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Training en coaching bij patiënten met COPD

Astrid Blondeel

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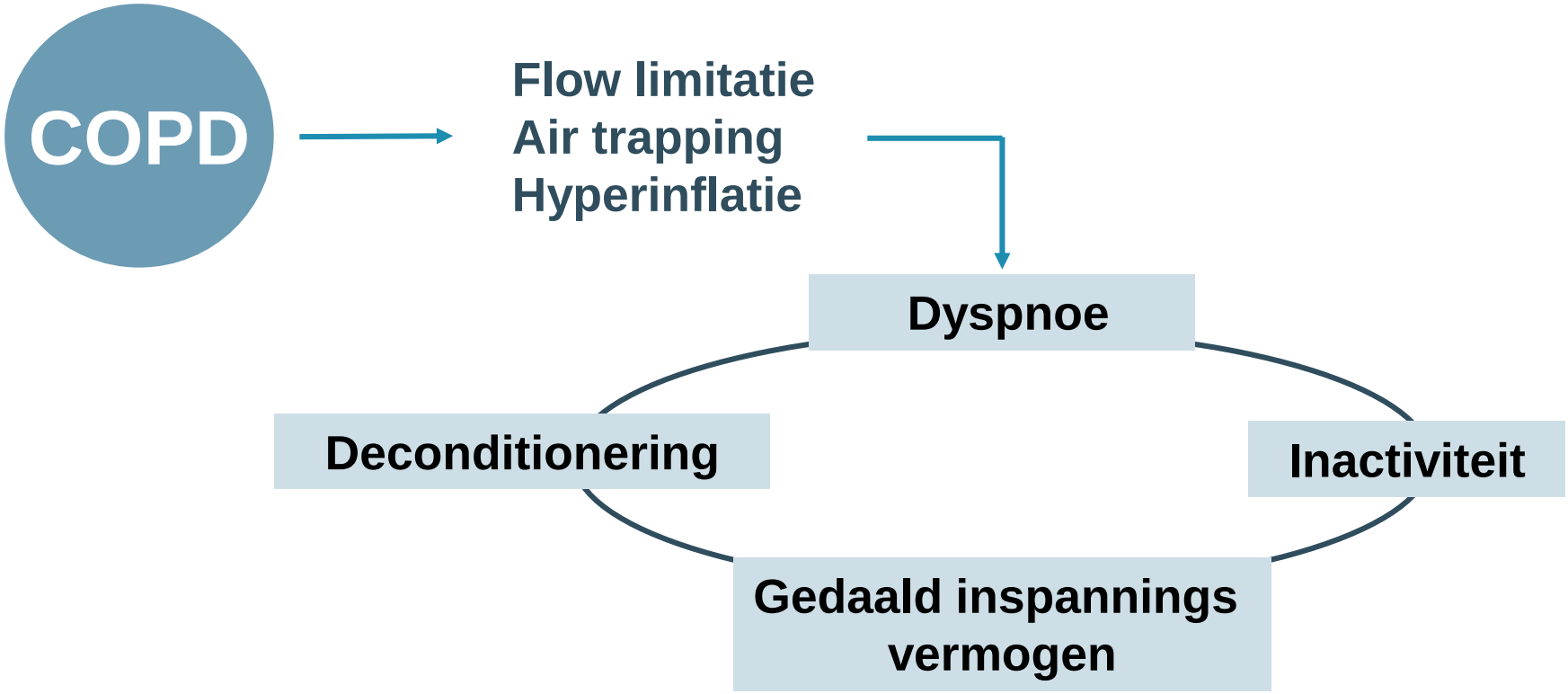
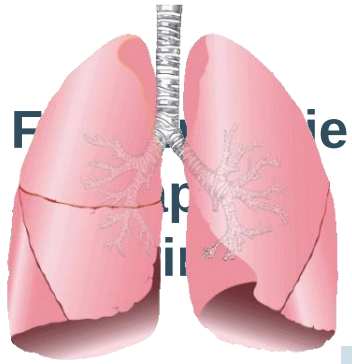
Vicieuze cirkel van inactiviteit



Vicieuze cirkel van inactiviteit

COPD



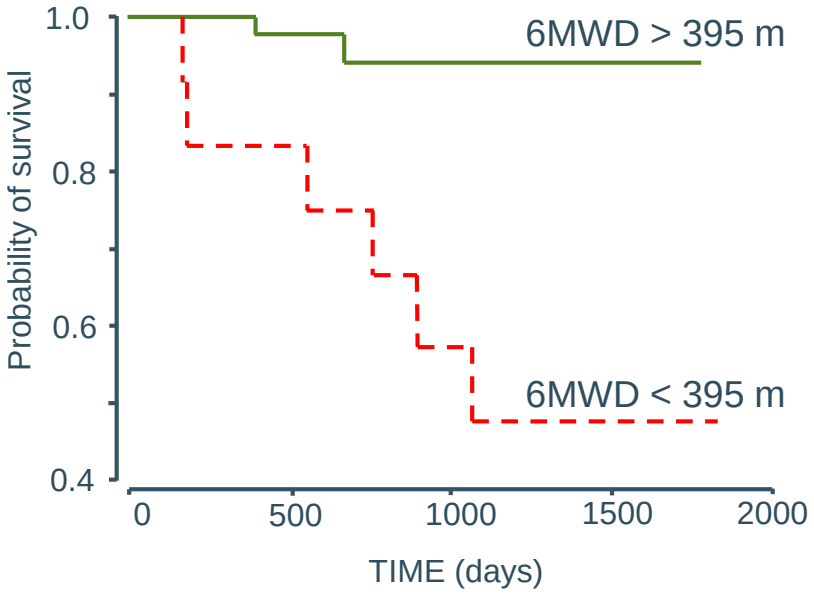
Dyspnoe

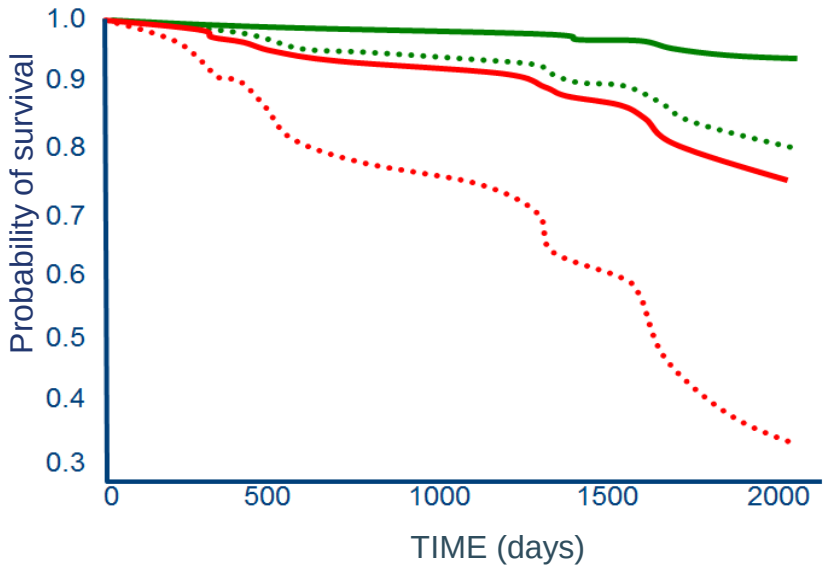
Inactiviteit

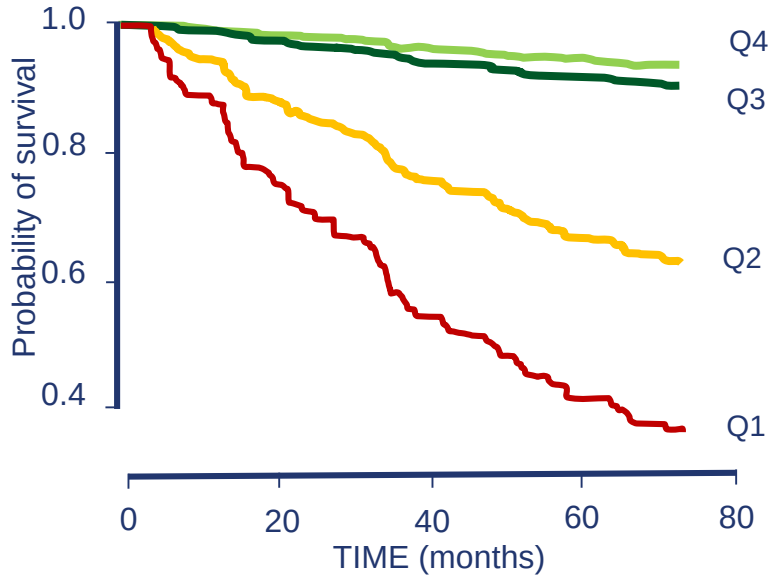
Gedaald inspannings vermogen

Deconditionering

Vicieuze cirkel van inactiviteit







Golpe, 2013; Garcia-Rio, Chest, 2012; Marquis et al.; AJRCCM; 2002

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Behandelmodaliteiten bij COPD

Table 4.8. Non-pharmacologic management of COPD			
Patient group	**Essential**	**Recommended**	**Depending on local guidelines**
A	Smoking cessation (can include pharmacologic treatment)	Physical activity	Flu vaccination Pneumococcal vaccination
B–D	Smoking cessation (can include pharmacologic treatment) Pulmonary rehabilitation	Physical activity	Flu vaccination Pneumococcal vaccination

GOLD guidelines, 2018

Respiratoire revalidatie

Pulmonary rehabilitation is a comprehensive intervention based on a thorough ***patient assessment*** *followed by* ***patient-tailored therapies****, which include, but are not limited to, exercise training, education, and behavior change, designed to* ***improve the physical and psychological condition*** *of people with chronic respiratory disease and to* ***promote the long-term adherence of health-enhancing behaviors.***

Inhoud van de avond

1. Training bij patiënten met COPD
2. Coaching bij patiënten met COPD
3. Casus

Respiratoire revalidatie

*Pulmonary rehabilitation is a comprehensive intervention based on a thorough **patient assessment** followed by patient-tailored therapies, which include, but are not limited to, exercise training, education, and behavior change, designed to improve the physical and psychological condition of people with chronic respiratory disease and to promote the long-term adherence of health-enhancing behaviors.*

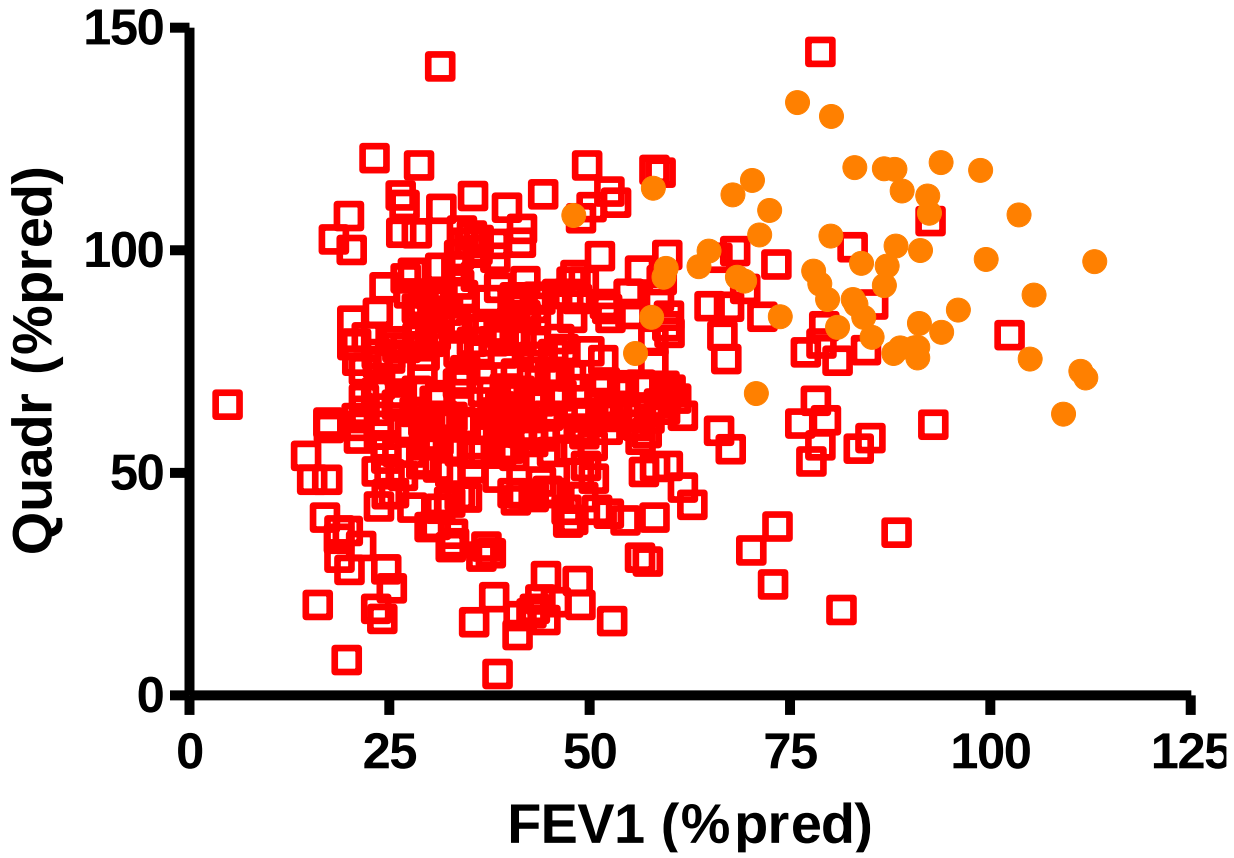
Assessment: doel?

Is de inspanningscapaciteit gedaald?

Is het veilig om te trainen?

Aan welke trainingsintensiteit trainen?

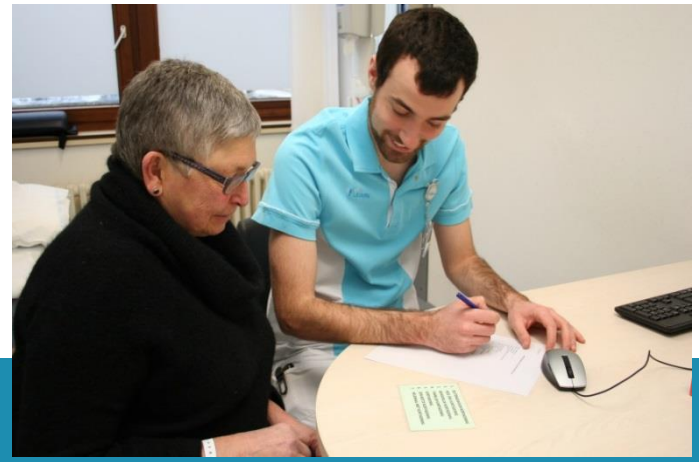
Assessment: doel?



