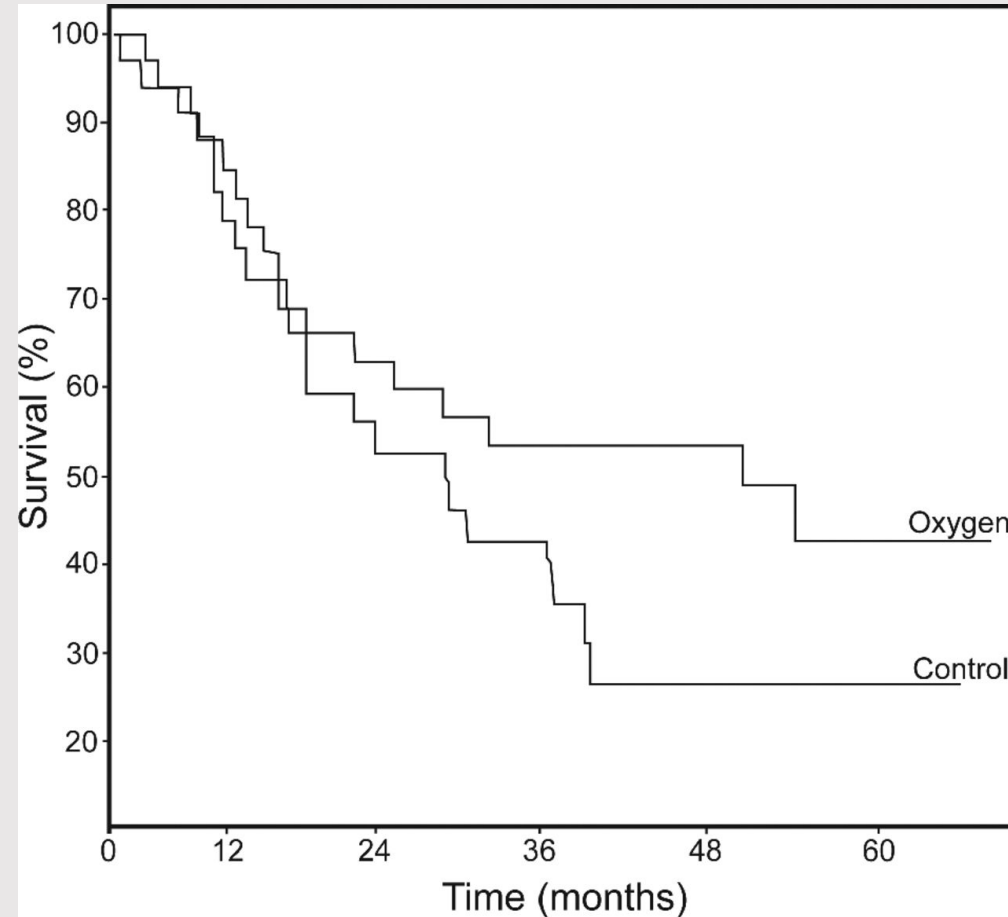


# 만성폐쇄성폐질환 환자에서 휴대용산소치료는 과연 필요한가?

서울의대 윤호일

# LTOT IN COPD (MRC study)



# Portable oxygen therapy Ambulatory oxygen therapy (AOT)



# Potential benefits of AOT

- **May increase duration of oxygen therapy**
- **May enhance exercise capacity**
- **May reduce symptom**
- **May improve health status**
- **May enhance the effectiveness of pulmonary rehab**
- **May decrease mortality**

# AOT in exercise tests





# CHEST

Special Feature

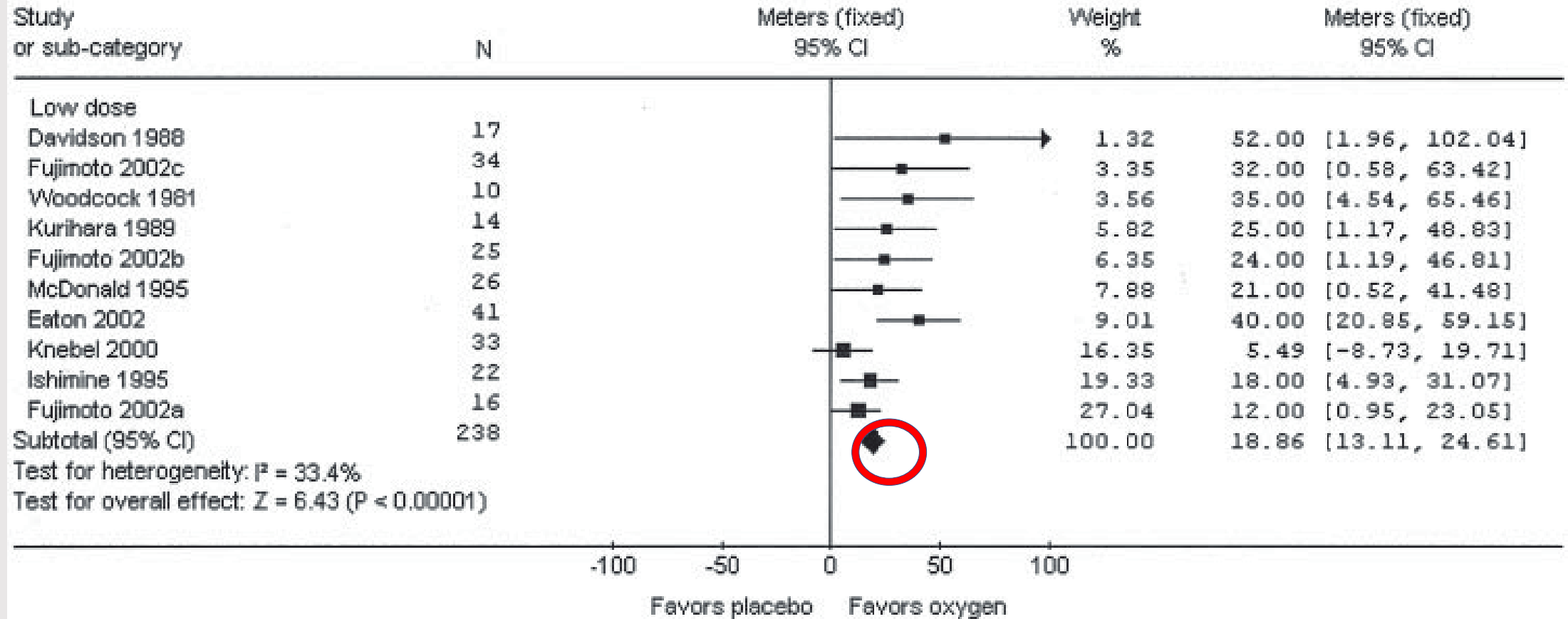
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## **A Systematic Review of Randomized Controlled Trials Examining the Short- term Benefit of Ambulatory Oxygen in COPD\***

