



Groupe Havrais d' Aide Aux Handicapé
Respiratoires


Groupe de Recherche
sur le Handicap Ventilatoire

UPRES - EA3830
IRIB



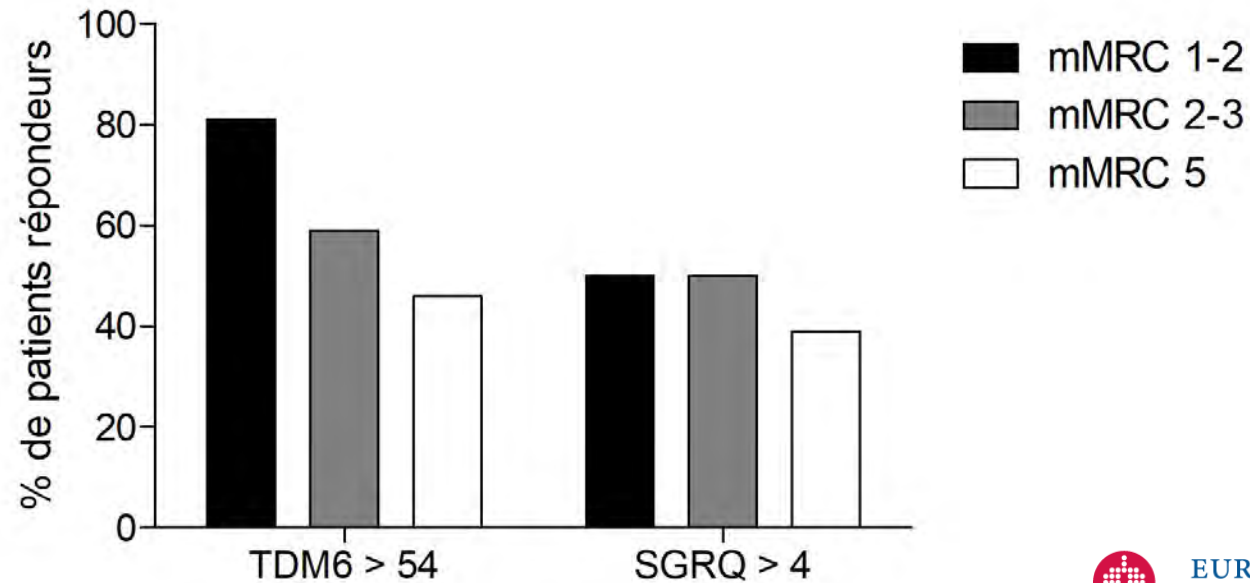

Optimiser le réentraînement à l'effort pour le patient dyspnéique

GUILLAUME PRIEUR – GROUPE HOSPITALIER DU HAVRE

Pourquoi optimiser le réentraînement ?

Predictors of success and failure in pulmonary rehabilitation

R. Garrod*, J. Marshall*, E. Barley# and P.W. Jones#



Comment optimiser le réentraînement ?



Les deux grands classiques



Patients en dehors des critères d'OLD

Ventilation non invasive

High-pressure non-invasive ventilation during exercise in COPD patients with chronic hypercapnic respiratory failure: A randomized, controlled, cross-over trial

RAINER GLOECKL,^{1,2}  VASILEIOS ANDRIANOPOULOS,¹  ANTJE STEGEMANN,¹ JULIAN OVERSOHL,³
TESSA SCHNEEBERGER,^{1,4} URSULA SCHOENHEIT-KENN,¹ WOLFGANG HITZL,^{5,6} MICHAEL DREHER,⁷
A. REMBERT KOCZULLA^{1,4} AND KLAUS KENN^{1,4}



20 patients BPCO avec
VNI nocturne
VEMS 19±4 %
VR 351±70 %



IPAP : 27 ± 3 cmH₂O
PEP : 6 ± 1 cm H₂O
O₂ : 3.8 ± 1.6 L/min

Ventilation non invasive

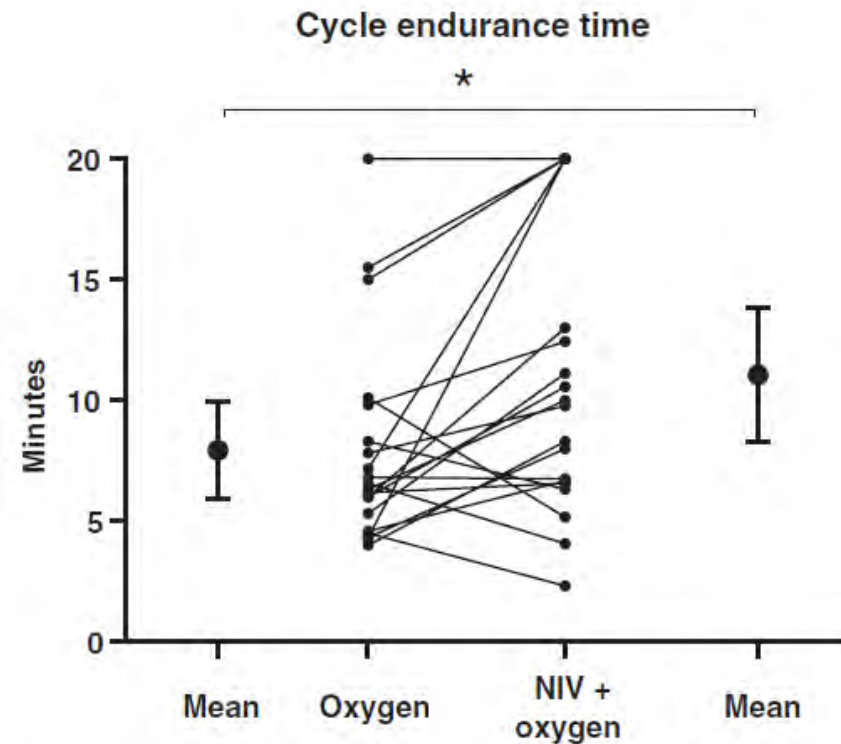


Figure 2 Individual and group data (mean \pm 95% CI) for changes in cycling endurance time under the two conditions ($P = 0.013$). NIV, non-invasive ventilation.

High-pressure non-invasive ventilation during exercise in COPD patients with chronic hypercapnic respiratory failure: A randomized, controlled, cross-over trial

