



# ESPEN Congress Glasgow 2002

## Cardio-Respiratory Failure

**Does Nutritional Intervention Improve  
Function/Capacity in COPD?**

***Annemie Schols***

# Does nutritional intervention improve function in COPD?

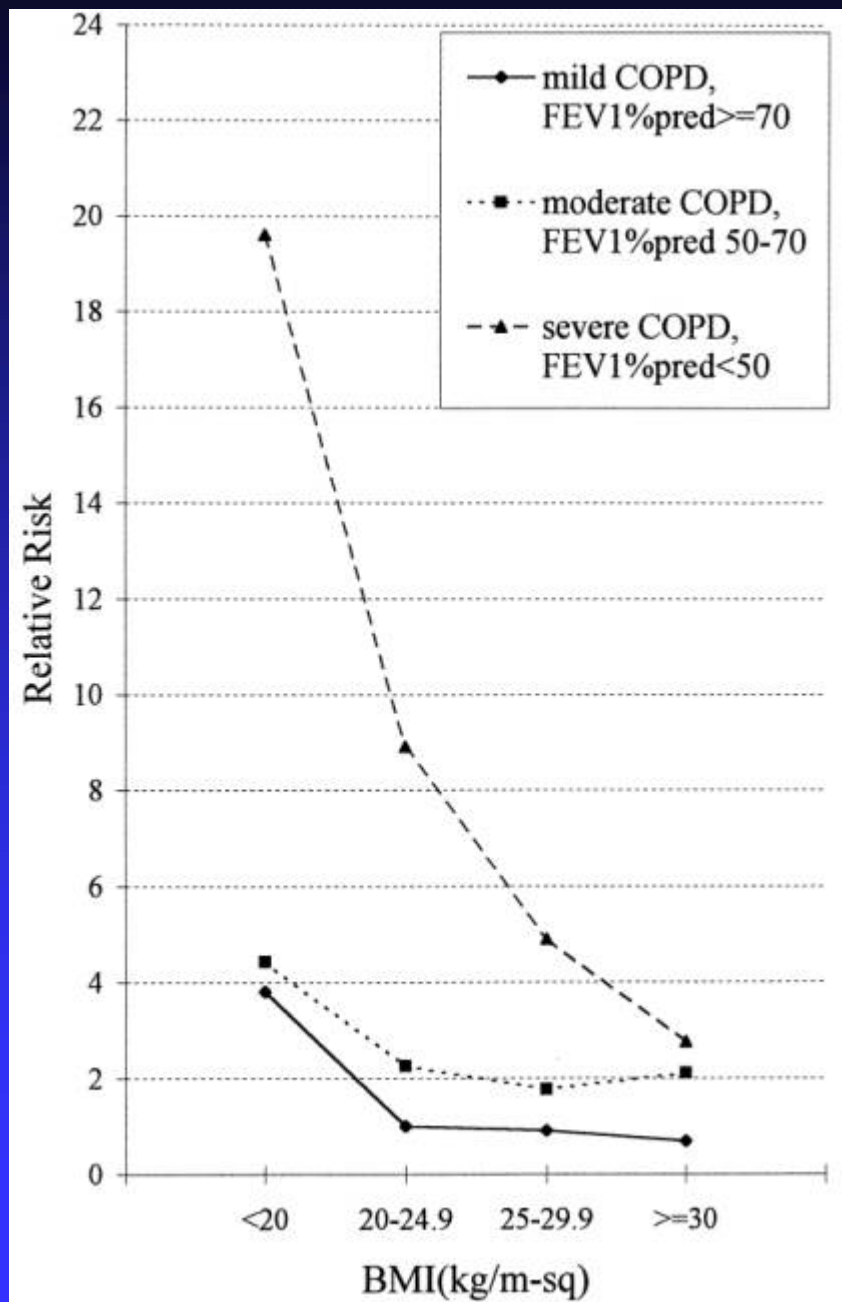
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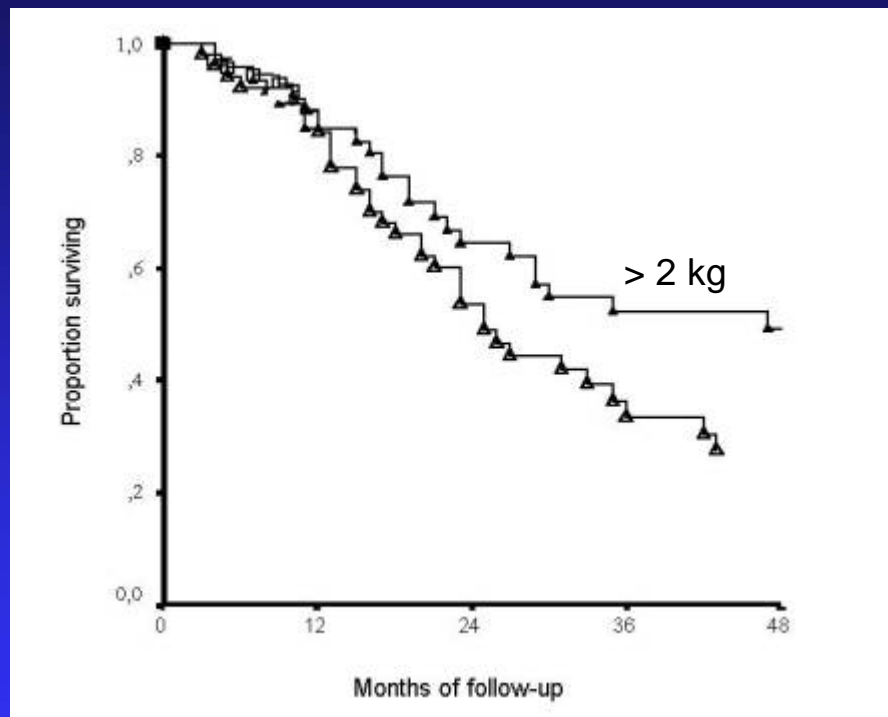