Spierkracht is niet gerelateerd aan longfunctie

Wél aan activiteiten van dagelijks leven en inspanningsvermogen (maar slechts matig)

Assessment



Assessment

Evaluatie inspannigscapaciteit:

Maximale ergospirometrie

6 minuten wandeltest

Singh, Eur Respir Journal, 2014

Assessment

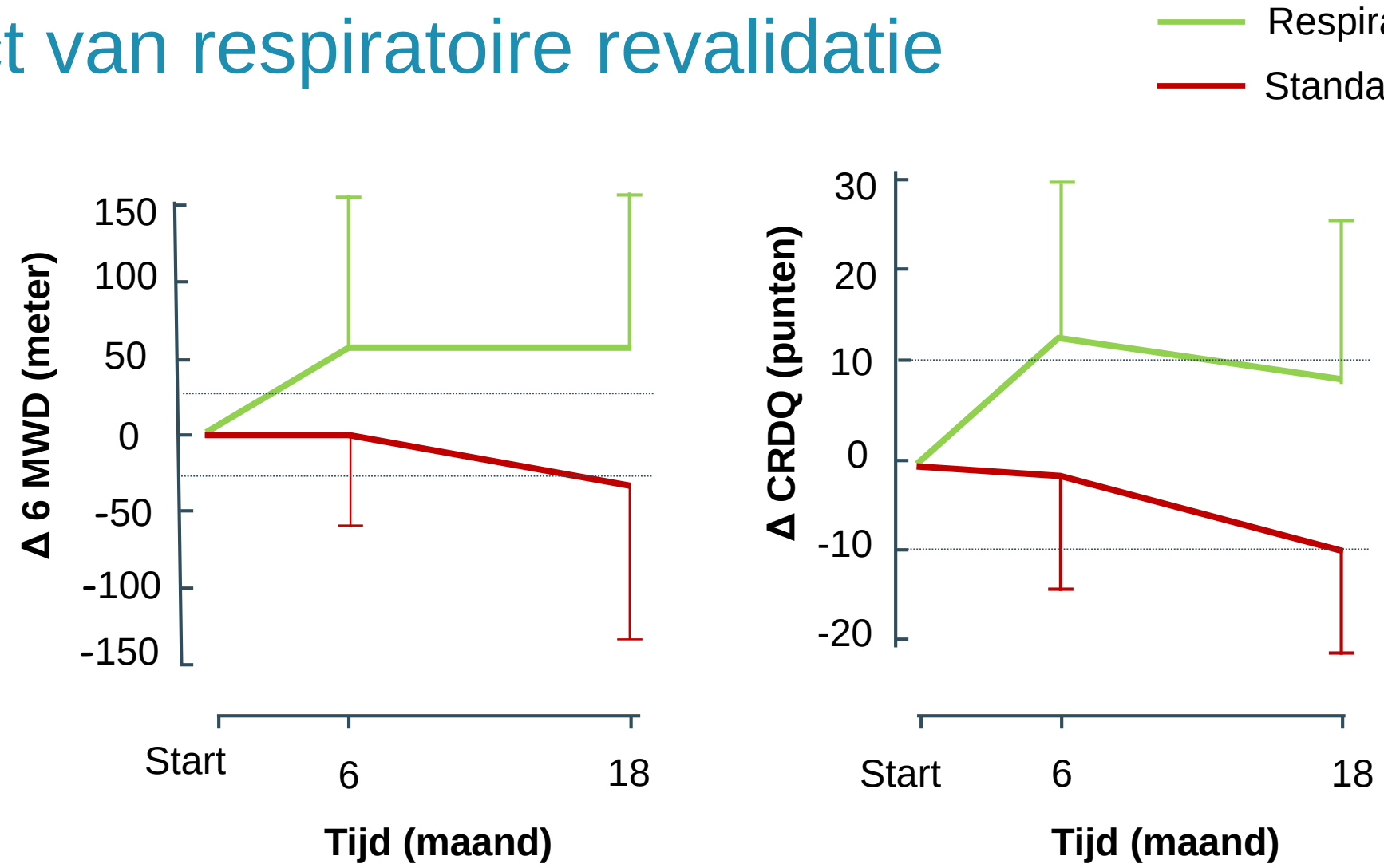
Perifere spierkrachtmeting
Respiratoire spierkrachtmeting

Maltais, ERS-ATS statement, 2014

Respiratoire revalidatie

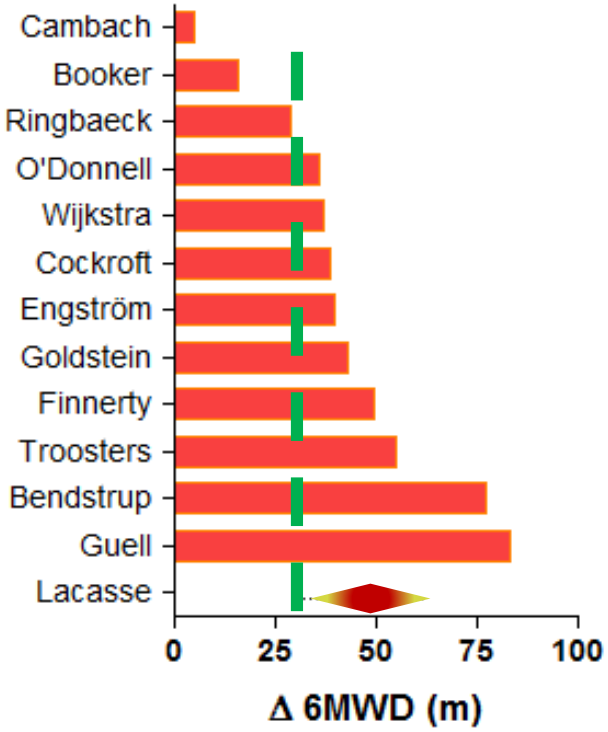
Pulmonary rehabilitation is a comprehensive intervention based on a thorough patient assessment followed by patient-tailored therapies, which include, but are not limited to, exercise training, education, and behavior change, designed to ***improve the physical and psychological condition*** *of people with chronic respiratory disease and to promote the long-term adherence of health-enhancing behaviors.*

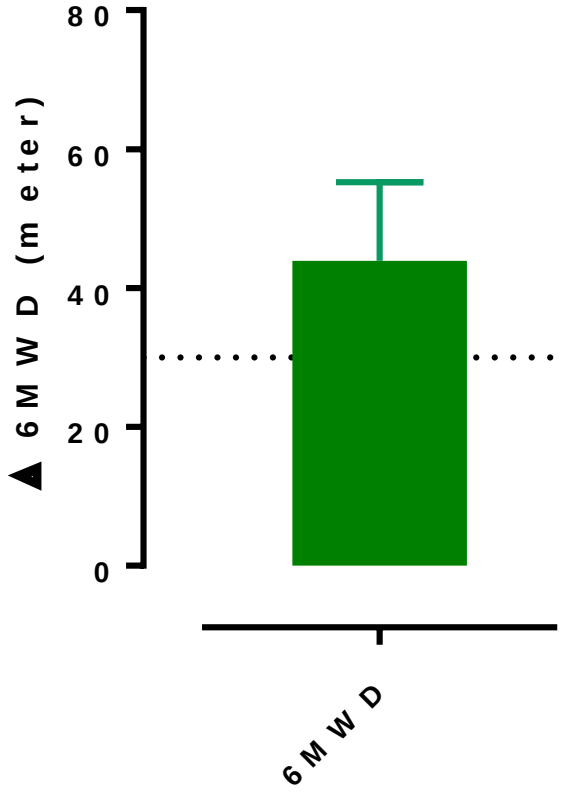
Effect van respiratoire revalidatie

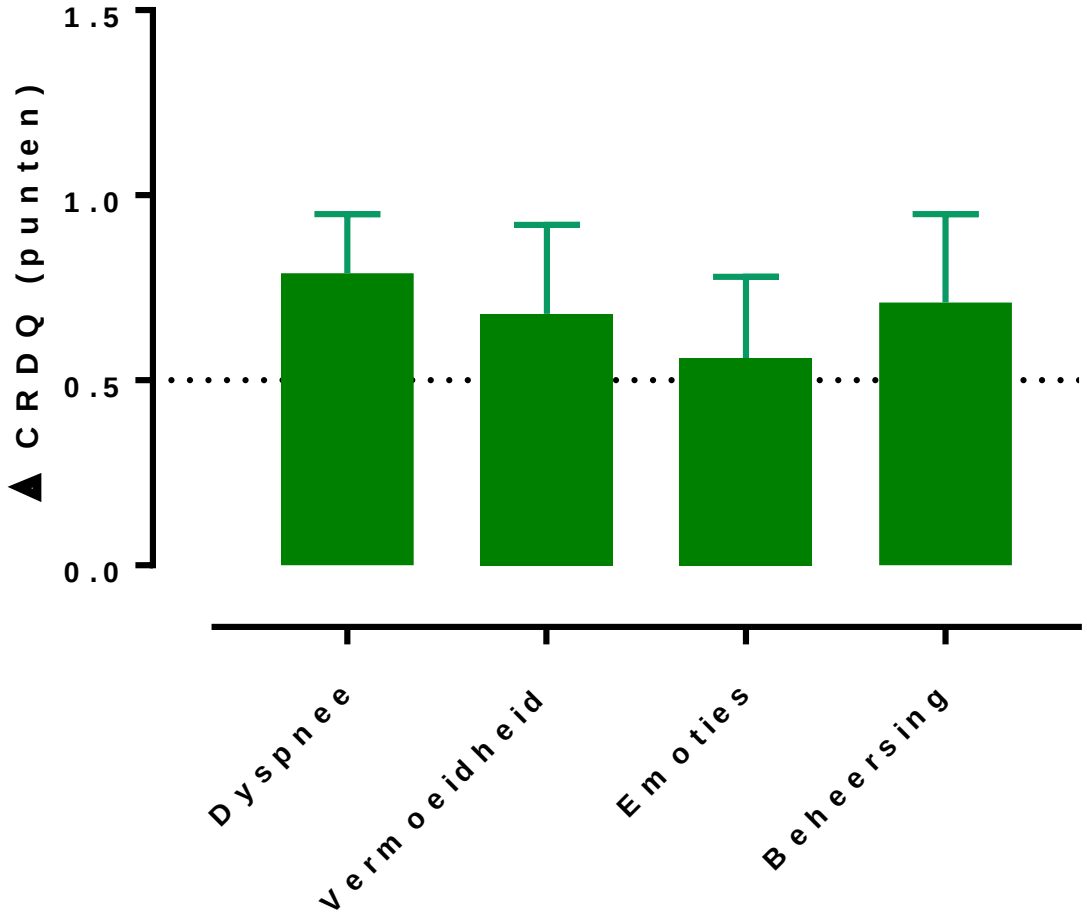


Troosters, Am J Med 2000

Effect van respiratoire revalidatie







Lacasse Cochrane Rev 2007
Mc Carthy, Cochrane 2015

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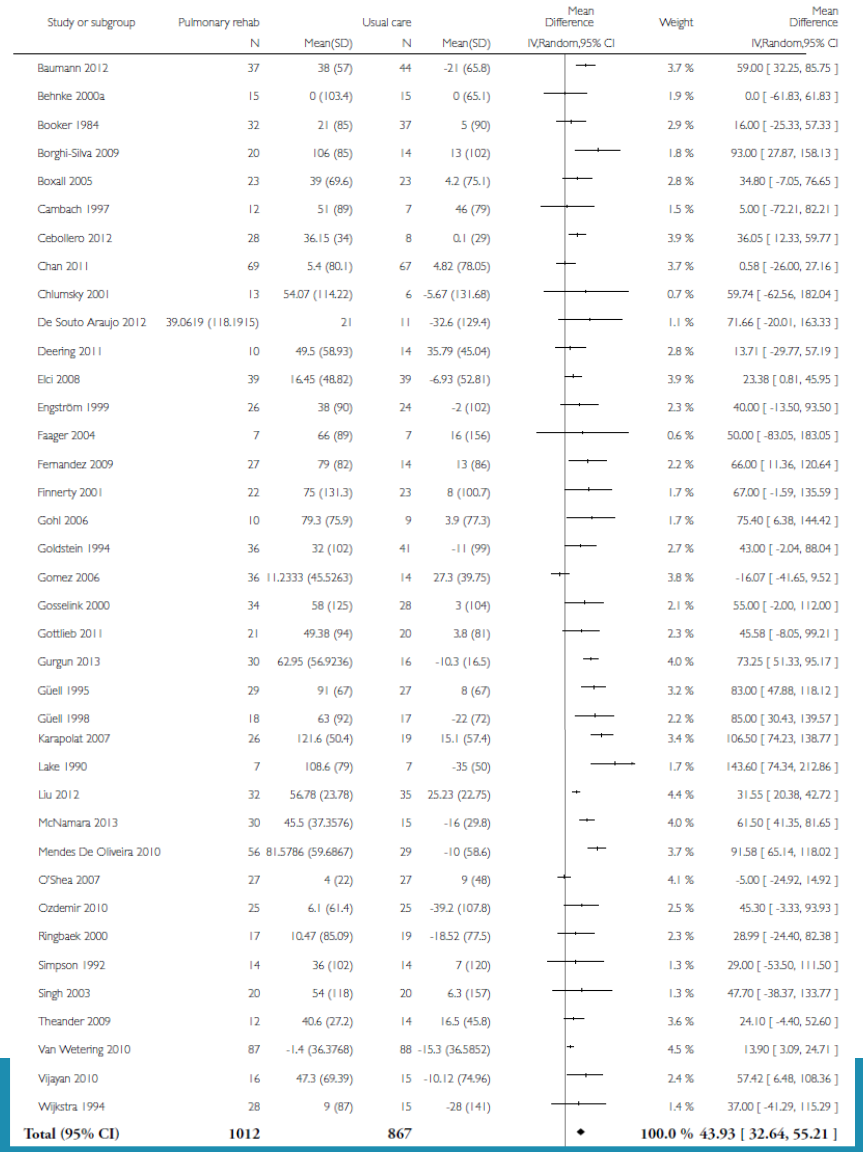
Effect van respiratoire revalidatie