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Ventilation non invasive

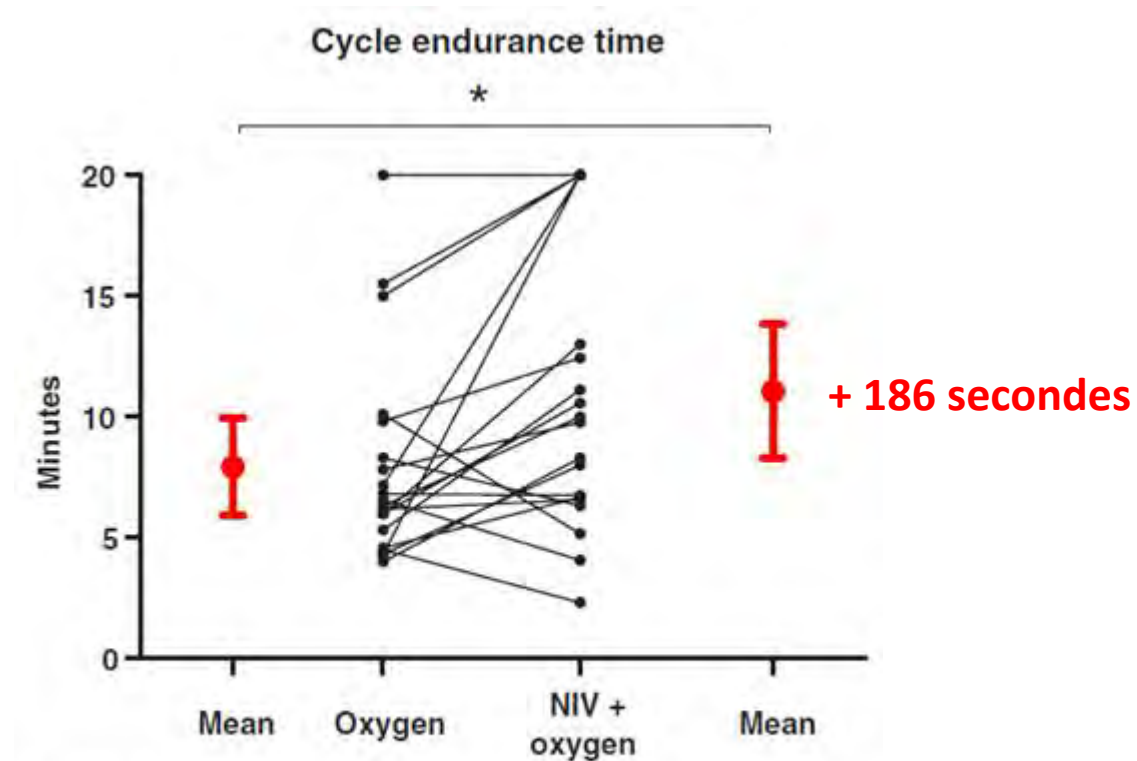


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Ventilation non invasive

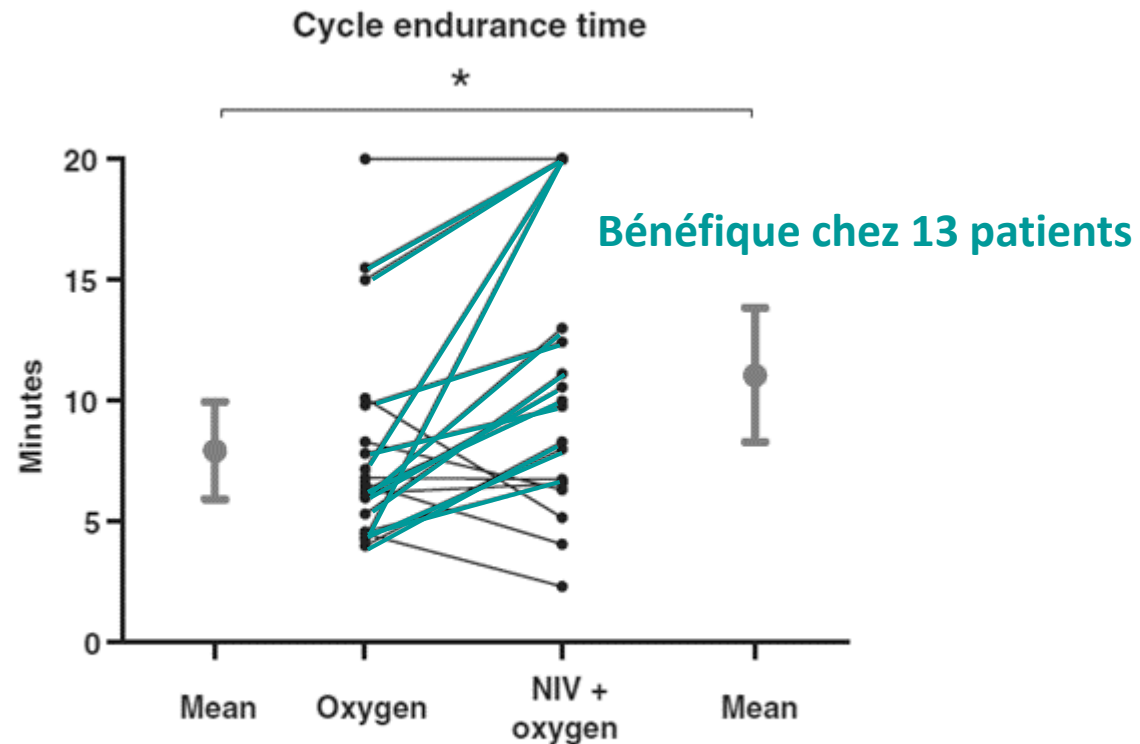


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Ventilation non invasive

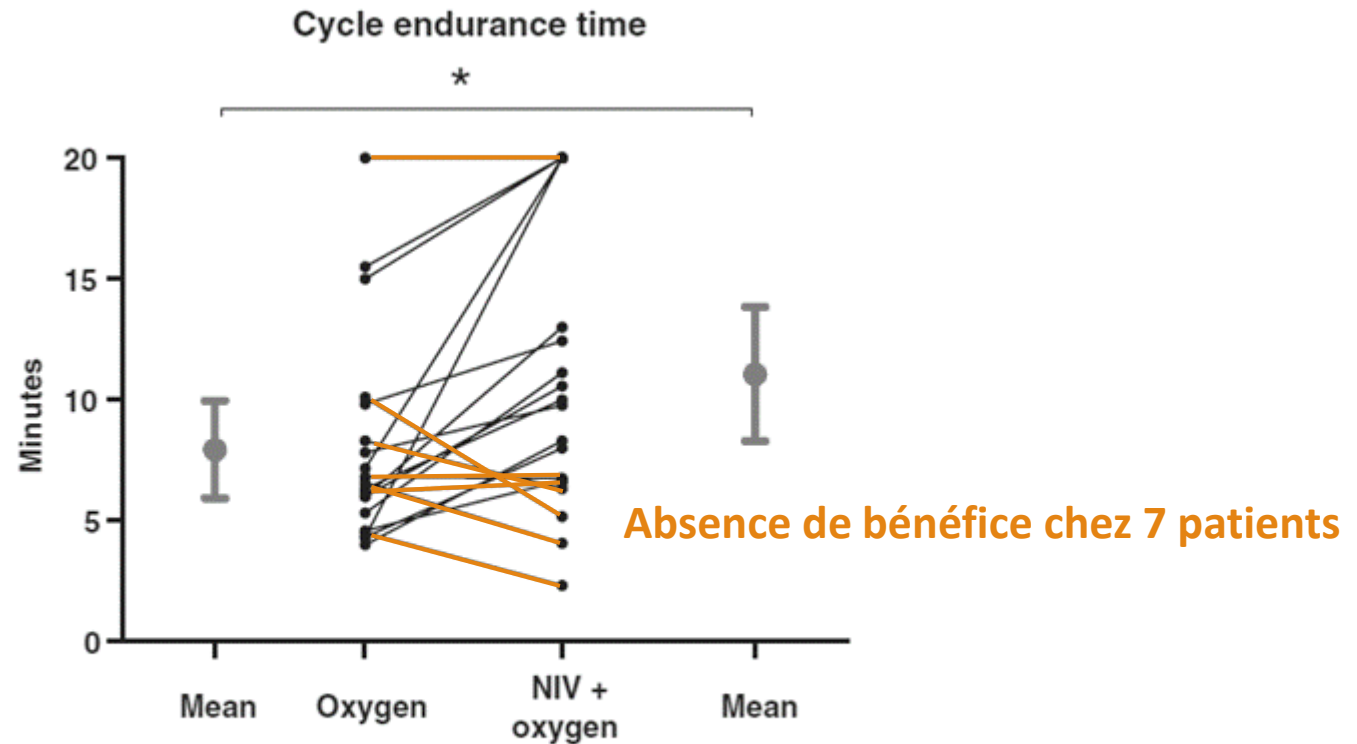


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VNI, Quel effet sur le long terme ?

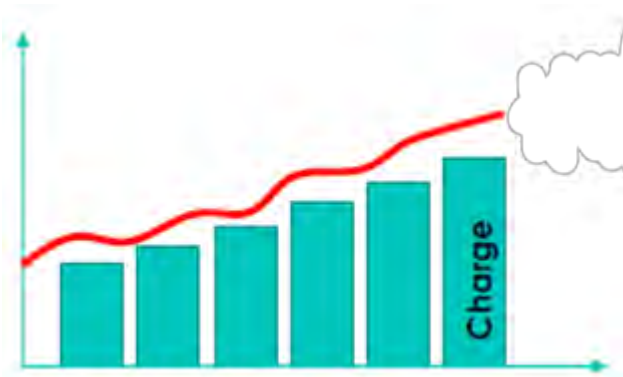
Non-invasive ventilation during exercise training for people with chronic obstructive pulmonary disease (Review)

Menadue C, Piper AJ, van 't Hul AJ, Wong KK



**THE COCHRANE
COLLABORATION®**

VNI, Quel effet sur le long terme ?

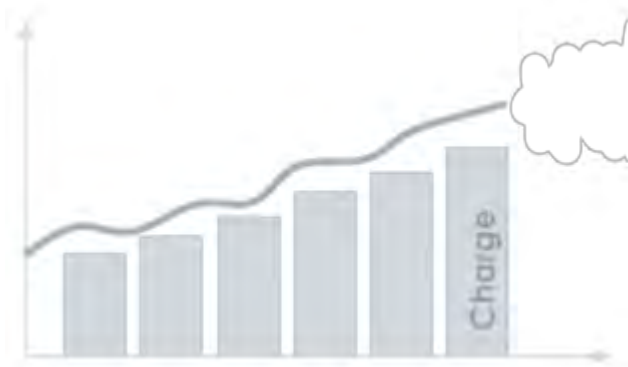


↗ de la charge de travail +17%
(environ 6 watts)

↗ du temps d'endurance +59%
(3,6 minutes)

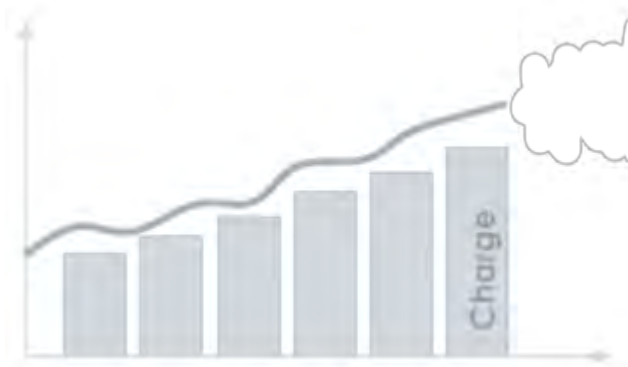


VNI, Quel effet sur le long terme ?



Absence de bénéfice :
VO₂ pic
Ventilation minute
Dyspnée

VNI, Quel effet sur le long terme ?



Absence de bénéfice sur la qualité de vie

TAKE HOME MESSAGE

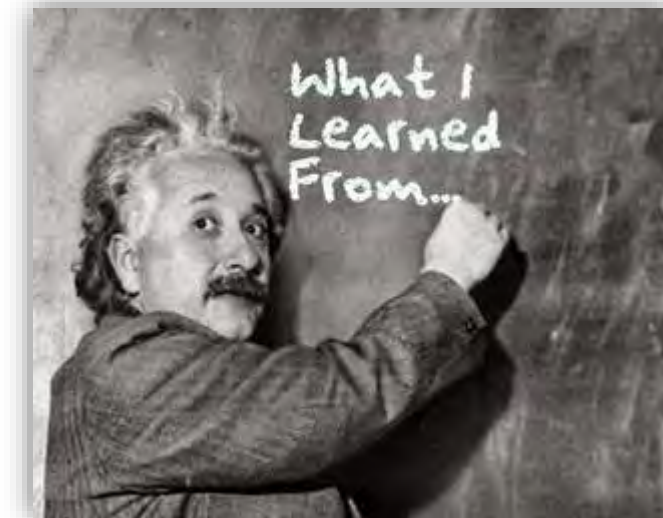
Efficace majoritairement sur les patients très sévères qui ont une VNI nocturne

Forte pression (IPAP > 20 cmH₂O) conseillée

Masque nasal est généralement mieux toléré dans les études

Tous les patients ne sont pas répondeurs (environ 1/3)

