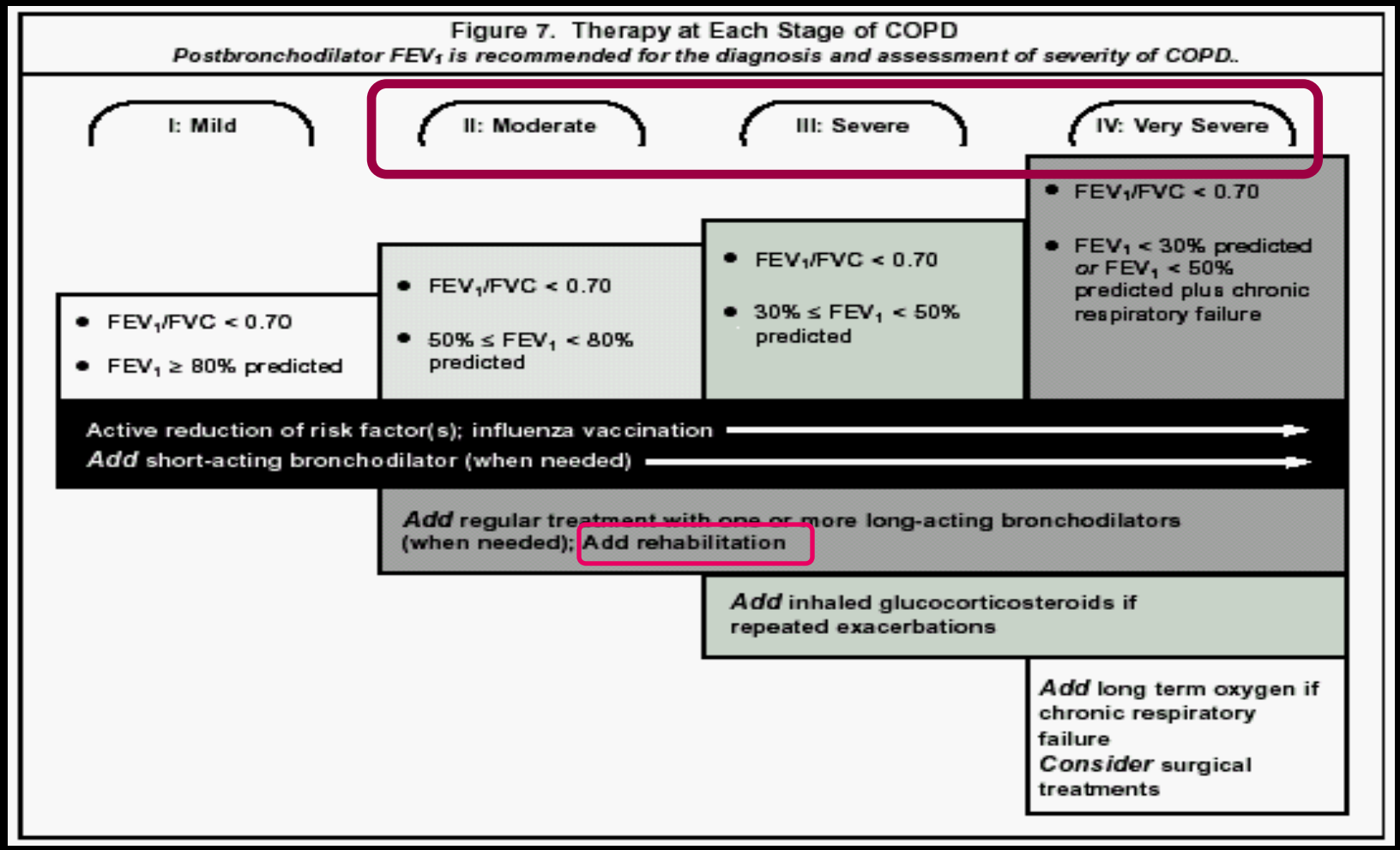
Αποκατάσταση ασθενών με ΧΑΠ

Επαμεινώνδας Ν. Κοσμάς

Δ/ντής Πνευμονολογικού Τμήματος
Νοσοκομείο Metropolitan

Θεραπεία ΧΑΠ



Clinical Practice Guideline Update from ACP, ACCP, ATS, ERS. Ann Intern Med 2011

- Recommendation 6:
- Clinicians should prescribe pulmonary rehabilitation for symptomatic patients with FEV1 < 50 %pred.
- It might be considered also for symptomatic or exercise-limited patients with FEV1 > 50% pred

Τι έχει μεγαλύτερη σημασία στην επιλογή των ασθενών ?

Στάδιο βαρύτητας
FEV1

Συμπτώματα:

Δύσπνοια
↓ικανότητα για άσκηση
Ποιότητα ζωής

Δύσπνοια στη ΧΑΠ – Θεραπεία

Neuro-mechanical dissociation

Κεντρικός νευρικός controller

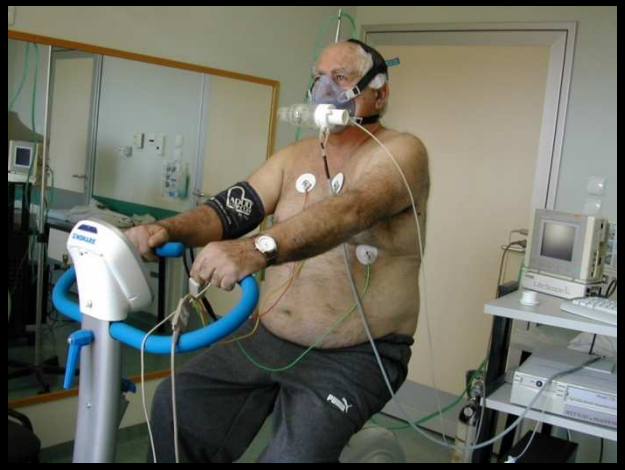
- Αυξημένη ένταση αισθητήριας πληροφορίας
  - Υποξαιμία
  - Υπερκαπνία
  - Οξέωση
  - Πυρετός (και από μη αναπνευστική λοίμωξη)
  - Περιφερική αδυναμία σκελετικών μυών (Deconditioning, απαίτηση για περισσότερο O2)
  - Αυξημένο φορτίο αντιστάσεων (+ελαστικό)
  - Άγχος, φόβος, πανικός
- Αυξημένη αναπνευστική κινητική ώση

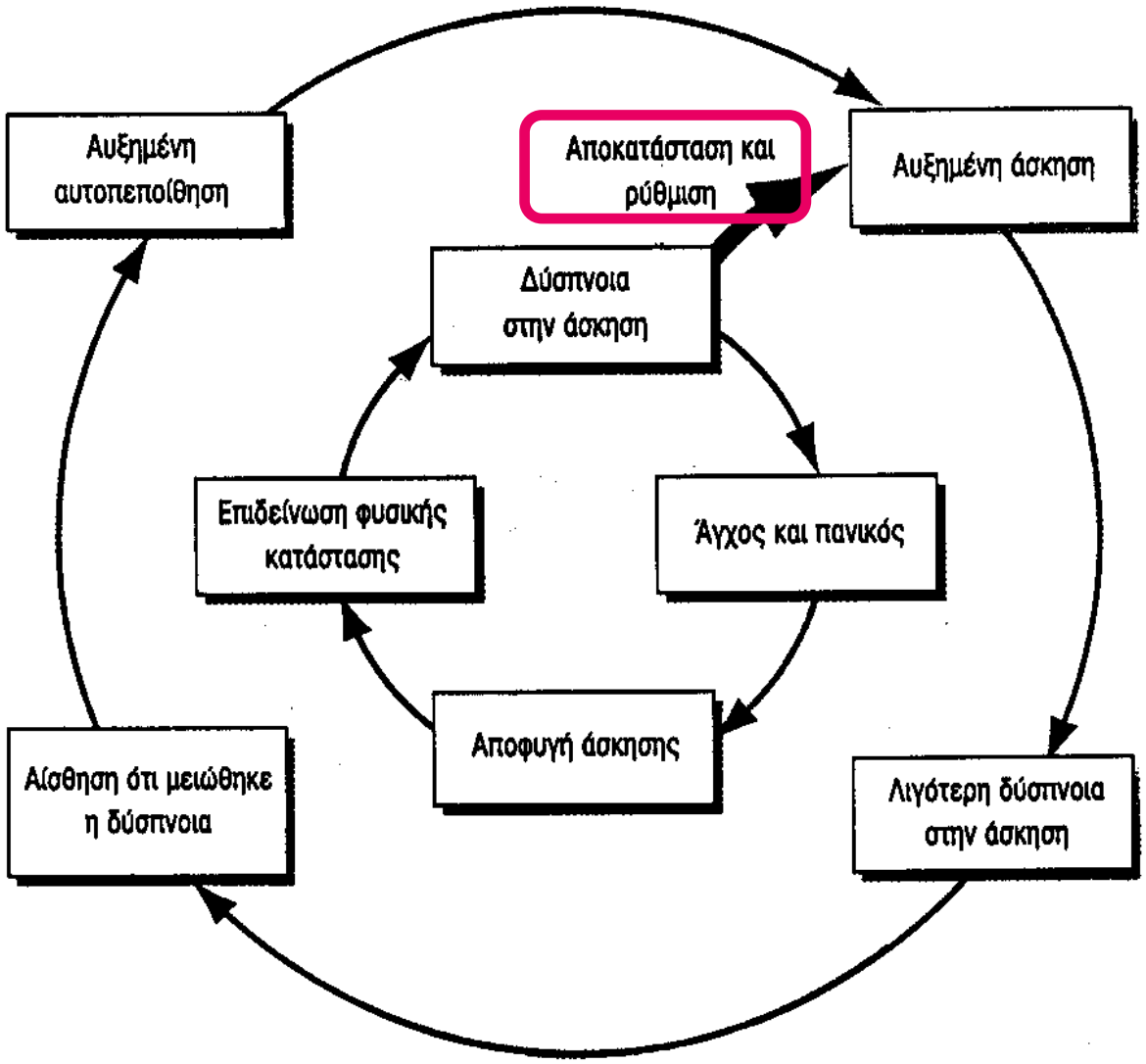
Μηχανική απάντηση

- Αδυναμία του αναπνευστικού συστήματος να εκτελέσει την ώση
  - **Pmus = Ers.Vt + Rrs.(Vt/Ti)+ I.(Vt/Ti)2**
  - ↑Rrs (βρογχοσύσπαση, εκκρίσεις)
  - ↓Pmus (υπερδιάταση, PEEPi, καχεξία)
  - ↑Ers (υπερδιάταση, μετατόπιση στην καμπύλη P-V, PEEPi)
- Κυψελιδικός υποαερισμός (↓VA)
  - Υποξαιμία, υπερκαπνία, οξέωση
- Feedbacks X/Y – M/Y για επιπλέον αύξηση της αναπνευστικής ώσης

Μηχανισμοί δύσπνοιας & μειωμένης ικανότητας άσκησης στη ΧΑΠ

- Μηχανική δυσλειτουργία (υπερδιάταση, απόφραξη)
- Υποξαιμία - Υπερκαπνία
- Καρδιακή δυσλειτουργία
- Δυσλειτουργία σκελετικών μυών – Deconditioning
- Δυσλειτουργία διαφράγματος - Υπερδιάταση
- Διαταραχές θρέψης (↓FFM ανεξάρτητα από BMI)
- Άγχος – Πανικός - Κατάθλιψη
- Αντίληψη συμπτώματος
- Διάφορα (Αναιμία – Οστεοπόρωση κλπ)





Εικόνα 7.3 Ο φαύλος κύκλος της επιδείνωσης και της αδράνειας που εμφανίζονται στη ΧΑΠ και η επίδραση της πνευμονικής αποκατάστασης.

Αναπνευστική Φυσιοθεραπεία

Αναπνευστική Φυσιοθεραπεία

Αερόβια άσκηση σε εργομετρικό ποδήλατο

Αερόβια άσκηση σε δαπεδοεργόμετρο και εργόμετρο άνω άκρων

Ασκησεις ενδυνάμωσης μυών άκρων & κορμού

Και επίσης…

- Ενημέρωση – εκπαίδευση ασθενών
- Τεχνικές αυτοαξιολόγησης & αυτοδιαχείρισης
- Ψυχολογική αξιολόγηση & υποστήριξη
- Διατροφική παρέμβαση