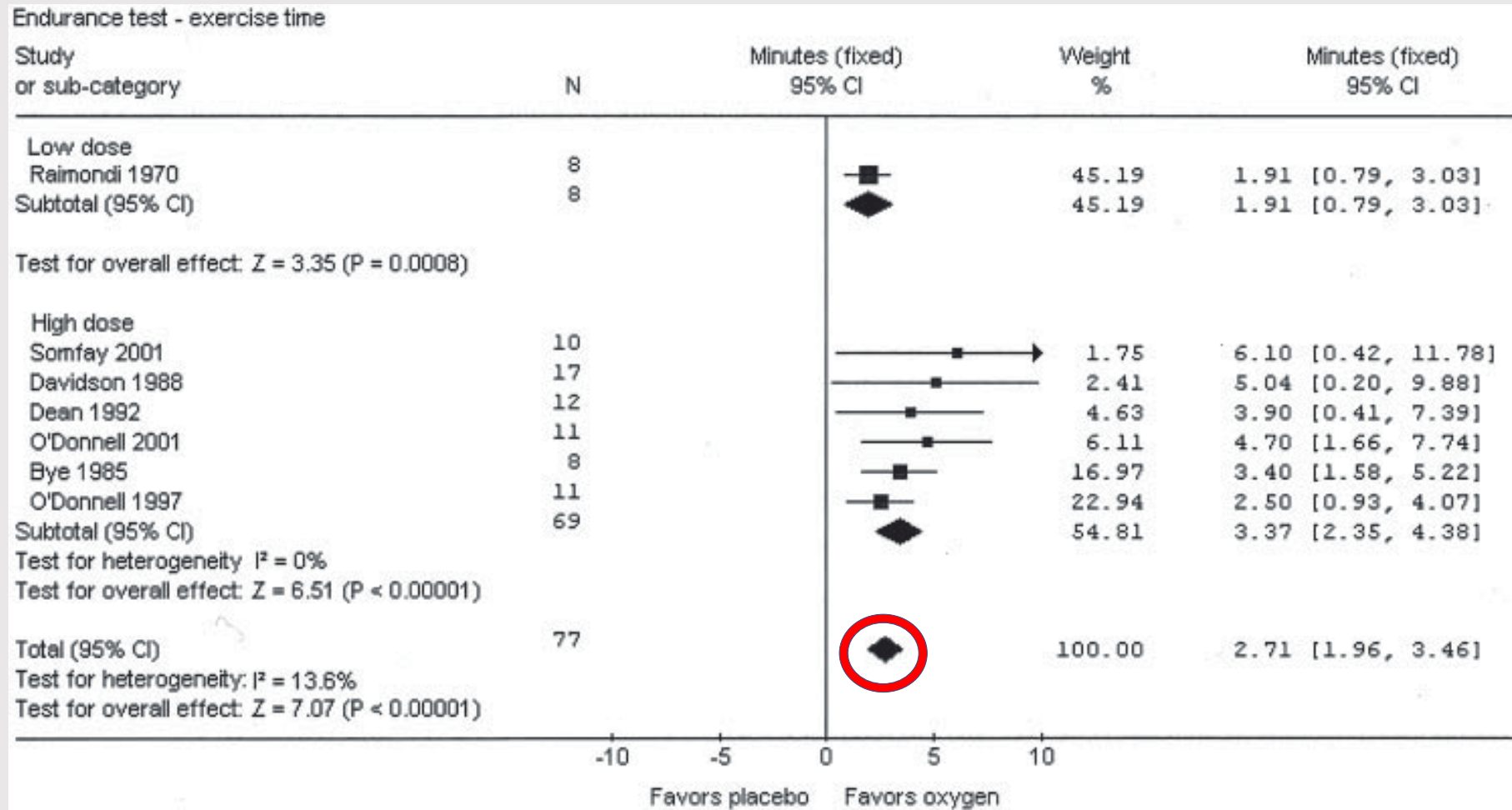
*Judy M. Bradley, PhD; Toby Lasserson, MPhil; Stuart Elborn, MD;  
Joe MacMahon, MB; and Brenda O'Neill, PhD*