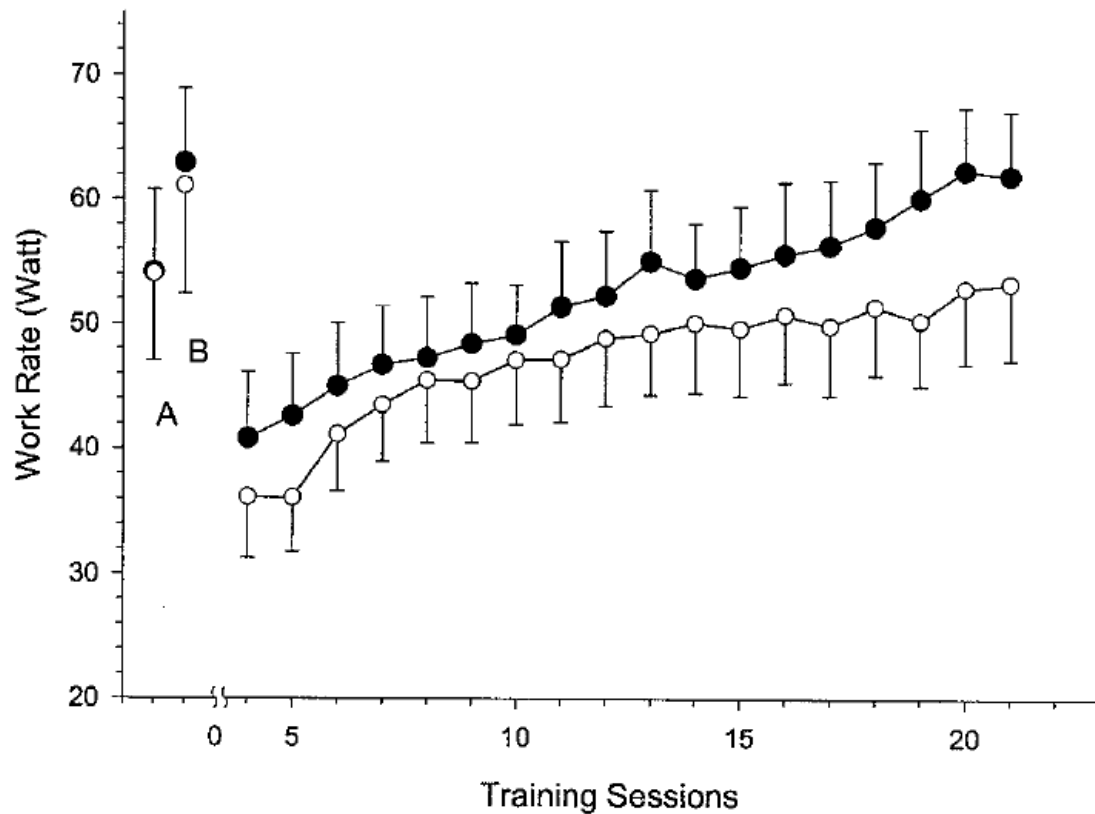
Nécessite une expertise et pratique chronophage



Oxygénothérapie (hors critère d'OLD)



Oxygénothérapie (hors critère d'OLD)



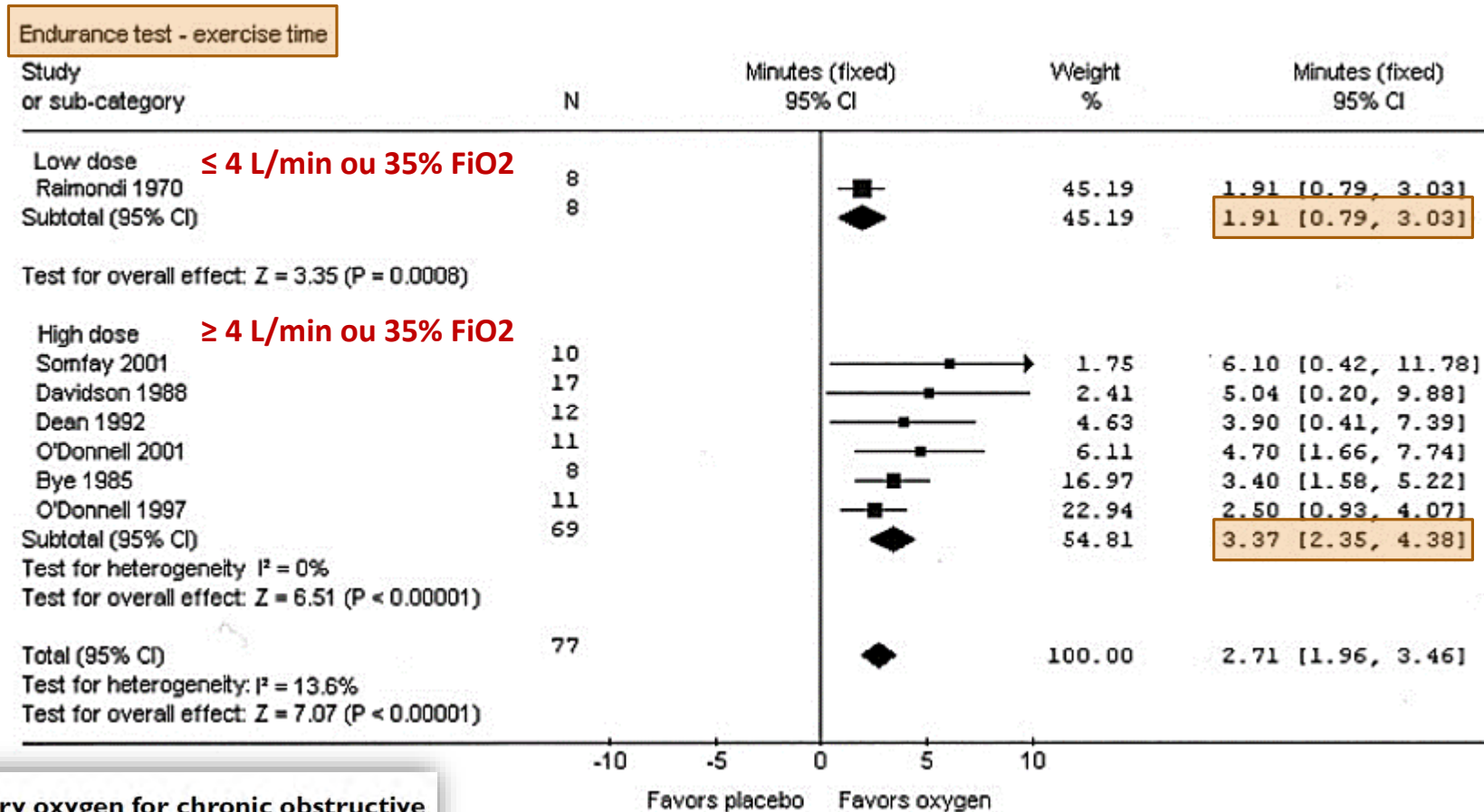
Benefits of Supplemental Oxygen in Exercise Training in Nonhypoxemic Chronic Obstructive Pulmonary Disease Patients

Margareta Emtner, Janos Porszasz, Mary Burns, Attila Somfay, and Richard Casaburi
Rehabilitation Clinical Trials Center, Harbor-UCLA Research and Education Institute, Torrance, California

Patients :
29 BPCO VEMS < 50 %

Oxygène :
3L/min

Oxygénothérapie (hors critère d'OLD)



Augmentation significative du temps d'endurance

Augmentation significative de la puissance pic (+ 8,8 watts)

Short-term ambulatory oxygen for chronic obstructive pulmonary disease (Review)



Oxygénothérapie (hors critère d'OLD)

Oxygen therapy during exercise training in chronic obstructive pulmonary disease (Review)

Nonoyama M, Brooks D, Lacasse Y, Guyatt GH, Goldstein R

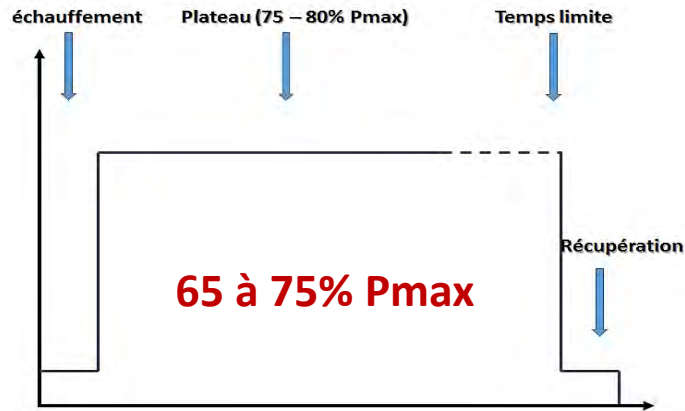


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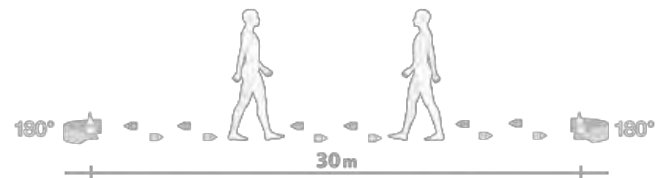
Oxygène :
3,5 à 5 L/min

Oxygénothérapie (hors critère d'OLD)

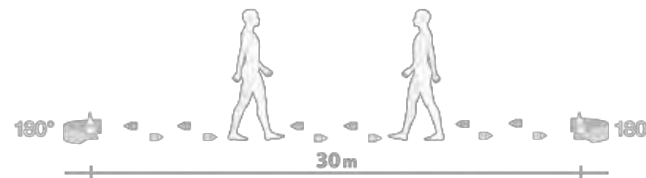
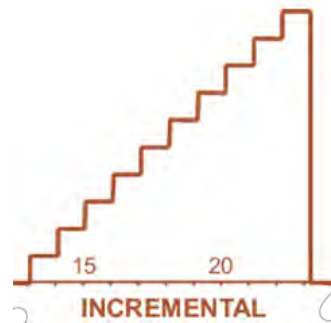
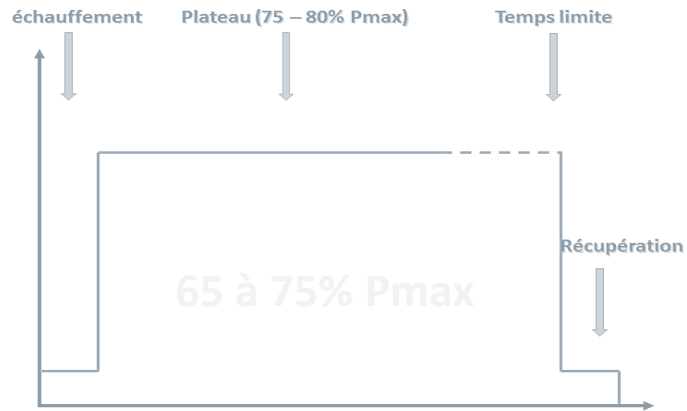


↗ du temps d'endurance
(environ 2,7 minutes)