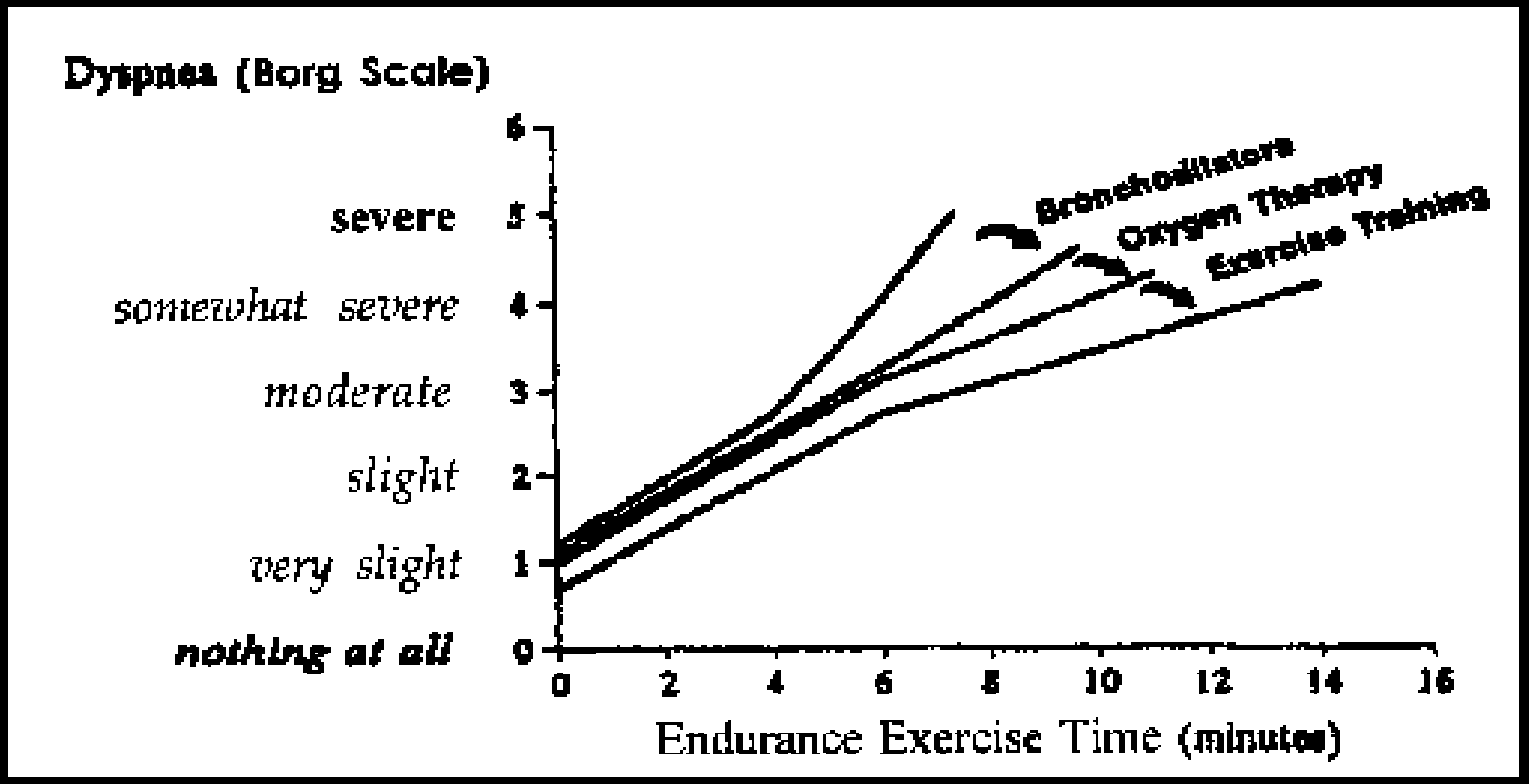





ΤΑ ΟΦΕΛΗ ΤΗΣ ΠΝΕΥΜΟΝΙΚΗΣ ΑΠΟΚΑΤΑΣΤΑΣΗΣ

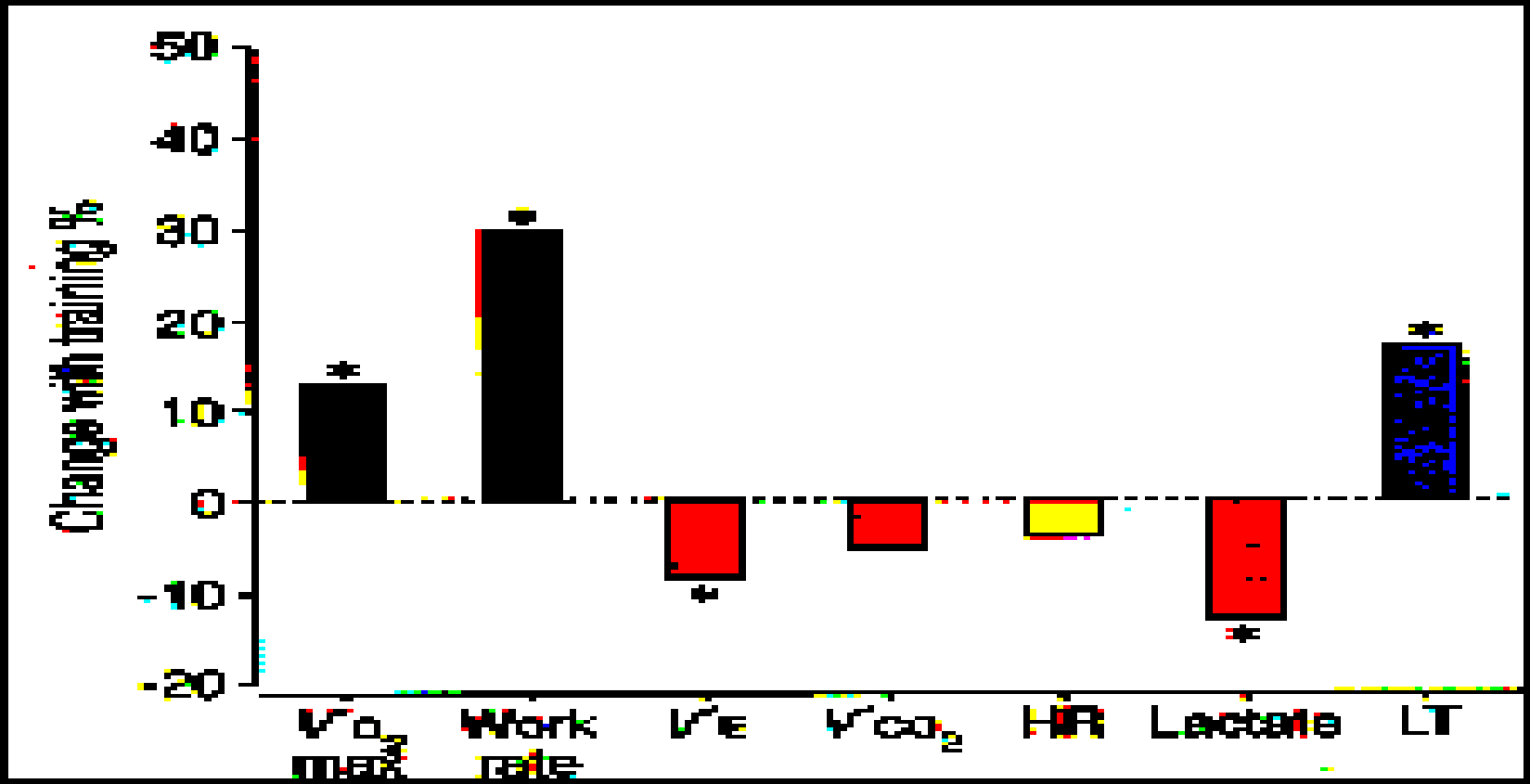
ΣΤΗΝ ΔΥΣΠΝΟΙΑ & ΣΤΗΝ ΙΚΑΝΟΤΗΤΑ ΑΣΚΗΣΗΣ….

Στη δύσπνοια

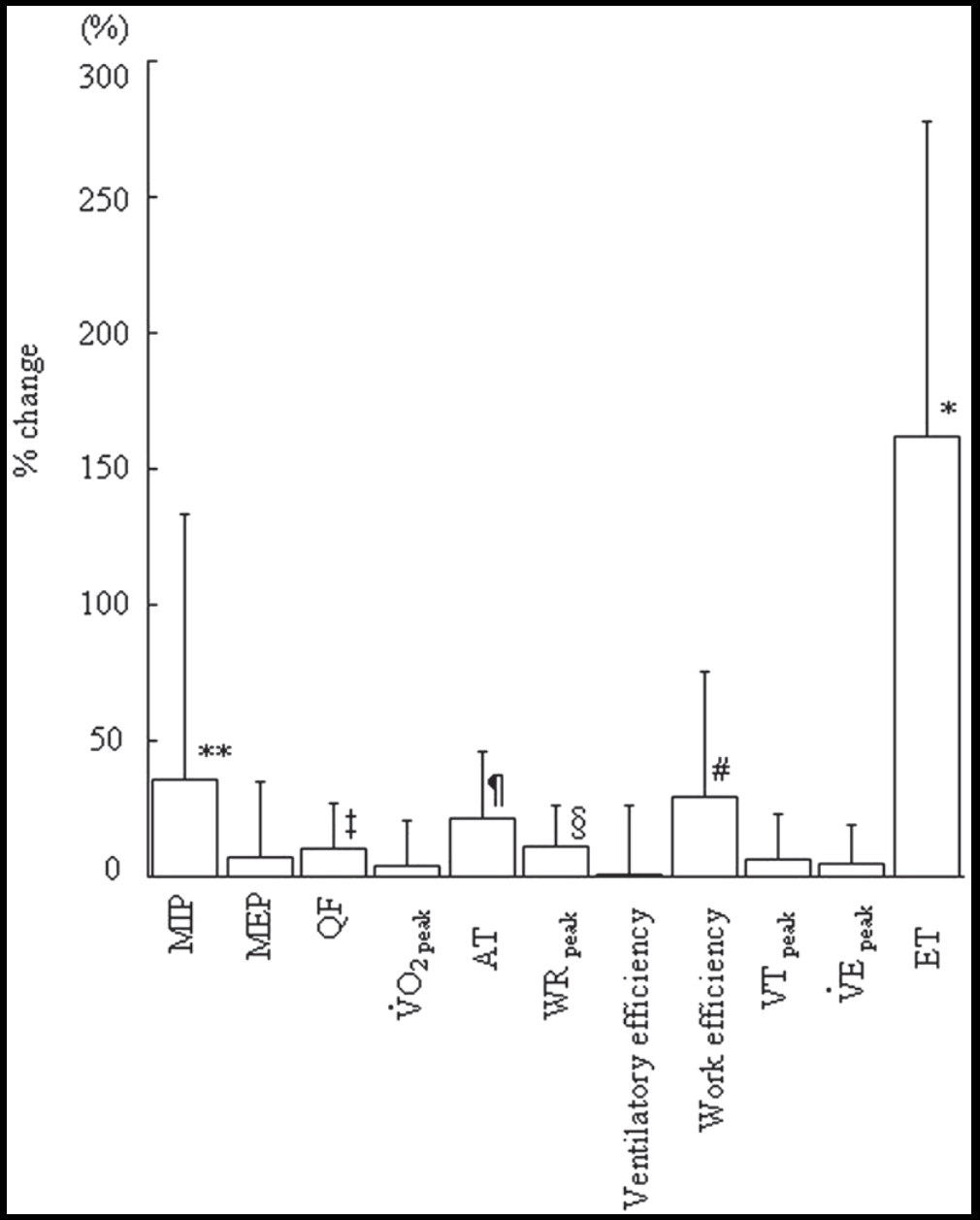


ATS Consensus. Dyspnea. AJRCCM 1999

Στην ικανότητα για άσκηση



Maltais F. AJRCCM 1996



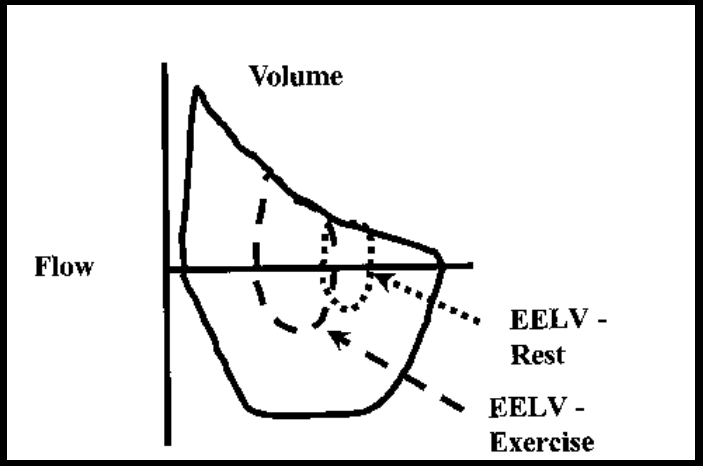
Arizono S. Intern Med 2011

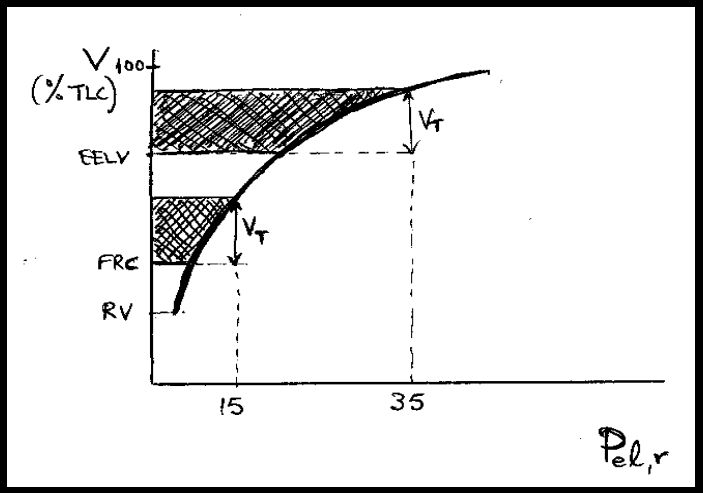
Changes in muscle function and exercise endurance in COPD after rehabilitation

ΥΠΕΡΔΙΑΤΑΣΗ & Η ΕΠΙΔΡΑΣΗ ΤΗΣ ΑΠΟΚΑΤΑΣΤΑΣΗΣ

Υπερδιάταση στη ΧΑΠ:

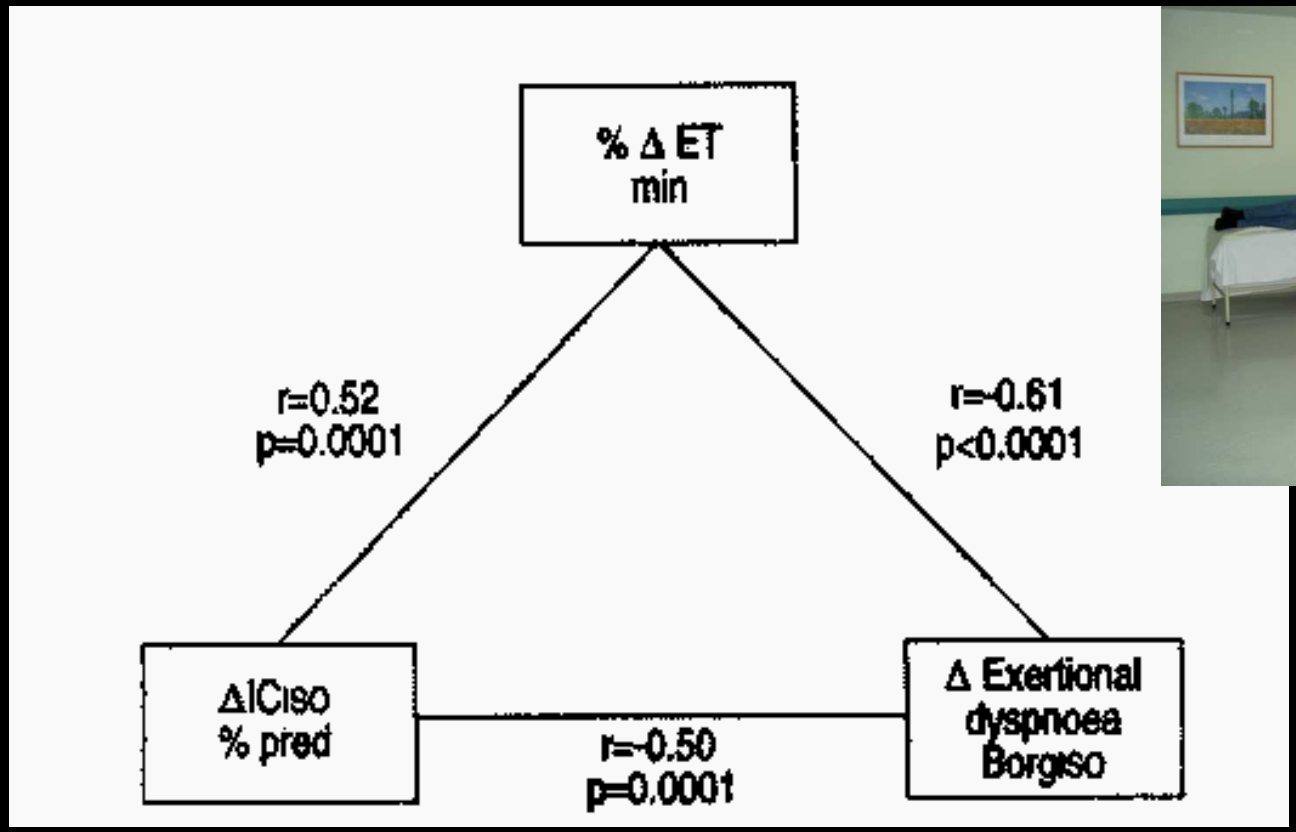
Δύσπνοια – Αυξημένο έργο αναπνοής





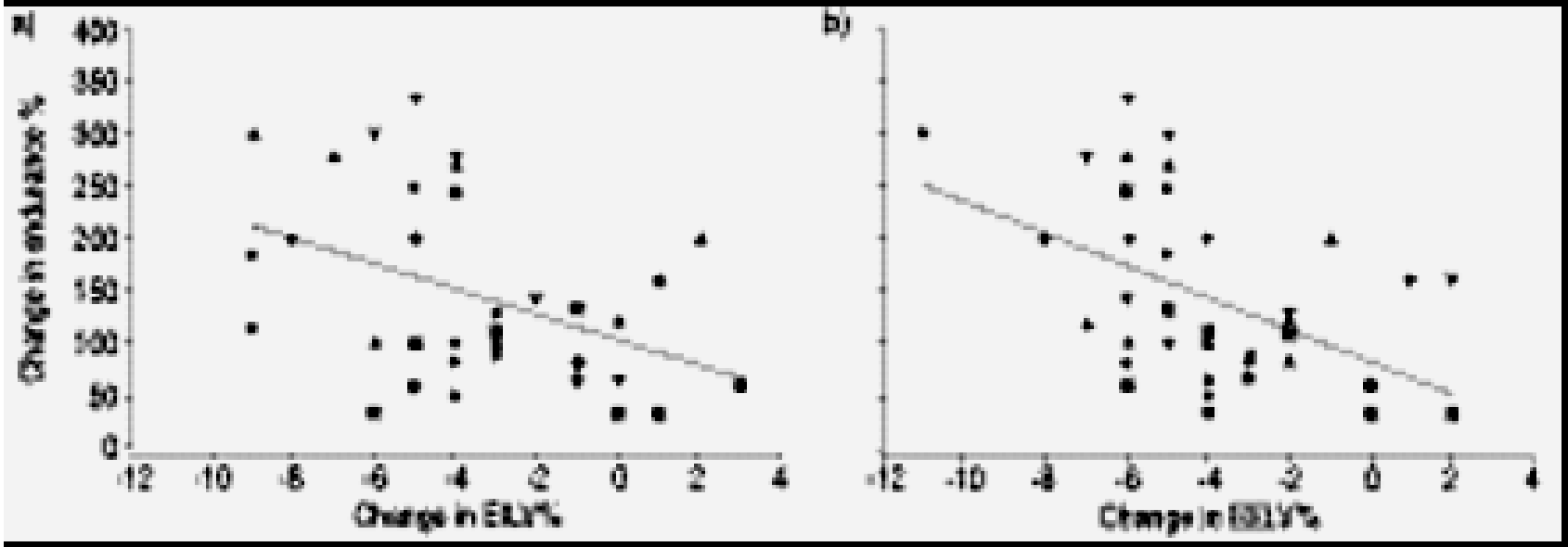
Hyperinflation in COPD:

Exertional dyspnea – Exercise endurance



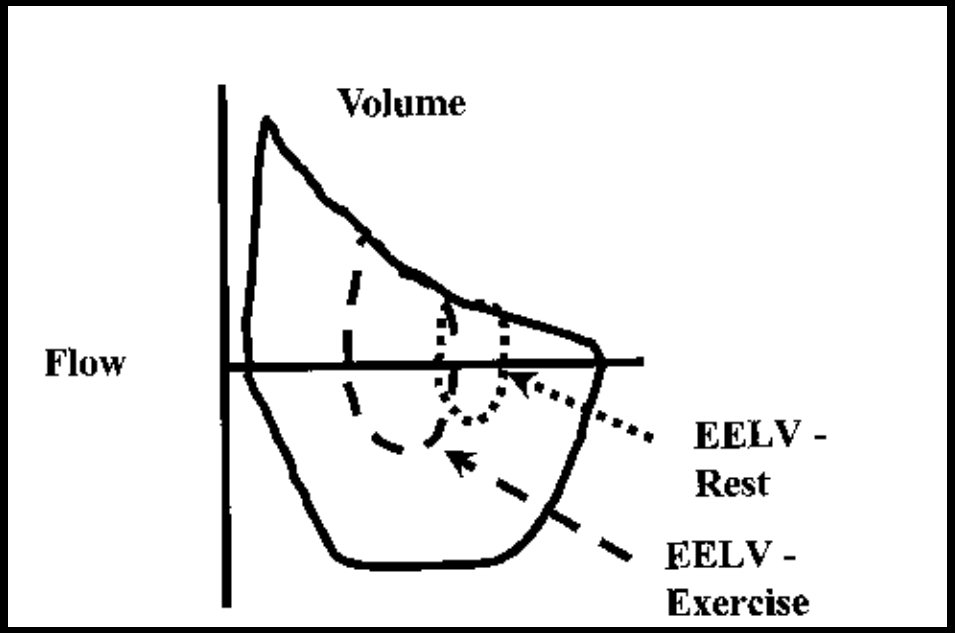
O'Donnell DE. ERJ 2004; 23: 832

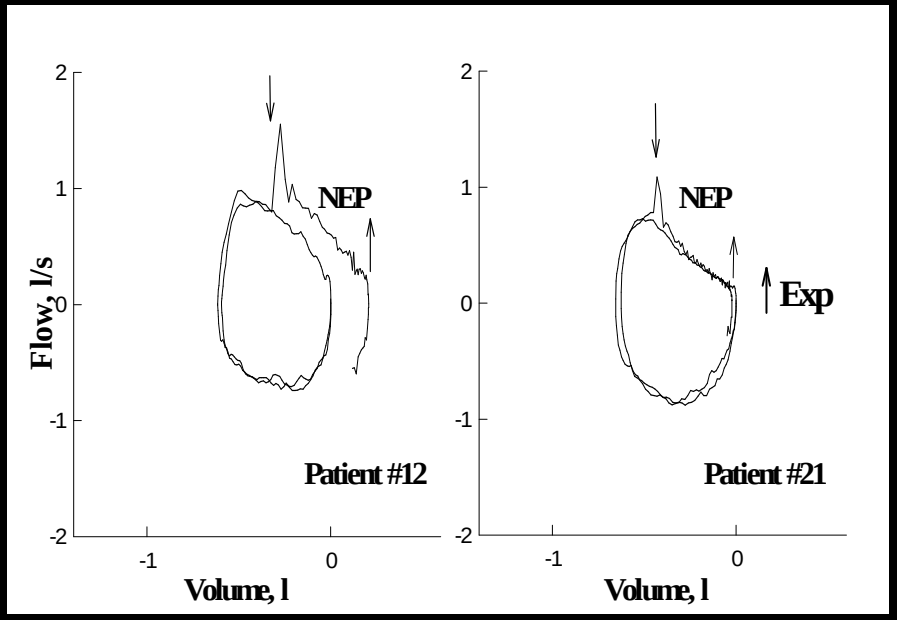
Decrease in hyperinflation results to increase in exercise endurance



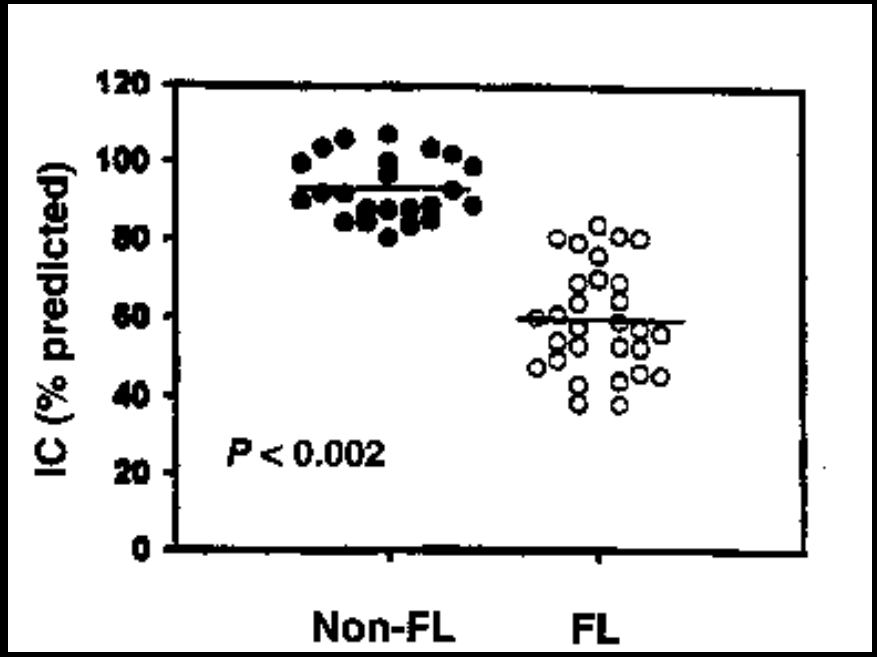
Somfay A. ERJ 2001

EFL: Κύριος μηχανισμός γένεσης της υπερδιάτασης



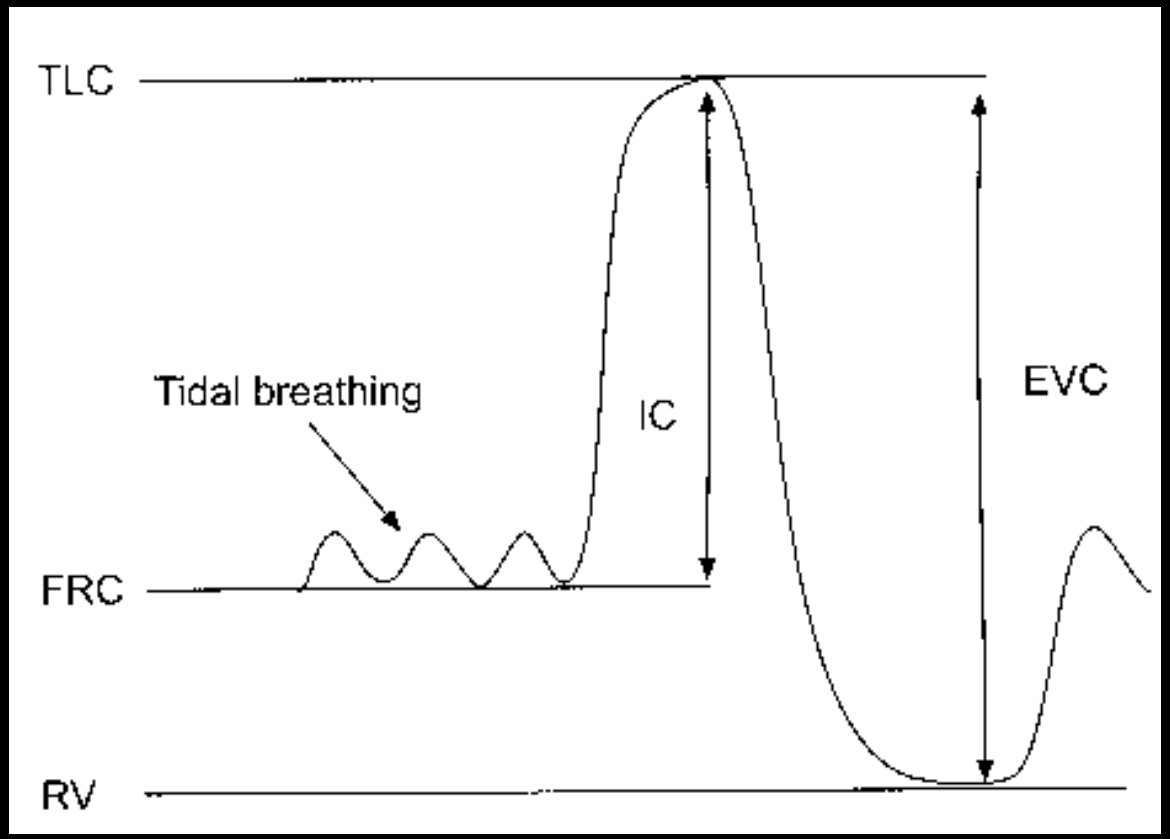


EFL: Κύριος μηχανισμός γένεσης της υπερδιάτασης

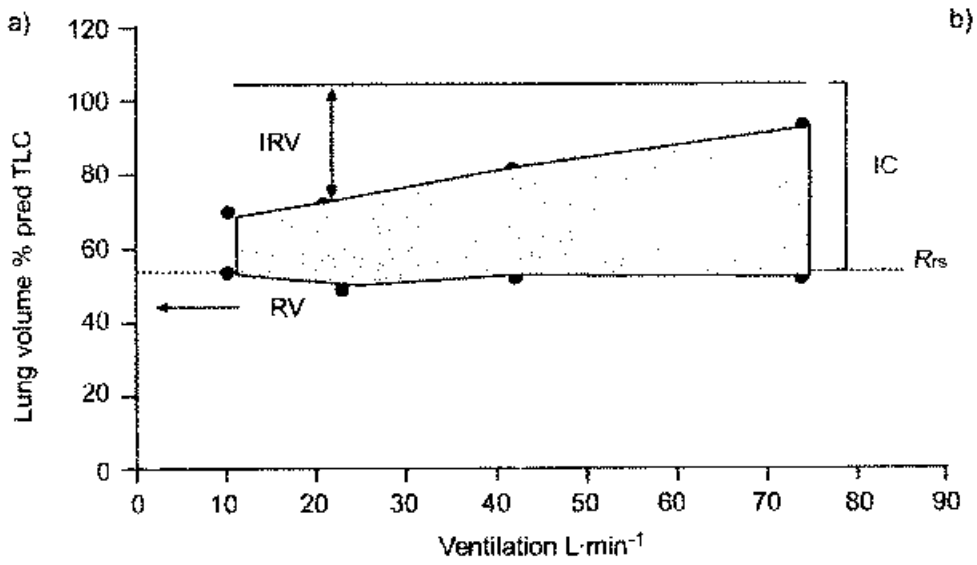


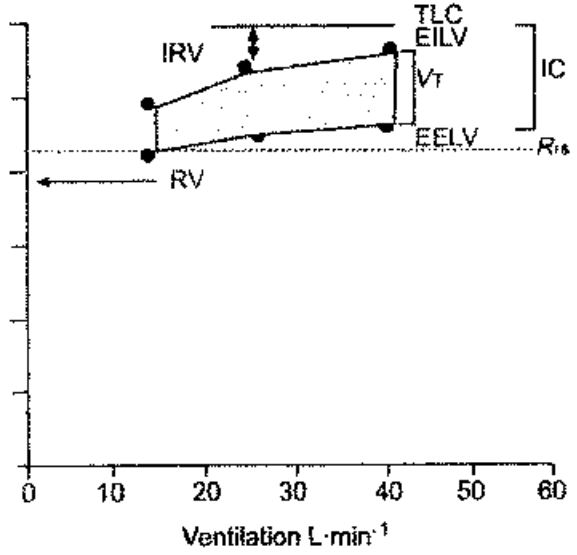
Diaz O. ERJ 2000

IC: έμμεση εκτίμηση της υπερδιάτασης

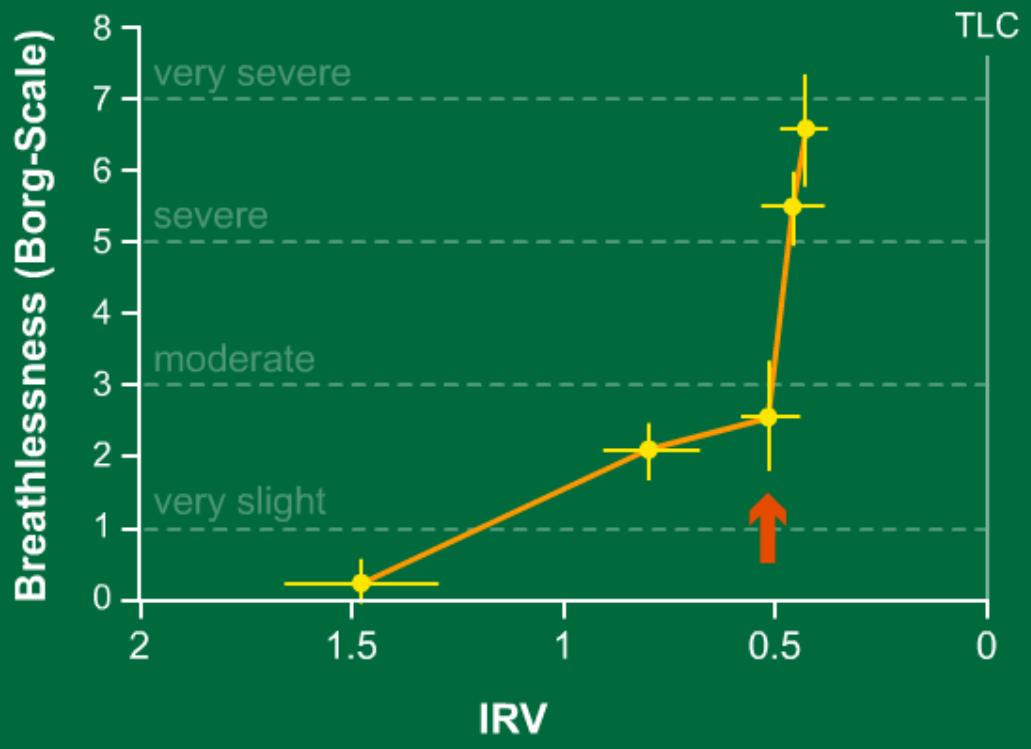


ΜΕΤΑΒΟΛΗ ΠΝΕΥΜΟΝΙΚΩΝ ΟΓΚΩΝ ΣΤΗΝ ΑΣΚΗΣΗ





Lung Volumes and Dyspnea



Mechanical threshold of Dyspnea is indicated by the abrupt rise in Dyspnea after a critical “minimal” Inspiratory Reserve Volume (IRV) is reached that prevents further expansion of Tidal Volume (VT) during exercise.

