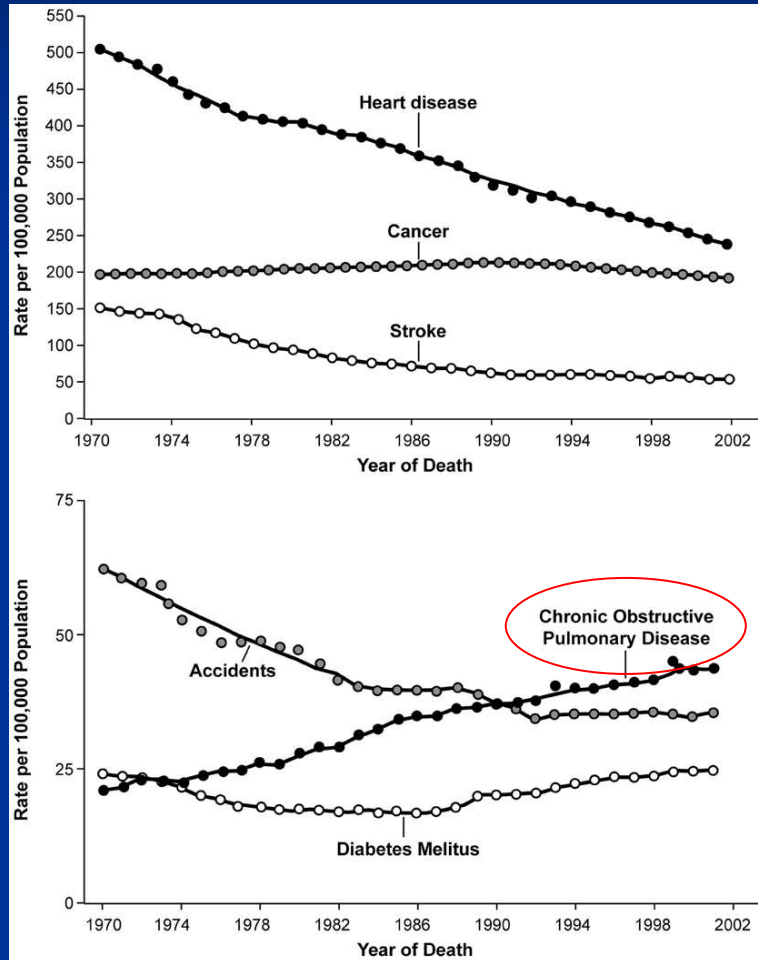
■ Introduction

- Public Health / Individual Perspective
- Individual Goals / Functioning
- Guidelines

■ Supplemental Oxygen

- long term
- ambulatory
- exercise training
- nocturnal

Public Health perspective



- By 2020 COPD is projected to become the
 - third most common cause of death

Murray C et al. Global burden of disease study. Lancet 1997

Jemal A et al. JAMA 2005

Individual perspective

- People experience the consequences of COPD as a **limitation in functioning**
- Individual goals of rehabilitation