↘ de la dyspnée (> 1 point)

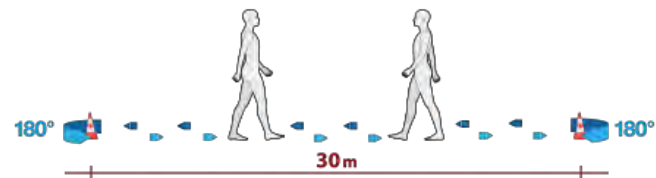
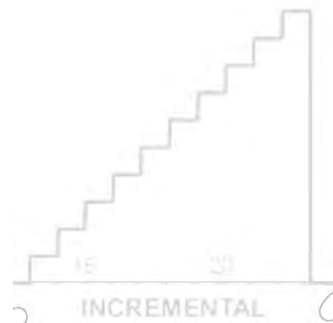
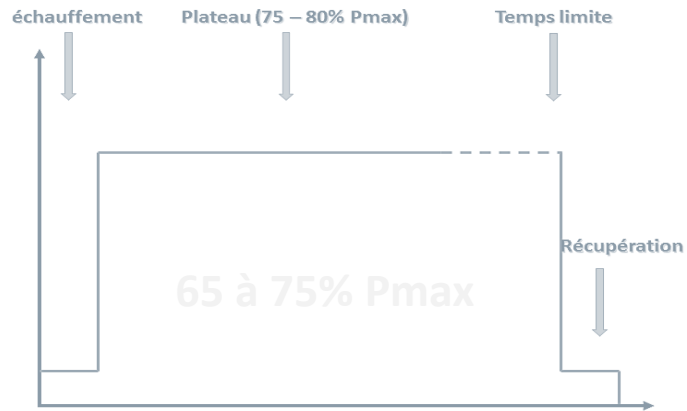


Oxygénothérapie (hors critère d'OLD)



Absence de bénéfice :
Puissance (watts)
VO₂ pic
Dyspnée

Oxygénothérapie (hors critère d'OLD)



Absence de bénéfice :
Distance de marche
Dyspnée

TAKE HOME MESSAGE

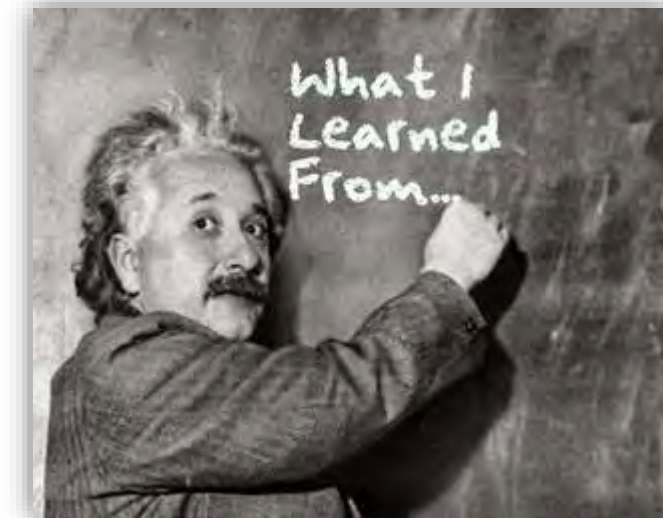
Peut être efficace chez les patients sévères répondeurs (environ 50% de patients répondeurs)

Débit \geq à 4L/min apporte plus de bénéfices

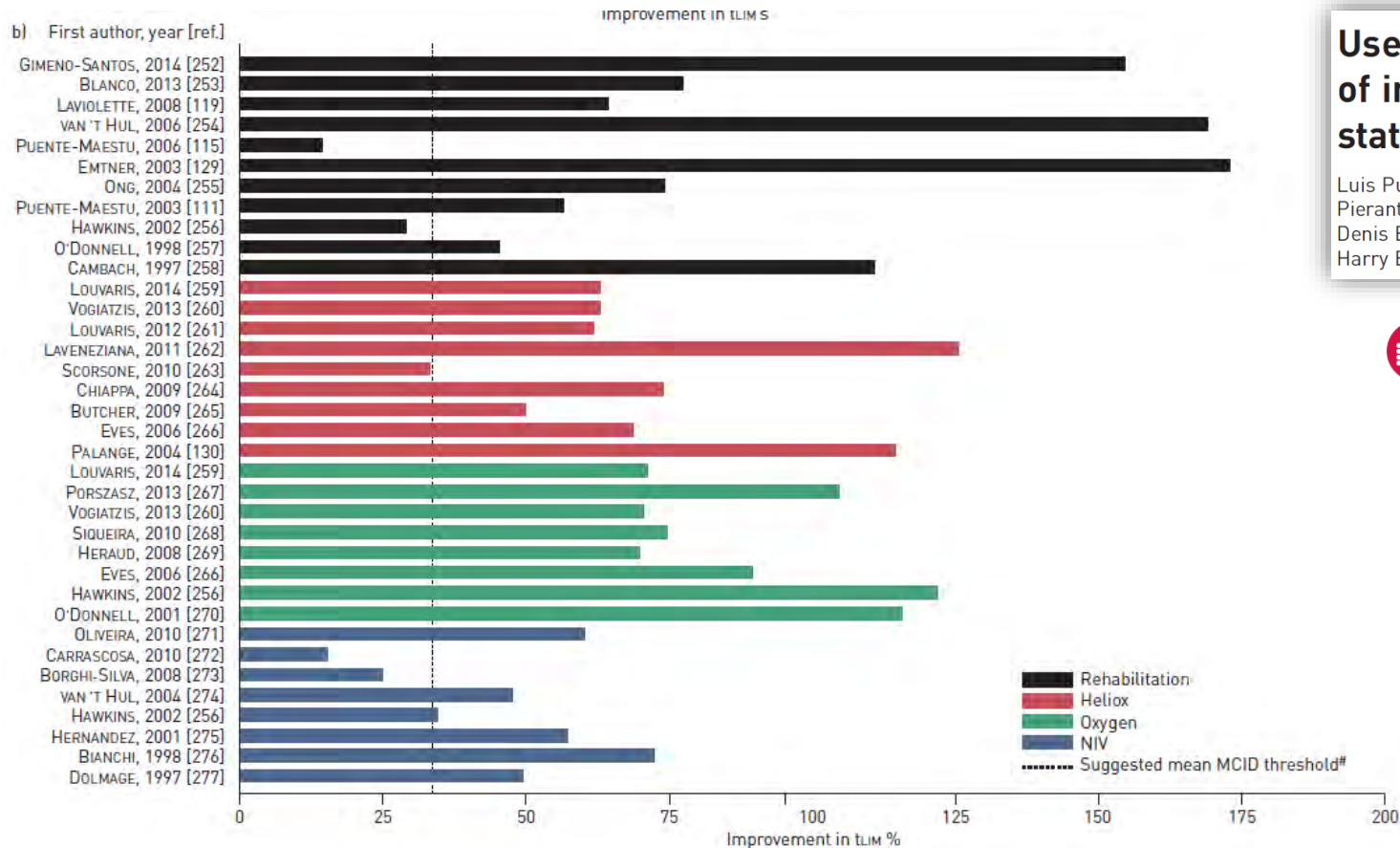
Soulage la dyspnée principalement pendant la séance

Perte de la plupart des bénéfices lorsque les patients ne sont plus sous O₂

Nécessite un plateau technique disposant d'une source d'oxygène



Oxygène ou VNI ?



Use of exercise testing in the evaluation of interventional efficacy: an official ERS statement

Luis Puente-Maestu^{1,2,3}, Paolo Palange⁴, Richard Casaburi⁵, Pierantonio Laveneziana^{6,7}, François Maltais⁸, J. Alberto Neder^{9,10}, Denis E. O'Donnell¹¹, Paolo Onorati^{4,12}, Janos Porszasz⁵, Roberto Rabinovich¹³, Harry B. Rossiter^{5,14}, Sally Singh¹⁵, Thierry Troosters^{16,17} and Susan Ward¹⁸



EUROPEAN RESPIRATORY *journal*

FLAGSHIP SCIENTIFIC JOURNAL OF ERS

Que faire lorsque l'on ne dispose pas de tous ces moyens techniques ?



1 – Bronchodilatateur avant l'effort

Use of exercise testing in the evaluation of interventional efficacy: an official ERS statement

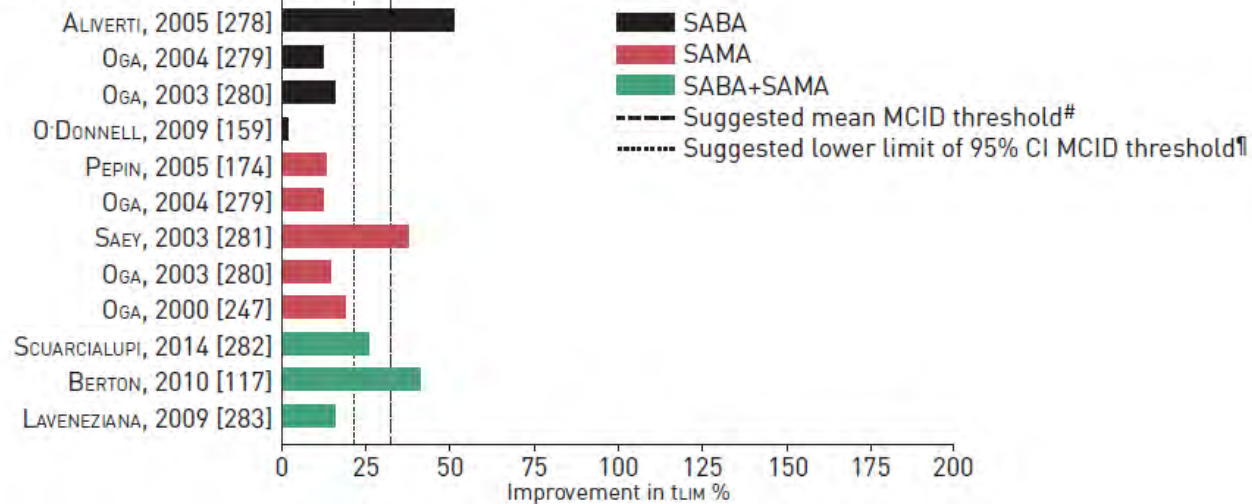
Luis Puente-Maestu^{1,2,3}, Paolo Palange⁴, Richard Casaburi⁵, Pierantonio Laveneziana^{6,7}, François Maltais⁸, J. Alberto Neder^{9,10}, Denis E. O'Donnell¹¹, Paolo Onorati^{4,12}, Janos Porszasz⁵, Roberto Rabinovich¹³, Harry B. Rossiter^{5,14}, Sally Singh¹⁵, Thierry Troosters^{16,17} and Susan Ward¹⁸