Exercise Training Decreases Ventilatory Requirements and Exercise-Induced Hyperinflation at Submaximal Intensities in Patients With COPD*

Janos Porszasz, MD, PhD; Margareta Emtner, PhD; Shinichi Goto, MD; Attila Somfay, MD, PhD; Brian J. Whipp, PhD, DSc; and Richard Casaburi, MD, PhD, FCCP

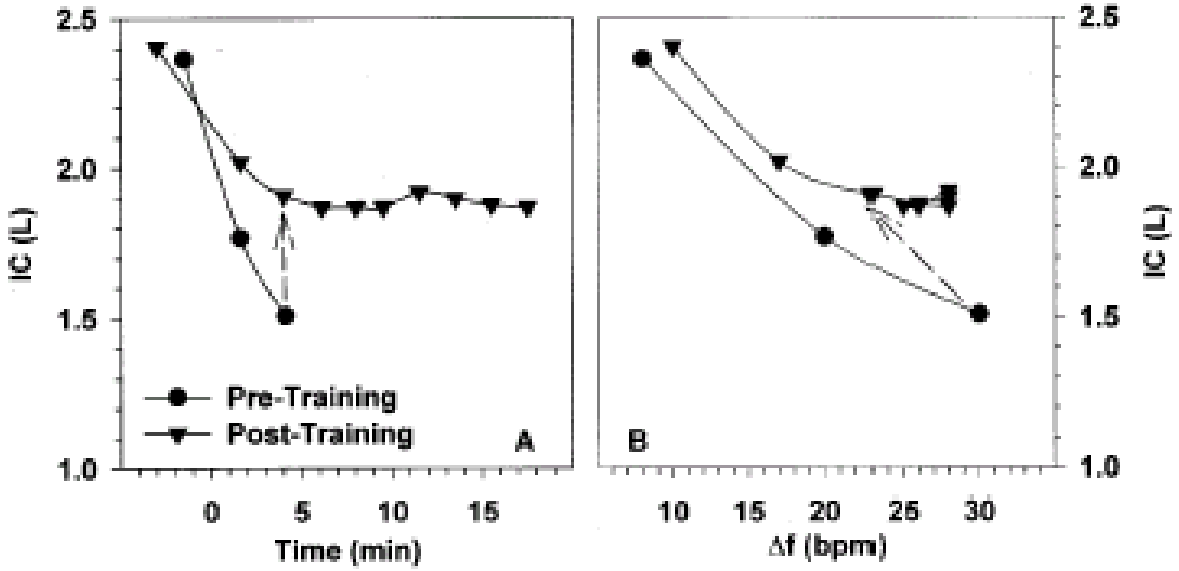


FIGURE 3. Changes in IC as a function of time (*left*, *A*) and of *f* (*right*, *B*) during CWR exercise prior to and after the training program in a representative subject. The dashed arrows connect the isotime values.

Chest 2005

Exercise Training Decreases Ventilatory Requirements and Exercise-Induced Hyperinflation at Submaximal Intensities in Patients With COPD*

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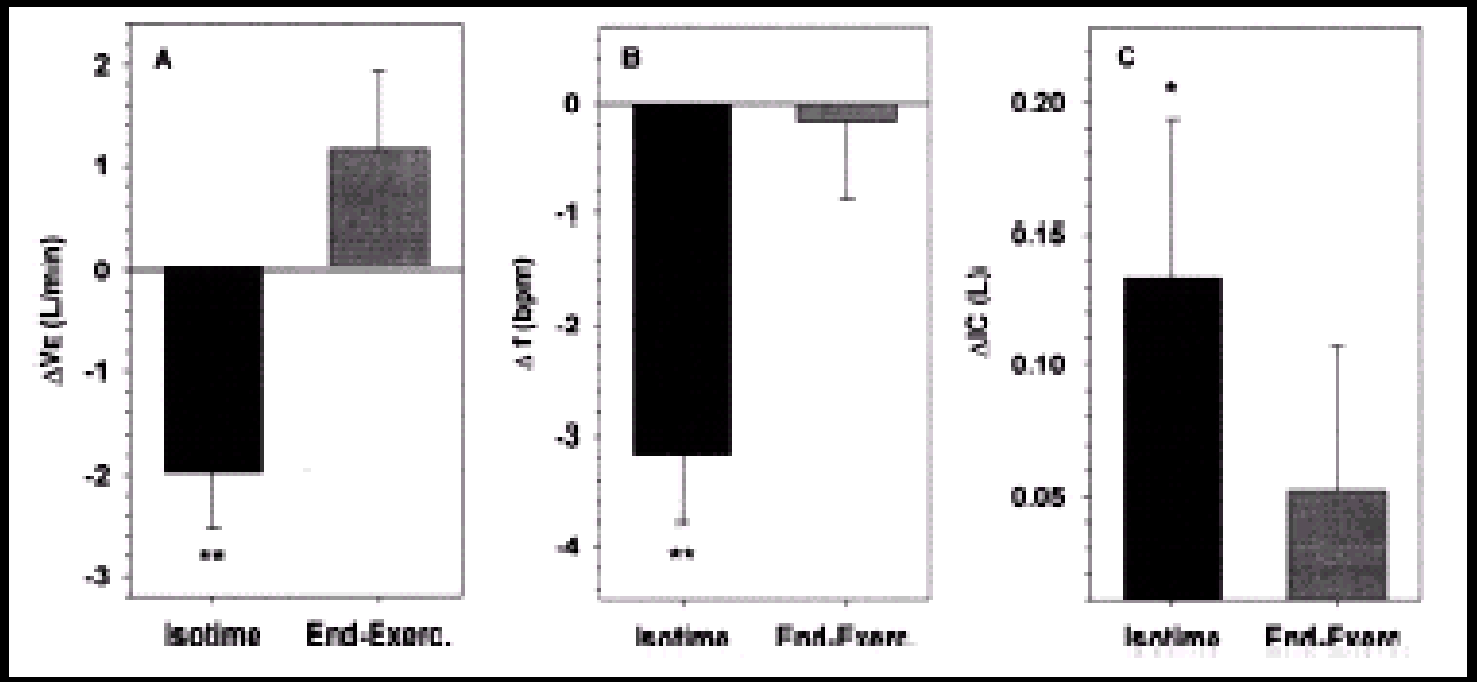

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In summary, we found that high-intensity endurance exercise training can reduce hyperinflation at a given level of exercise in patients with severe COPD. Our findings provide evidence that training, through its *f*-reducing effect, often leads to a lesser degree of hyperinflation and contributes to dramatic improvement in submaximal exercise endurance. Although

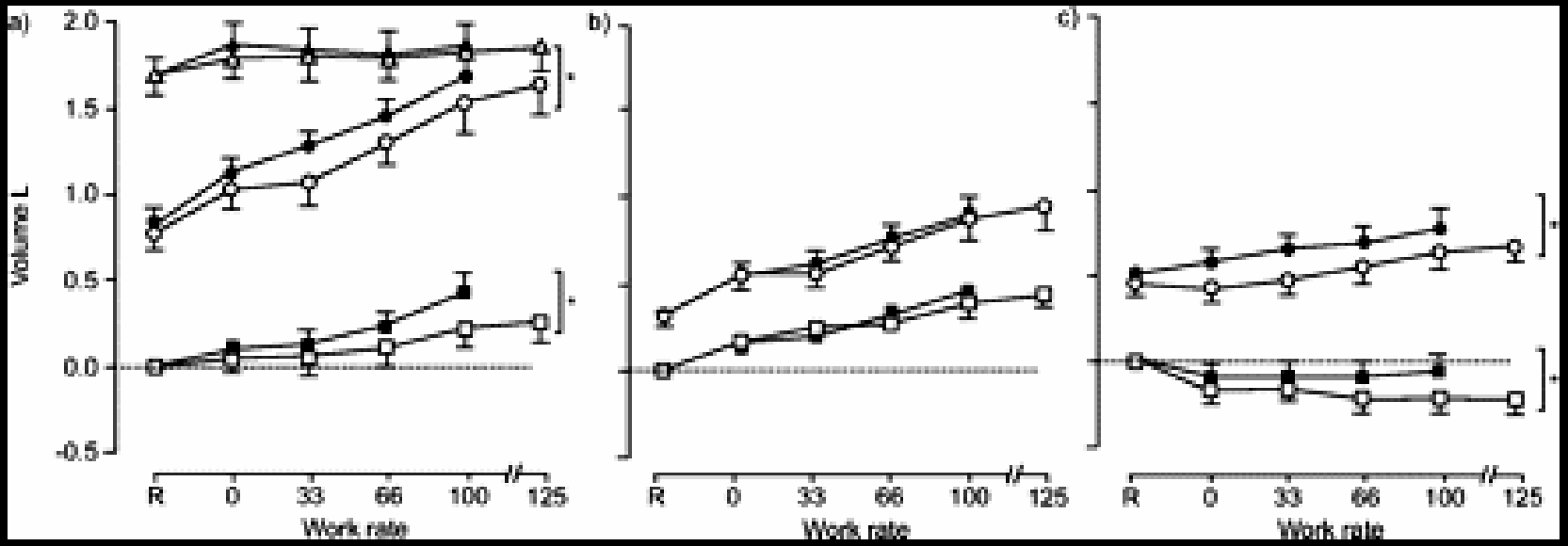
Chest 2005

A controlled trial of leg training on breathing pattern & dynamic hyperinflation in severe COPD

- 28 pts (FEV1 42%) with training (T)
- 20 control pts (FEV1 45%) without T
- 24 sessions of cycling 45 min
- Significant improvements in the T-group with respect to MIP, MEP, endurance in CWR, EELV, respiratory frequency, leg fatigue, exertional dyspnea

Puente-Maestu L. Lung 2006

Effects of rehabilitation on chest wall volume regulation during exercise in COPD patients



Georgiadou O. ERJ 2007

Effects of rehabilitation on chest wall volume regulation during exercise in COPD patients

The major findings of the present study are as follows: 1) rehabilitation reduced $\dot{V}'_E$ and f_B at a given level of exercise, as well as operational chest wall volumes; 2) the reductions of EEV_{cw} and EIV_{cw} were attributed to changes of the abdominal, and not the ribcage, compartment; and 3) the improvement in exercise capacity was similar in patients who progressively hyperinflated during exercise (EH) and those who did not (LH).

Georgiadou O. ERJ 2007

The effect of pulmonary rehabilitation on patient-centered outcomes.

	Pre-rehab	Post-rehab	Paired t-test
mMRC	2.24±1.03	1.74±0.96	P<0.001
6MWD, m	293±66	337±55	P<0.001
WRmax, watts	78±26	85±28	P=0.005
SGRQ	47±13	34±14	P<0.001
BMI, kg/m^2	28±5	28±4	NS

Ε. Θεοδωρακοπούλου, διδακτορική διατριβή

Expiratory flow limitation (EFL) status before and after rehabilitation.

	Pre-rehabilitation	Post-rehabilitation
EFL - rest, 30%, 60%, 90% Wmax	8	0
EFL – 30%, 60%, 90% Wmax	3	0
EFL – 60%, 90% Wmax	3	0
EFL – 90% Wmax	10	2
NFL- rest, 30%, 60%, 90% Wmax	18	40

Ε. Θεοδωρακοπούλου, διδακτορική διατριβή

Changes in IC pre- and post-rehabilitation according to EFL or NFL status at rest and at the various stages of exercise.

	Pre-rehabilitation IC (l, mean±SD)	Post-rehabilitation IC (l, mean±SD)	Paired t- test
Rest			
EFL→NFL (n=8)	1.89±0.44	2.15±0.42	*P<0.001*
NFL→NFL (n=34)	2.31±0.75	2.28±0.80	*NS*
	(P=0.043)		
30% WRmax			
EFL→NFL (n=11)	1.68±0.49	1.94±0.52	*P<0.001*
NFL→NFL (n=31)	2.12±0.92	2.23±0.87	*NS*
	(P=0.04)		
60% WRmax			
EFL→NFL (n=14)	1.51±0.54	1.71±0.59	*P<0.001*
NFL→NFL (n=28)	2.14±0.85	2.19±0.85	*NS*
	(P=0.017)		
90% WRmax			
EFL→NFL (n=22)	1.44±0.39	1.69±0.46	*P=0.002*
NFL→NFL (n=18)	2.15±0.81	2.17±0.89	*NS*
	(P=0.022)		

Ε. Θεοδωρακοπούλου, διδακτορική διατριβή

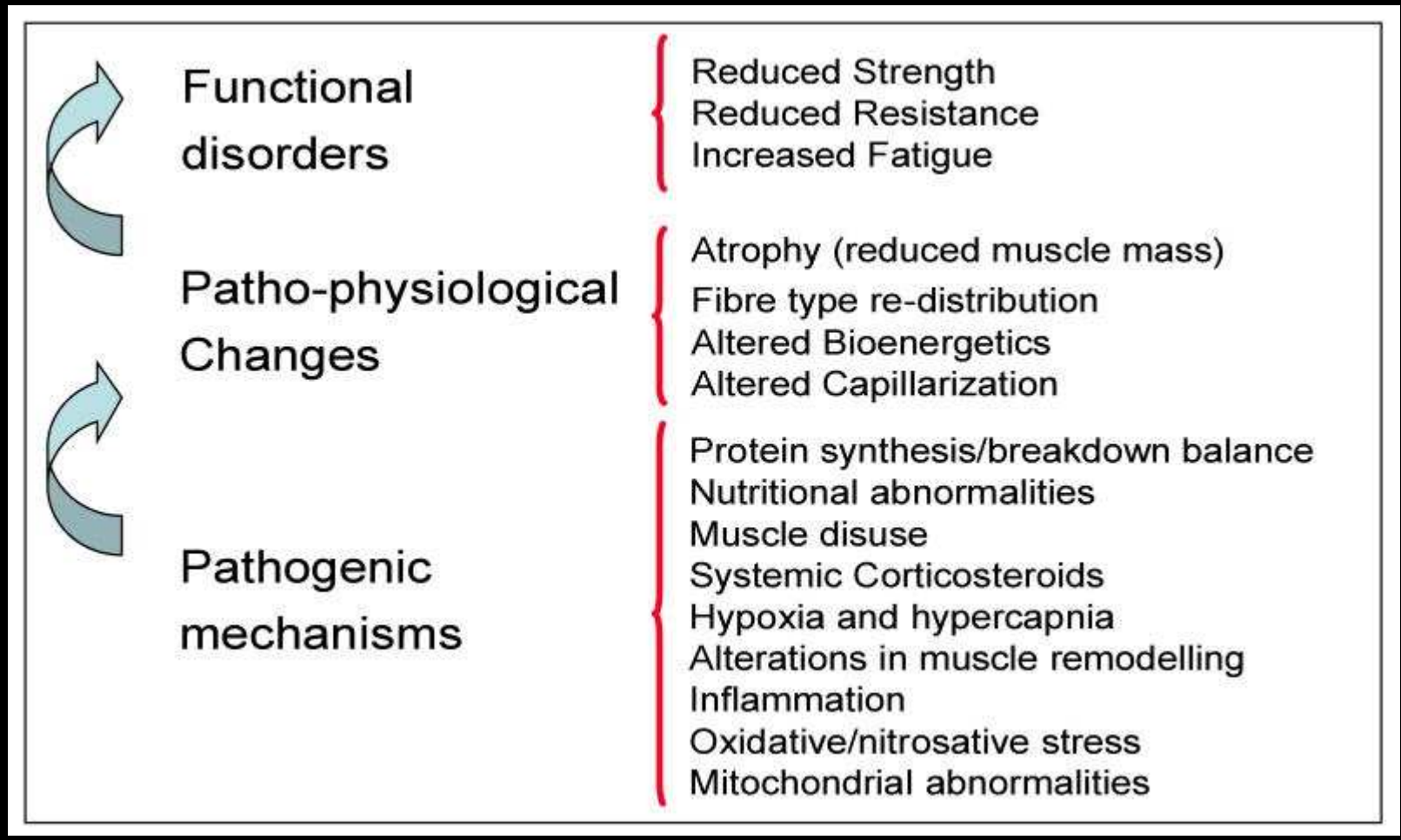
Changes in breathing pattern pre- and post-rehabilitation according to EFL or NFL status at rest and at the various stages of exercise.