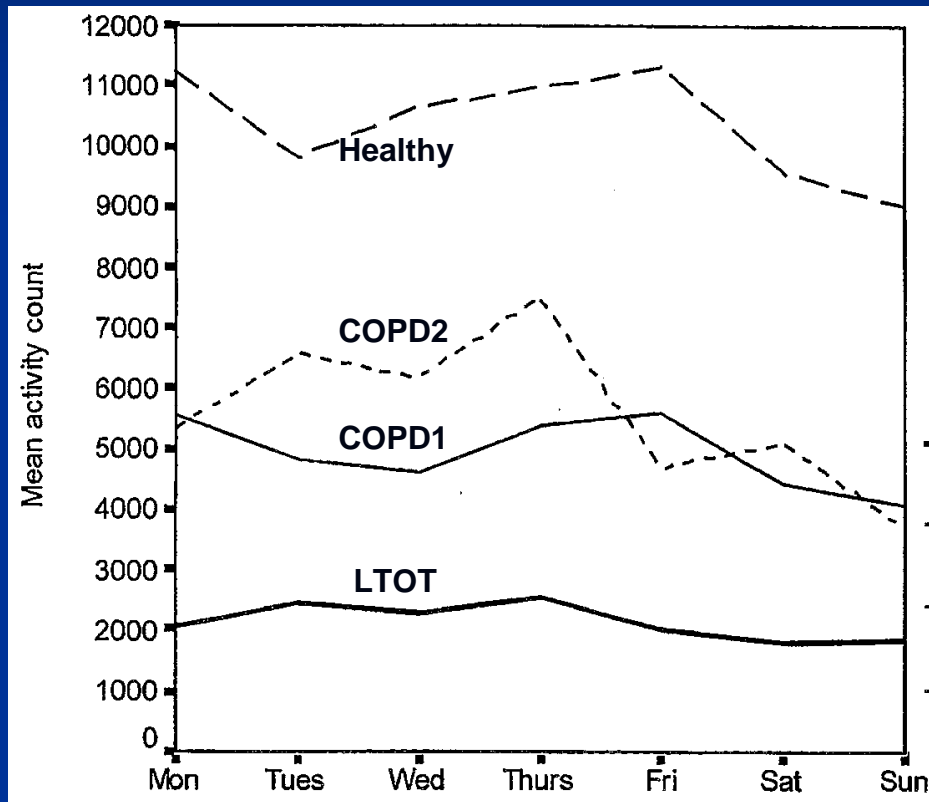


The focus on Functioning is reflected in the current treatment guidelines for COPD

- Improve functioning
 - Relieve symptoms
 - Improve exercise tolerance
 - Improve health status
- Reduce risk factors
- Improvement in physiological function
- Prevent and treat complications
- Prevent and treat exacerbations
- Prevent disease progression
- Reduce mortality

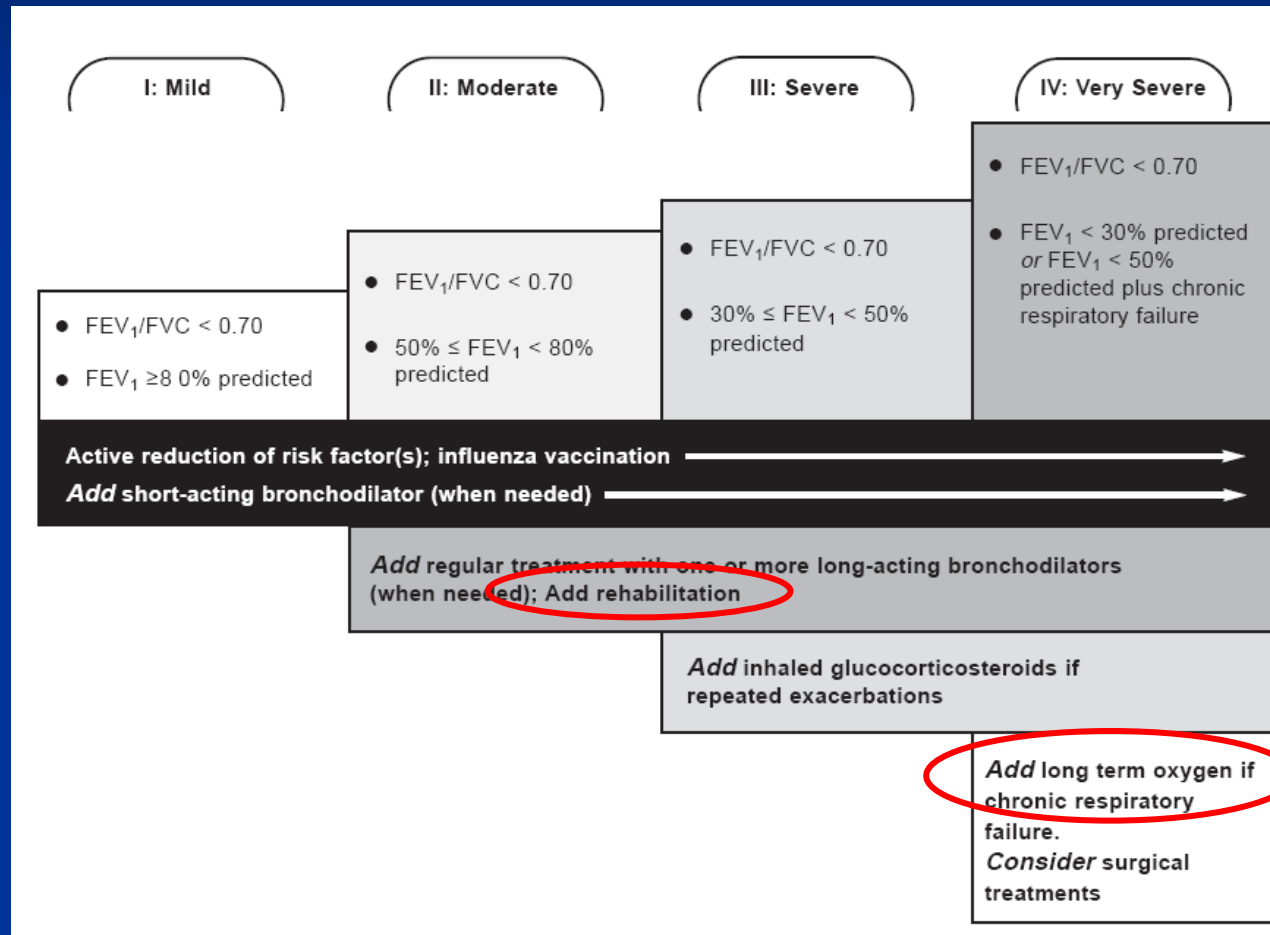
*GOLD update. www.goldcopd.com 2006
NICE Guidelines No. 12. Thorax 2004
Celli BR et al. ATS/ERS position paper
COPD. E Resp J 2004*