Study or subgroup	Pulmonary rehab N	Mean(SD)	Usual care N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Baumann 2012	37	38 (57)	44	-21 (65.8)		3.7 %	59.00 [32.25, 85.75]
Behnke 2000a	15	0 (103.4)	15	0 (65.1)		1.9 %	0.0 [-61.83, 61.83]
Booker 1984	32	21 (85)	37	5 (90)		2.9 %	16.00 [-25.33, 57.33]
Borghi-Silva 2009	20	106 (85)	14	13 (102)		1.8 %	93.00 [27.87, 158.13]
Boxall 2005	23	39 (69.6)	23	4.2 (75.1)		2.8 %	34.80 [-7.05, 76.65]
Cambach 1997	12	51 (89)	7	46 (79)		1.5 %	5.00 [-72.21, 82.21]
Cebollero 2012	28	36.15 (34)	8	0.1 (29)		3.9 %	36.05 [12.33, 59.77]
Chan 2011	69	5.4 (80.1)	67	4.82 (78.05)		3.7 %	0.58 [-26.00, 27.16]
Chlumsky 2001	13	54.07 (114.22)	6	-5.67 (131.68)		0.7 %	59.74 [-62.56, 182.04]
De Souto Araujo 2012	39.0619 (118.1915)	21	11	-32.6 (129.4)		1.1 %	71.66 [-20.01, 163.33]
Deering 2011	10	49.5 (58.93)	14	35.79 (45.04)		2.8 %	13.71 [-29.77, 57.19]
Elci 2008	39	16.45 (48.82)	39	-6.93 (52.81)		3.9 %	23.38 [0.81, 45.95]
Engström 1999	26	38 (90)	24	-2 (102)		2.3 %	40.00 [-13.50, 93.50]
Faager 2004	7	66 (89)	7	16 (156)		0.6 %	50.00 [-83.05, 183.05]
Fernandez 2009	27	79 (82)	14	13 (86)		2.2 %	66.00 [11.36, 120.64]
Finnerty 2001	22	75 (131.3)	23	8 (100.7)		1.7 %	67.00 [-1.59, 135.59]
Gohl 2006	10	79.3 (75.9)	9	3.9 (77.3)		1.7 %	75.40 [6.38, 144.42]
Goldstein 1994	36	32 (102)	41	-11 (99)		2.7 %	43.00 [-2.04, 88.04]
Gomez 2006	36	11.2333 (45.5263)	14	27.3 (39.75)		3.8 %	-16.07 [-41.65, 9.52]
Gosselink 2000	34	58 (125)	28	3 (104)		2.1 %	55.00 [-2.00, 112.00]
Gottlieb 2011	21	49.38 (94)	20	3.8 (81)		2.3 %	45.58 [-8.05, 99.21]
Gurgun 2013	30	62.95 (56.9236)	16	-10.3 (16.5)		4.0 %	73.25 [51.33, 95.17]
Güell 1995	29	91 (67)	27	8 (67)		3.2 %	83.00 [47.88, 118.12]
Güell 1998	18	63 (92)	17	-22 (72)		2.2 %	85.00 [30.43, 139.57]
Karapolat 2007	26	121.6 (50.4)	19	15.1 (57.4)		3.4 %	106.50 [74.23, 138.77]
Lake 1990	7	108.6 (79)	7	-35 (50)		1.7 %	143.60 [74.34, 212.86]
Liu 2012	32	56.78 (23.78)	35	25.23 (22.75)		4.4 %	31.55 [20.38, 42.72]
McNamara 2013	30	45.5 (37.3576)	15	-16 (29.8)		4.0 %	61.50 [41.35, 81.65]
Mendes De Oliveira 2010	56	81.5786 (59.6867)	29	-10 (58.6)		3.7 %	91.58 [65.14, 118.02]
O'Shea 2007	27	4 (22)	27	9 (48)		4.1 %	-5.00 [-24.92, 14.92]
Ozdemir 2010	25	6.1 (61.4)	25	-39.2 (107.8)		2.5 %	45.30 [-3.33, 93.93]
Ringbaek 2000	17	10.47 (85.09)	19	-18.52 (77.5)		2.3 %	28.99 [-24.40, 82.38]
Simpson 1992	14	36 (102)	14	7 (120)		1.3 %	29.00 [-53.50, 111.50]
Singh 2003	20	54 (118)	20	6.3 (157)		1.3 %	47.70 [-38.37, 133.77]
Theander 2009	12	40.6 (27.2)	14	16.5 (45.8)		3.6 %	24.10 [-4.40, 52.60]
Van Wetering 2010	87	-1.4 (36.3768)	88	-15.3 (36.5852)		4.5 %	13.90 [3.09, 24.71]
Vijayan 2010	16	47.3 (69.39)	15	-10.12 (74.96)		2.4 %	57.42 [6.48, 108.36]
Wijkstra 1994	28	9 (87)	15	-28 (141)		1.4 %	37.00 [-41.29, 115.29]
Total (95% CI)	**1012**		**867**			**100.0 %**	**43.93 [32.64, 55.21]**

Inspanningscapaciteit

Effect op 6MWD 44m [33-55] boven MID

Quality of life en Symptomen

Effect op HRQoL boven MID

McCarthy Cochrane Library 2015

Daling van kosten voor nodige gezondheidszorg

Griffiths Lancet 2000

Verbetering van gemoedstoestand

Coventry Curr Opin Pulm Med. 2009

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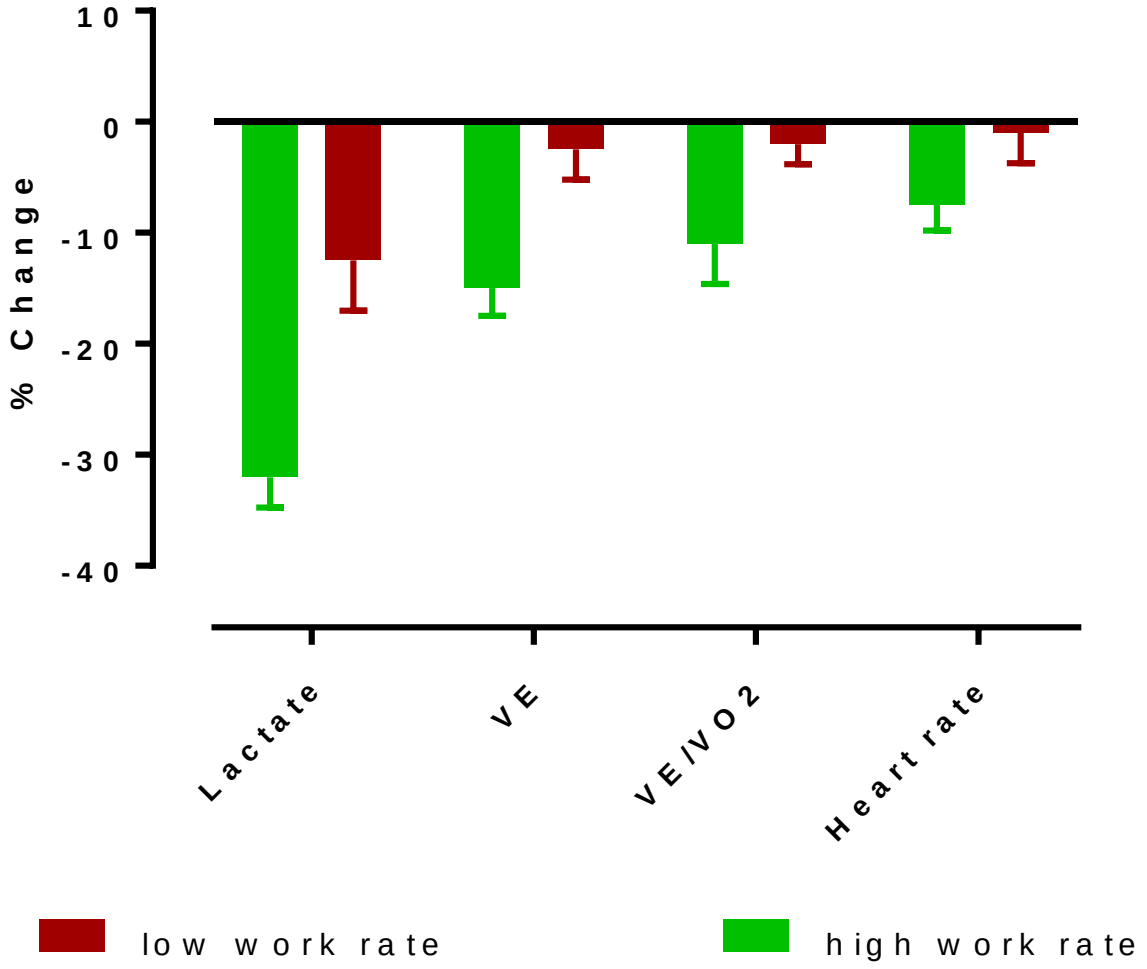
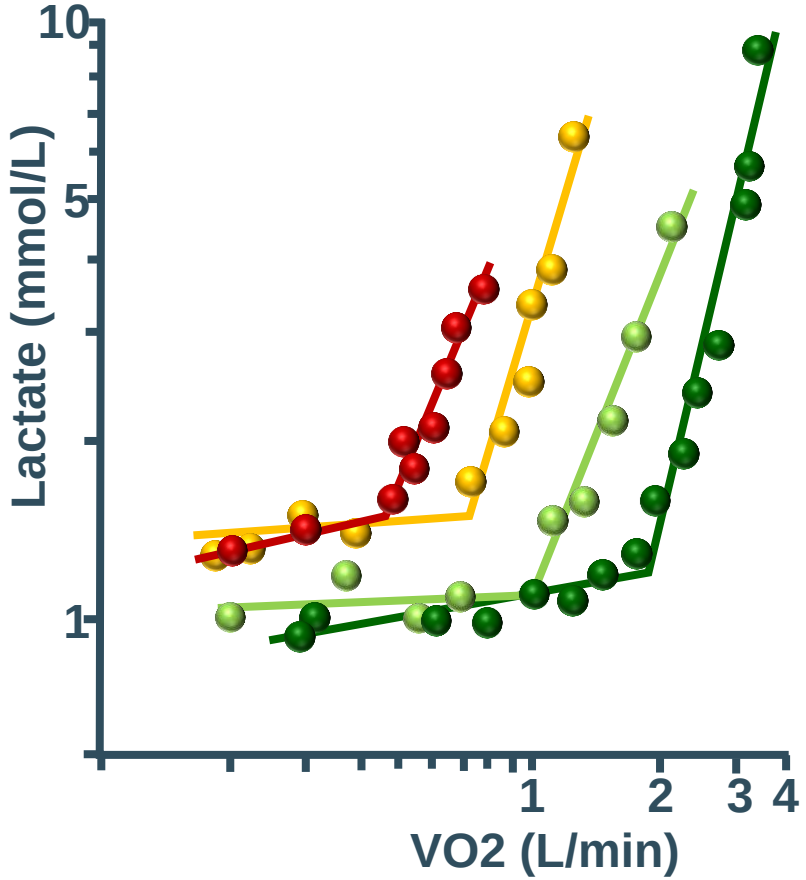
Inspanningstraining

INTENSITY IS KEY

Duurtraining ?
Intervaltraining ?

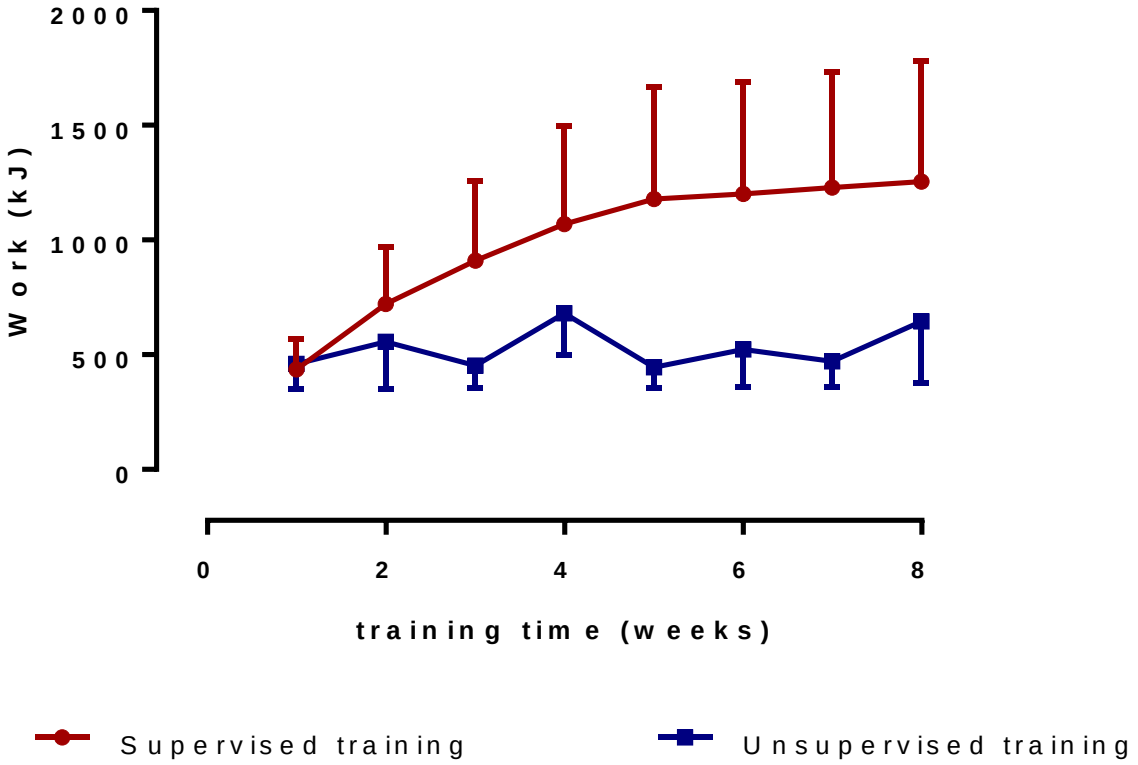
Training bij COPD: intensiteit?