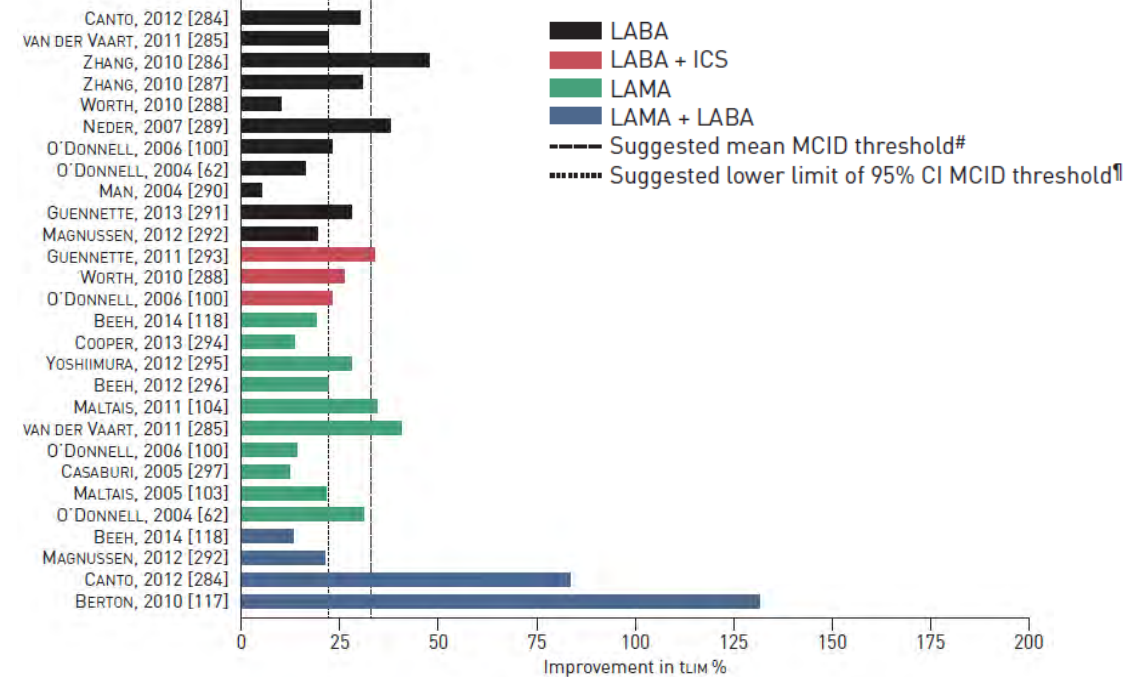
EUROPEAN RESPIRATORY *journal*

FLAGSHIP SCIENTIFIC JOURNAL OF ERS

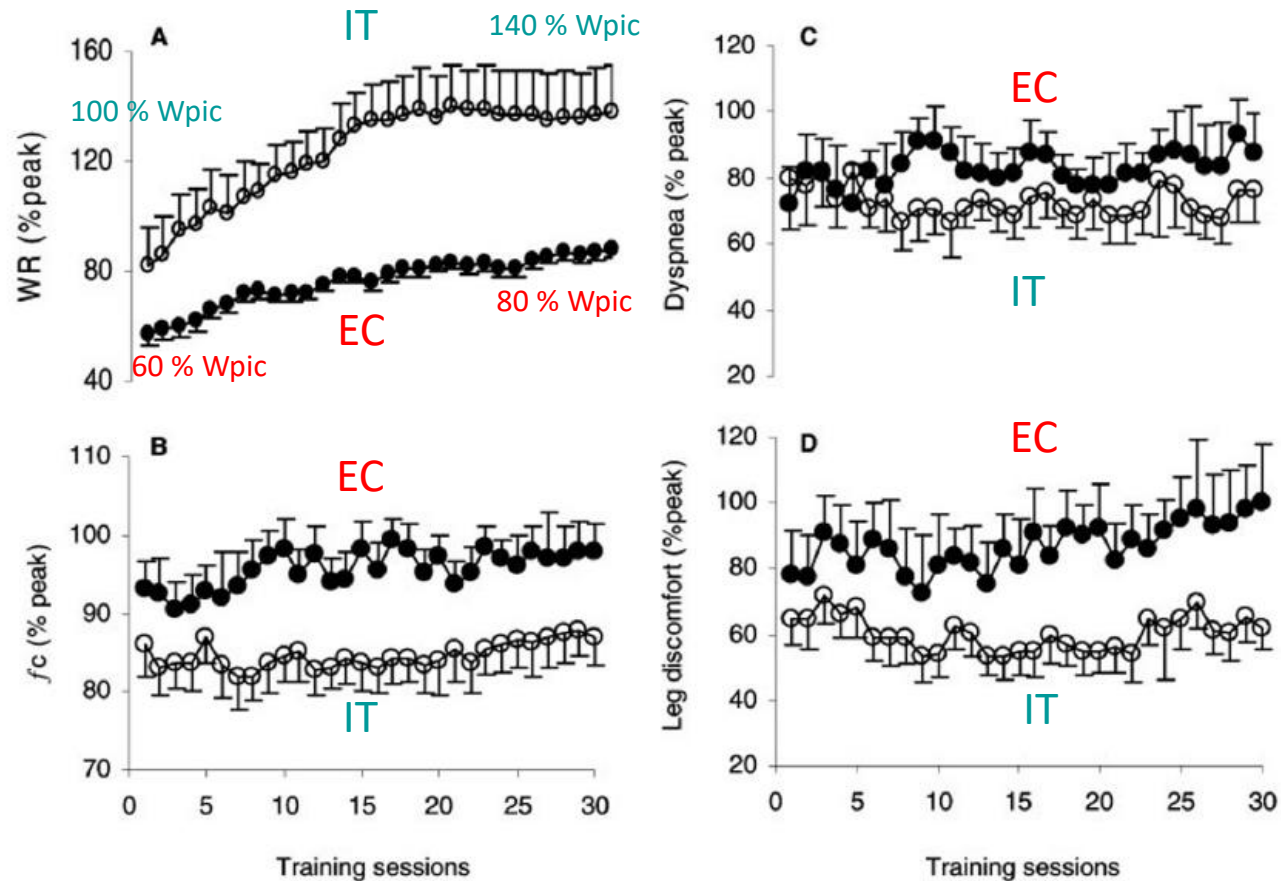
b) First author, year [ref.]



First author, year [ref.]



2 – Faire de l'Interval Training



19 patients BPCO - VEMS < 45%

Travail en continu : 60% Wpic ; 30 min
IT : 100% Wpic ; 45 min ; 30''/30''
3/semaine 10 semaines

Efficacité identique sur le muscle et
temps d'endurance

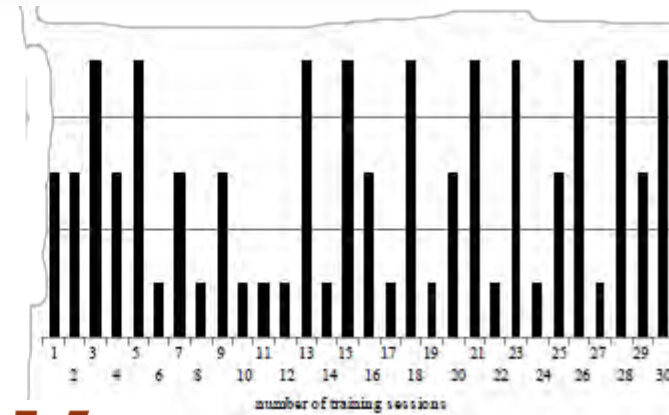
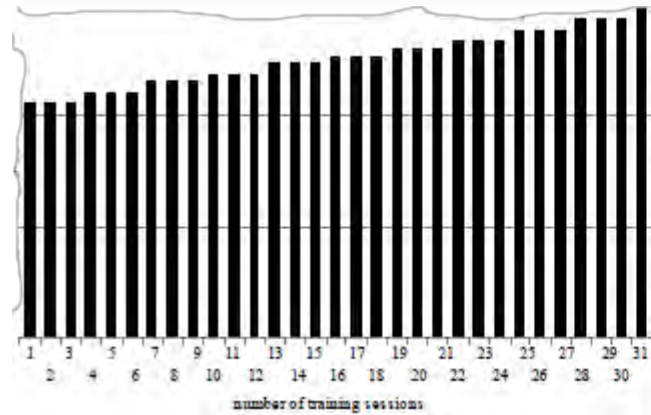
3 – Varier les entraînements

Nonlinear Exercise Training in Advanced Chronic Obstructive Pulmonary Disease Is Superior to Traditional Exercise Training

A Randomized Trial

Peter Klijn¹, Anton van Keimpema^{1,2}, Monique Legemaat¹, Rik Gosselink³, and Henk van Stel⁴