# Endurance distance

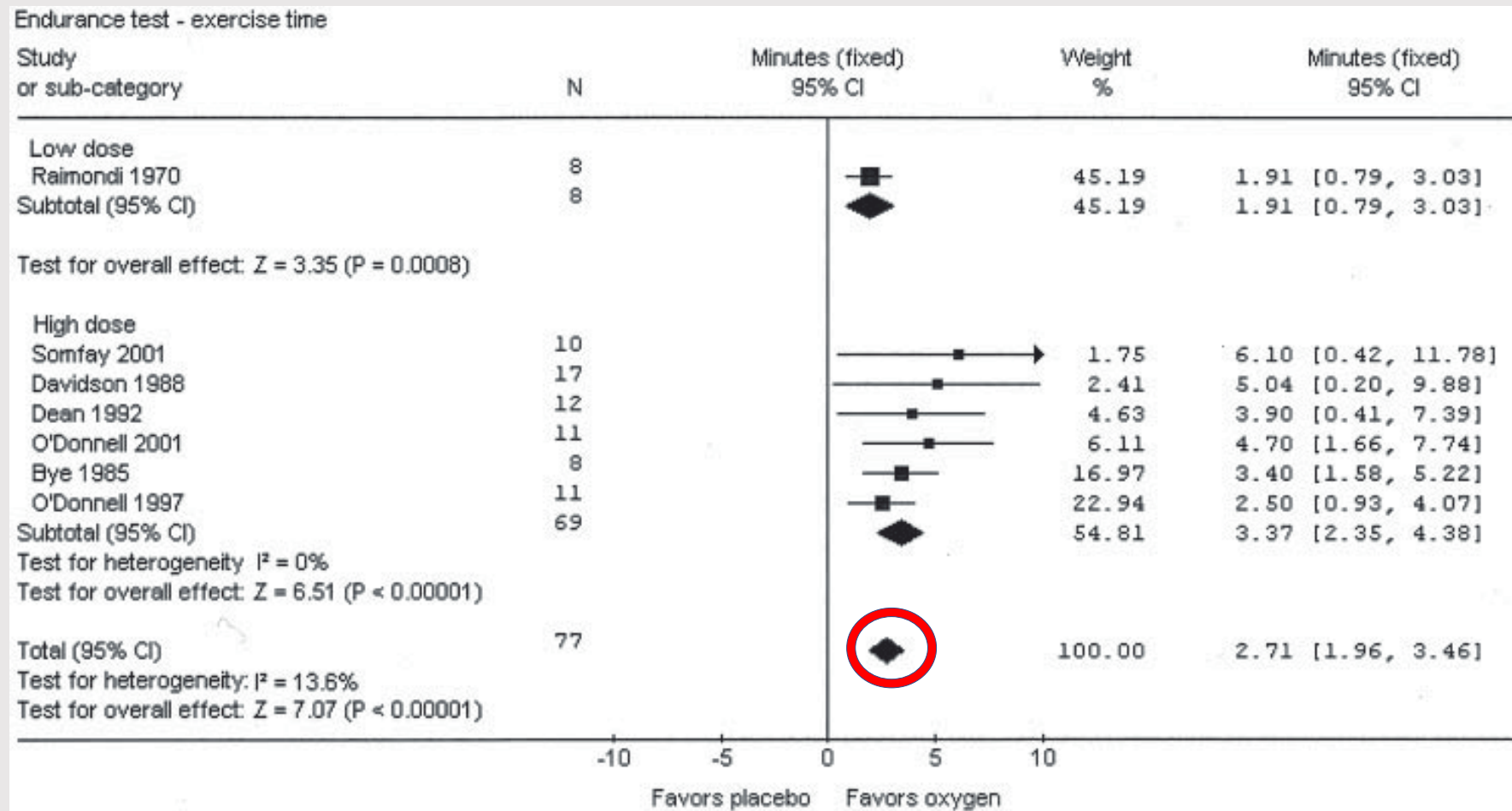
Endurance test - exercise distance



# Endurance time

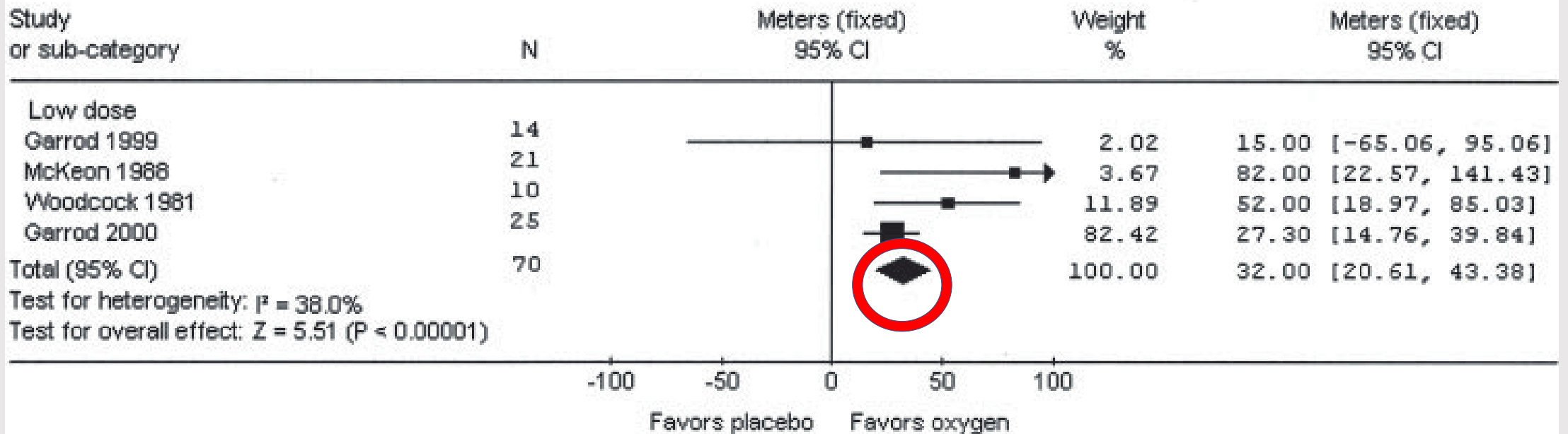


# Maximal distance



# Maximal time

## Maximal test - exercise distance



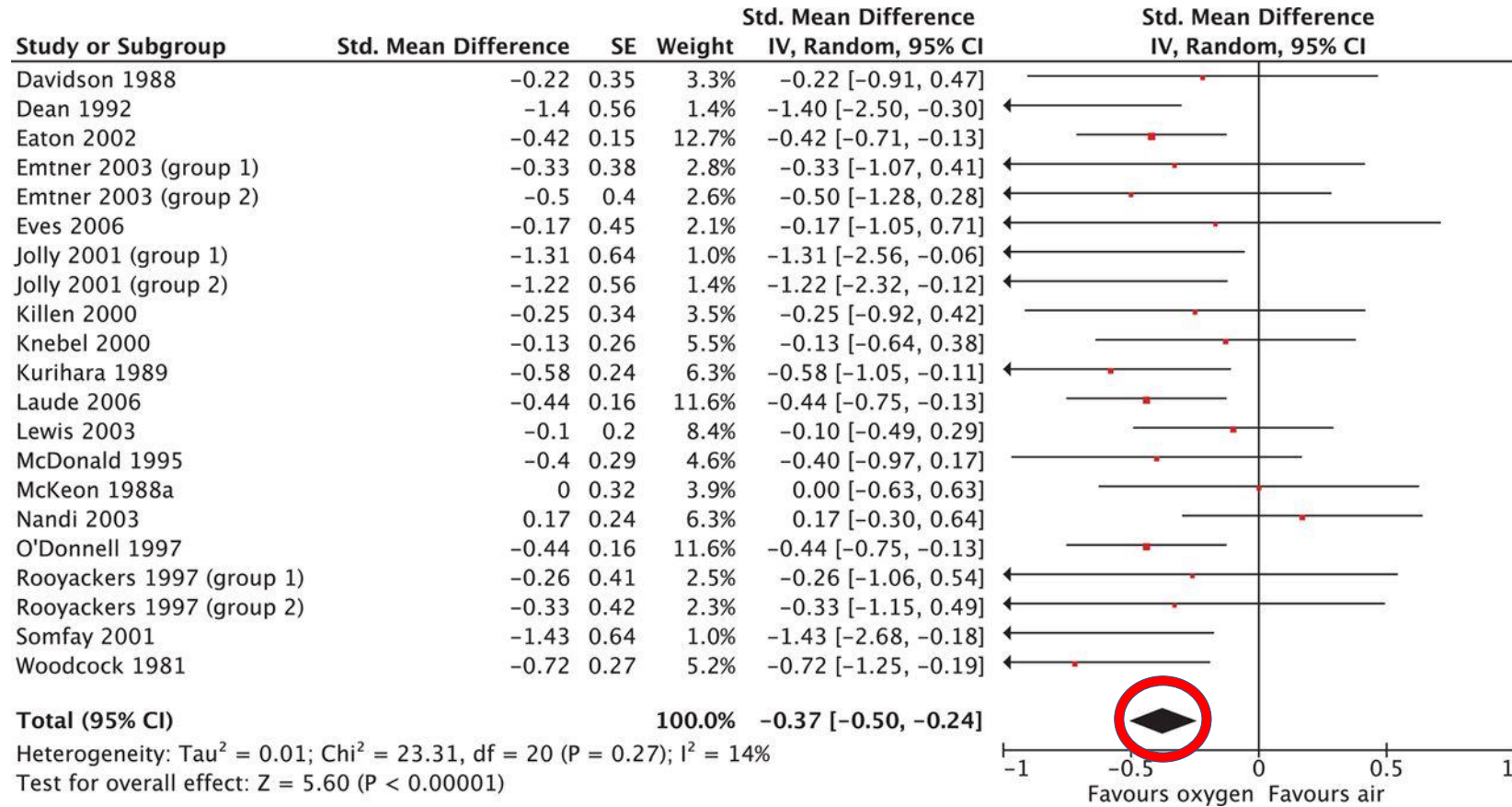
AUDIT, RESEARCH AND GUIDELINE UPDATE



# Oxygen for relief of dyspnoea in people with chronic obstructive pulmonary disease who would not qualify for home oxygen: a systematic review and meta-analysis

Hope E Uronis,<sup>1</sup> Magnus P Ekström,<sup>2,3</sup> David C Currow,<sup>3</sup> Douglas C McCrory,<sup>4,5</sup>  