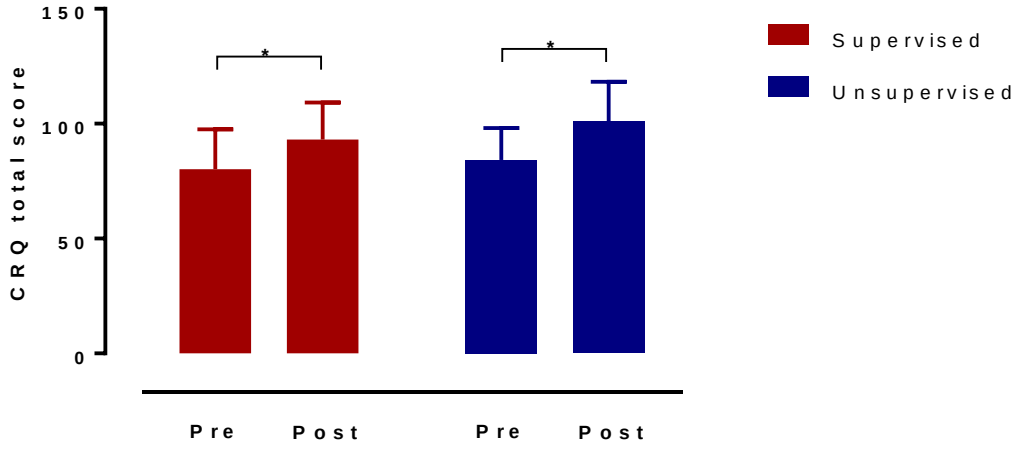




Casaburi et al Am Rev Respir Dis, 1991
Engelen AJRCCM, 2000

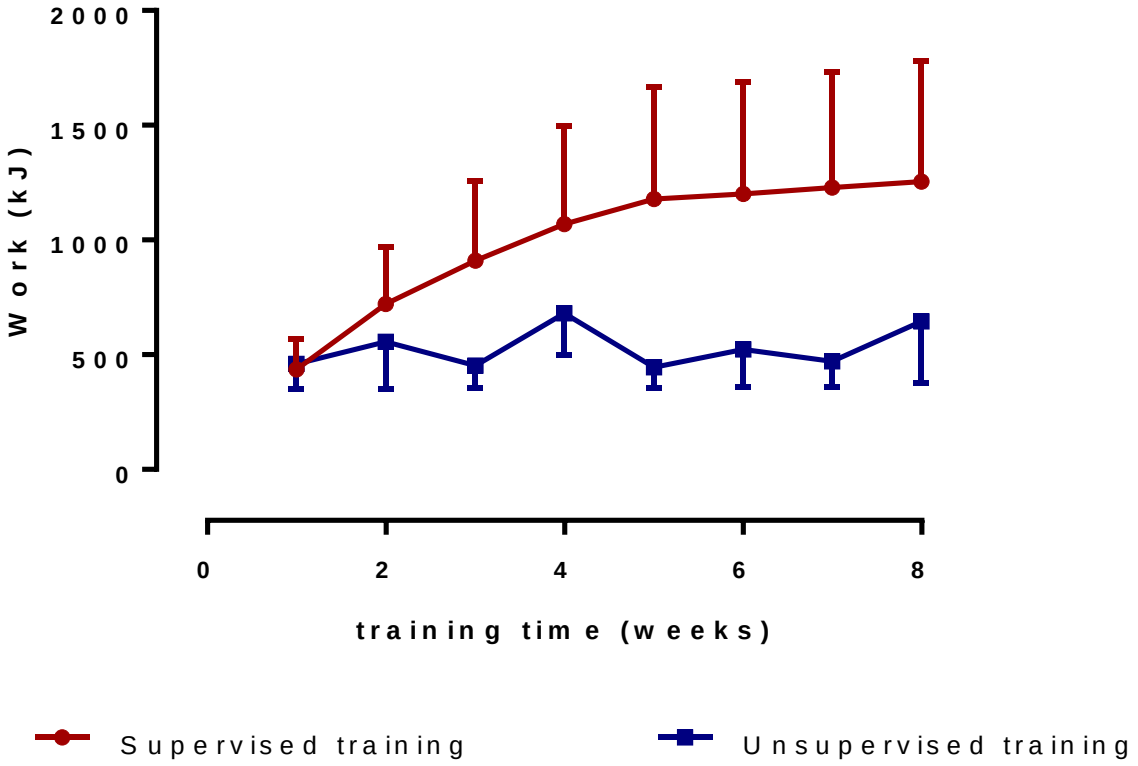
Training bij COPD: intensiteit?

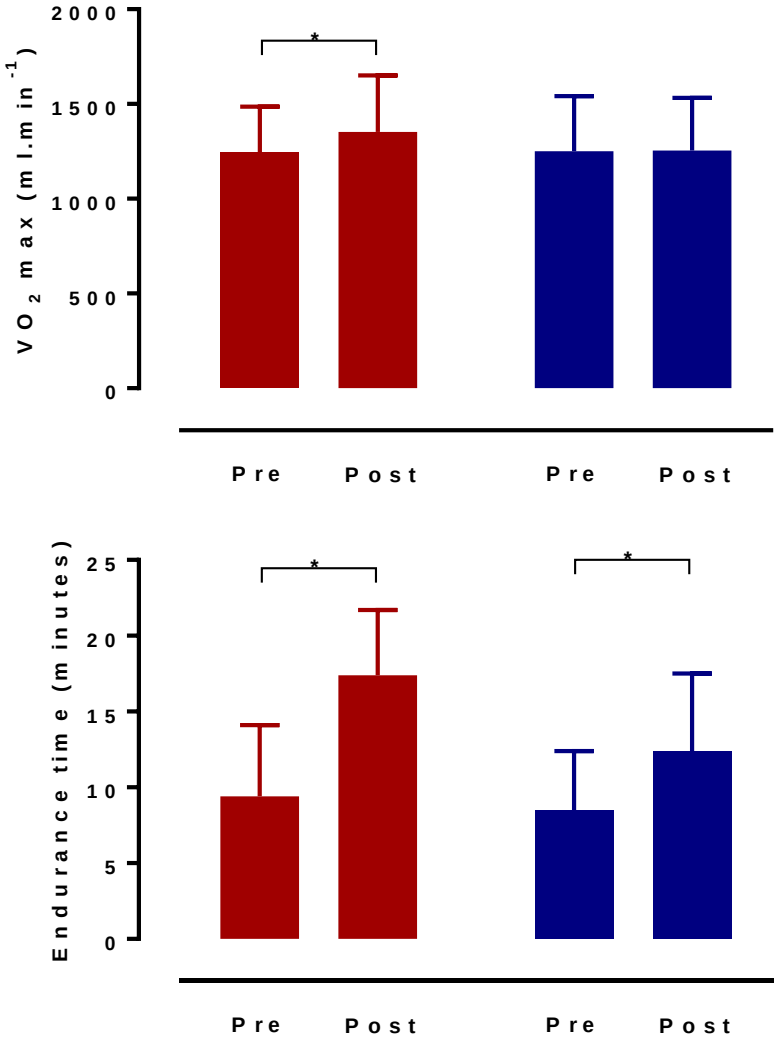




Puente-Maestu, Eur Respir Journal, 2000

Training bij COPD: intensiteit?





Puente-Maestu, Eur Respir Journal, 2000

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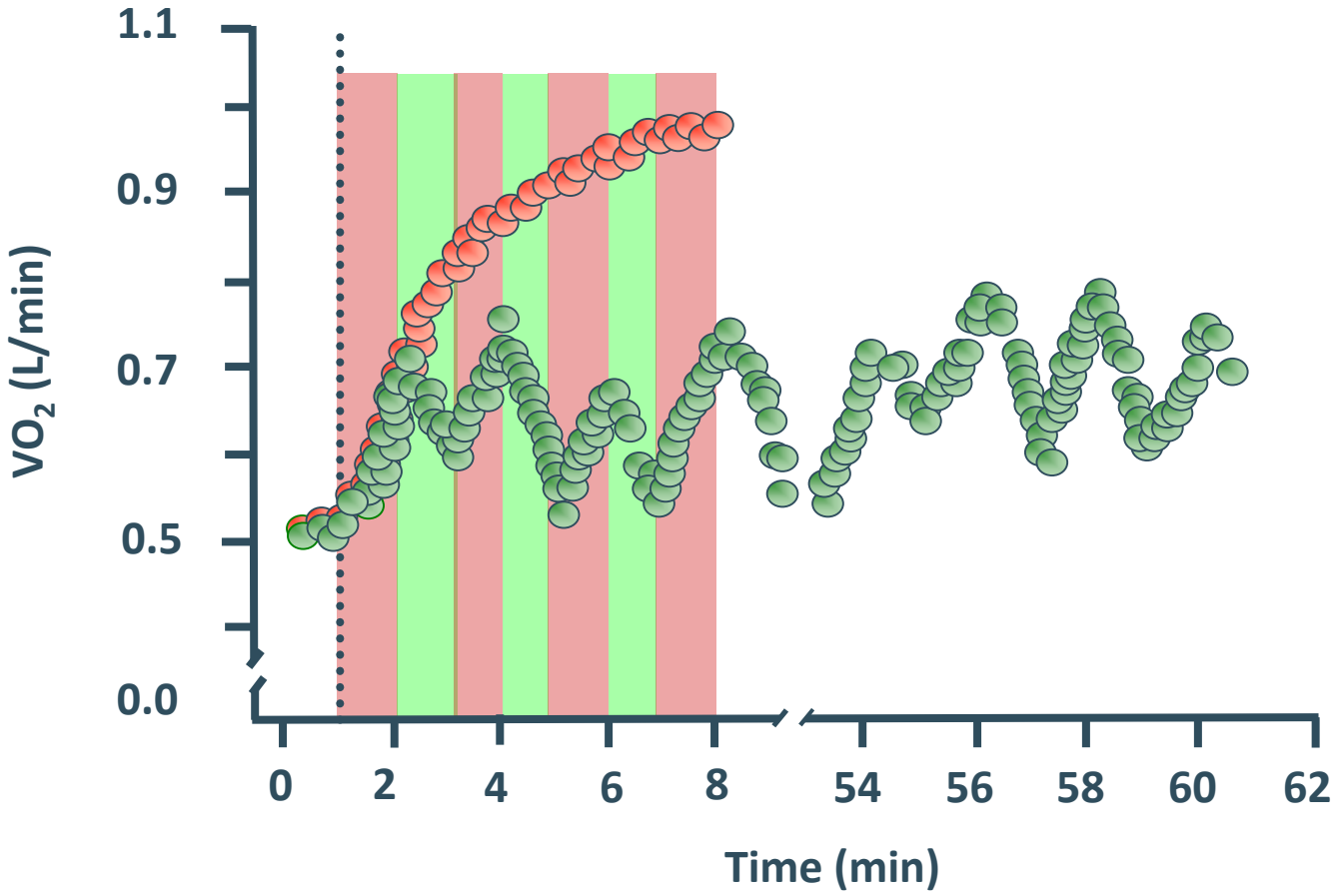
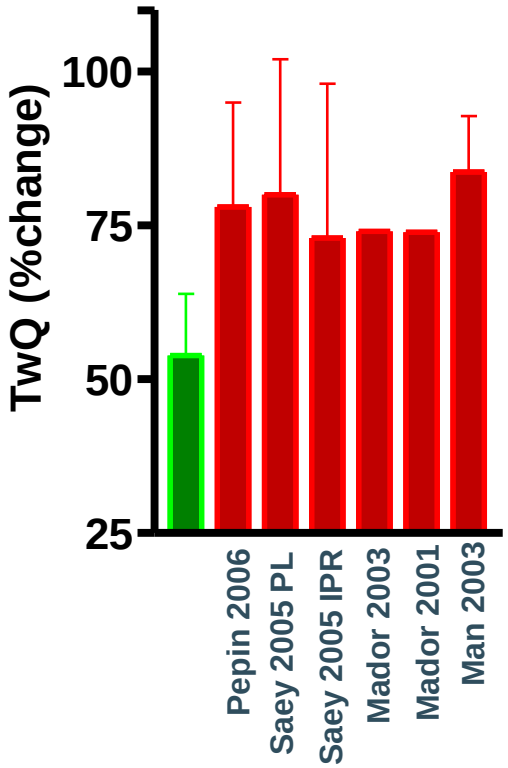
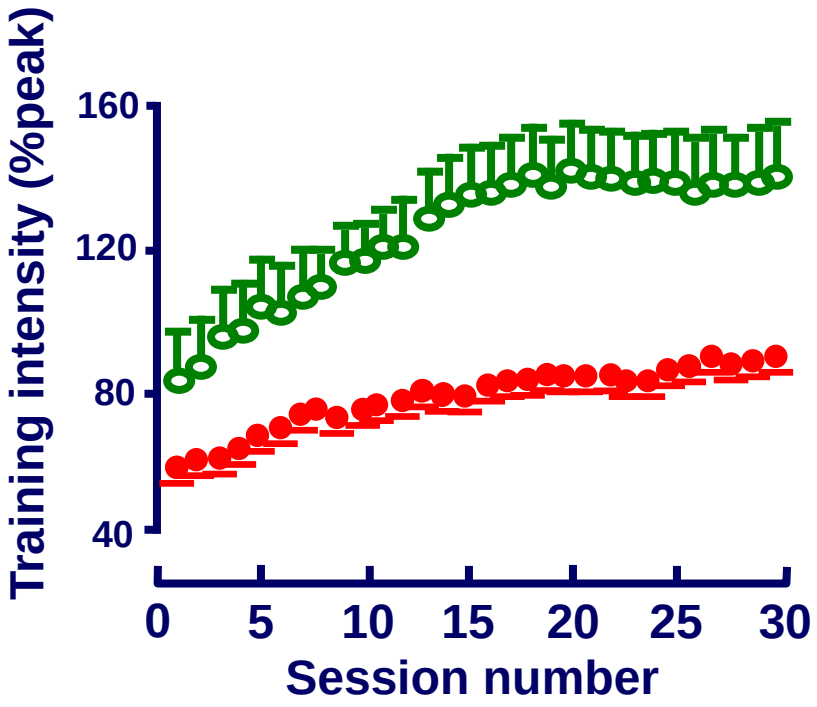
Training bij COPD: intensiteit?