Physical Activity

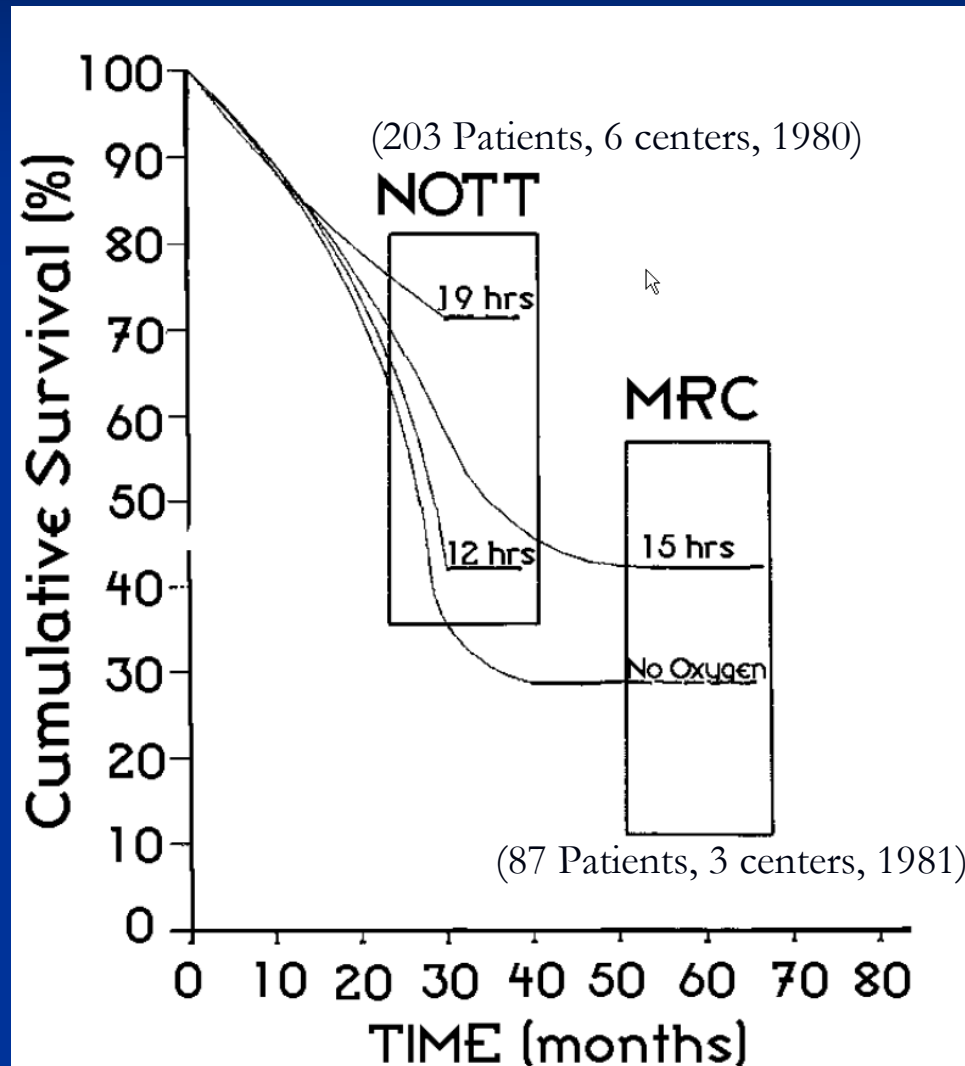


- Recommended activity level; moderate activity 30 min 3-5x per week (+strength and flexibility)
- COPD doubles risk of immobility
- Baseline levels of spontaneous physical activity in COPD are very low

Therapie at Each Stage of COPD – stepwise Approach



Mortality Benefit with Supplemental Oxygen



QoL (SGRQ)
cardiovascular mortality
depression
cognitive function
exercise capacity
frequency of hospitalisation

Okubadejo A et al. Eur Resp J 96

Clini E et al. Eur Resp J 96