Gregory P Samsa,<sup>6</sup> Amy P Abernethy<sup>1,3</sup>

# Effect of oxygen on breathlessness



# Benefits of AOT

- **May increase duration of oxygen therapy**
- **Enhance exercise capacity**
- **Reduce symptoms**
- **May improve health status**
- **May enhance the effectiveness of pulmonary rehab.**
- **May decrease mortality**

# Duration of oxygen therapy

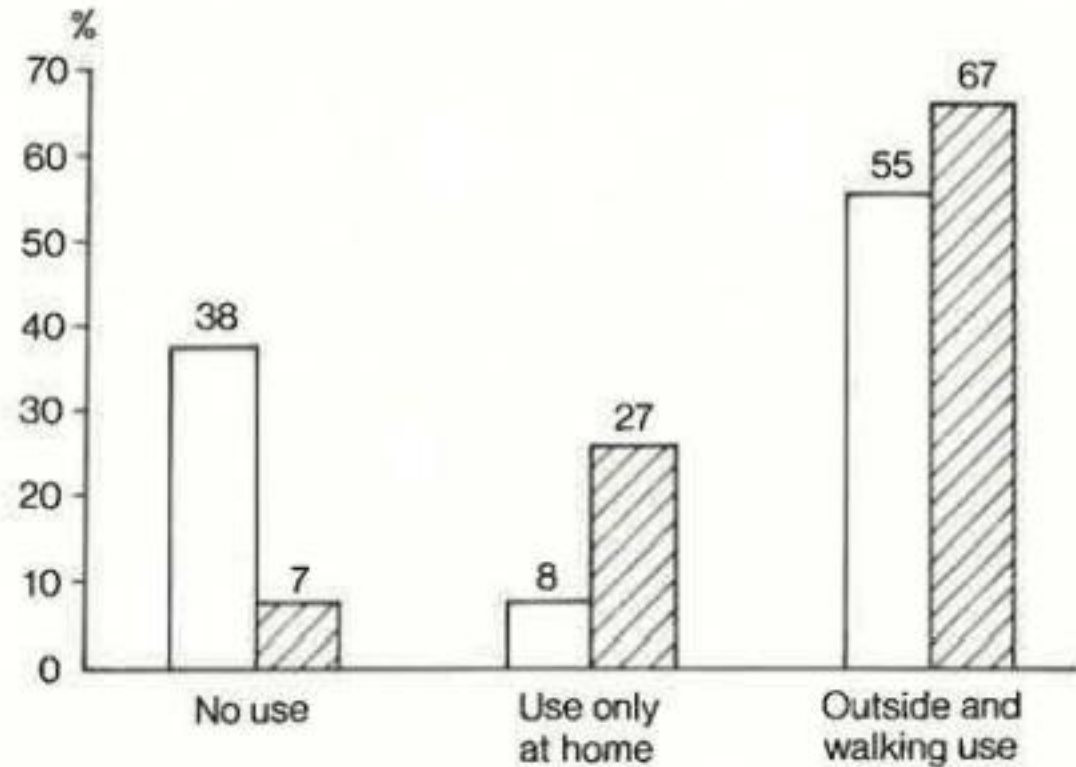


Fig. 1. - Daily duration of oxygen therapy. Percentage of patients according to the type of O<sub>2</sub> source.