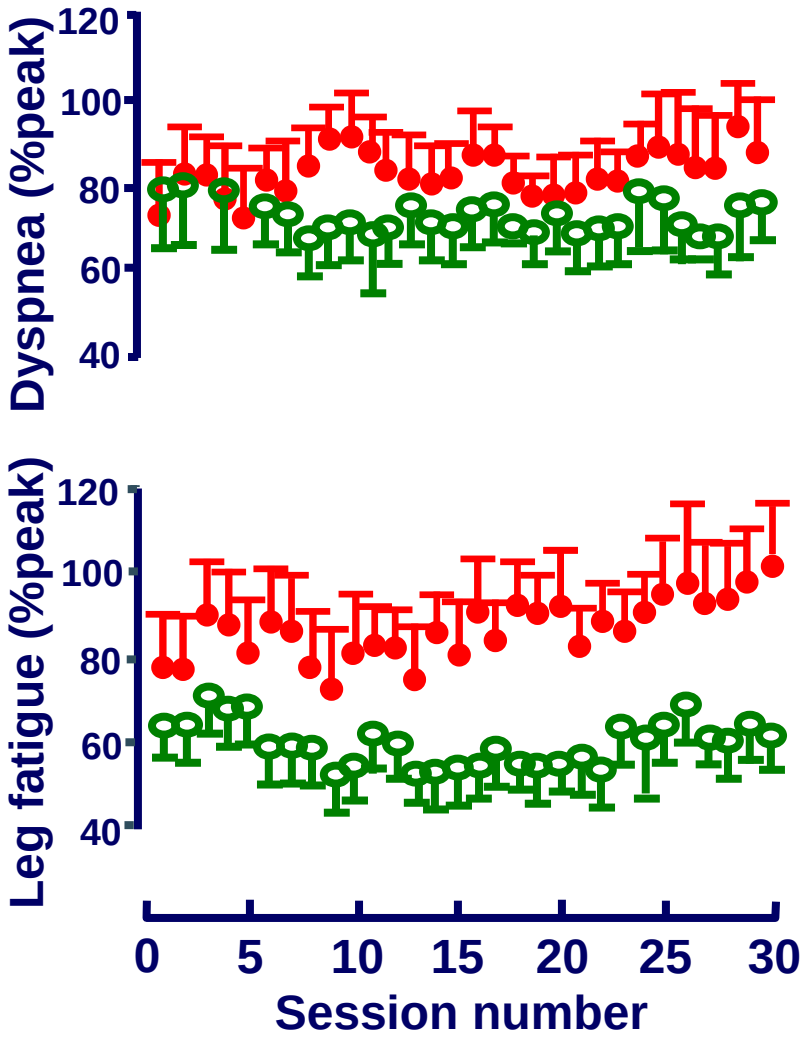




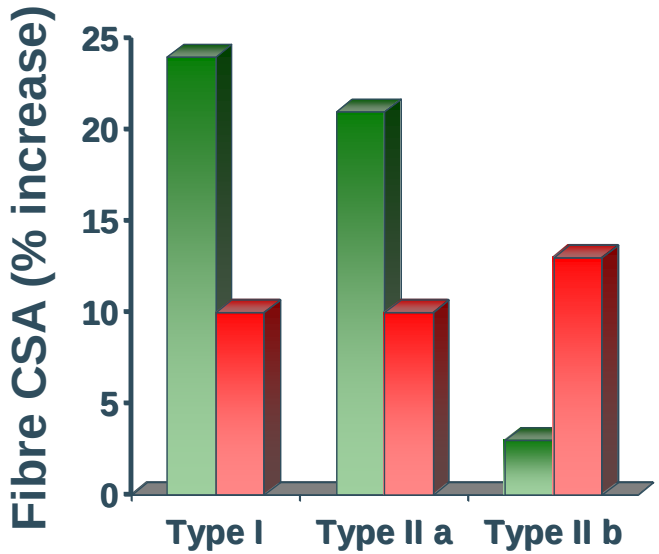
Sabapathy Thorax 2004

Training bij COPD: intensiteit?





Interval training
Endurance training



Vogiatzis ERJ 2002 *Vogiatzis Chest 2006*

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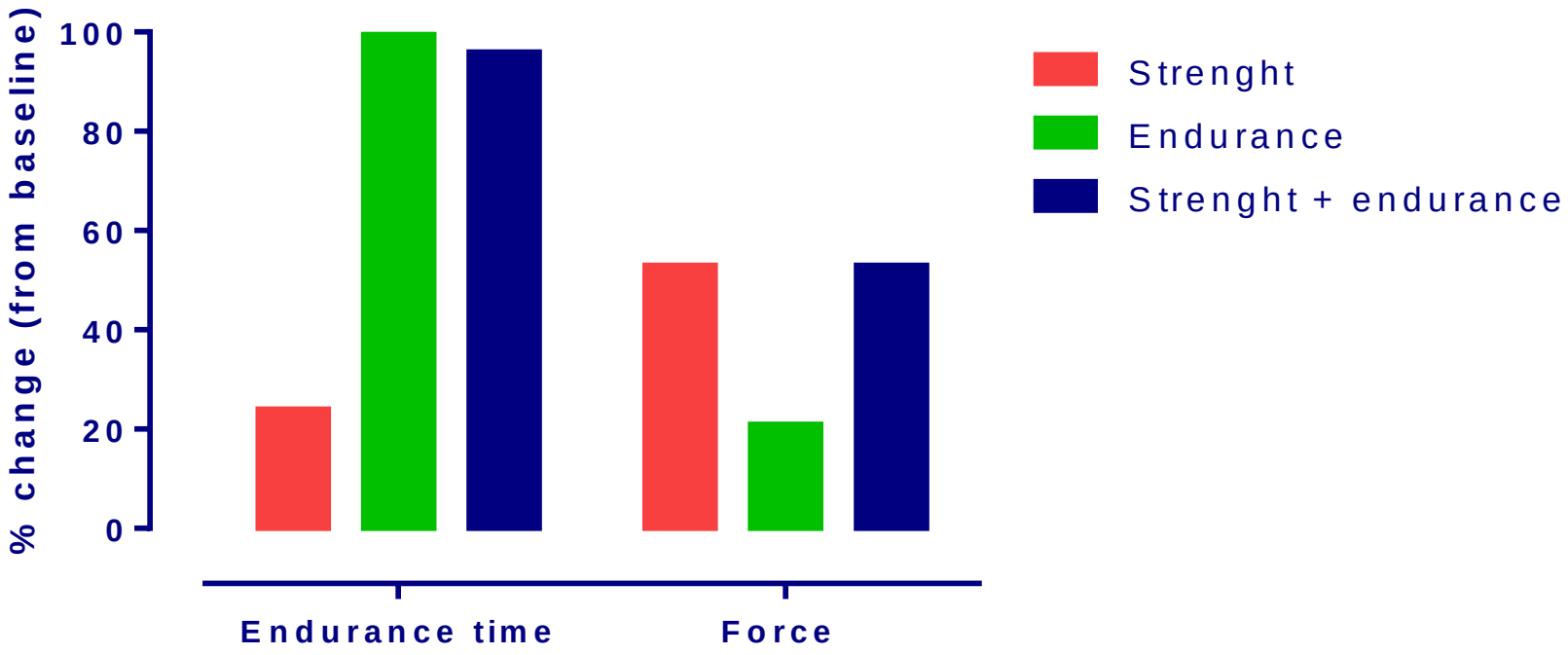
Voorbeeld duurtraining

Week	Duur	Intensiteit
1	10 min.	75%
2	12 min.	75%
3	12 min.	80%
4	14 min.	80%
5	14 min.	85%
6	16 min.	90%
7	16 min.	90%
8	16 min.	95%
9	16 min.	100%
10	16 min.	105%
11	16 min.	110%
12	16 min.	110%

Voorbeeld intervaltraining

Week	Duur per serie	Aantal series	Intensiteit
1	2 min.	5x	60% Wmax
2	2 min.	6x	60% Wmax
3	2 min.	7x	65% Wmax
4	2 min.	7x	65% Wmax
5	2 min.	7x	70% Wmax
6	2 min.	8x	70% Wmax
7	2 min.	8x	75% Wmax
8	2 min.	8x	75% Wmax
9	2 min.	8x	80% Wmax
10	2 min.	8x	80% Wmax
11	2 min.	8x	85% Wmax
12	2 min.	8x	85% Wmax

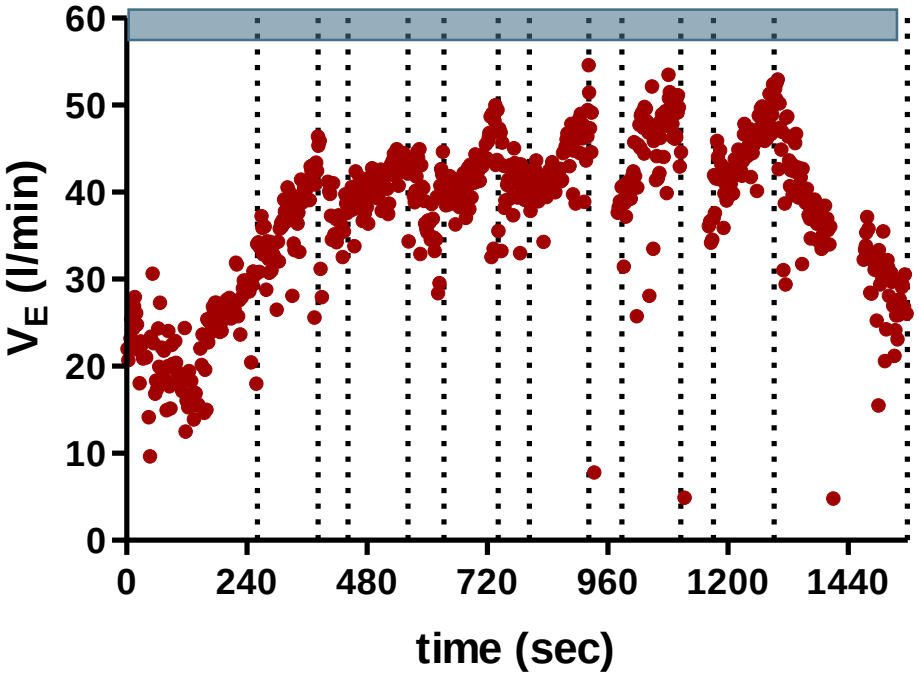
Training bij COPD: krachttraining?