Borak J, Monaldi Arch Chest D 96

Haidl P et al. Respiration 04

*Tiep BL et al. Clinics
in Chest Medicine
990; 11: 507*

Supplemental Oxygen - longterm

- The only „medication“ with a mortality benefit
- Demonstrated efficacy in patients with:
 - $pO_2 < 55\text{mmHg}$ (sat 88% or less) or
 - $pO_2 < 60\text{mmHg}$ - cor pulmonale
- polycythemia
- Should assess for need for O_2 with ambulation

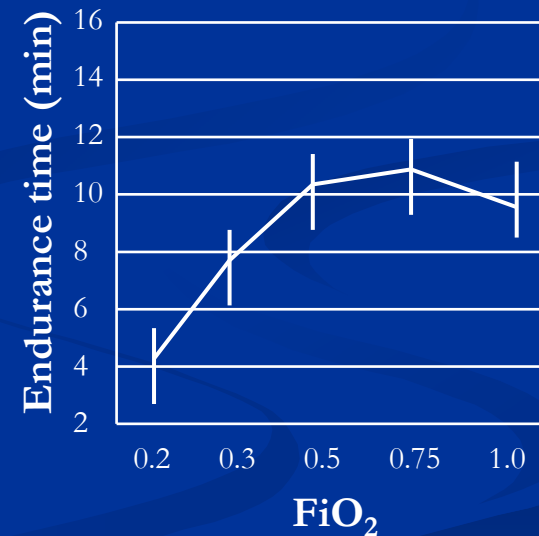
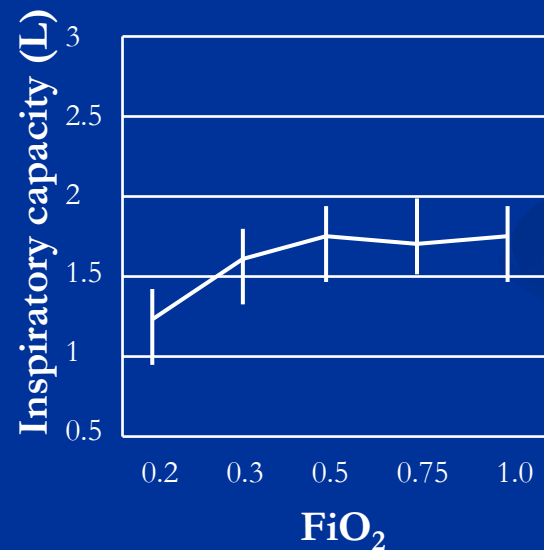
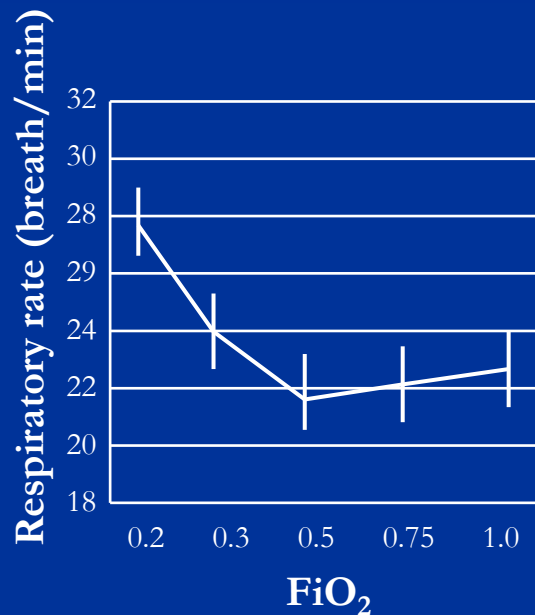
GOLD update 2006 . www.goldcopd.com