AMERICAN JOURNAL OF
Respiratory and
Critical Care Medicine



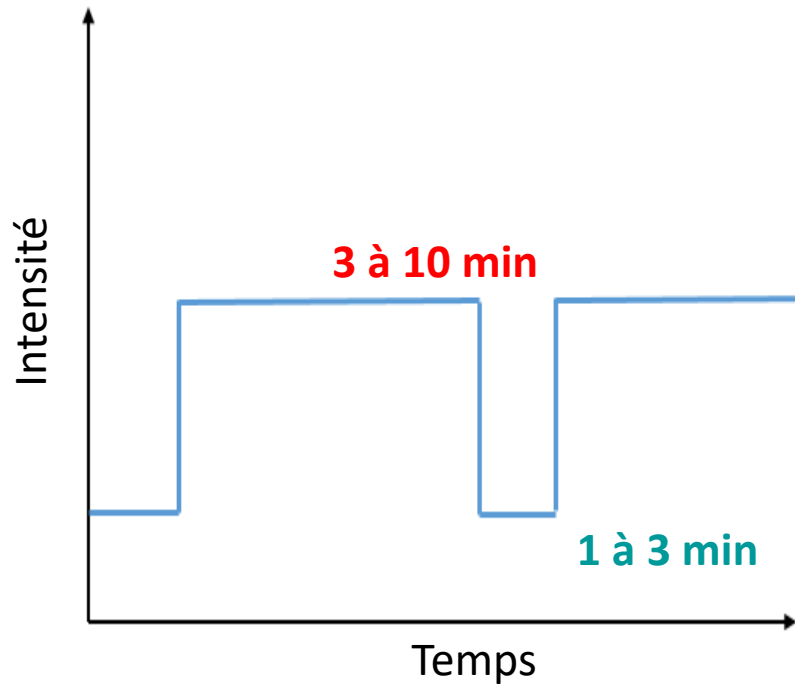
110 patients BPCO
sévères
VEMS : $32 \pm 9\%$

Endurance progressive
10 min 30 % Wpic
↗ progressive 75 % Wpic
(25min)