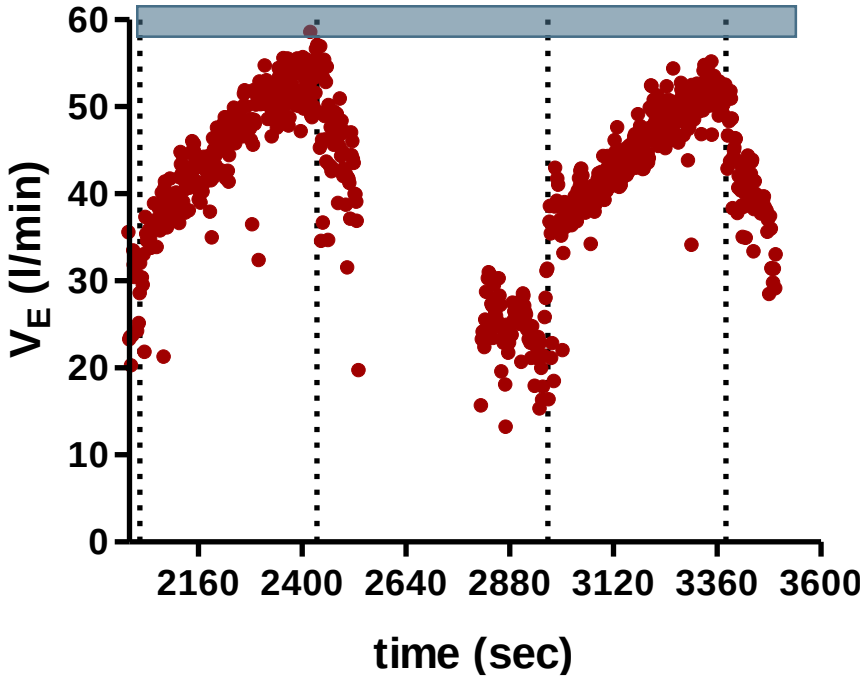
Ortega, Am J Respir Crit Care Med 2002

Training bij COPD

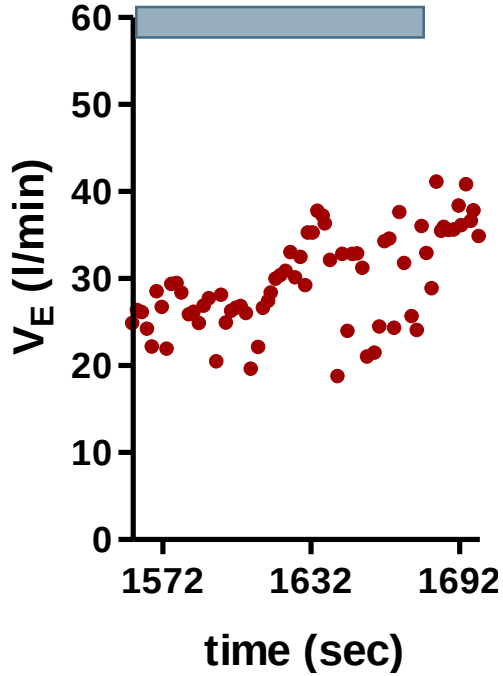
CYCLING



WALKING



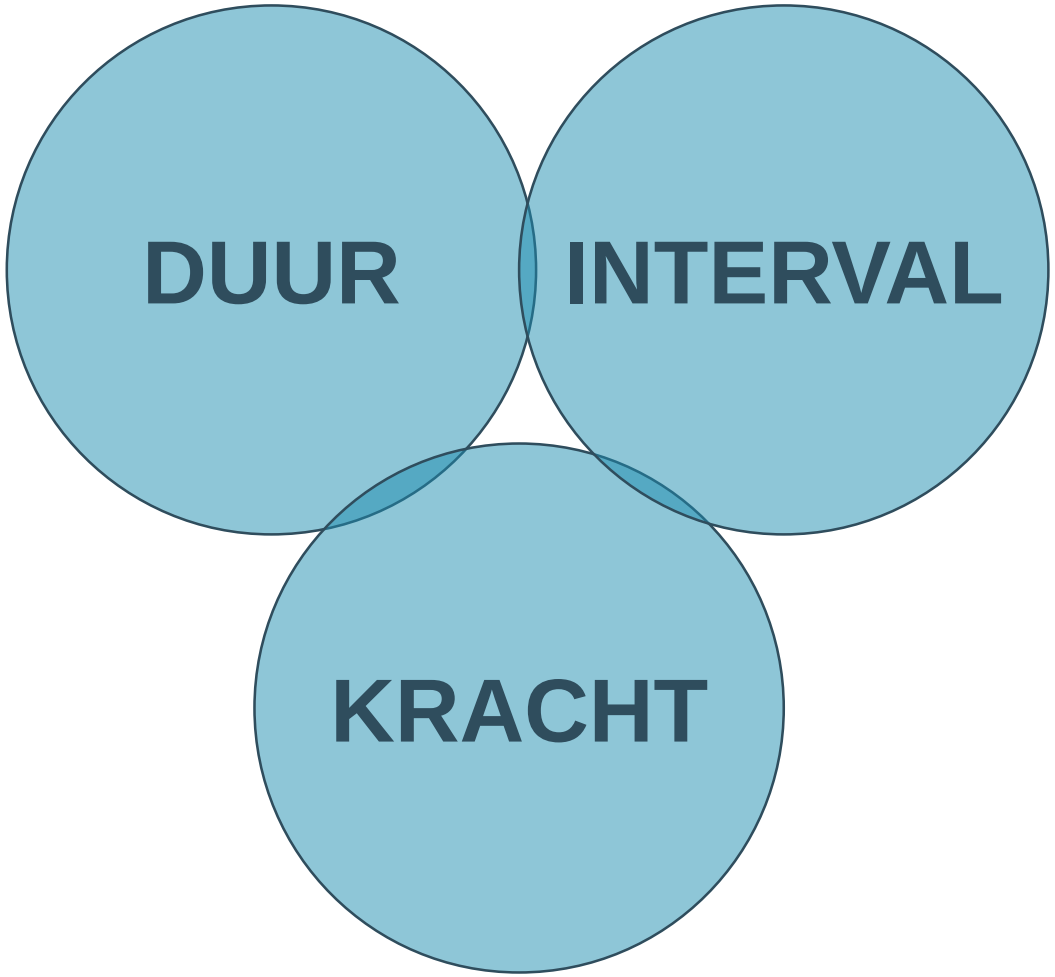
RESISTANCE TRAINING



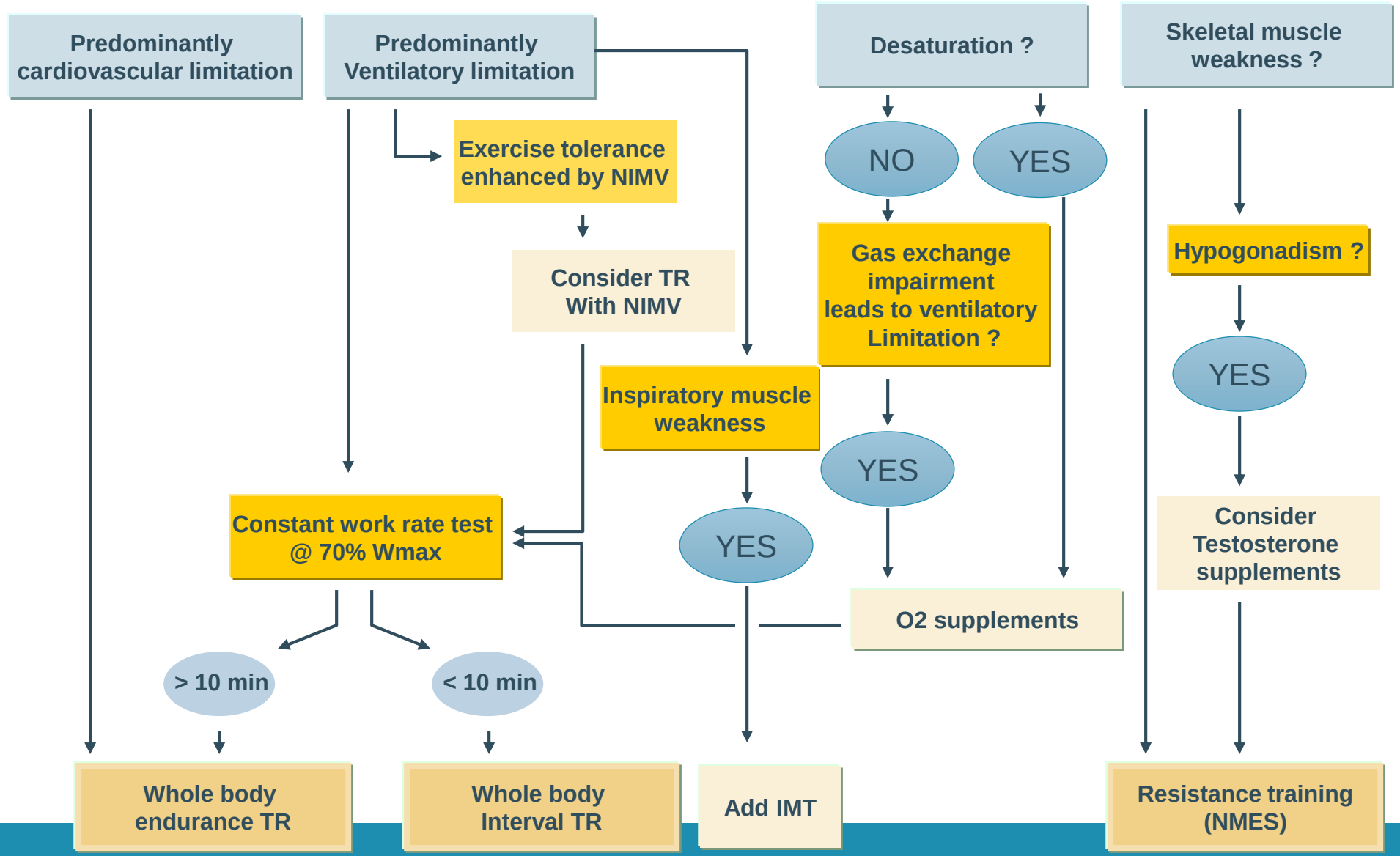
= MVV

V.A. FEV$_1$ = 1.53, MVV = 61.2

Training bij COPD



Optimal bronchodilatation and safety to perform exercise



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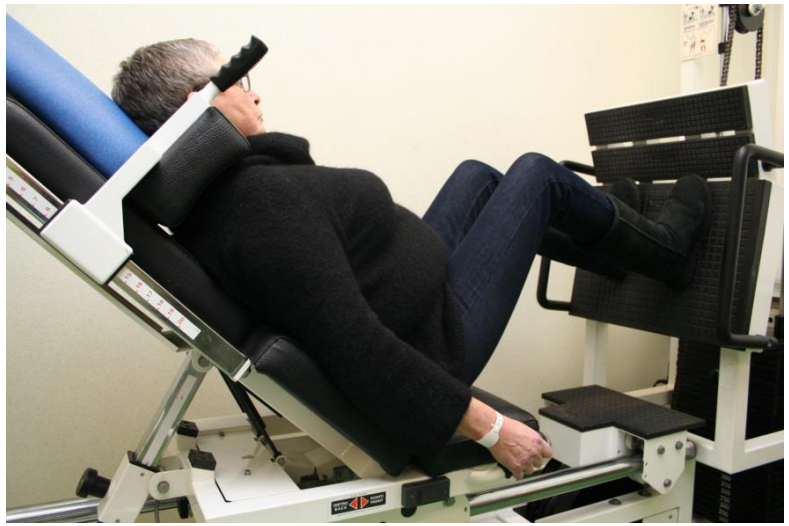
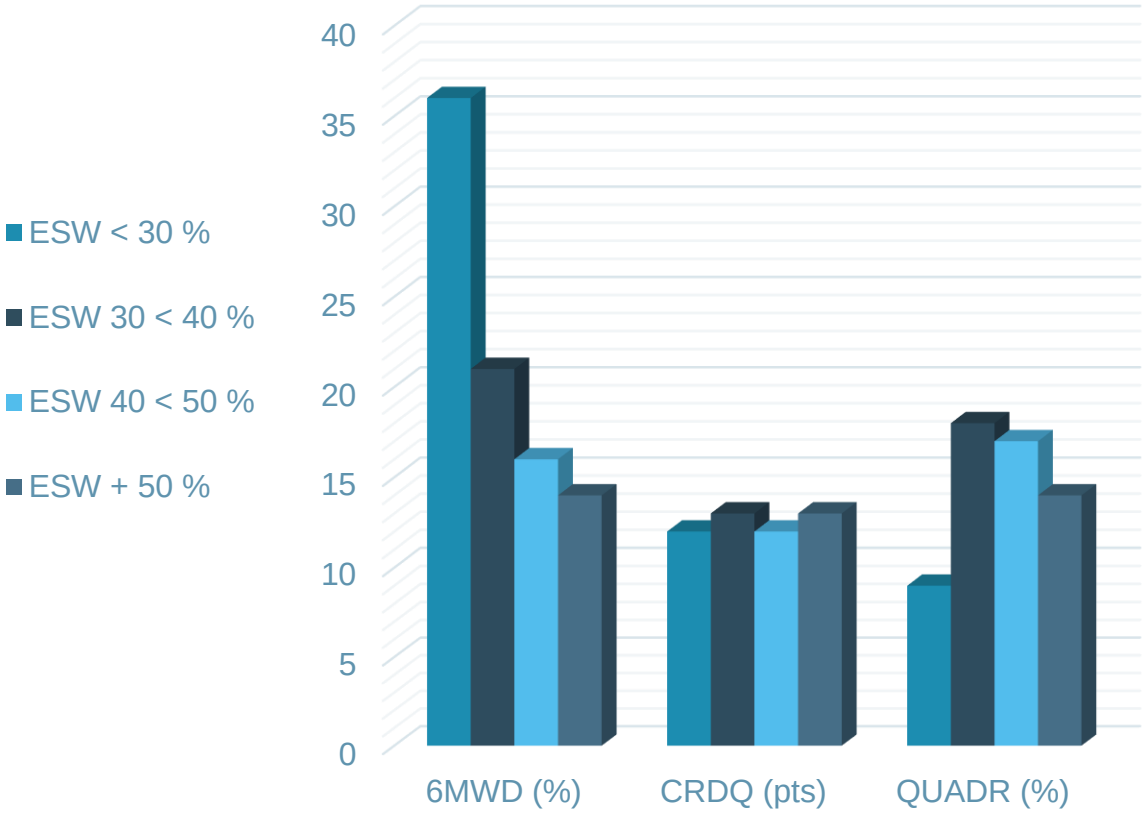
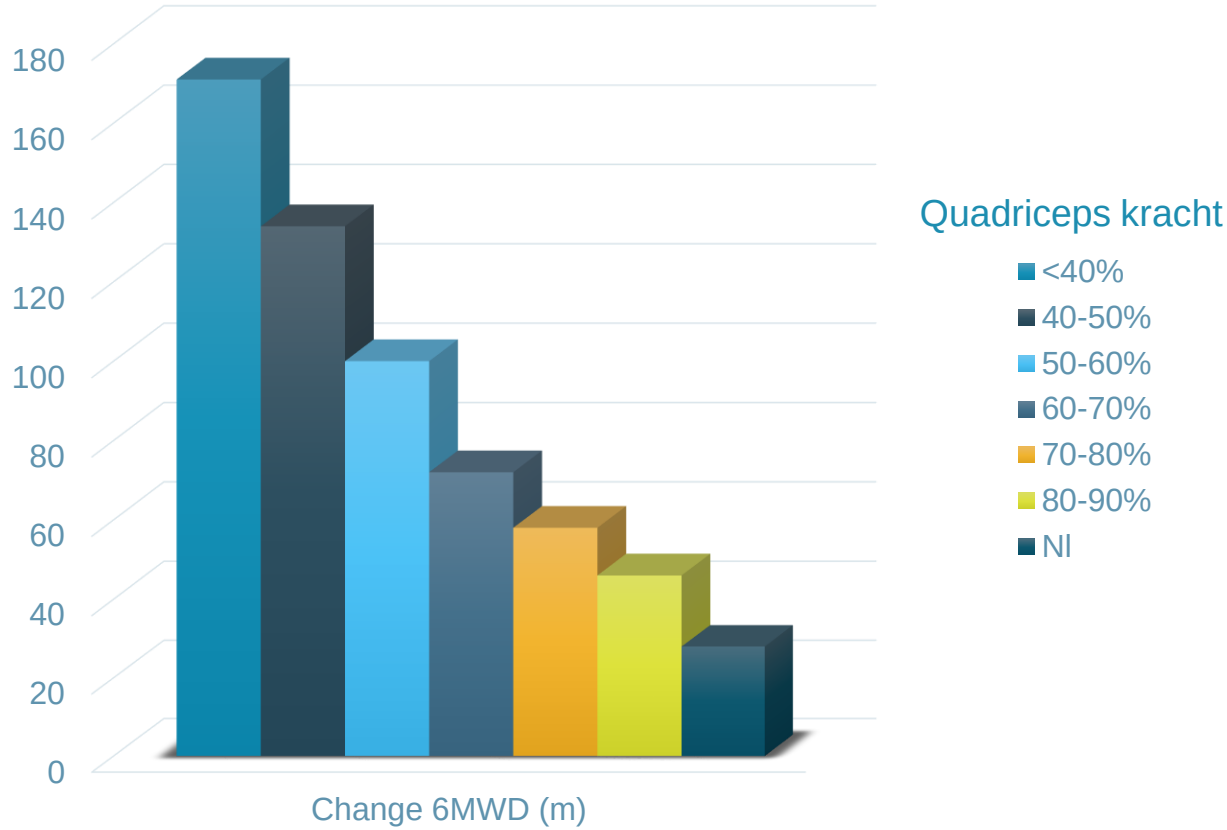


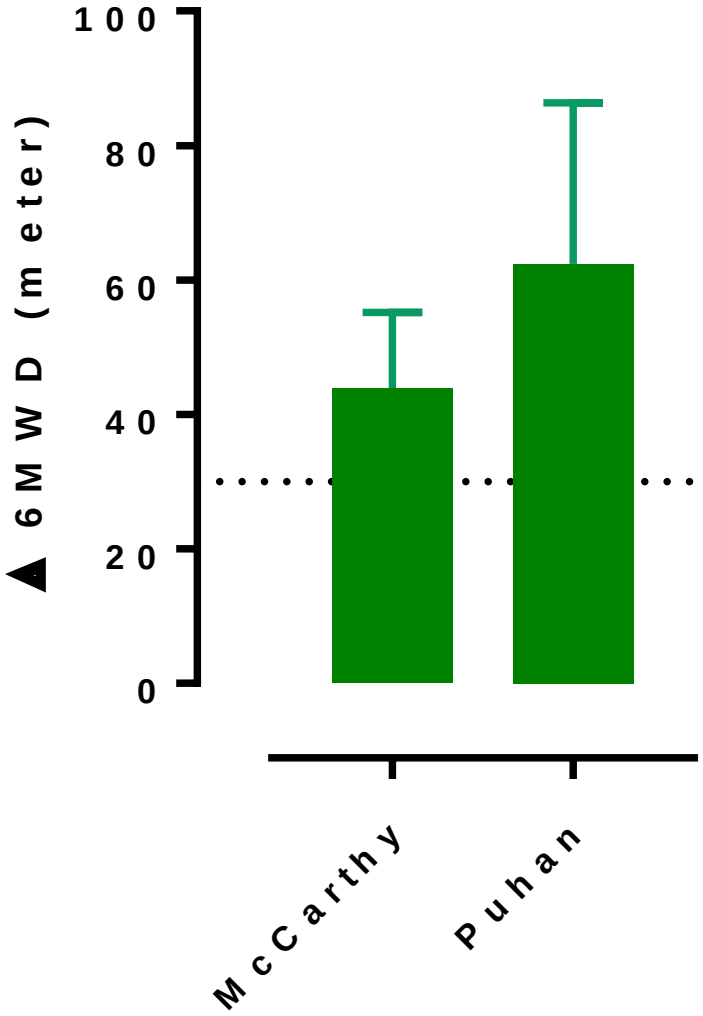

MONARK

Respiratoire revalidatie: voor wie?