SGP – [www.pneumo.ch](http://www.pneumo.ch/de/kommissionen-und-arbeitsgruppen/arbeitsgruppe-sauerstoff/richtlinien.html) / de/ kommissionen-und-arbeitsgruppen/ arbeitsgruppe-sauerstoff/ richtlinien.html

Supplementary Oxygen and Exercise

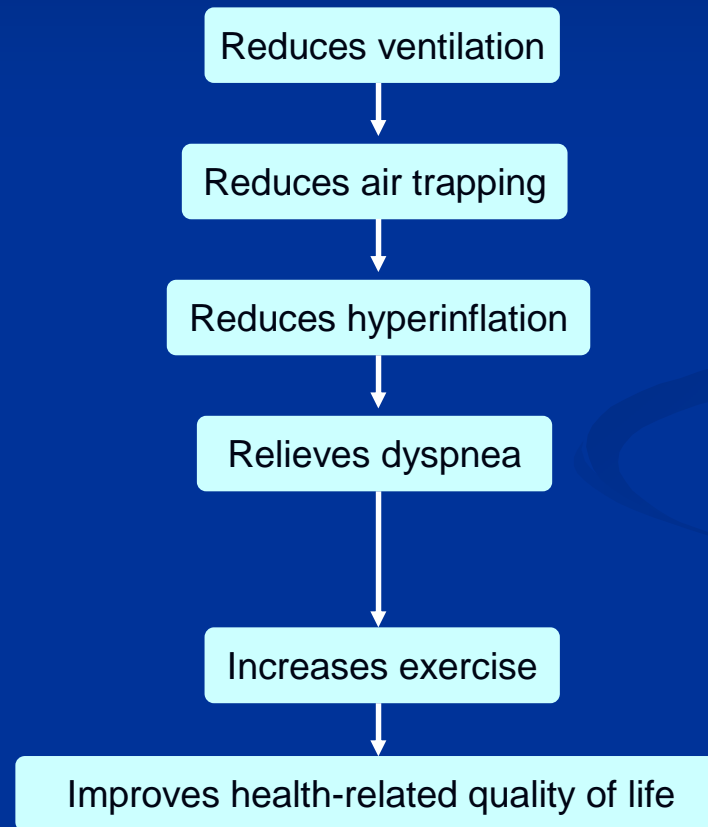
- Strong laboratory support for oxygen improving exercise by decreasing ventilation
- Reducing Dynamic Hyperinflation
 - Increases work of breathing
 - Respiratory muscles at a mechanical disadvantage
 - Sensation of dyspnea with increasing inspiratory pressures