□ fixed O<sub>2</sub>, n=58; ▨ Portable O<sub>2</sub>, n=64.

Table 2. – Daily activities of patients, average values over the year of the study

		Fixed oxygen		Portable oxygen
n		58		64
<b>Indoors</b>				
rest	h	13	NS	12.8
activities	h	9.2	NS	9.3
<b>Outdoors</b>				
activities	h	1.6	NS	1.8
distance walked	m	520±370		480±397

NS: not significant between fixed and portable oxygen.

Table 3. – Daily activities of the patients according to the duration of oxygen therapy

	<15 h·day <sup>-1</sup>		>18 h·day <sup>-1</sup>			
	Fixed O <sub>2</sub> n=34	Portable O <sub>2</sub> n=14	Fixed O <sub>2</sub> n=6	Portable O <sub>2</sub> n=19		
Rest h·day <sup>-1</sup>	13.2	NS	13.9	15	NS	13.9
Outside h·day <sup>-1</sup>	2.1	NS	1.8	0.1	p<0.05	2
Distance walked m·day <sup>-1</sup>	658	NS	432	20	p<0.01	385



VS



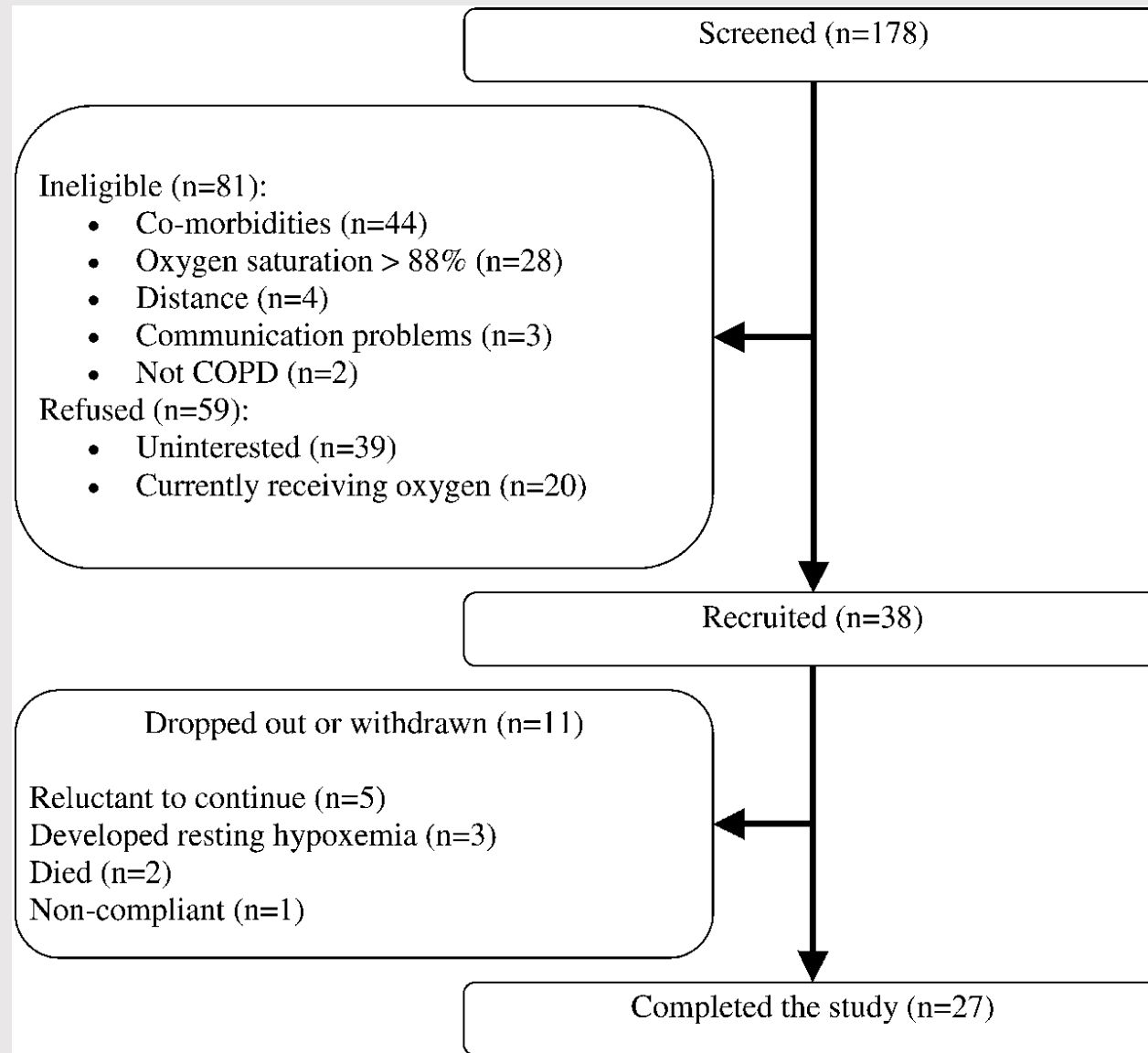
# Benefits of AOT

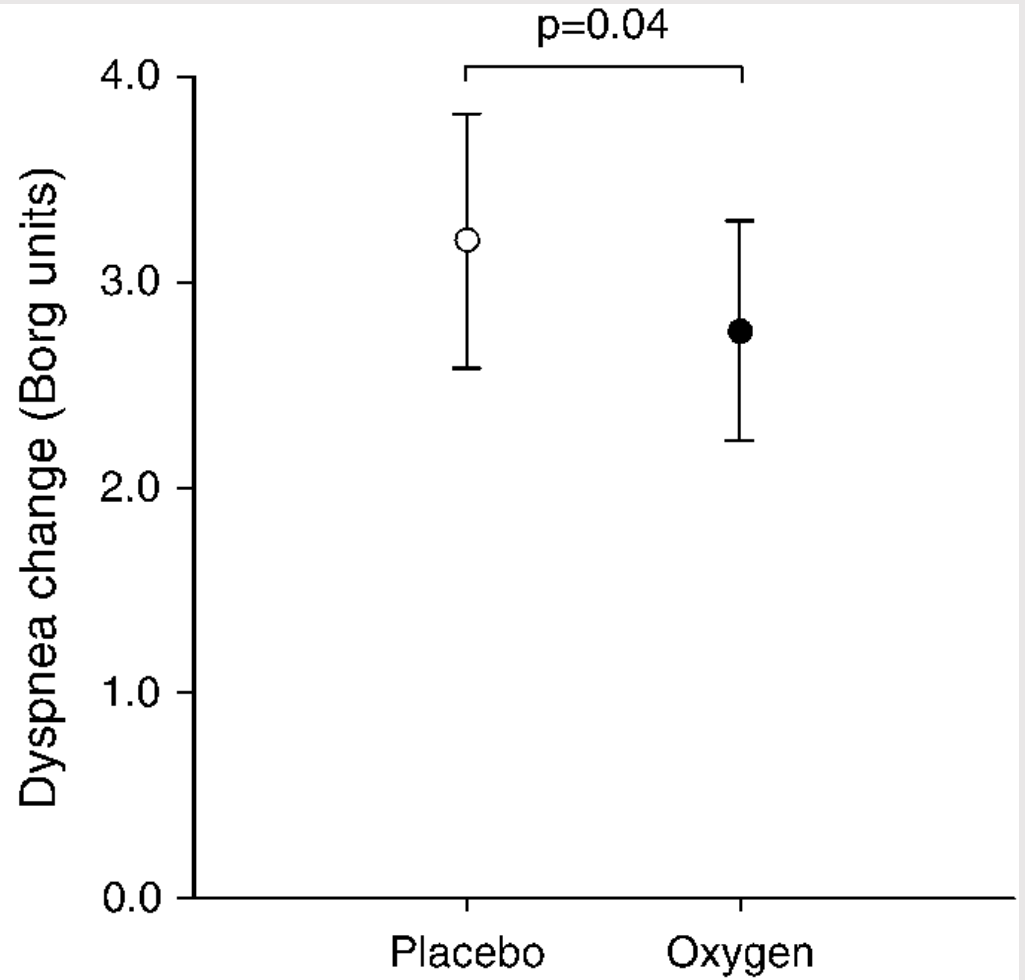
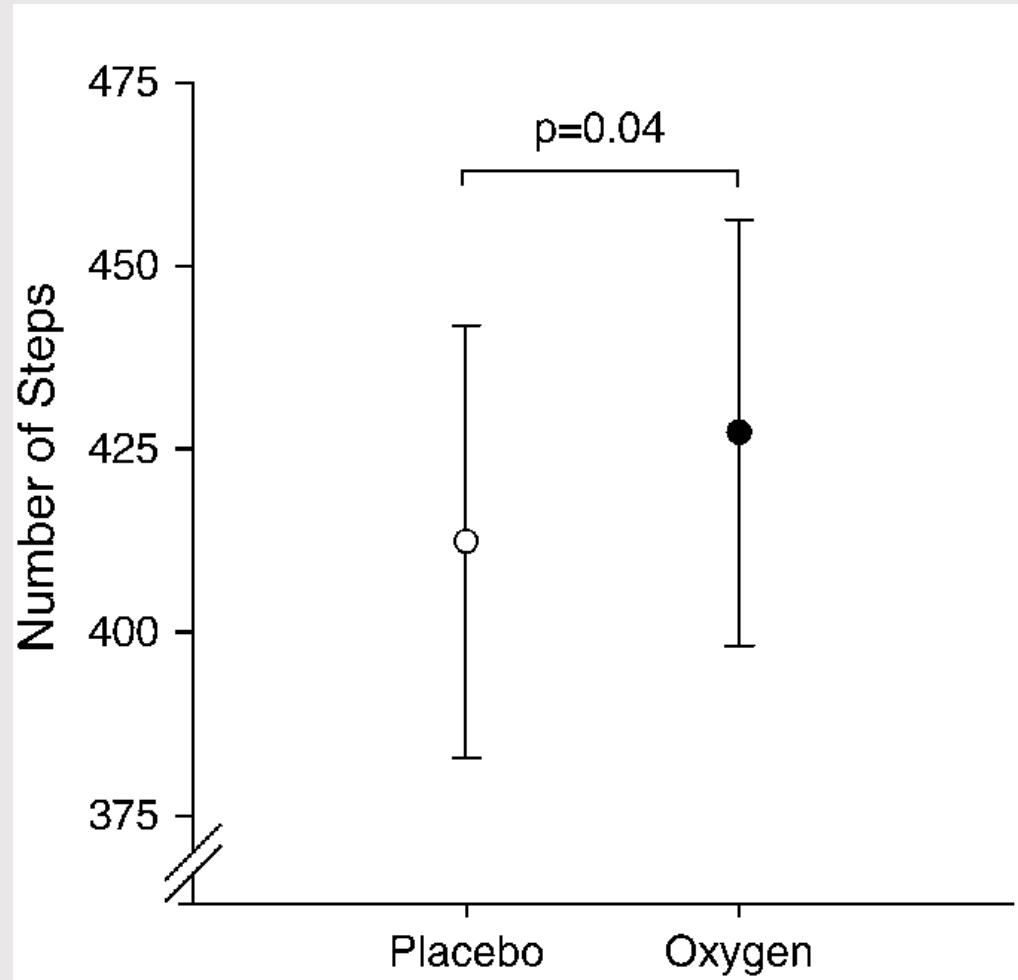
- Increase duration of oxygen therapy
- Enhance exercise capacity
- Reduce symptoms
- **May improve health status**
- **May enhance the effectiveness of pulmonary rehab.**
- **May decrease mortality**