Weight gain - supplemental nutrition - muscle respiratory function

# Underweight->decreased survival



# Weight gain->increased survival



Schols, AJRCCM, 1997

Landbo, AJRCCM, 1999

# Nutritional Support for Individuals With COPD\*

## A Meta-analysis

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Yves Lacasse, MD, MSc; and Roger S. Goldstein, MB, ChB, FCCP*

**Rationale:** Malnutrition in patients with COPD is associated with an impaired pulmonary status, reduced diaphragmatic mass, lower exercise capacity, and higher mortality rate when compared to adequately nourished individuals with COPD. Nutritional support may therefore be a useful part of their comprehensive care.

**Purpose:** To conduct a meta-analysis of randomized controlled trials (RCTs) to clarify whether nutritional supplementation (caloric supplementation for at least 2 weeks) improved anthropometric measures, pulmonary function, respiratory muscle strength, and functional exercise capacity in patients with stable COPD.

**Methods:** RCTs were identified from several sources, including the Cochrane Airways Group register of RCTs, a hand search of abstracts presented at international meetings, and consultation with experts. Two reviewers independently selected trials for inclusion, assessed quality, and extracted the data. Within each trial and for each outcome, we calculated an effect size. The effect sizes were then pooled by a random-effects model. Homogeneity among the effect sizes was also tested.

**Results:** From 272 references, nine RCTs were ultimately included. Six articles were considered as high quality. Only two studies were double blinded. For each of the outcomes studied, the effect of nutritional support was small: the 95% confidence intervals around the pooled effect sizes all included zero. The effect of nutritional support was homogeneous across studies.

**Conclusion:** Nutritional support had no effect on improving anthropometric measures, lung function, or functional exercise capacity among patients with stable COPD.

*(CHEST 2000; 117:672-678)*

**Key words:** COPD; meta-analysis; nutrition; respiratory rehabilitation; systematic review

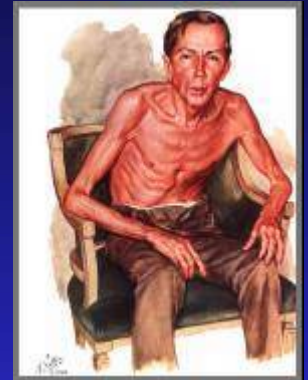
**Abbreviations:** BMI = body mass index; CI = confidence interval; RCT = randomized controlled trials