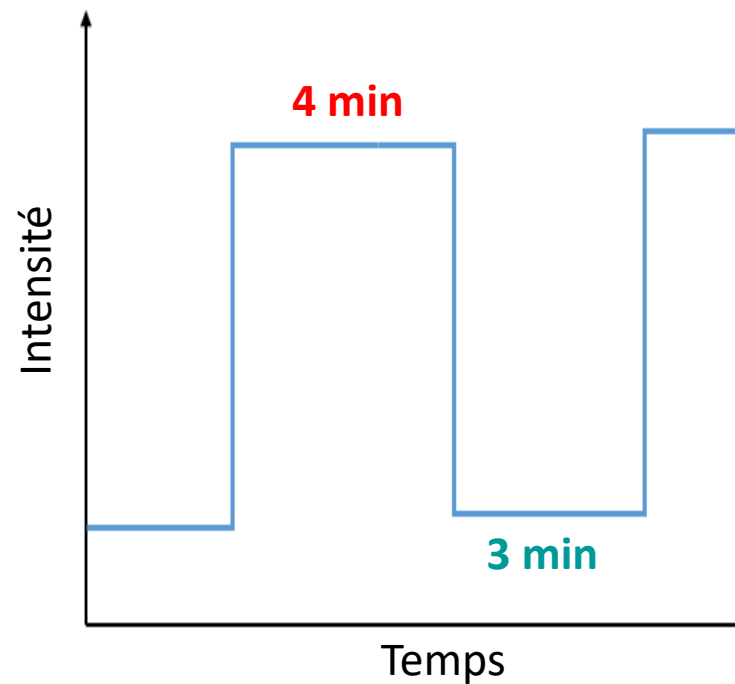


Exemples d'entraînement

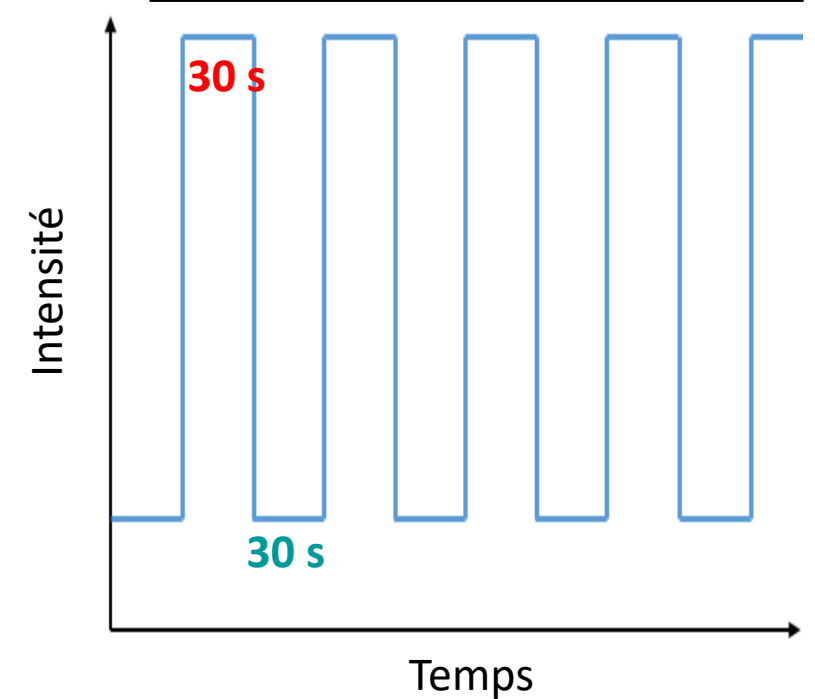
50 à 60 % du Wpic



80 à 90 % du Wpic

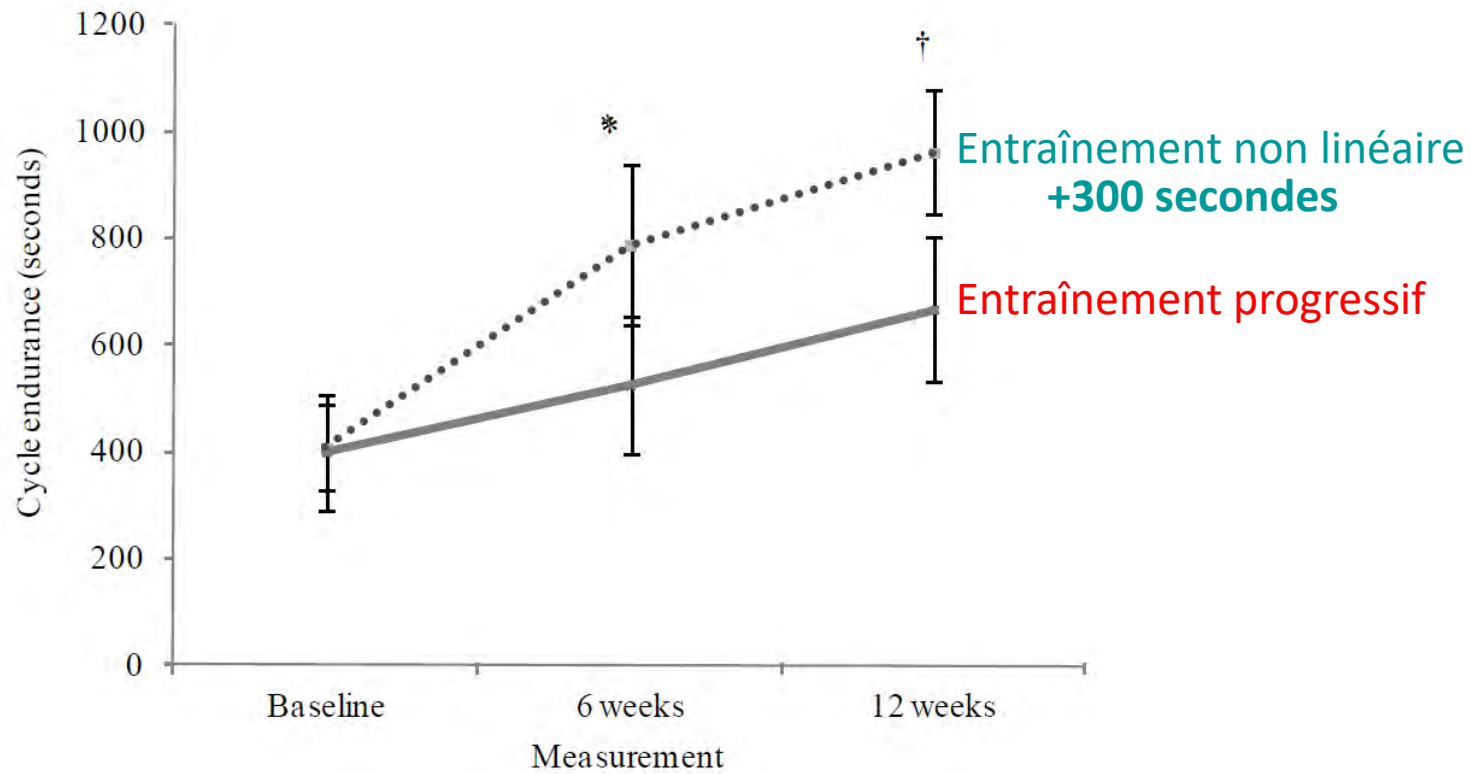


100 à 120 % du Wpic



Durée de 10 à 50 minutes

3 – Varier les entraînements



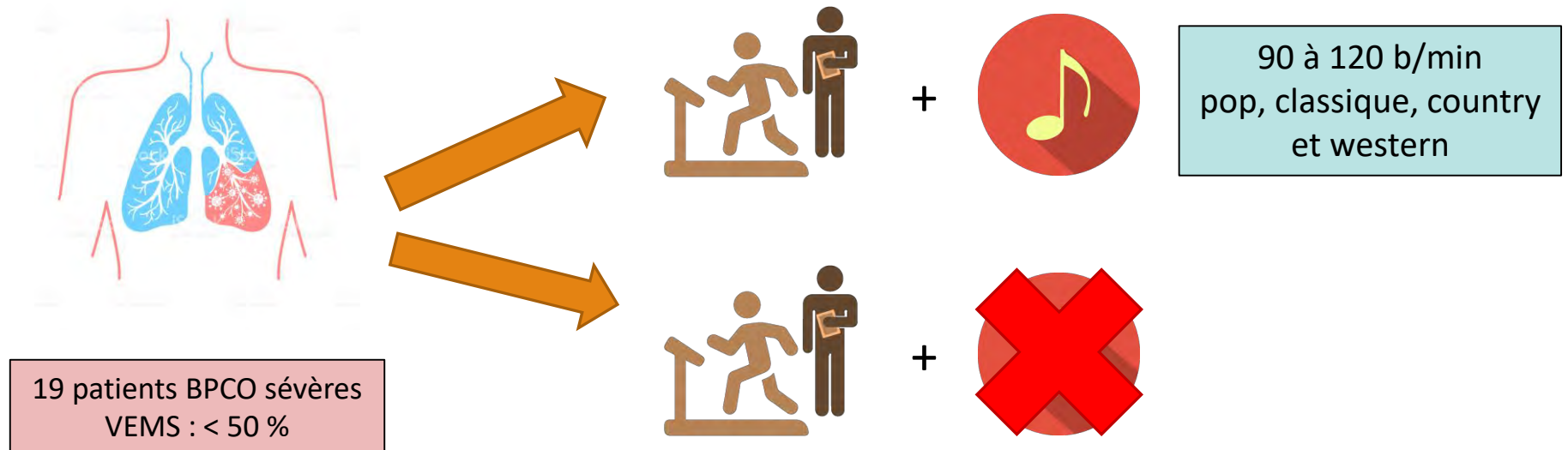
-1 point sur la dyspnée

-2 points sur la fatigue musculaire

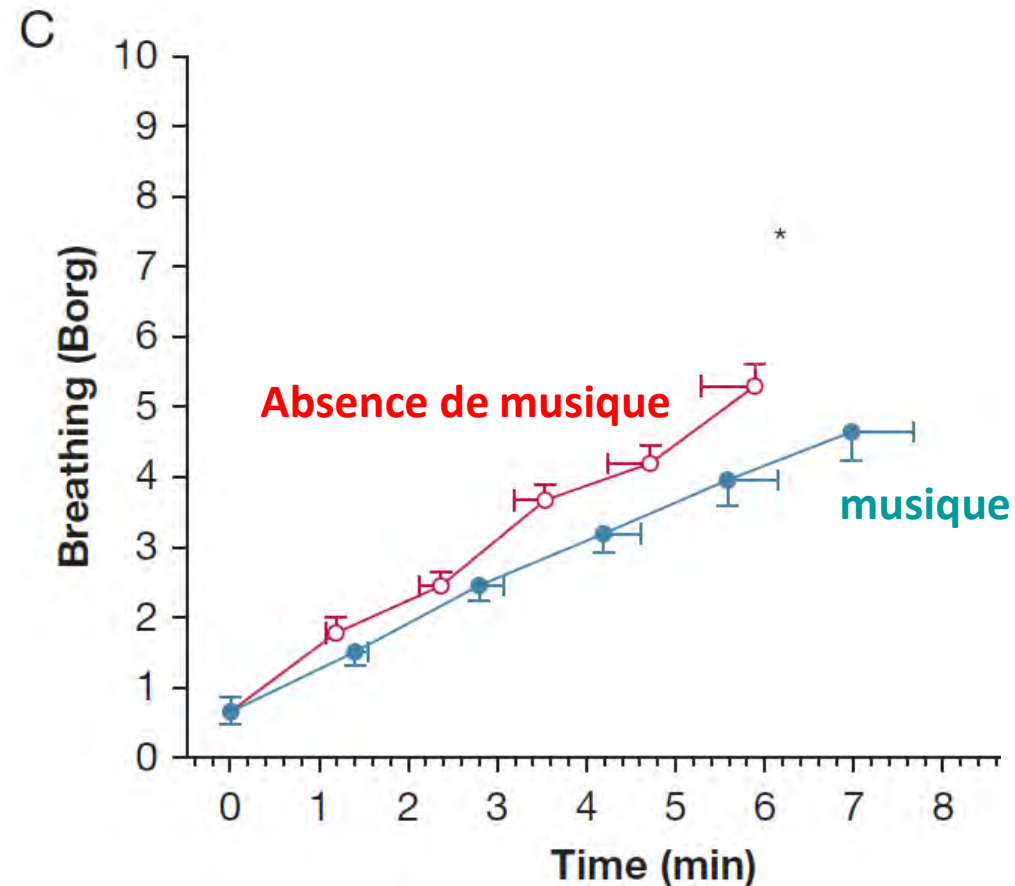
Amélioration de la Qualité de vie

4 – Mettre la musique que les patients aiment

The Impact of Listening to Music During a High-Intensity Exercise Endurance Test in People With COPD 



4 – Mettre la musique que les patients aiment



+ 1 min de temps
d'endurance

-1 point sur la dyspnée

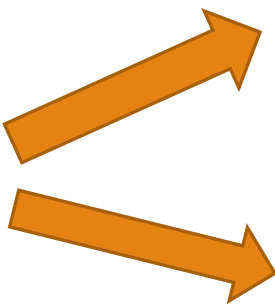
5 – Mettre un ventilateur

Air Current Applied to the Face Improves Exercise Performance in Patients with COPD

Nathaniel Marchetti¹, Matthew R. Lammi², John M. Travaline¹, David Ciccolella¹, Brian Civic³, and Gerard J. Criner¹



10 patients BPCO sévères
VEMS 34 ± 3 %



+



Visage

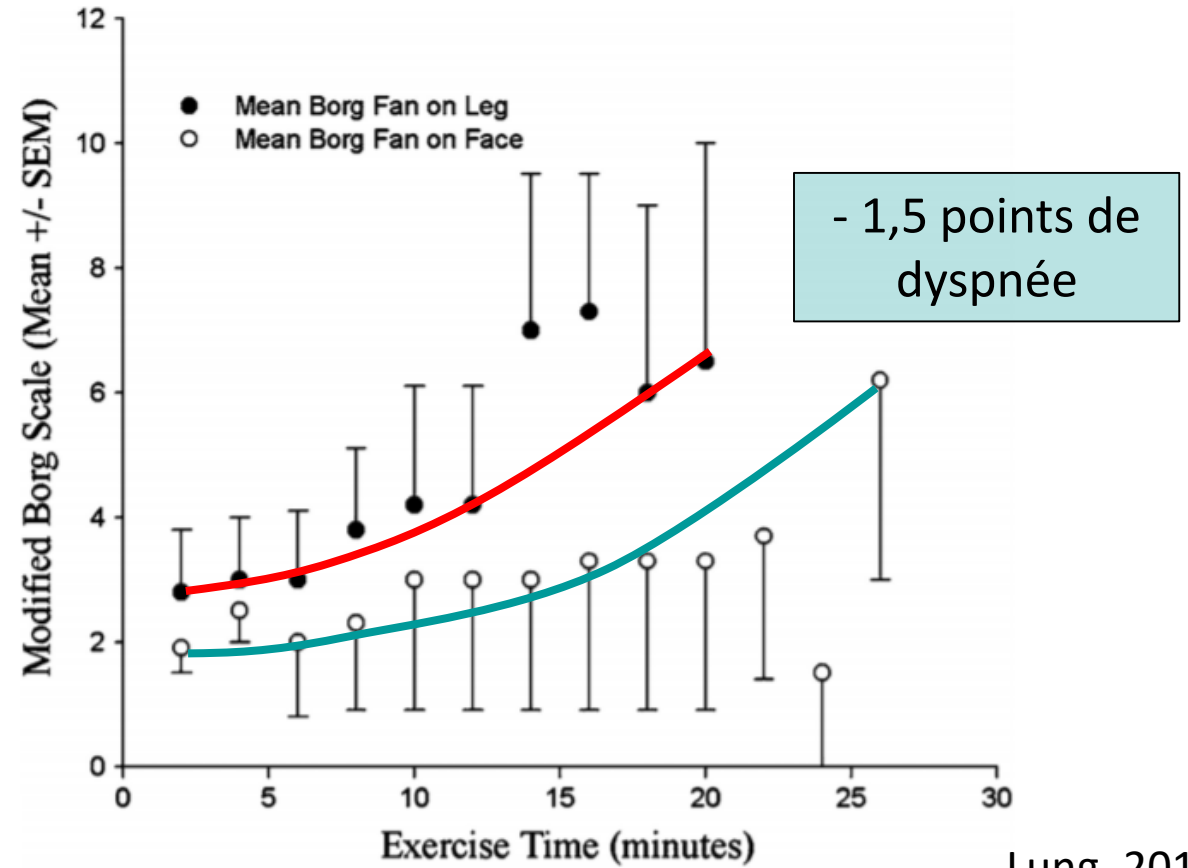
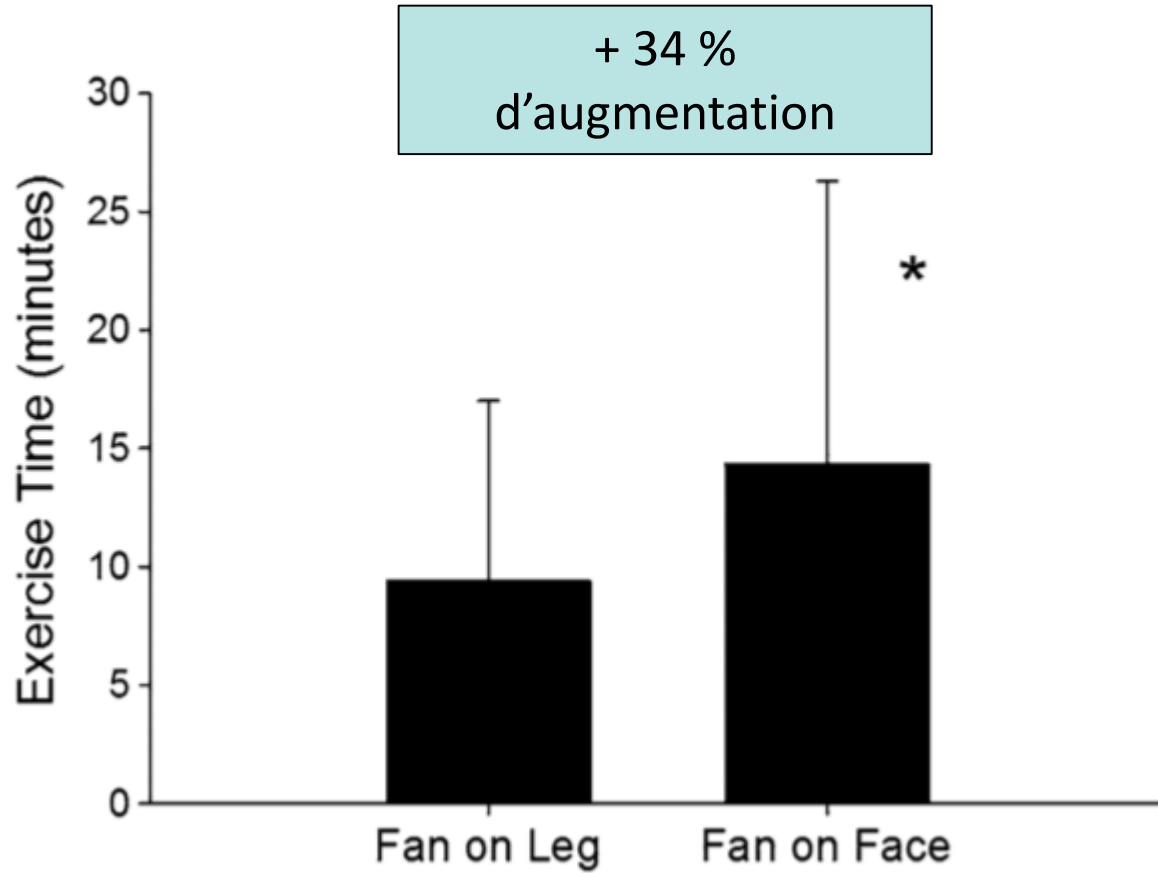