	V_E-pre l/min	V_E-post l/min	p. t-test	V_T-pre L	V_T-post l	p.t-test	RR-pre bpm	RR-post bpm	p.t-test	V_T/T_i-pre l/sec	V_T/T_i-post l/sec	p.t-test
Rest												
EFL→NFL (n=8)	14.1±4.0	11.7±3.1	NS	0.85±0.23	0.71±0.21	P=0.007	17±3	17±4	NS	0.65±0.19	0.50±0.10	NS
NFL→NFL (n=34)	13.2±4.2	12.7±3.8	NS	0.77±0.28	0.78±0.27	NS	18±5	17±6	NS	0.56±0.17	0.55±0.14	NS
30% WRmax												
EFL→NFL (n=11)	17.7±1.8	14.0±1.9	P<0.001	0.90±0.17	0.73±0.21	P<0.001	20±4	20±4	NS	0.82±0.14	0.63±0.12	P=0.007
NFL→NFL (n=31)	17.4±5.8	16.6±5.6	NS	0.88±0.29	0.92±0.40	NS	21±6	20±7	NS	0.72±0.18	0.72±0.19	NS
60% WRmax												
EFL→NFL (n=14)	19.9±5.9	16.5±4.2	P=0.001	0.92±0.24	0.83±0.23	P=0.02	22±5	20±7	NS	0.92±0.20	0.75±0.13	P=0.006
NFL→NFL (n=28)	20.7±5.6	20.0±5.7	NS	1.00±0.32	0.99±0.34	NS	22±6	21±6	NS	0.87±0.21	0.84±0.20	NS
90% WRmax												
EFL→NFL (n=22)	20.3±5.1	17.0±3.7	P<0.001	0.98±0.25	0.86±0.24	P<0.001	22±5	22±6	NS	0.95±0.24	0.74±0.15	P<0.001
NFL→NFL (n=18)	22.3±6.2	23.8±6.3	NS	1.11±0.38	1.23±0.38	NS	21±7	20±5	NS	0.92±0.18	0.96±0.22	NS

Ε. Θεοδωρακοπούλου, διδακτορική διατριβή

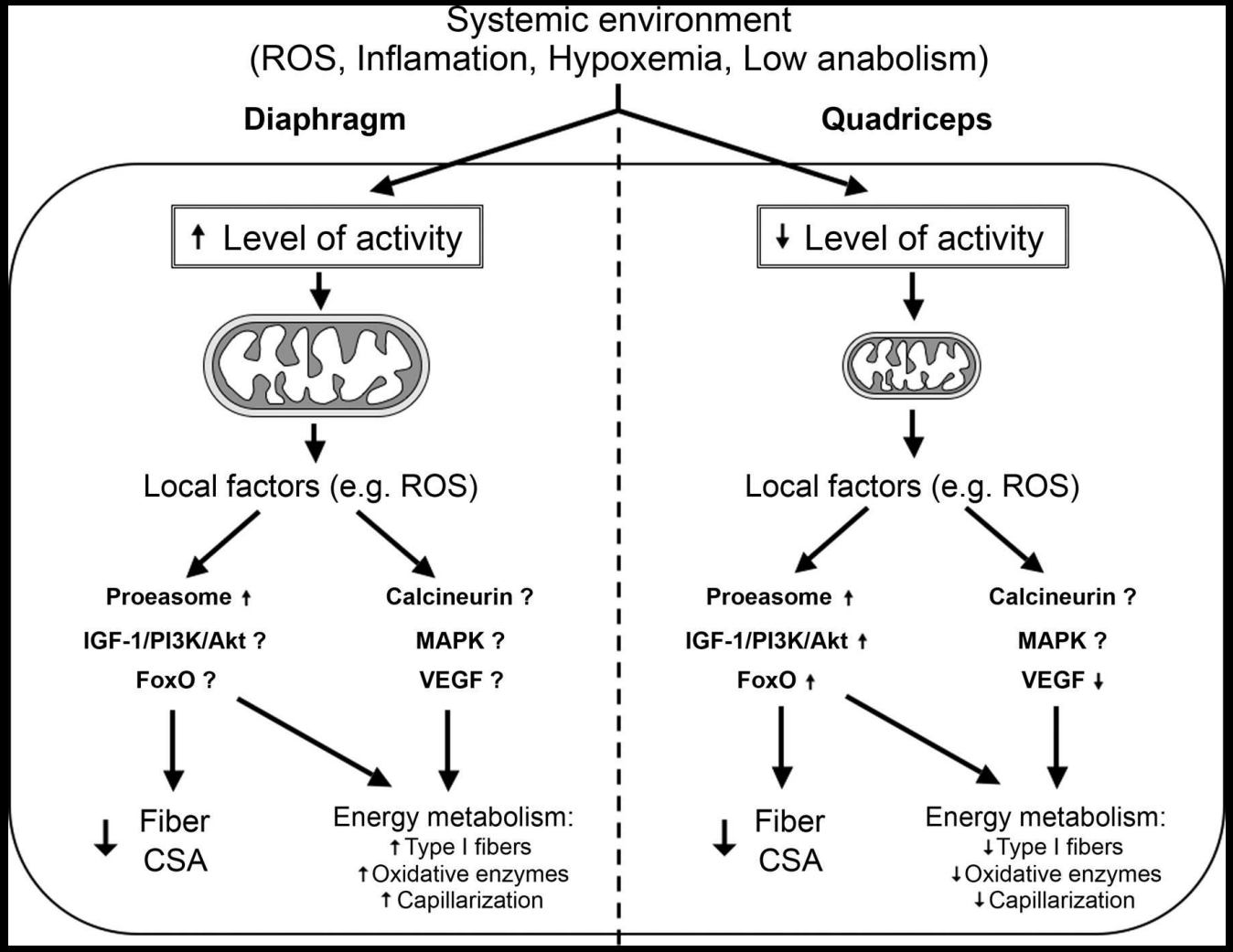
ΔΥΣΛΕΙΤΟΥΡΓΙΑ ΠΕΡΙΦΕΡΙΚΩΝ ΜΥΩΝ & ΑΠΟΚΑΤΑΣΤΑΣΗ

Δυσλειτουργία περιφερικών μυών στη ΧΑΠ



Rabinovich RA. Curr Opin Pulm Med 2010

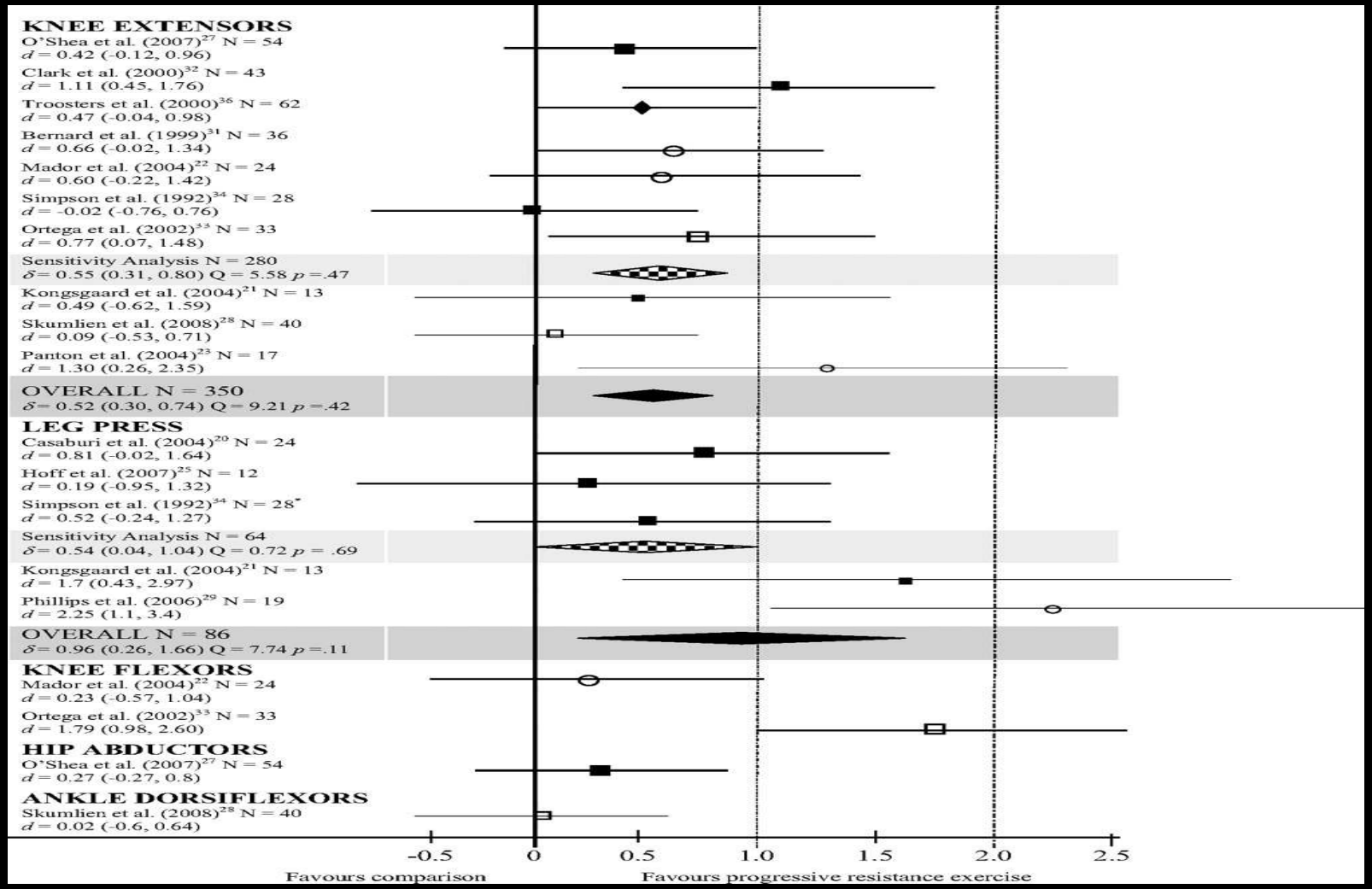
Interactions between systemic factors, activity level, and mitochondrial function in the phenotypic expression of diaphragmatic and quadriceps changes in COPD.



Caron M et al. J Appl Physiol 2009;107:952-961

Journal of Applied Physiology

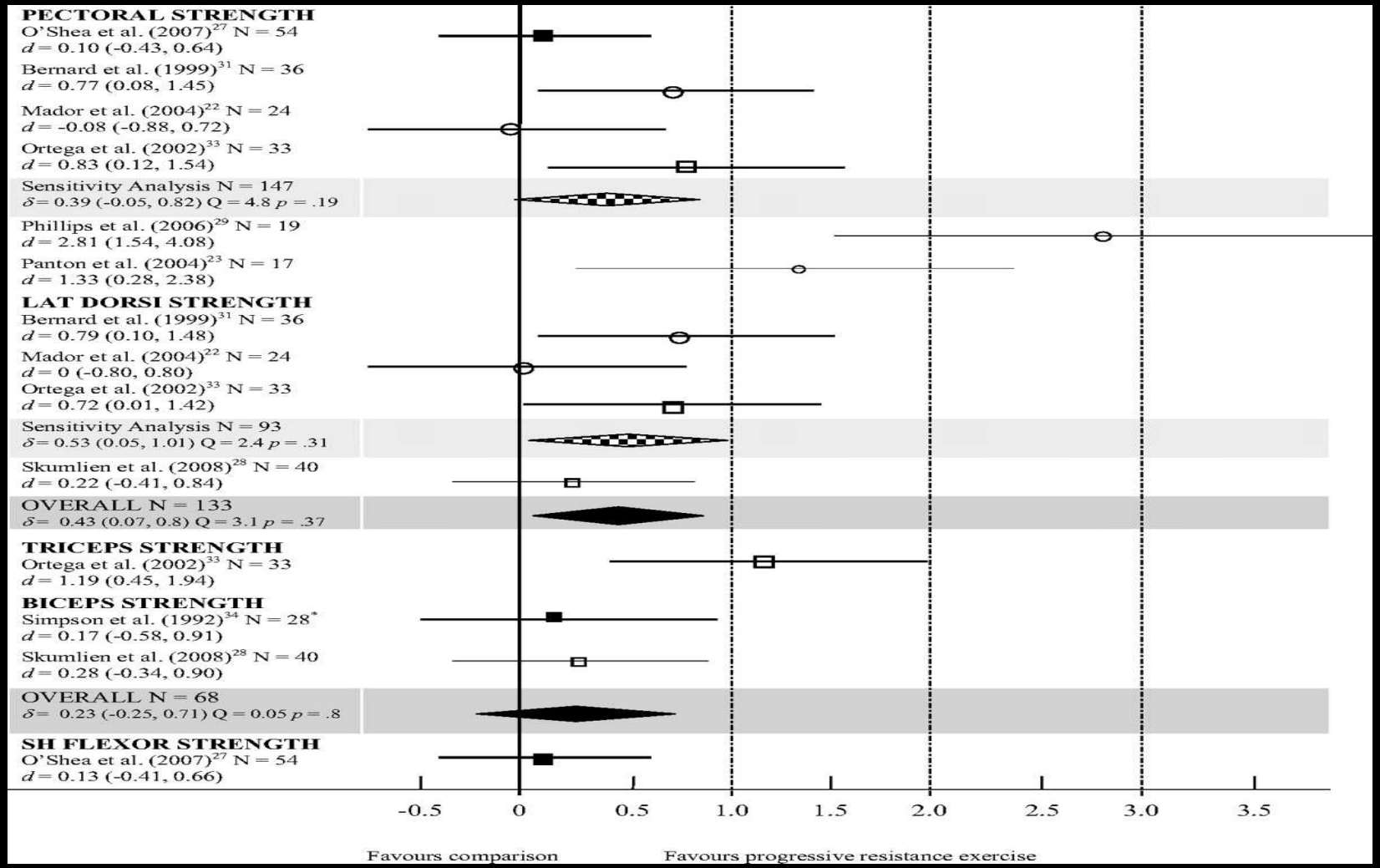
Standardized mean differences with 95% CIs for measures of leg strength. ■ = progressive resistance exercise compared with no intervention; □ = progressive resistance exercise compared with aerobic training; ○ = progressive resistance exercise/aerobic train...



O'Shea S D et al. Chest 2009;136:1269-1283

CHEST
The Cardiopulmonary and Critical Care Journal

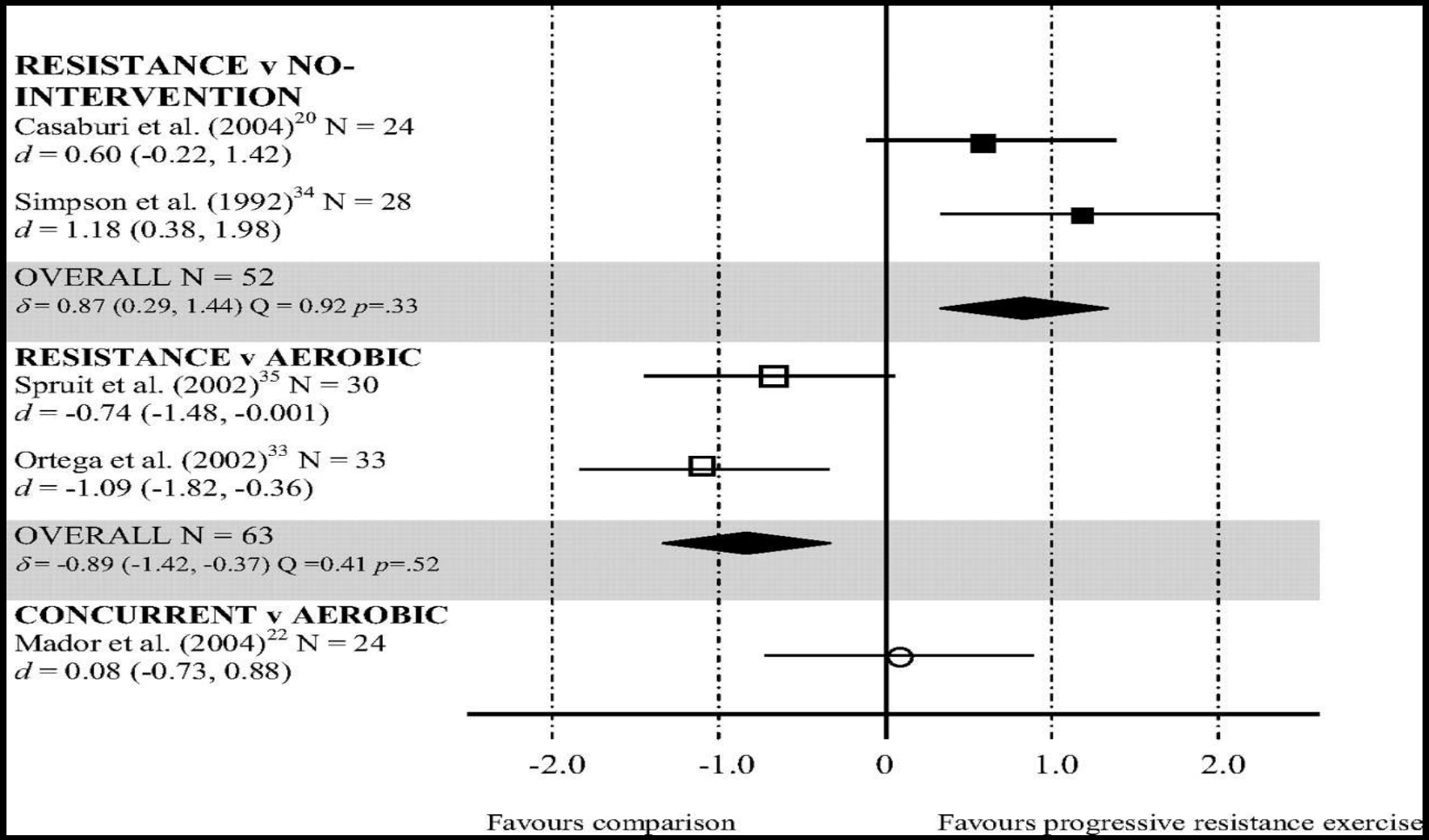
Standardized mean differences with 95% CIs for measures of arm strength. ■ = progressive resistance exercise compared with no intervention; □ = progressive resistance exercise compared with aerobic training; ○ = progressive resistance exercise/aerobic train...