# Rationale for nutritional therapy

- **Weight loss**
- **Muscle wasting**
- **Intrinsic muscle abnormalities**

complex  
pathophysiology



## Short term intervention: < 2 weeks



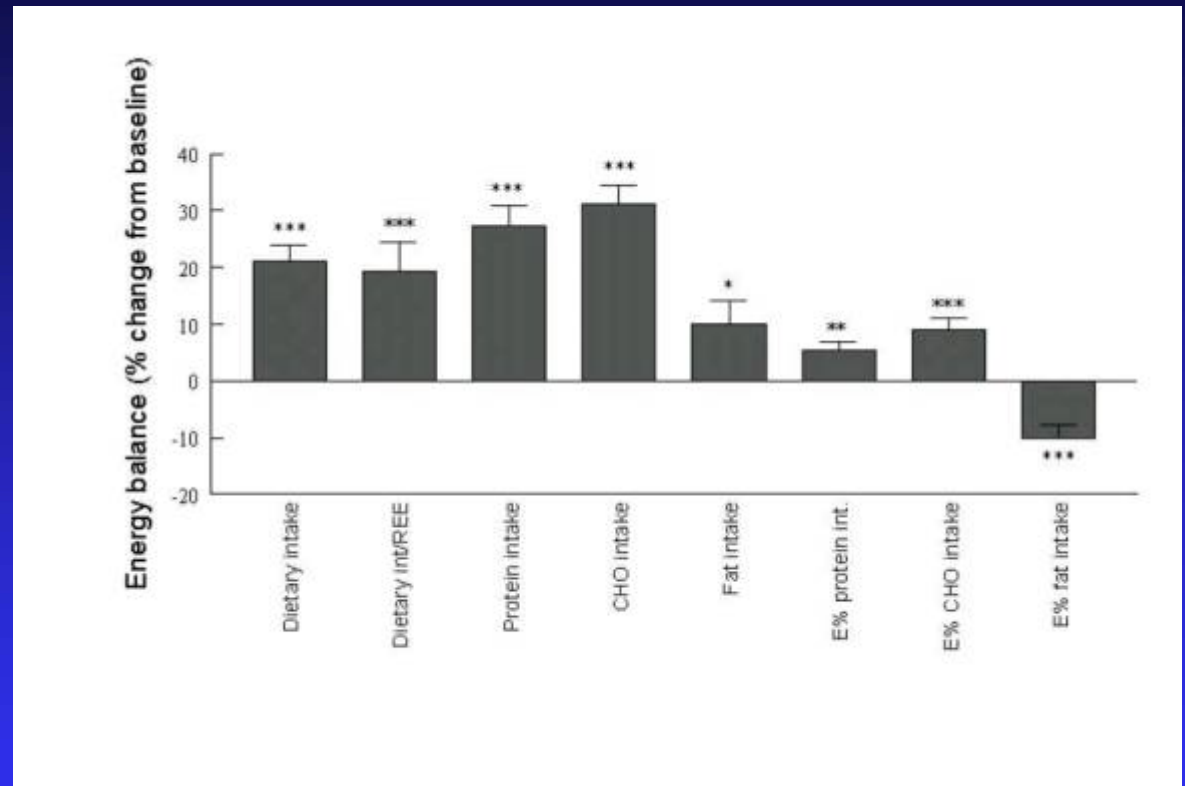
- **Weight gain**
- **Body composition?**
- **Improvement in respiratory muscle function**
- **No improvement in limb muscle function**

## Longer term intervention: 4 weeks-3 months



- **Weight gain**
- **Increase in fat-free mass**
- **Improvement in respiratory muscle function**
- **Improvement in limb muscle function**
- **Improvement in exercise capacity**
- **Improvement in health status**