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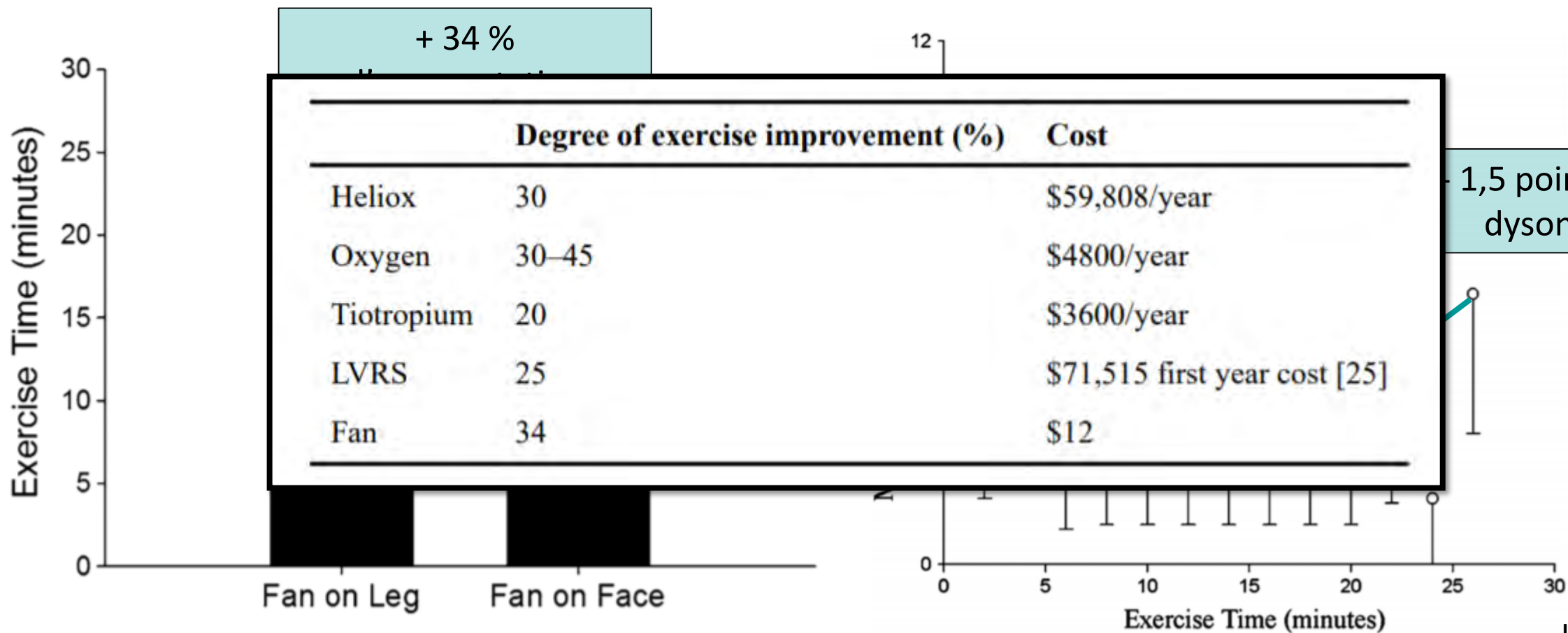


Jambe

5 – Mettre un ventilateur



5 – Mettre un ventilateur



6 – Favoriser le maintien des acquis

Benefits of Long-Term Pulmonary Rehabilitation Maintenance Program in Patients with Severe Chronic Obstructive Pulmonary Disease

Three-Year Follow-up

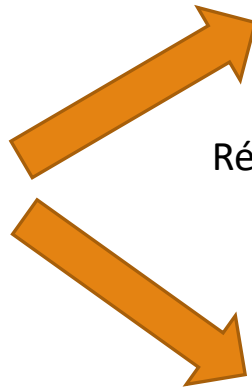
Maria-Rosa Güell¹, Pilar Cejudo^{2,3}, Francisco Ortega^{2,3}, M. Carmen Puy¹, Gema Rodríguez-Trigo⁴, José Ignacio Pijoan^{5,6,7}, Lorea Martínez-Indart⁵, Amaia Gorostiza⁵, Khaled Bdeir⁸, Bartolome Celli⁹, and Juan B. Galdiz^{5,10}



143 patients BPCO
VEMS 34±10 %



8 semaines
3 fois/sem



Réhabilitation à la maison
Au moins 3 fois/sem



1 séance / 15 jours



1 appel / 15 jours



6 – Favoriser le maintien des acquis

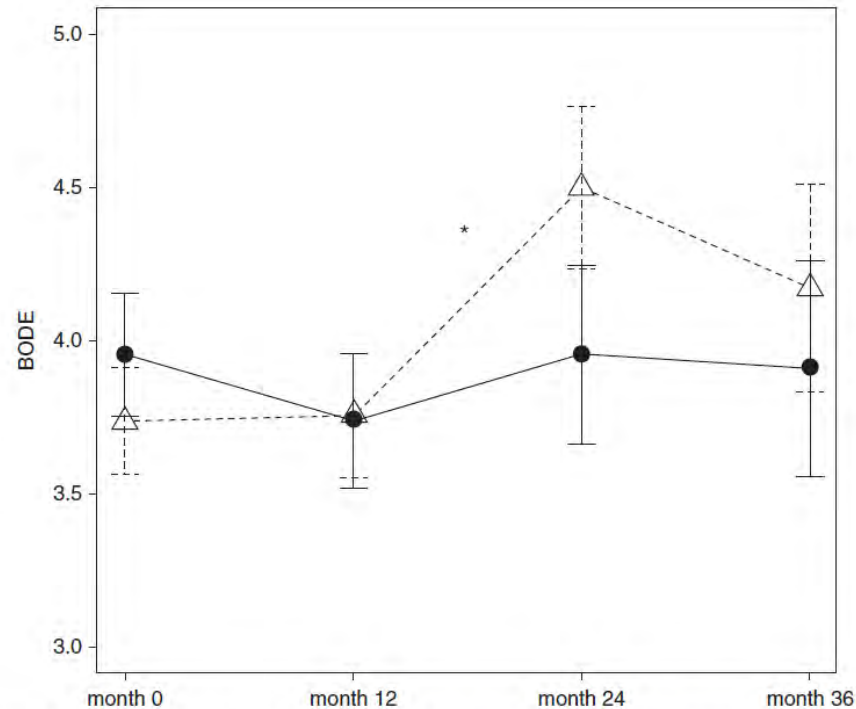
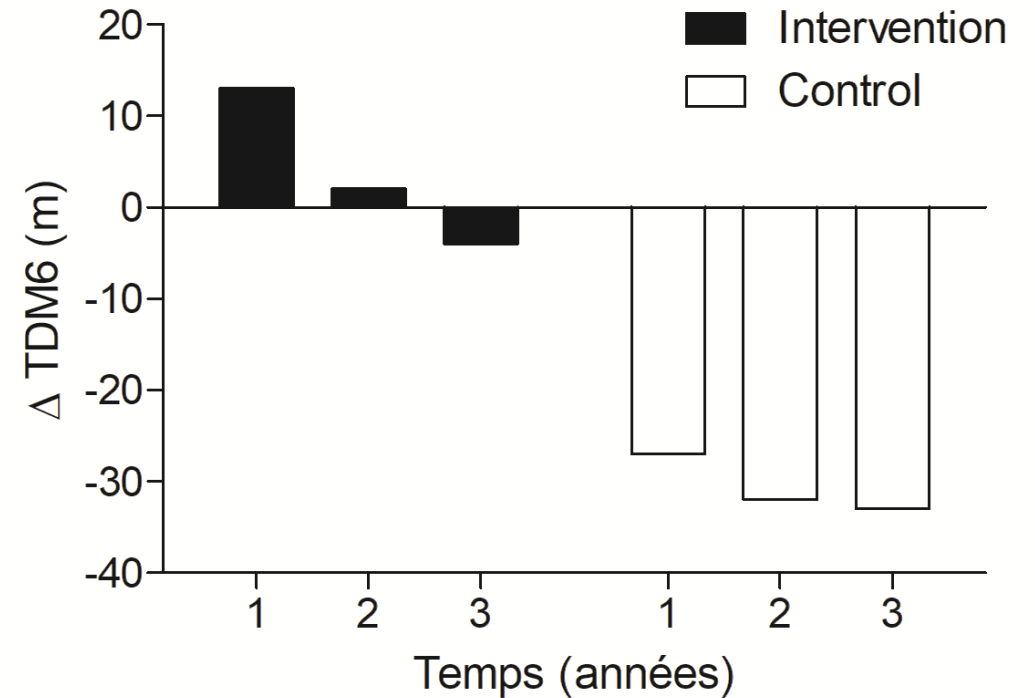


Figure 2. Patterns of change of BODE index over study follow-up. Data shown are mean values with error bars representing SE; triangles are values for the control group, and circles are values for the intervention group. Month 0 is baseline following the completion of in-hospital pulmonary rehabilitation. *Significant difference in mean changes from Month 0 to Month 24 between groups ($P = 0.043$). BODE = body mass index, airflow obstruction, dyspnea, and exercise capacity.



7 – Créer de la convivialité



Take Home Message



Merci pour votre attention

gprieur.kine@gmail.com