O'Shea S D et al. Chest 2009;136:1269-1283

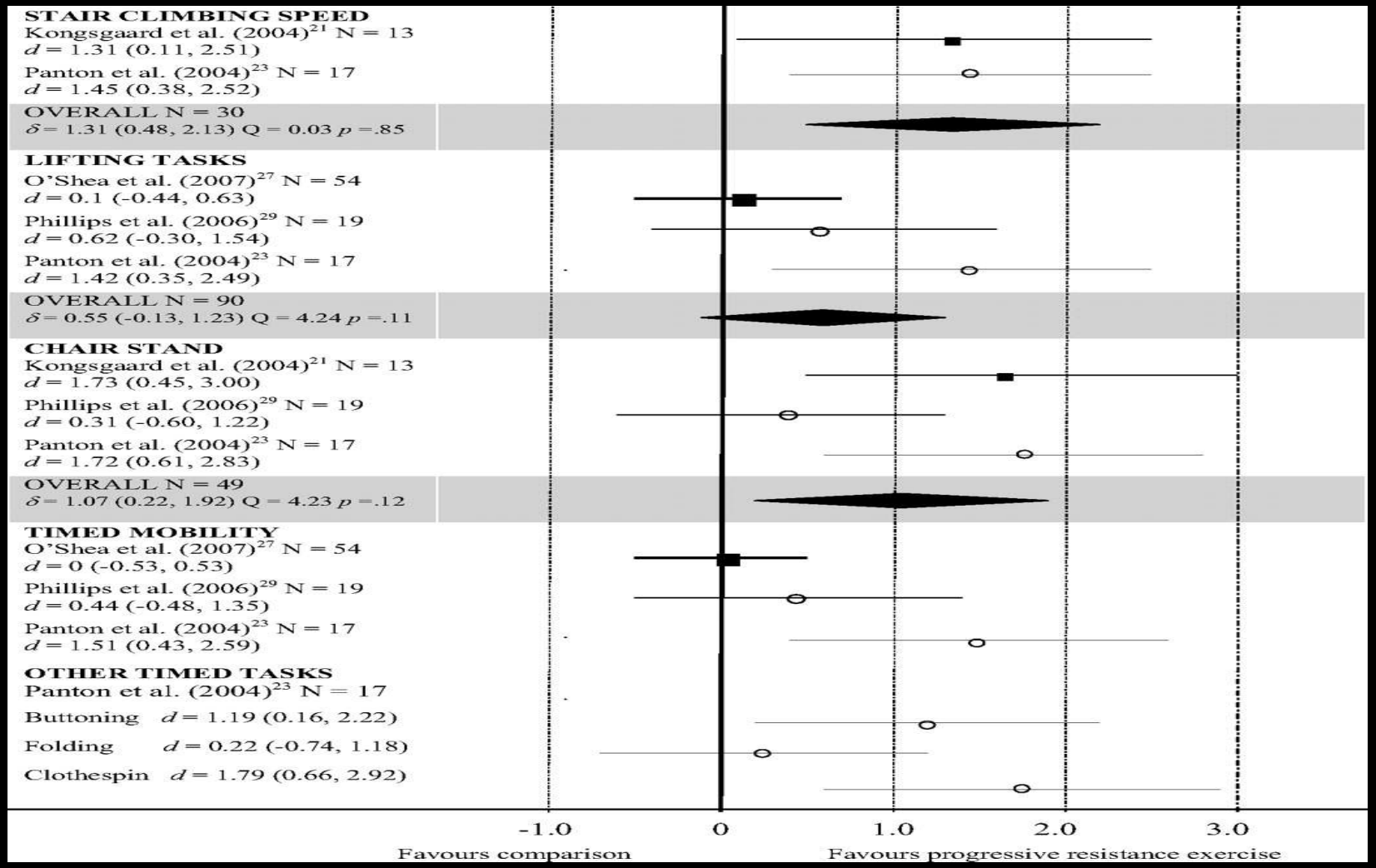
CHEST
The Cardiopulmonary and Critical Care Journal

Standardized mean differences with 95% CIs for measures of walking endurance. ■ = progressive resistance exercise compared with no intervention; □ = progressive resistance exercise compared with aerobic training; ○ = progressive resistance exercise/aerobic ...



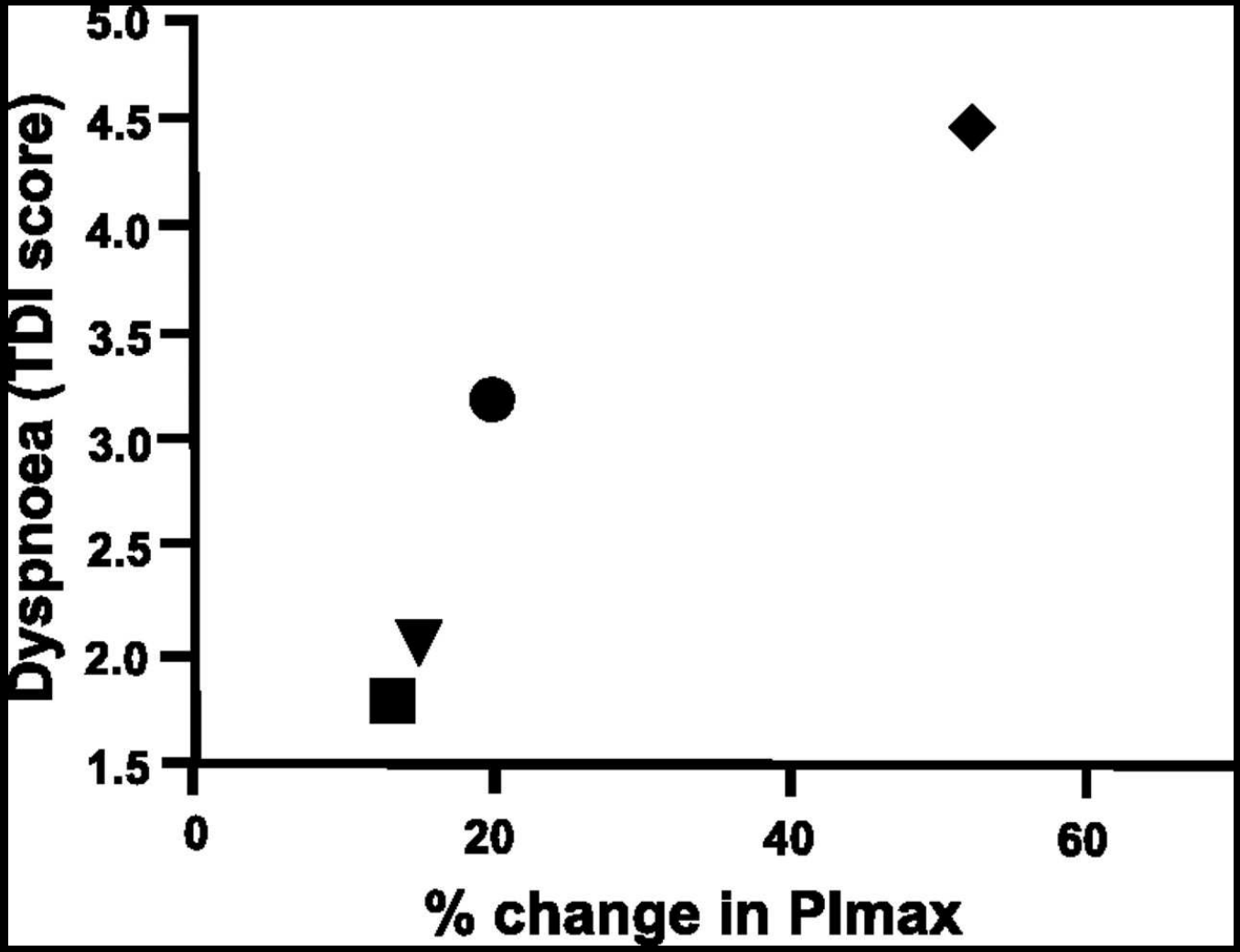
O'Shea S D et al. Chest 2009;136:1269-1283

Standardized mean differences with 95% CIs for measures of activity. ■ = progressive resistance exercise compared with no intervention; □ = progressive resistance exercise compared with aerobic training; ○ = progressive resistance exercise/aerobic training ...



O'Shea S D et al. Chest 2009;136:1269-1283

Relationship between improvement in dyspnea and percent change in maximum inspiratory pressure (Pimax) in four studies using transitional dyspnea index (TDI) as an outcome measurement (61–64).



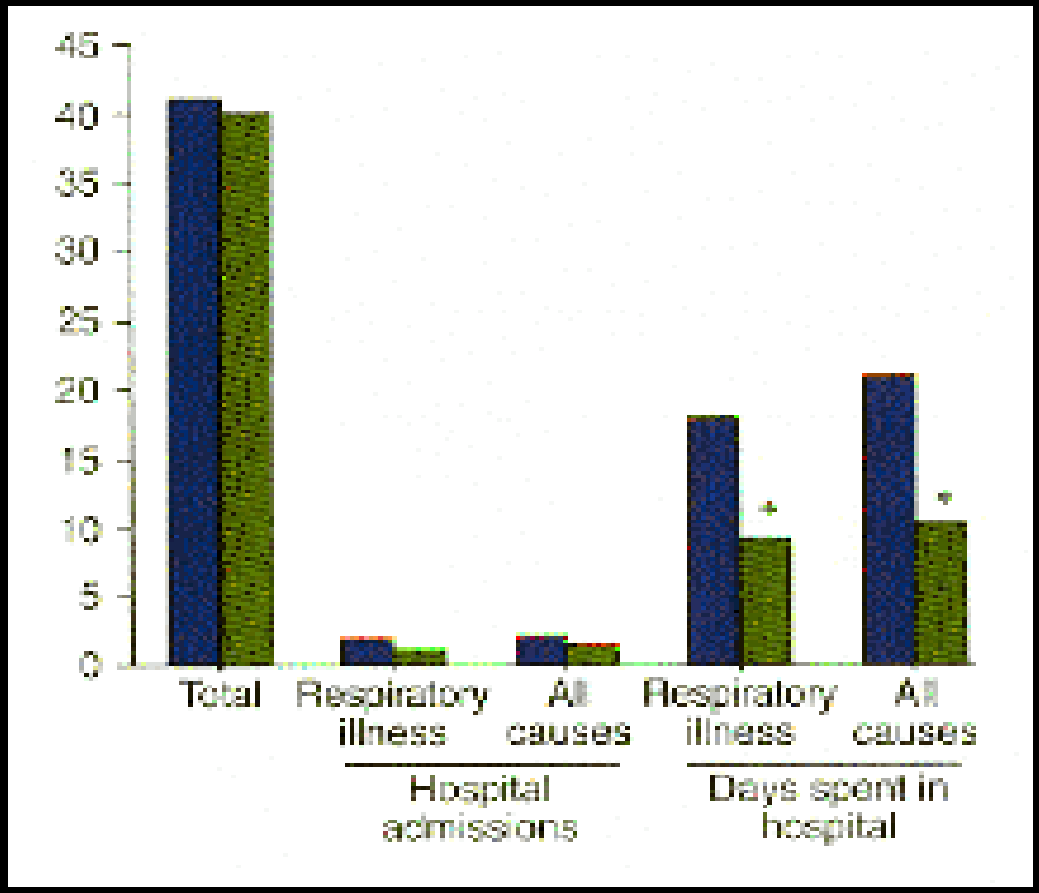
Decramer M J Appl Physiol 2009;107:971-976

Journal of Applied Physiology

Μηχανισμοί δύσπνοιας & μειωμένης ικανότητας άσκησης στη ΧΑΠ – Επίδραση αποκατάστασης

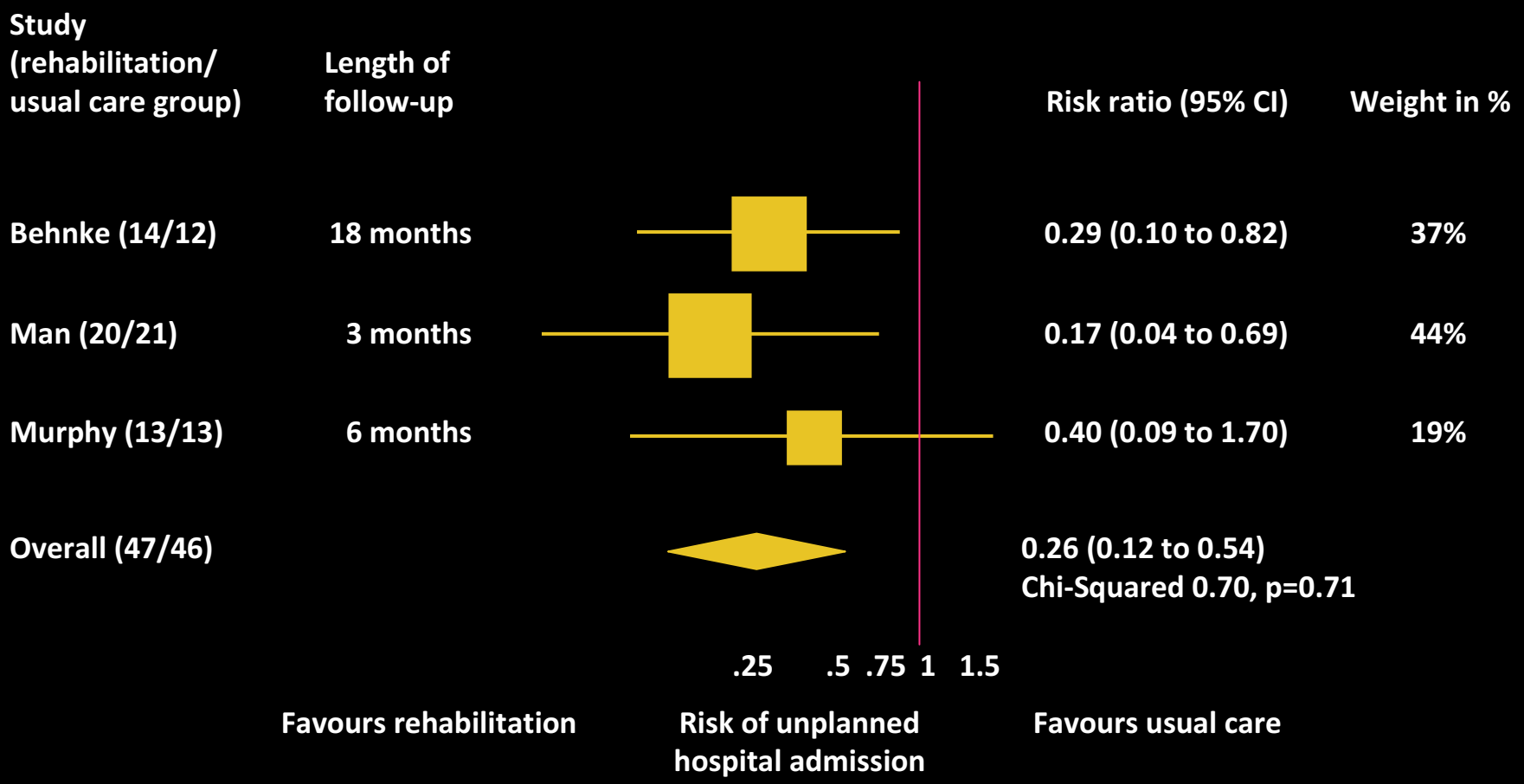
- Μηχανική δυσλειτουργία (υπερδιάταση, απόφραξη)
- Υποξαιμία - Υπερκαπνία
- Καρδιακή δυσλειτουργία
- Δυσλειτουργία σκελετικών μυών – Deconditioning
- Δυσλειτουργία διαφράγματος - Υπερδιάταση
- Διαταραχές θρέψης (↓FFM ανεξάρτητα από BMI)
- Άγχος – Πανικός - Κατάθλιψη
- Αντίληψη συμπτώματος
- Διάφορα (Αναιμία – Οστεοπόρωση κλπ)