Respiratoire revalidatie en exacerbaties

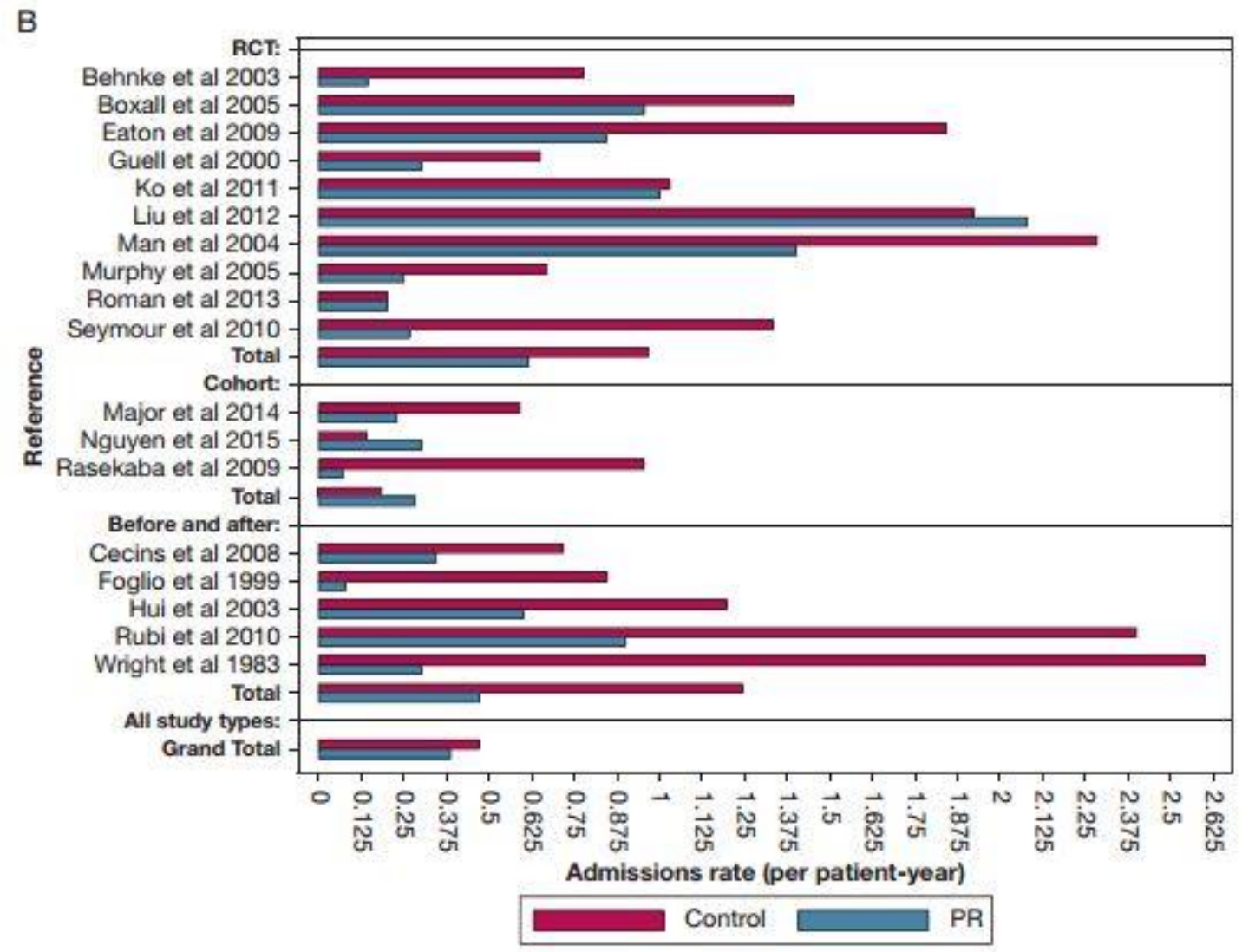


ERS/ATS recommendations

For patients who are hospitalised with a COPD exacerbation, we suggest the initiation of pulmonary rehabilitation within 3 weeks after hospital discharge (conditional recommendation, very low quality of evidence).

Mc Carthy, Cochrane 2015 *Puhan, Cochrane 2016*

Respiratoire revalidatie en exacerbaties



Moore, Chest 2016

Multidisciplinaire zorgen

Selectie van de behandelmodaliteit

FEV_1 ≥ 50% pred.
mMRC score < 1

FEV_1 ≥ 50% pred.
mMRC score ≥ 1

FEV_1 < 50% pred.
mMRC score ≥ 1

Wmax ≥ 70% pred.
VO2max ≥ 80% pred.
obv CPET

Wmax < 70% pred.
VO2max < 80% pred.
obv CPET

Advies rond verbeteren fysieke activiteit en aangepaste sportactiviteit

Beweegprogramma en verbeteren fysieke activiteit

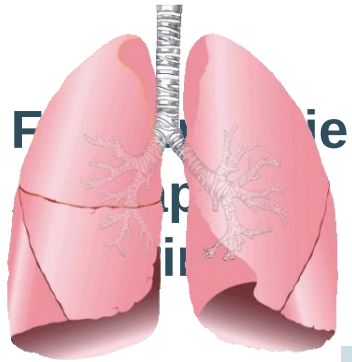
Multidisciplinaire revalidatie

Respiratoire revalidatie

Pulmonary rehabilitation is a comprehensive intervention based on a thorough patient assessment followed by patient-tailored therapies, which include, but are not limited to, exercise training, education, and behavior change, designed to improve the physical and psychological condition of people with chronic respiratory disease and to ***promote the long-term adherence of health-enhancing behaviors.***

Vicieuze cirkel van inactiviteit

COPD



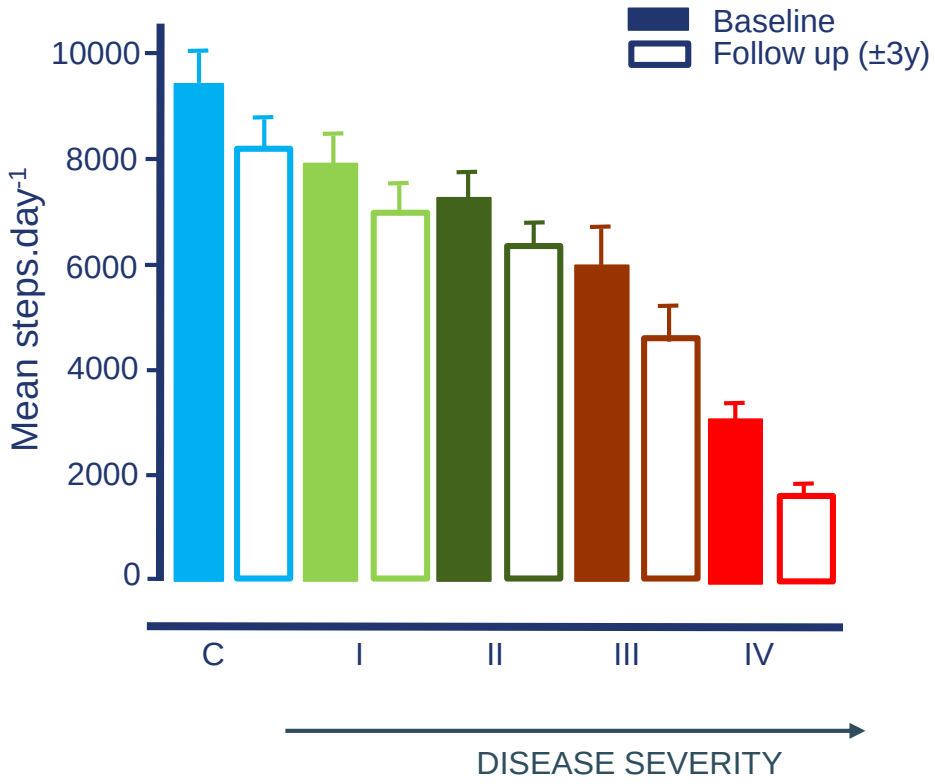
Dyspnoe

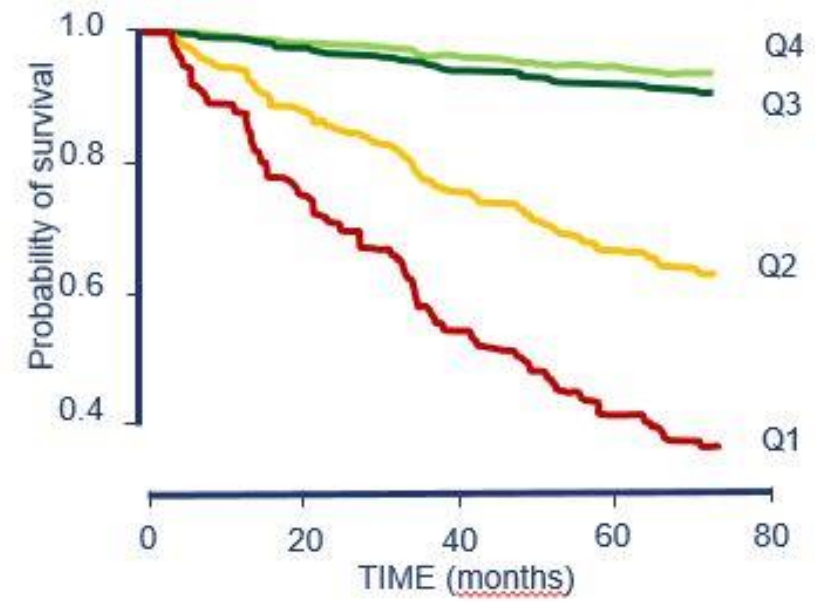
Inactiviteit

Gedaald inspannings vermogen

Deconditionering

Vicieuze cirkel van inactiviteit

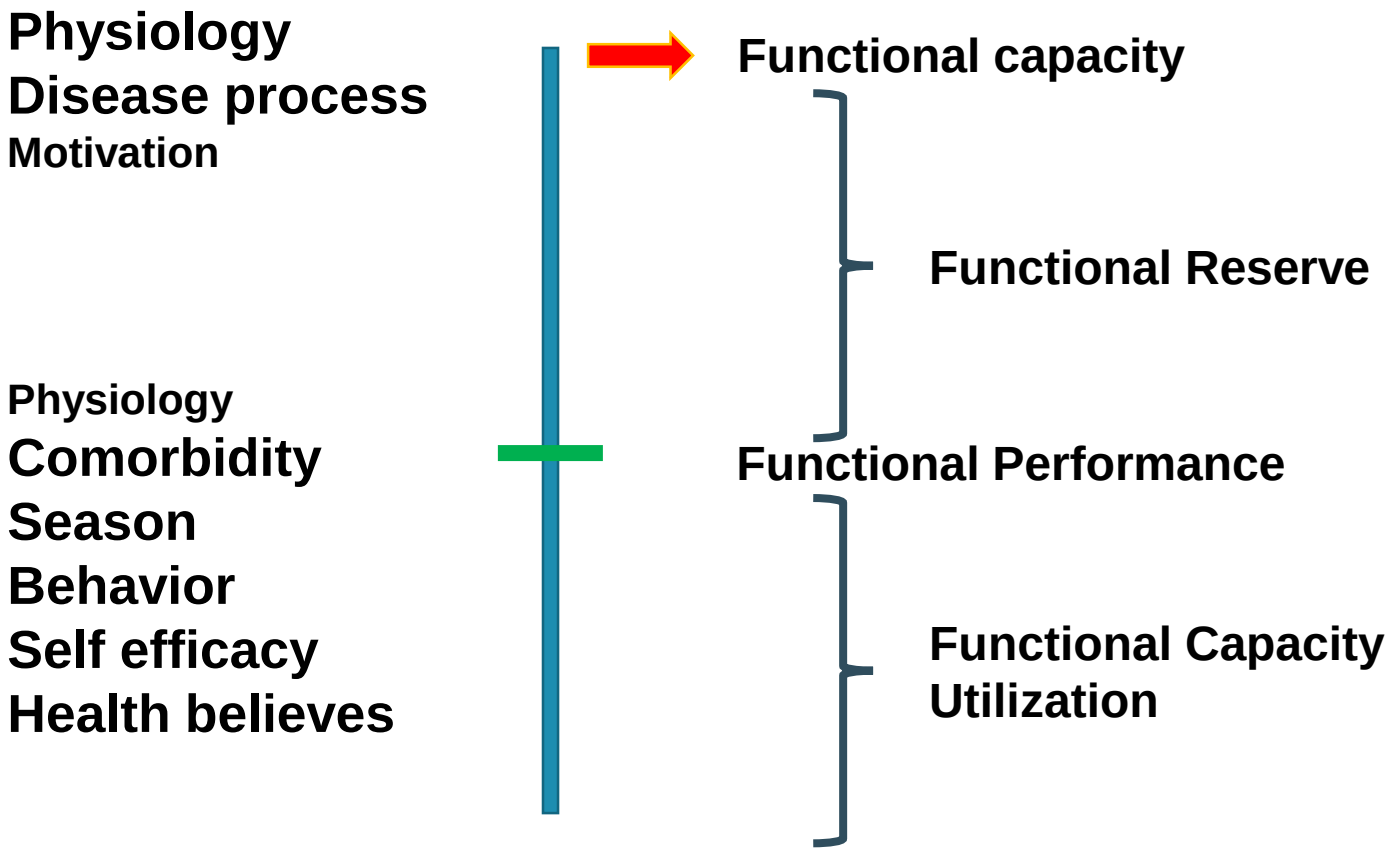




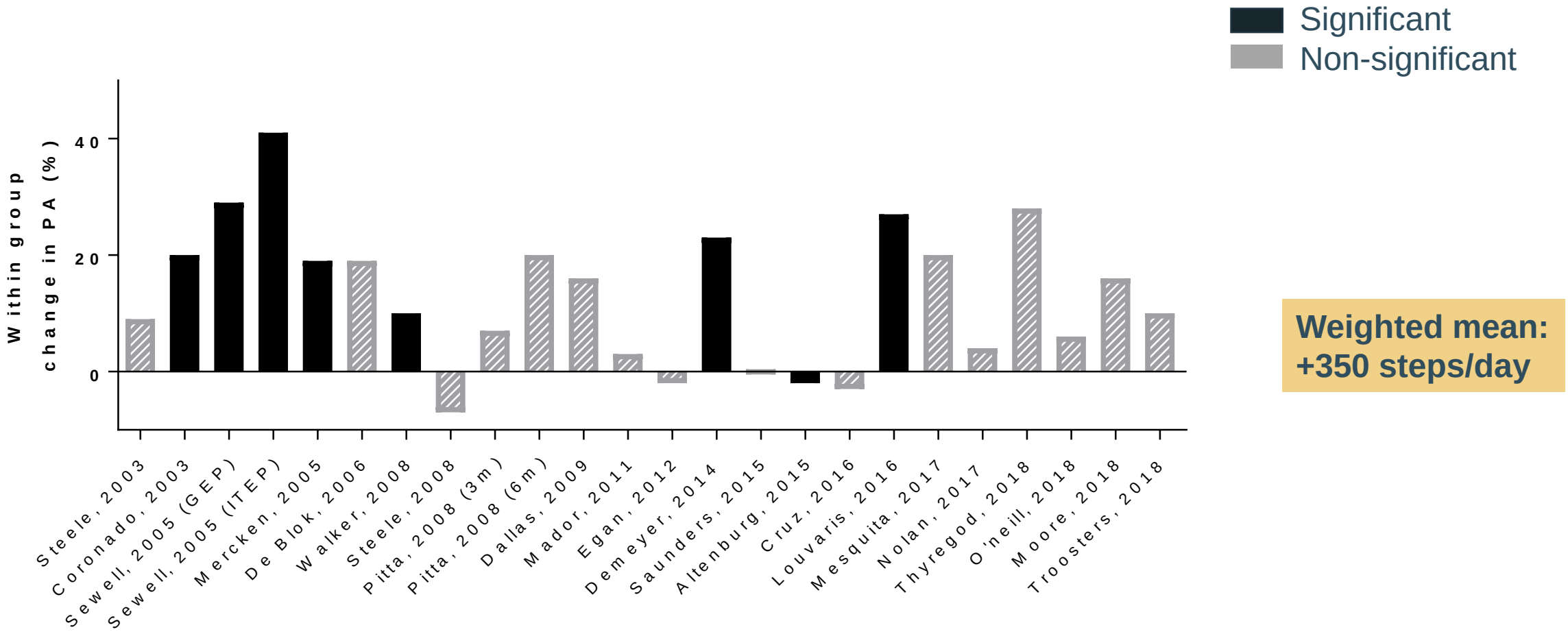
Waschki, AJRCCM, 2015. Garcia-Rio, Chest, 2012

Vicieuze cirkel van inactiviteit

Physical activity / Exercise tolerance / functional status



Effect revalidatie op fysieke activiteit



Weighted mean: +350 steps/day

Blondeel et al, Journal of COPD, 2019

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Meten van fysieke activiteit: doel?