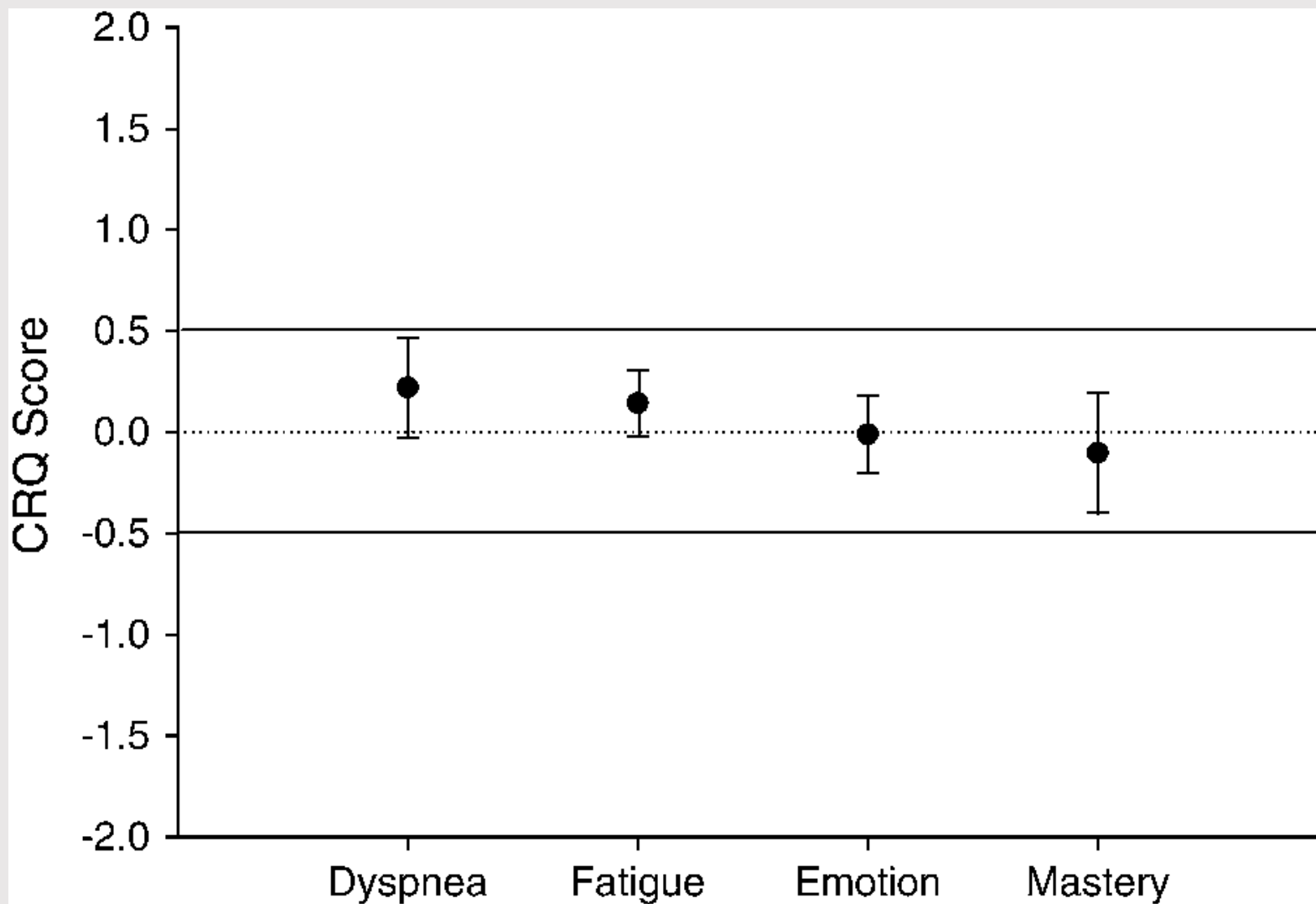
# **Effect of Oxygen on Health Quality of Life in Patients with Chronic Obstructive Pulmonary Disease with Transient Exertional Hypoxemia**

**Mika L. Nonoyama<sup>1,2</sup>, Dina Brooks<sup>2,3</sup>, Gordon H. Guyatt<sup>4</sup>, and Roger S. Goldstein<sup>2,3,5</sup>**

<sup>1</sup>Graduate Department of Rehabilitation Sciences, University of Toronto, Toronto, Canada; <sup>2</sup>Department of Respiratory Medicine, West Park Healthcare Centre, Toronto, Canada; <sup>3</sup>Department of Physical Therapy, University of Toronto, Toronto, Canada; <sup>4</sup>Department of Clinical Epidemiology and Biostatistics, McMaster University, Canada; and <sup>5</sup>Faculty of Medicine, University of Toronto, Toronto, Canada







**TABLE 2. GROUP N-OF-1 RANDOMIZED CONTROLLED TRIAL RESULTS**

	Mean Difference (Oxygen – Placebo)	95% CI
CRQd	0.22	−0.03 to 0.47
CRQf	0.14	−0.02 to 0.31
CRQe	−0.01	−0.20 to 0.18
CRQm	−0.10	−0.40 to 0.19
SGRQs	−0.17	−2.63 to 2.29
SGRQa	0.42	−1.59 to 2.43
SGRQi	−0.79	−2.75 to 1.17
SGRQt	−0.32	−1.71 to 1.06
5MWT, steps	<u>14.90*</u>	0.85 to 28.94
5MWT, dyspnea change	<u>−0.44*</u>	−0.86 to −0.02

*Definition of abbreviations:* a = activities; CI = confidence interval; CRQ = Chronic Respiratory Questionnaire; d = dyspnea; f = fatigue; 5MWT = five-minute-walk test; e = emotion; i = impact; m = mastery; s = symptoms; SGRQ = St. George’s Respiratory Questionnaire; t = total.

\* p < 0.05.