Oxygen in 10 Non-hypoxemic Patients with severe COPD

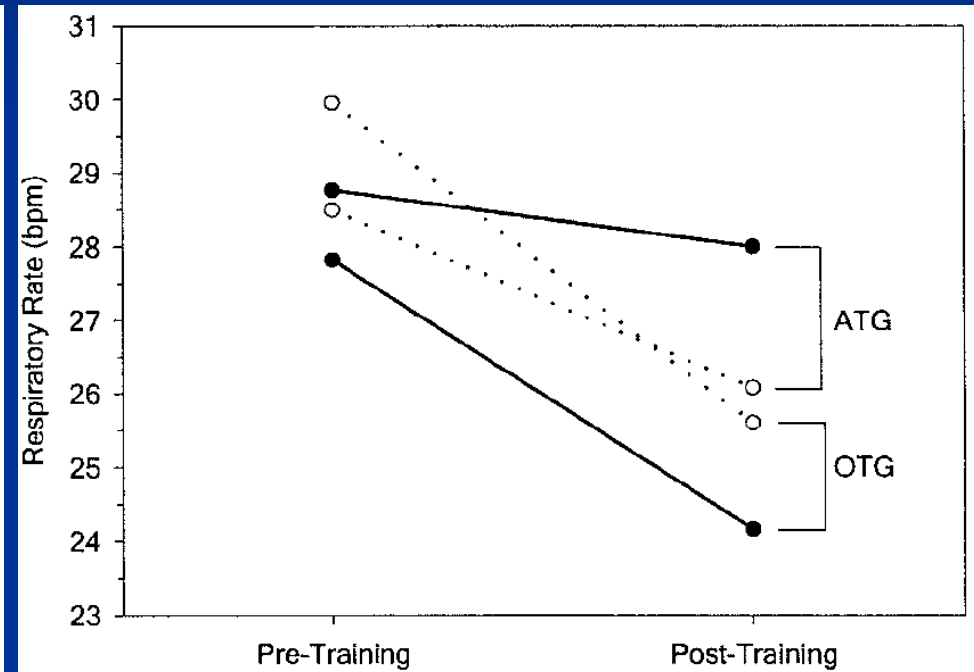
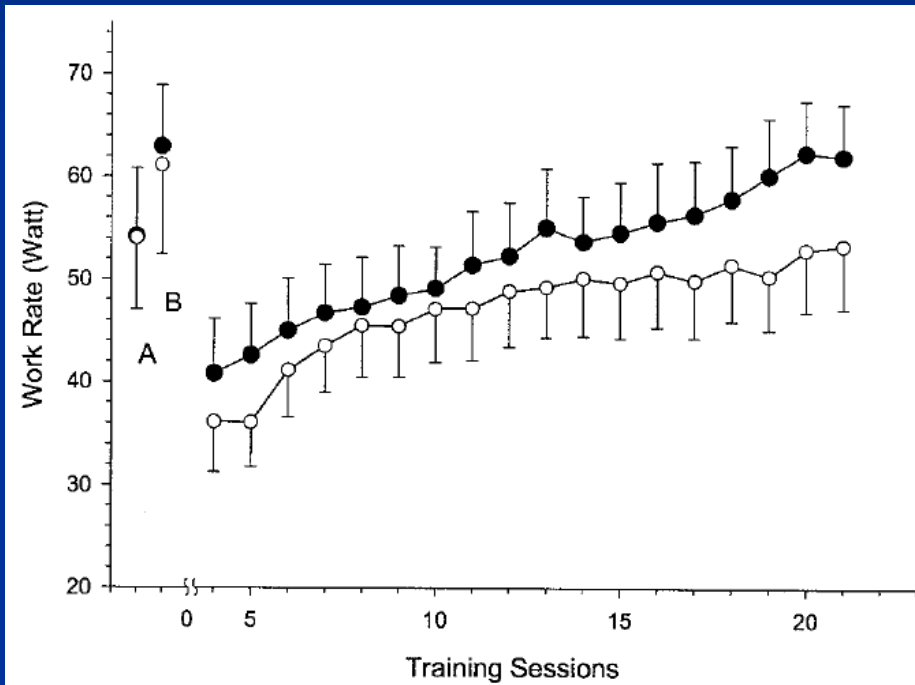