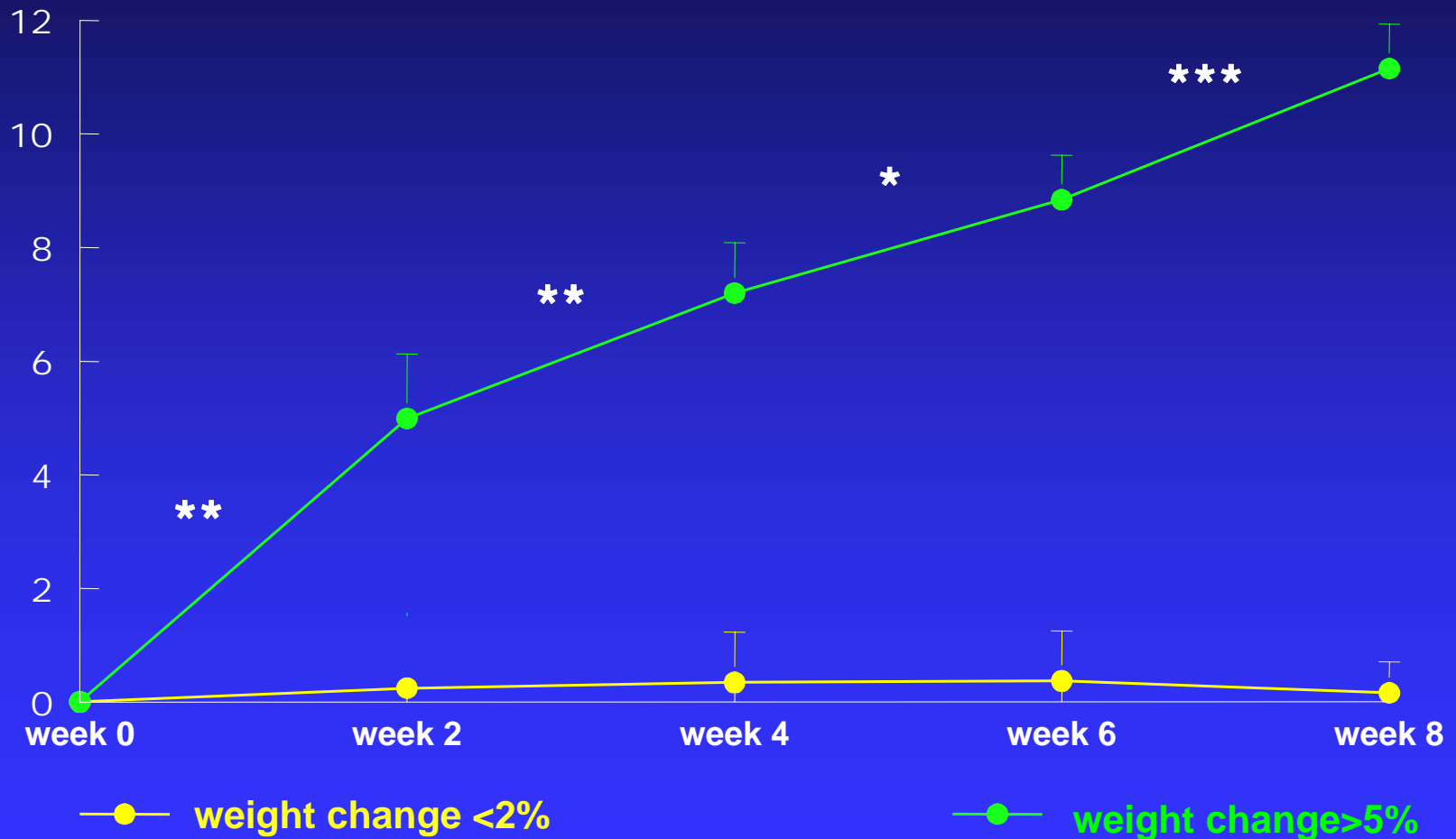
# Nutrition as integrated part of pulmonary rehabilitation



Creutzberg, Nutrition, 2003

**Nutritional intervention: 2-3 liquid supplements daily**  
**Exercise program: endurance training i.r.t. daily activities**

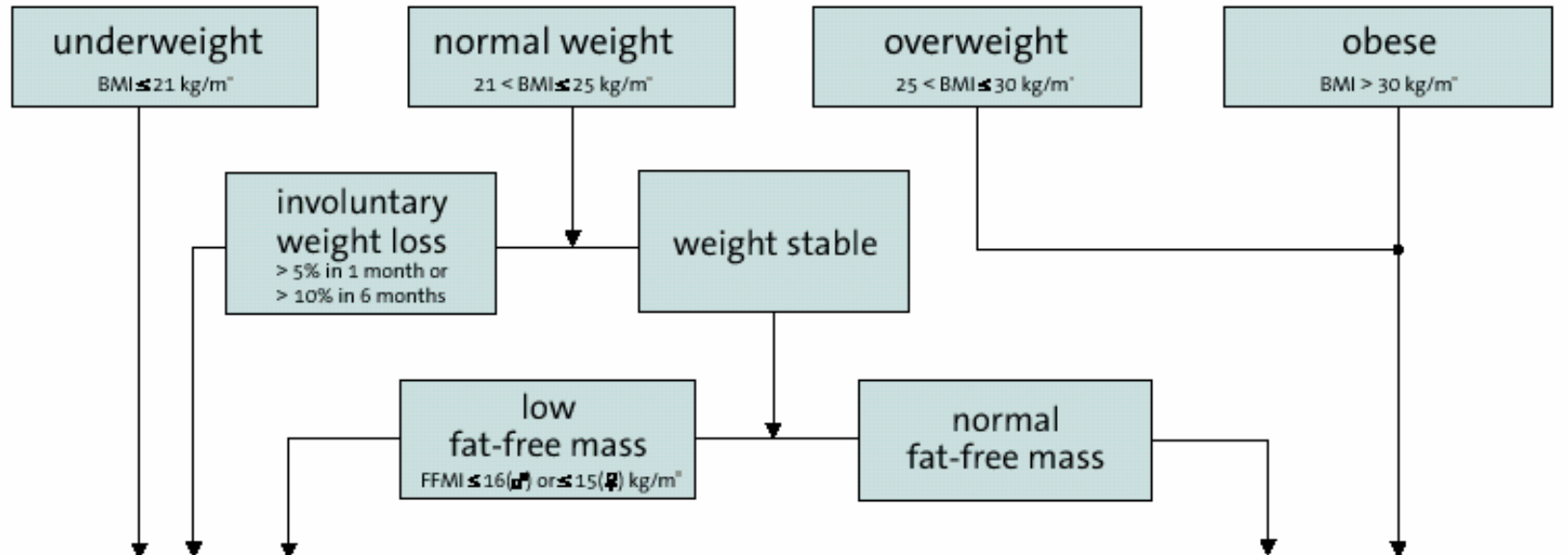
# Weight gain after nutritional supplementation in a controlled rehabilitation setting