# Benefits of AOT

- Increase duration of oxygen therapy
- Enhance exercise capacity
- Reduce symptoms
- **May not improve health status**
- **May enhance the effectiveness of pulmonary rehab**
- **May decrease mortality**

# **Ambulatory oxygen improves the effectiveness of pulmonary rehabilitation in selected patients with chronic obstructive pulmonary disease**

**F Dyer<sup>1</sup>, J Callaghan<sup>1</sup>, K Cheema<sup>2</sup>, and J Bott<sup>1</sup>**

Chronic Respiratory Disease  
9(2) 83–91

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**Table 1.** Baseline characteristics of participants who completed the study<sup>a</sup>

	RA group, n = 23	O <sub>2</sub> group, n = 24	p value
Male/female	15/8	15/9	0.85
Age (years)	70 (7)	68 (8)	0.32
BMI (kg/m <sup>2</sup> )	29 (7)	24 (4)	0.002
FEV <sub>1</sub> (L)	1.12 (0.5)	0.96 (0.4)	0.28
FEV <sub>1</sub> (% pred)	44 (11)	39 (16)	0.25
Resting SpO <sub>2</sub> on RA	94 (2)	94 (2)	0.45
Lowest SpO <sub>2</sub> on RA during ESWT	84 (5)	83 (6)	0.45
MRC	3 (1)	3 (1)	0.20
ESWT (m) on room air	280 (139)	285 (157)	0.92
HADS anxiety	6 (4)	7 (4)	0.16
HADS depression	6 (3)	6 (4)	0.69
CRQ dyspnoea	3 (1)	3 (1)	0.36
CRQ emotion	5 (1)	4 (1)	0.21
CRQ fatigue	4 (1)	3 (1)	0.33
CRQ mastery	5 (1)	5 (2)	0.51
SIFT function	4 (2)	5 (2)	0.87
SIFT content	4 (2)	4 (2)	0.18

BMI: body mass index; CRQ: Chronic Respiratory Questionnaire; ESWT: endurance shuttle walk test; FEV<sub>1</sub>: forced expiratory volume in 1 s; HADS: Hospital Anxiety and Depression scale; RA: room air; SIFT: Surrey information on function tool; SpO<sub>2</sub>: oxygen saturation.

<sup>a</sup> Data are expressed as mean (SD).

**Table 2.** Change in endurance shuttle walking test with PR

	RA group	O <sub>2</sub> group	Difference	95% CI	p value
Mean change, seconds <sup>a</sup> (SD)	378 (364)	679 (317)	301	101–501	0.004
Mean change, m <sup>b</sup> (SD)	393 (395)	883 (484)	489	228–750	0.0005
Mean change, % <sup>c</sup> (SD)	77 (59)	204 (468)	127	31–223	0.01

PR: pulmonary rehabilitation; RA: room air.

<sup>a</sup> Change in exercise tolerance is expressed in seconds (the recommended method to report change in ESWT), allowing for differences in severity of disability.

<sup>b</sup> Change in exercise tolerance is expressed in metres to demonstrate change in distance walked allowing for differences in severity of disability.

<sup>c</sup> Change in exercise tolerance is expressed in percentage change.

**Table 3.** Change in health status, emotion, and function

	RA group	O <sub>2</sub> group			
	Mean (SD)		Difference	95% CI	p
CRQ—dyspnoea	0.6 <sup>a</sup> (1.3)	0.4 (1.3)	−0.1	−0.9 to 0.7	0.76
CRQ—emotion	0.2 (1.2)	0.7 (1.0)	0.5 <sup>a</sup>	−0.2 to 1.2	0.15
CRQ—fatigue	0.4 (1.4)	1.1 <sup>a</sup> (1.2)	0.7 <sup>a</sup>	−0.1 to 1.5	0.10
CRQ—mastery	0.1 (1.0)	0.7 <sup>a</sup> (1.4)	0.7 <sup>a</sup>	−0.0 to 1.4	0.006
HADS—anxiety	−0.7 (2.5)	−2.0 (3.8)	−1.4	−3.2 to 0.5	0.15
HADS—depression	−1.3 (2.9)	−0.4 (2.9)	−0.9	−2.7 to 0.8	0.27
SIFT—function	1.3 (1.6)	1.8 (1.4)	0.6	−0.3 to 1.5	0.20
SIFT—content	2.3 (2.6)	2.6 (2.0)	0.3	−1.1 to 1.7	0.67

CRQ: Chronic Respiratory Questionnaire; HADS: Hospital Anxiety and Depression scale; MCID: minimal clinically important difference; RA: room air; SIFT: Surrey information on function tool.

<sup>a</sup> MCID for CRQ-SR (0.5 per domain) reached.

# Benefits of AOT

- Increase duration of oxygen therapy
- Enhance exercise capacity
- Reduce symptoms
- May improve health status
- Enhance the effectiveness of pulmonary rehab.
- May decrease mortality

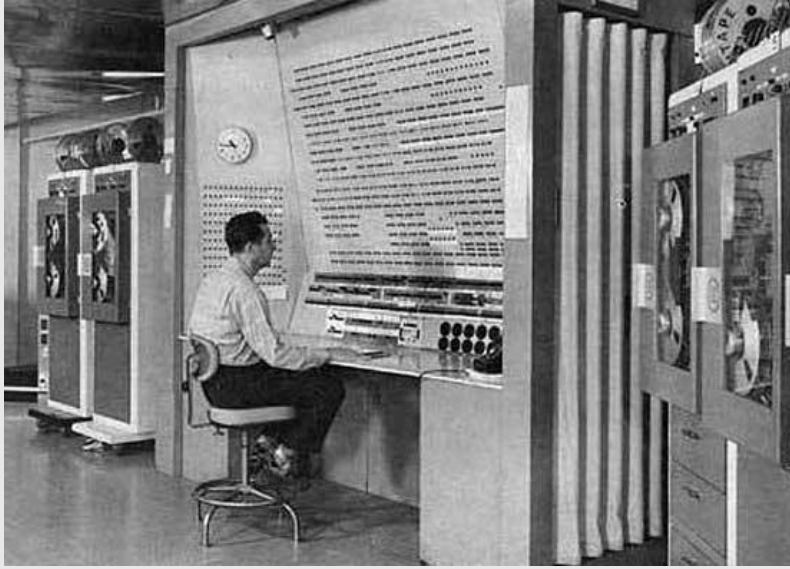
# Benefits of AOT

- Increase duration of oxygen therapy ✓
- Enhance exercise capacity ✓
- Reduce symptoms ✓
- May improve health status Δ
- Enhance the effectiveness of pulmonary rehab ✓
- Decrease mortality ?

**AOT can be safely recommended to COPD patients who**

**1) require LTOT**

**2) are only hypoxemic when they exercise**



**만성폐쇄성폐질환 환자에서  
휴대용산소치료는 과연 필요한가?**

**일부 만성폐쇄성폐질환 환자에서  
휴대용산소치료는 필요하다**