Modified from Somfay A et al. Eur Resp J 2001

Medical Volume Reduction with Oxygen



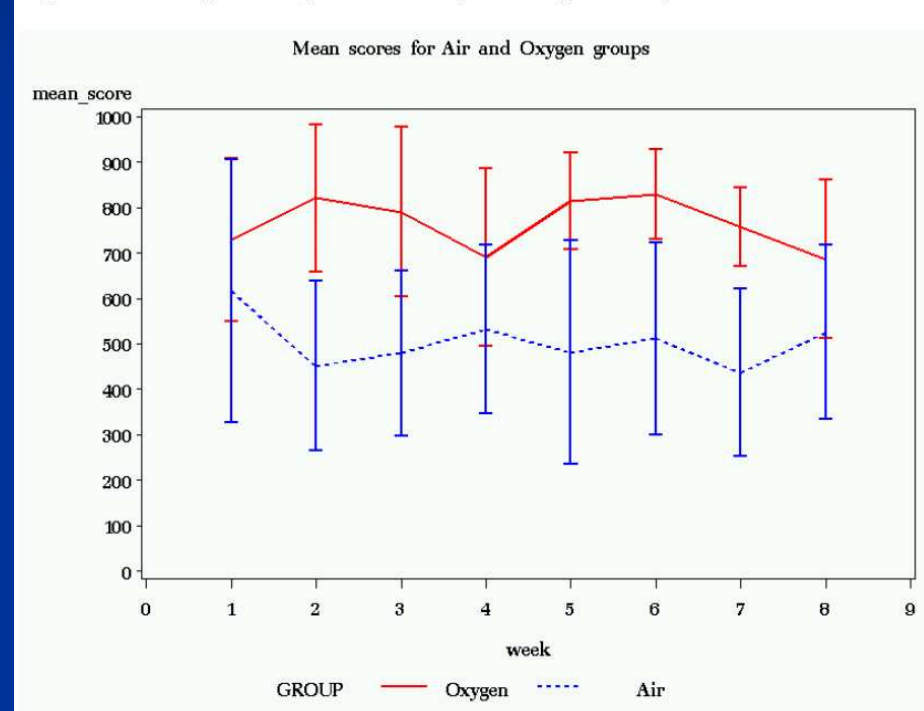
Training With Supplemental O₂ in Non-hypoxemic COPD



Ambulatory Oxygen

- HRQoL
- Dyspnea
- 6 MWT
- Mortality ?

Figure 3. Time spent away from home (minutes per week)



Sandland C et al. Chest 2008

Oxygen Only During Sleep ?

- Isolated nocturnal hypoxemia in COPD
- 30 % transient Hypoxemia during Sleep
 - Fletcher 1987; non REM saturation > 5 Min below 90%
 - Levi-Valensi 1992; >30% of the time in bed saturation <90%
- Progression to ?
 - chronic pulmonary hypertension
 - severe daytime hypoxemia
 - right heart failure
 - death among patients with resting hypoxemia

Summary of Randomized Trials of Nocturnal Oxygen Therapie

| | Risk with therapy | Risk without therapy | Relative risk |
|---------------------|-------------------|----------------------|------------------|
| Fletcher's study | | | |
| Mortality | 5/19 | 6/19 | 0.8 (0.3 – 2.2) |
| Progression to LTOT | 6/19 | 1/19 | 6.0 (1.1 – 36.4) |
| Composite outcome | 11/19 | 7/19 | 1.6 (0.8 – 3.3) |
| Chaouat's study | | | |
| Mortality | 9/41 | 7/35 | 1.1 (0.5 – 2.6) |
| Progression of LTOT | 12/41 | 10/35 | 1.0 (0.5 – 2.1) |
| Composite outcome | 19/41 | 14/35 | 1.2 (0.7 – 2.0) |

Oxygen Therapy in COPD

- LTOT is life saving in resting hypoxemia
- Training with oxygen adds exercise and/or quality of life benefit over training on room air
- Ambulatory Oxygen reduces dyspnea and improves exercise – for those who require LTOT
- Time for studies to standardise ambulatory LTOT
- Nocturnal Oxygen in isolated nocturnal desaturation is not evidence based

Besten Dank für Ihre Aufmerksamkeit

Devices

Oxygen

Drugs

Physical training

Rehabilitation

Funktionsfähigkeit, QoL