ΠΑΡΟΞΥΝΣΕΙΣ & ΑΠΟΚΑΤΑΣΤΑΣΗ



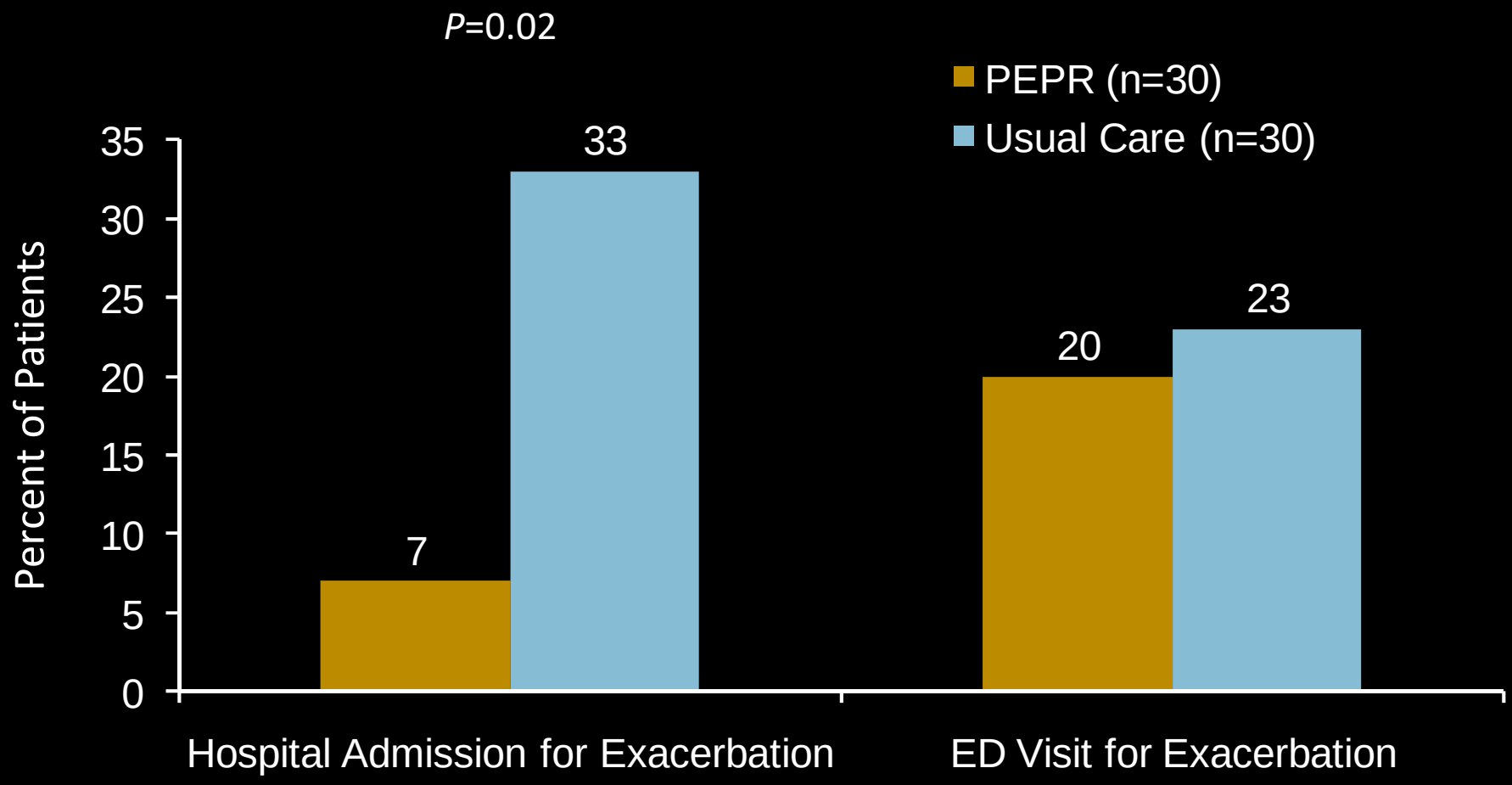
Griffiths TL. Thorax 2001

Μείωση της πιθανότητας για νοσηλεία κατά 75%



Puhan MA, et al. Respir Res. 2005;6:54. Reproduced with permission from Biomed Central.

Effects of Pulmonary Rehabilitation after Hospital Admission for an Exacerbation



PEPR = post-exacerbation pulmonary rehabilitation

Adapted from Seymour JM, et al. *Thorax*. 2010;65:423-428.

Αποκατάσταση μετά την παρόξυνση

- Μεταανάλυση 9 μελετών – 432 ασθενείς
- Η αποκατάσταση είναι ιδιαίτερα αποτελεσματική και ασφαλής παρέμβαση που μειώνει τις εισαγωγές στα νοσοκομεία & θνητότητα και βελτιώνει την ποιότητα ζωής σε ασθενείς με πρόσφατη παρόξυνση ΧΑΠ

Puhan MA. Cochrane Database Syst Rev 2011

ΨΥΧΟΛΟΓΙΚΟ ΠΡΟΦΙΛ & ΑΠΟΚΑΤΑΣΤΑΣΗ

Anxiety & Depression Prevalence in COPD

Anxiety

Prevalence	Study
32%	Janssen DJA. Chronic Respir Dis 2010
6%	Kessler R. ERJ 2011
24.5%	Moussas G. Ann Gen Psych 2008
22%	Deslauriers MA. Arch Psychol Chron Dis 2010
30%	Humboldt G. J COPD 2007

Depression

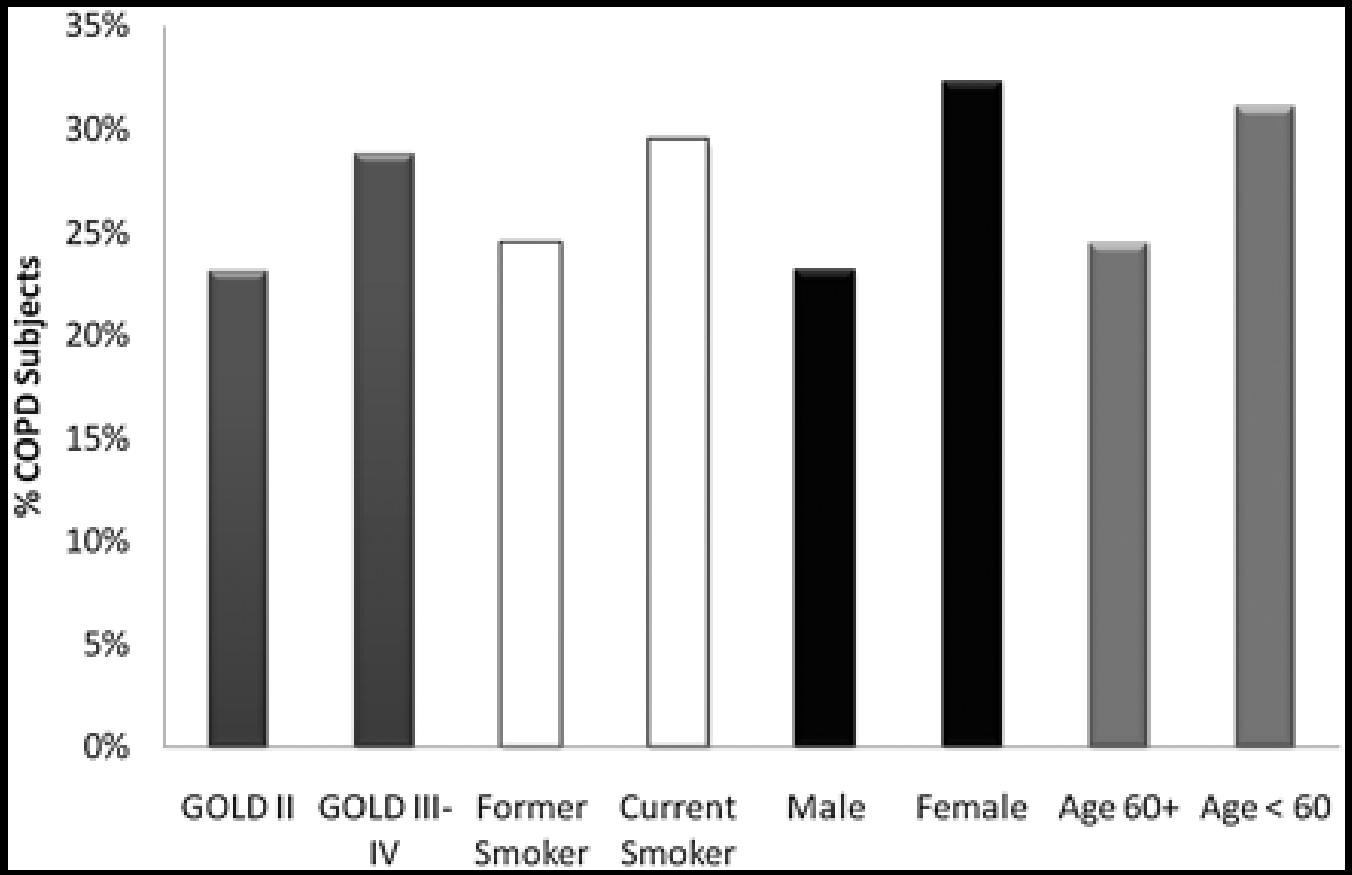
Prevalence	Study
27%	Janssen DJA. Chronic Respir Dis 2010
26%	Hanania NA. ECLIPSE. AJRCCM 2011
9%	Kessler R. ERJ 2011
44%	Ng TP. Arch Intern Med 2007
55%	Moussas G. Ann Gen Psych 2008

Differences due to different patient populations and tools-questionnaires

Variable	COPD (*n* = *2,118*)	Smokers without COPD (*n* = *335*)	Nonsmokers (*n* = *243*)
Age, mean (SD)	63 (7)	55 (9)	54 (9)
Female sex, %	35	44	63
Current smoker, %	36	60	n/a
Post-bronchodilator FEV_1% predicted, mean (SD)	48 (16)	109 (12)	115 (14)
CES-D score, mean (SD)	11 (9)	7 (8)	6 (7)
Depression, %*	**26**	**12**	**7**
Antidepressant use, %	13	9	9
History of depression, %	16	15	14

ECLIPSE Study
Hanania NA.
AJRCCM 2011

Depression prevalence in COPD patients stratified by age, gender, smoking status and GOLD stage



ECLIPSE Study
Hanania NA.
AJRCCM 2011

Demographic and Disease-related Descriptors	CES-D ≥ 16 (*n* = *557*)	CES-D <16 (*n* = *1,561*)	*P* Value
Age, yr	62 (7)	64 (7)	<0.001
Female, %	43	32	<0.001
Body mass index, kg/m^2	27 (6)	27 (6)	0.431
Fat-free mass, kg (SD)	50 (14)	52 (13)	0.011
Current smoker, %	41	35	0.012
Pack-year history	49 (27)	49 (27)	0.618
BODE Index	3.9 (2.2)	2.9 (2)	<0.001
Exacerbation rate, prior year (PPPY)*	1.09	0.78	<0.001
Hospitalized for exacerbation in prior year, %	20	14	<0.001
3 exacerbation in prior year, %	14	8	<0.001
3 concurrent COPD medications, %	76	71	0.020
Chronic cough, %	57	47	<0.001
Chronic phlegm, %	58	49	<0.001
Cardiovascular history (includes hypertension), %	60	55	0.039
Asthma history, %	24	22	0.472
Diabetes history, %	9	11	0.203
Reflux or peptic ulcer history, %	39	27	<0.001
Osteoporosis history, %	17	12	0.001
Antidepressant use, %	22	10	<0.001
History of depression, %	35	10	<0.001

ECLIPSE Study. Hanania NA. AJRCCM 2011

Tselebis *et al. Annals of General Psychiatry* 2010, **9**:16
http://www.annals-general-psychiatry.com/content/9/1/16

ANNALS OF GENERAL PSYCHIATRY

PRIMARY RESEARCH Open Access

Prevalence of alexithymia and its association with anxiety and depression in a sample of Greek chronic obstructive pulmonary disease (COPD) outpatients

Athanasios Tselebis*[1], Epaminondas Kosmas[2], Dionisios Bratis[1], Georgios Moussas[1], Athanasios Karkanias[1], Ioannis Ilias[3], Nikolaos Siafakas[4], Alexandros Vgontzas[5] and Nikolaos Tzanakis[4,6]

Table 3: Prevalence of anxiety, alexithymia and depressive symptoms in relation to gender.

	Anxiety (STAI)	Alexithymia (TAS-20)	Mild depression (BDI 10-14)	Moderate to severe depression (BDI ≥ 15)
Male	37.1%	10.6%	25%	30.3%
Female	45.7%	17.1%	20%	54.3%
Total	38.3%	12%	24%	35.3%

BDI = Beck Depression Inventory; STAI = Spielberger Trait Anxiety Inventory; TAS-20 = Toronto Alexithymia Scale.

Tselebis A. Ann Gen Psych 2010

Psychological symptom patterns and vital exhaustion in outpatients with Chronic Obstructive Pulmonary Disease

Athanasios Tselebis, Dionisios Bratis, Epaminondas Kosmas, Maria Harikiopoulou, Elpida Theodorakopoulou, Silvia Dumitru, Georgios Moussas, Athanasios Karkanias, Ioannis Ilias, Nikolaos Siafakas, Alexandros Vgontzas and Nikolaos Tzanakis

Patients (%) with clinically significant symptoms in SCL-90-R and MQ.