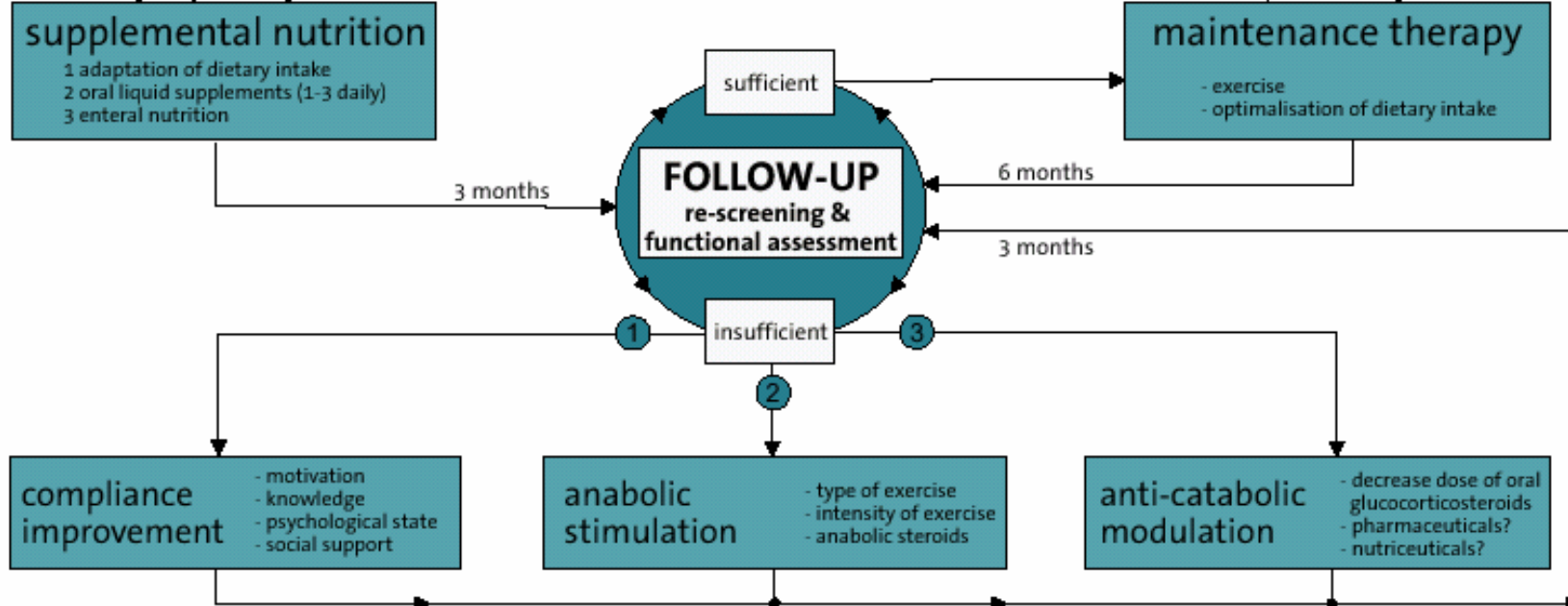
Adapted from Creutzberg; AJRCCM 2000

# systemic COPD management

SCREENING



THERAPY



**supplemental nutrition**  
 1 adaptation of dietary intake  
 2 oral liquid supplements (1-3 daily)  
 3 enteral nutrition

**maintenance therapy**  
 - exercise  
 - optimisation of dietary intake

**FOLLOW-UP**  
 re-screening &  
 functional assessment

**compliance improvement**  
 - motivation  
 - knowledge  
 - psychological state  
 - social support

**anabolic stimulation**  
 - type of exercise  
 - intensity of exercise  
 - anabolic steroids

**anti-catabolic modulation**  
 - decrease dose of oral glucocorticosteroids  
 - pharmaceuticals?  
 - nutraceuticals?