Without psychopathology	44.6%
Somatization	33.8%
Obsessive-compulsive	30.9%
Interpersonal sensitivity	13.7%
Depression	36.0%
Anxiety	23.7%
Hostility	20.1%
Phobic anxiety	12.9%
Paranoid ideation	6.5%
Psychoticism	5.0%
Vital Exhaustion	51.1%

Annals General Psychiatry, in review

Rehabilitation reduces depression and enhances HRQoL in COPD patients

- 136 patients with mild-to-severe COPD
- 4 weeks PR
- HADS
- No decrease in anxiety score
- Significant reduction of the depression score ($p = 0.02$)
- 10.4% reduction in the prevalence of possible depression cases

Bratas O. Chron Respir Dis 2011

Outcomes of pulmonary rehabilitation

Outcome	Start of PR	End of PR
6-minute walking distance (m)	445.5 (90.6)	479.2 (91.7)**
Dyspnea at rest	1.7 (1.5)	1.6 (1.4)
Dyspnea after 6-minute walking test	3.6 (1.6)	3.3 (1.6)*
Dyspnea during activities (BDI/TDI)	6.5 (2.3)	3.1 (2.6)**
SF-36 physical summary score	34.4 (8.8)	37.5 (10.0)**
SF-36 mental summary score	49.4 (12.0)	52.5 (10.7)**
HADS - anxiety	6.9 (4.2)	6.2 (4.1)**
HADS - depression	6.0 (3.8)	5.6 (3.8)*

238 patients, mean age 62 yo, mean FEV1 54%

Von Leupoldt A. Chest 2011

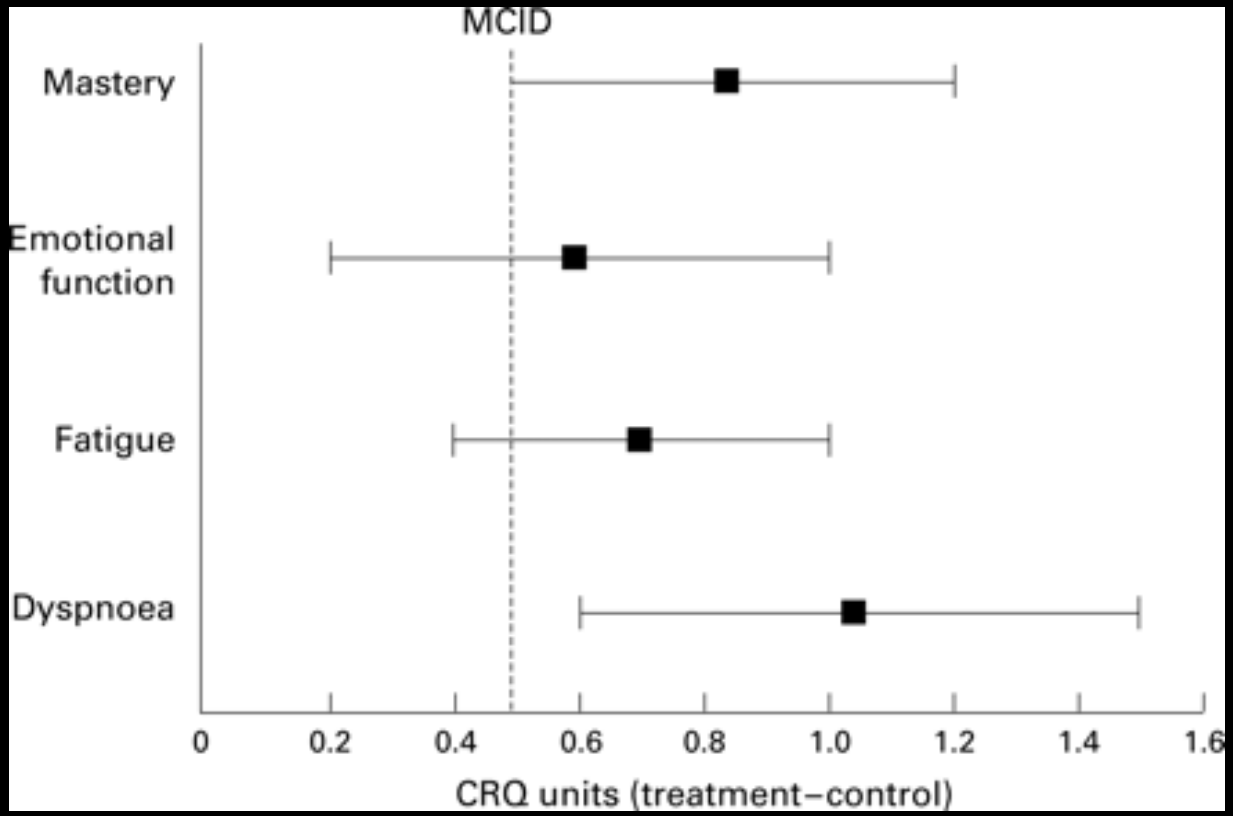
Pulmonary Rehabilitation promotes Group Psychotherapy without any pharmaceutical intervention

N=140				
SCL-90R	Pre-rehab		Post-rehab	
	%	Mean	%	Mean
SOMATIZATION	27,8%	0,71	9,3%	**0,45****
OBSESSIVE-COMPULSIVE	29,9%	0,75	15,5%	**0,49****
INTERPERSONAL SENSITIVITY	10,3%	0,44	8,2%	**0,35***
DEPRESSION	30,9%	0,81	13,4%	**0,48****
ANXIETY	21,6%	0,63	9,3%	**0,35****
ANGER-HOSTILITY	20,6%	0,53	9,3%	**0,32****
PHOBIC ANXIETY	10,3%	0,33	6,2%	**0,18****
PARANOID IDEATION	11,3%	0,42	11,3%	0,33
PSYCHOTICISM	2,1%	0,15	2,1%	0,13
T test paired :*p<0.05 ,**p<0.01				

Tselebis A et al. Ann Gen Psychiatry, in press

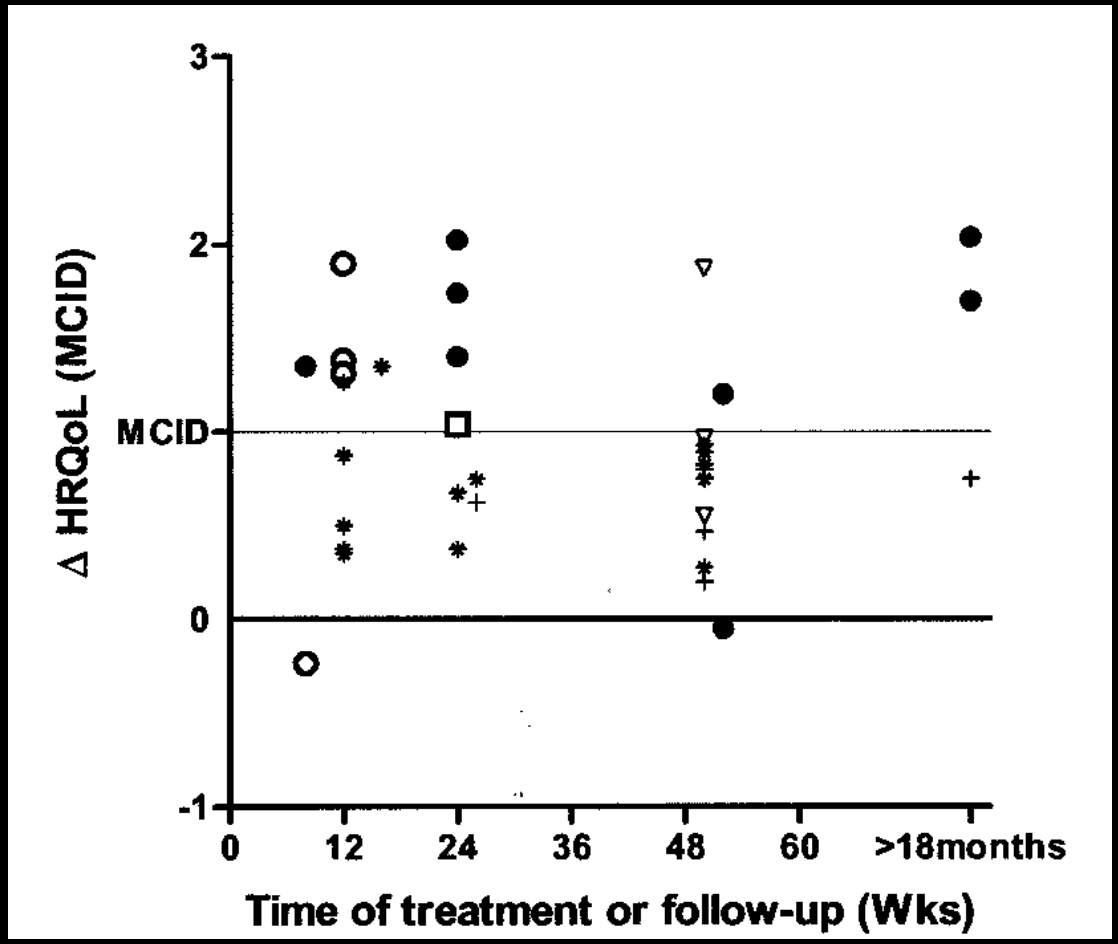
ΠΟΙΟΤΗΤΑ ΖΩΗΣ & ΑΠΟΚΑΤΑΣΤΑΣΗ

ΕΠΙΔΡΑΣΗ ΑΠΟΚΑΤΑΣΤΑΣΗΣ ΣΕ ΠΟΙΟΤΗΤΑ ΖΩΗΣ



Lacasse Y. Lancet 1996

ΕΠΙΔΡΑΣΗ ΣΕ ΠΟΙΟΤΗΤΑ ΖΩΗΣ



Troosters T. AJRCCM 2005

Η ΣΥΜΜΟΡΦΩΣΗ ΣΤΗΝ ΑΠΟΚΑΤΑΣΤΑΣΗ ???

Compliance to treatment in COPD

- **Patients' compliance to the various therapeutic strategies in COPD**

  - Smoking cessation <40%
    - Hypertension ≈ 70%, Coronary disease ≈ 60%
  - Flu vaccination <70%
  - Inhaled medication <50%
  - **Rehabilitation <30%**
  - Oxygen treatment <50%

Health in Europe Survey, 2006

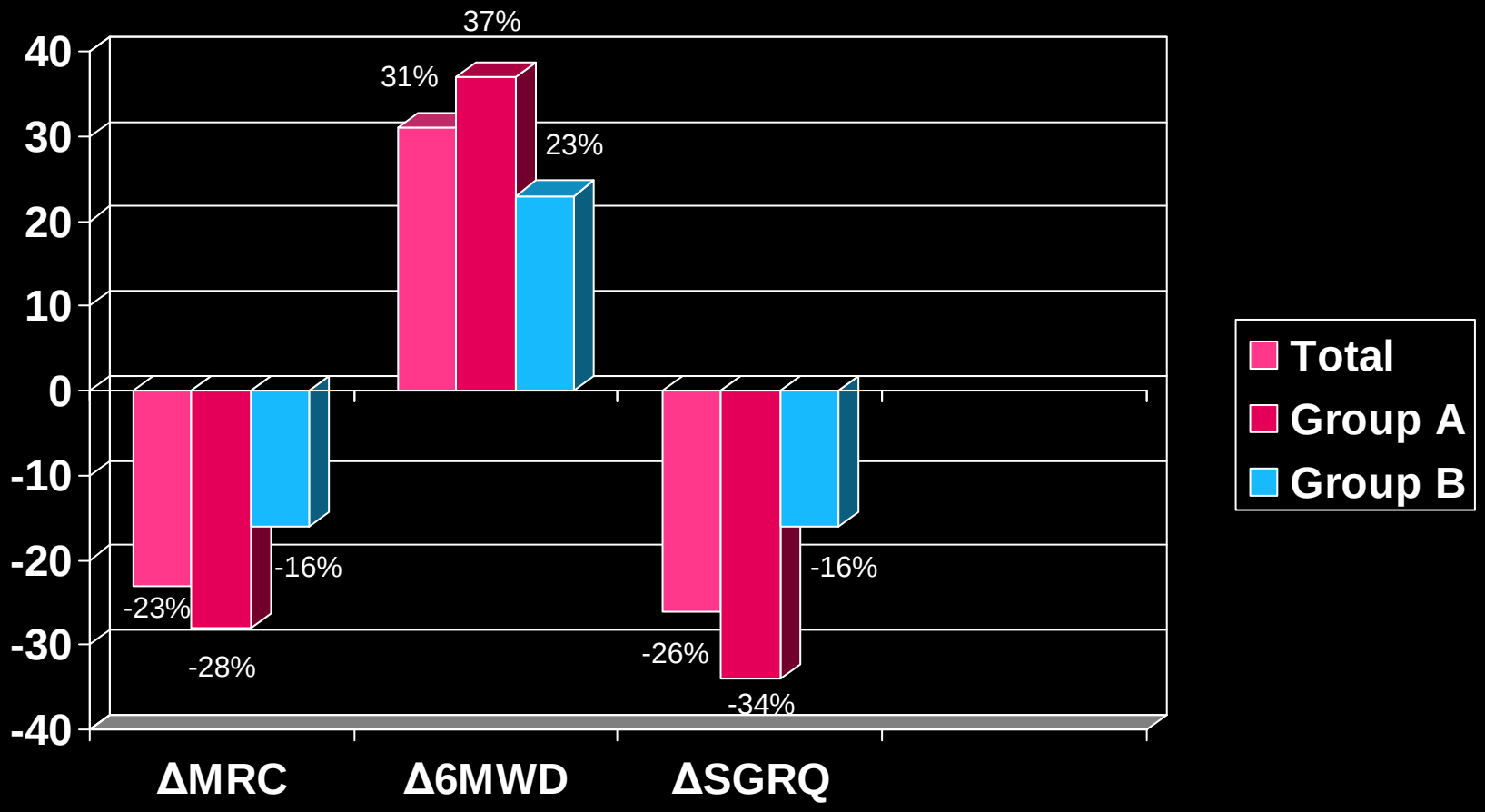
Results-1

- 85 consecutive patients (69 M; 16 F) who attended ≥ 10 sessions of PR
- Age 63±9 yrs
- FEV1 42 ±12 %pred (GOLD II – IV)

- Stratified according to their adherence into 2 groups (no difference with respect to age, FEV1 and Charlson index of comorbidities):
  - **Group A** (attended 18-25 sessions, N=48)
  - **Group B** (attended 10-17 sessions, N=37)

Σ. Ντουμίτρου, διδακτορική διατριβή

Change (%) pre- & post-PR in MRC, 6MWD, SGRQ



Σ. Ντουμίτρου, διδακτορική διατριβή

Conclusion

- It seems that compliance to PR plays a major role in determining the effects of PR in chronic dyspnea, exercise capacity and quality of life.
- Therefore, any attempt to predict compliance in every single patient is justified, since:
  - Compliance correlates positively with the outcomes
  - PR programs have limited availability

Hypothesis

- The COPD patients who succeed to comply to the most difficult task (smoking cessation) are those who present the highest level of motivation in confronting COPD.
- It is reasonable to hypothesize that these highly motivated patients are those who are more likely to comply to other treatment strategies as well, such as pulmonary rehabilitation.

Methods

- We developed an easy-to-use test comprised by smoking history and nicotine addiction in order to define the profile of motivated and compliant patients to rehabilitation.
- This is very important since rehabilitation is a beneficial treatment but with limited availability and should be offered preferentially to patients who are expected to comply.

Σ. Ντουμίτρου, διδακτορική διατριβή

Development of the prognostic test

- Smoking history (status–intensity)
  - Current smokers
    - PY≥40, PY<40
  - Ex–smokers
    - PY≥40, PY<40
- Nicotine addiction (Fägerstrom scale, FS)
  - Mild 0–3
  - Moderate 4–6
  - Severe 7–10
- PR program (duration: 12 wks, sessions: 25)
  - Education
  - Chest physiotherapy
  - Exercise
  - Psychologic support
  - Nutritional intervention
- Compliance
  - Number of attended sessions (max=25) (excluded abstinence due to exacerbation or any other medical reason)

Σ. Ντουμίτρου, διδακτορική διατριβή

Patients

- 85 patients (69 M; 16 F)
  - 36 current smokers
    - 20 with ≥40 PY, 16 with <40 PY
    - 25 mild-to-moderate addiction (FS 0-6)
    - 11 severe addiction (FS 7-10)
  - 49 ex-smokers
    - 31 with ≥40 PY, 18 with <40 PY
    - 16 mild-to-moderate addiction (FS 0-6)
    - 33 severe addiction (FS 7-10)
- Age 63±9 yrs
- FEV1 42 ±12 %pred

Σ. Ντουμίτρου, διδακτορική διατριβή

Stratification in 6 subgroups

- Highly motivated patients (HM)
  - HM-I: Ex-smokers, ≥40 PY, severe addiction (FS 7-10)
    - N = 22
  - HM-II: Ex-smokers, < 40 PY, severe addiction (FS 7-10)
    - N = 11
  - HM-III: Ex-smokers, ≥ or<40 PY, mild-to-moderate addiction (FS 0-6)
    - N = 16
- Less motivated patients (LM)
  - LM-I: Current smokers, ≥ 40 PY, severe addiction (FS 7-10)
    - N = 9
  - LM-II: Current smokers, < 40 PY, severe addiction (FS 7-10)
    - N = 2
  - LM-III: Current smokers,≥or<40 PY, mild-moderate addiction (FS 0-6)
    - N = 25

Σ. Ντουμίτρου, διδακτορική διατριβή

Results: Level of motivation & PR Attendance

	HM-I	LM-III	P (t-test)
N	22	25	
Age	62±7	62±10	ns
FEV1%prd	34±11	48±6	0.041
PR sessions	23±2 (92%)	13±3 (56%)	0.038

Σ. Ντουμίτρου, διδακτορική διατριβή

Συμπεράσματα

- Η αποκατάσταση βελτιώνει αναμφίβολα την δύσπνοια, την ικανότητα για άσκηση & την ποιότητα ζωής.
- Βασικοί μηχανισμοί βελτίωσης η καταπολέμηση της υπερδιάτασης & της περιφερικής μυικής δυσλειτουργίας (μέσω φυσιοθεραπείας, άσκησης & θρέψης).
- Υπάρχουν ισχυρές ενδείξεις ότι συμβάλλει επίσης στην πρόληψη παροξύνσεων & νοσηλειών και στην μείωση άγχους & κατάθλιψης.
- Πολύ σημαντικό θέμα η συμμόρφωση των ασθενών και αναγκαία η προσπάθεια πρόγνωσης αλλά και ενίσχυσης της.