Vragenlijsten

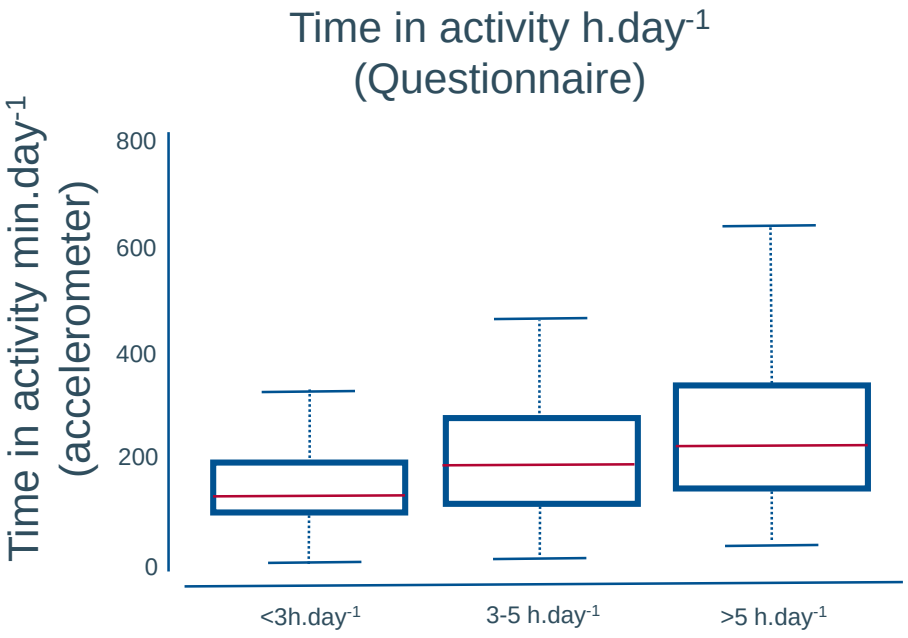
Accelerometers

Stappentellers / wearables

Vragenlijsten

vs

Yale physical activity survey



Donaire-Gonzalez, Archivos de bronconeumologia, 2011

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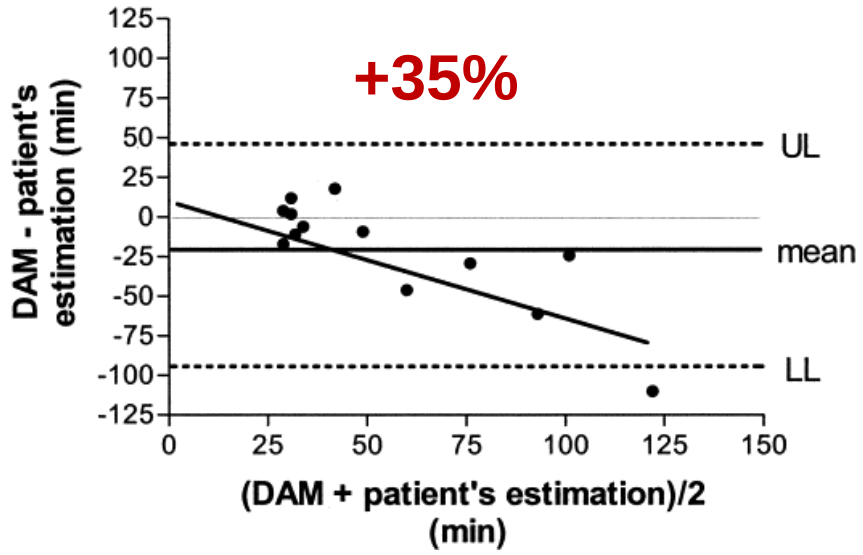
Vragenlijsten

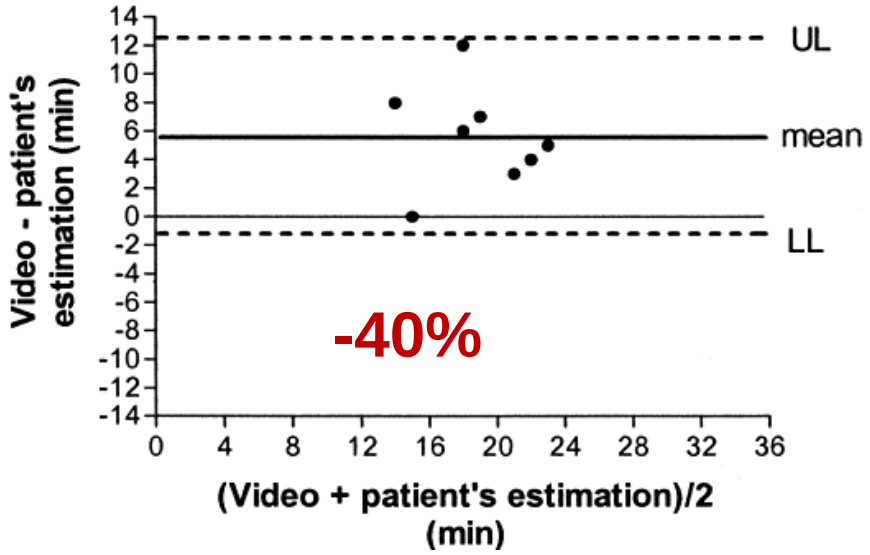
Self Report vs. Video Recording

Patiënten overschatten fysieke activiteit (wandelen) en onderschatten sedentair gedrag (zitten)

Wandelen



Zitten



Pitta, Arch Phys Med Rehabil, 2005

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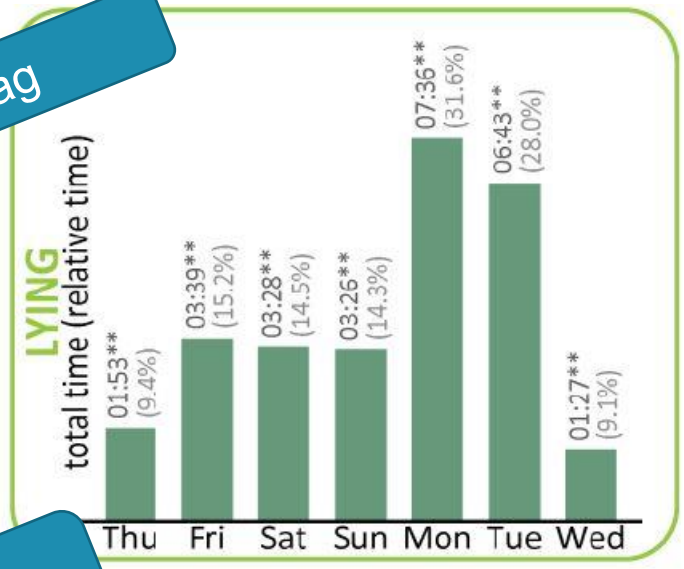
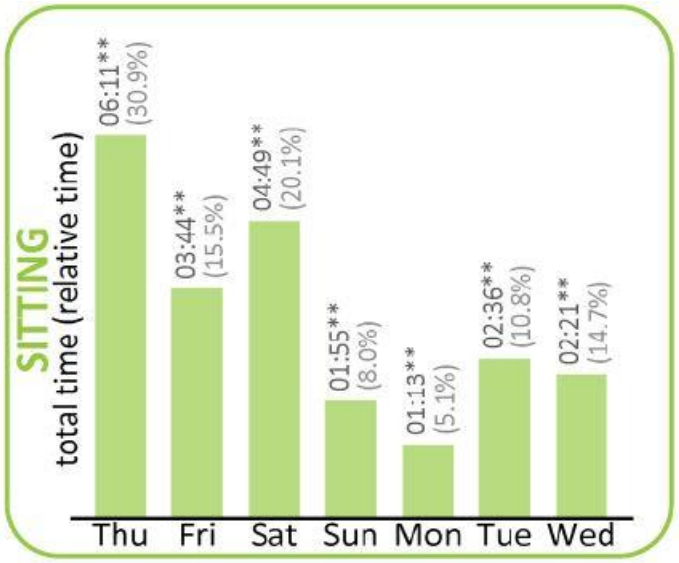
Accelerometers

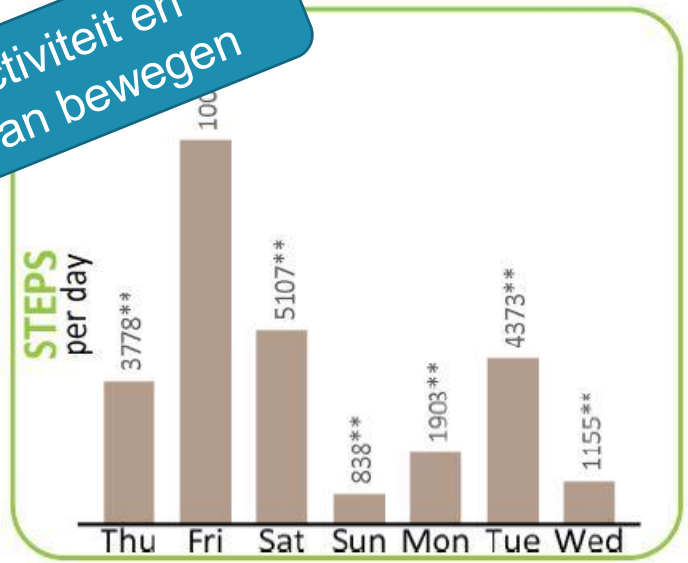
Dynaport	Actigraph
👍 Validiteit en kwaliteitscontrole 👍 Nauwkeurigheid 👍 Steps + energieverbruik 👍 Intensiteit en duur 👍 Houdingen	👍 Validiteit en kwaliteitscontrole 👍 Nauwkeurigheid 👍 Steps + energieverbruik 👍 Cutoffs 👍 30d meting
✘ Prijs ✘ 14 dagen	✘ Prijs

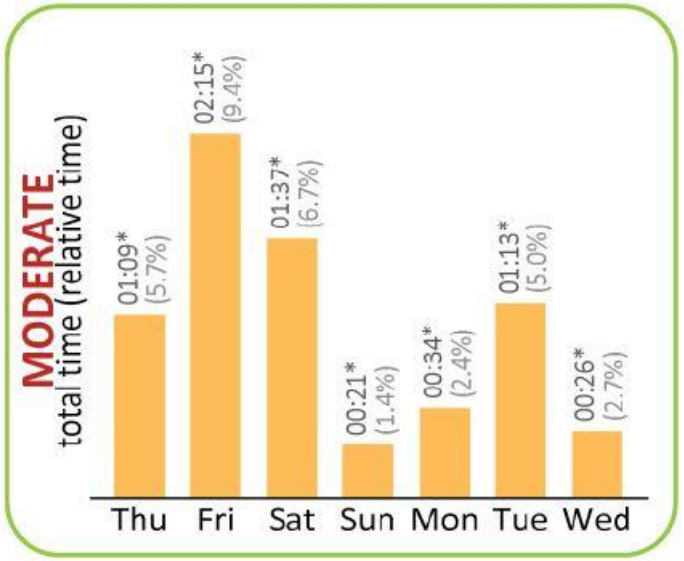
Sedentair gedrag

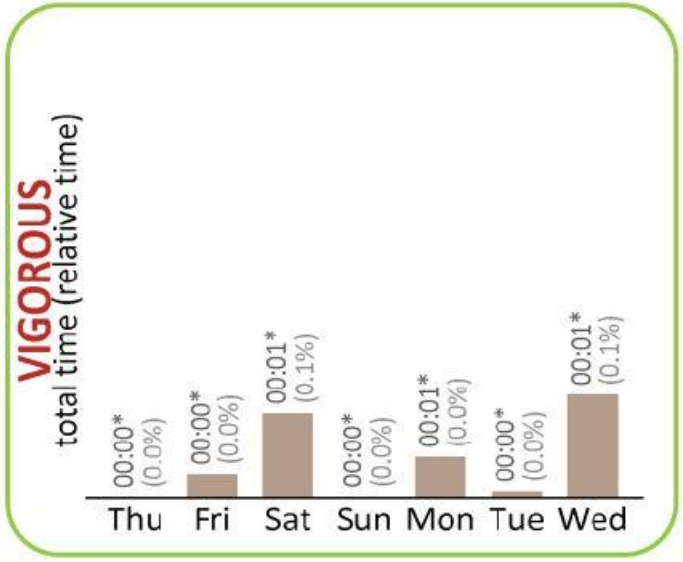




Fysieke activiteit en intensiteit van bewegen

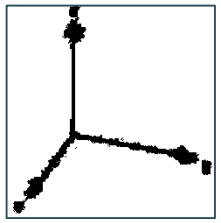


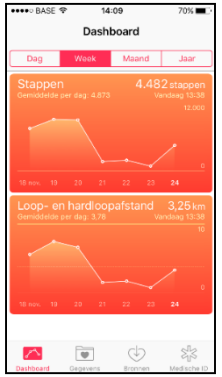




Stappenteller / wearables





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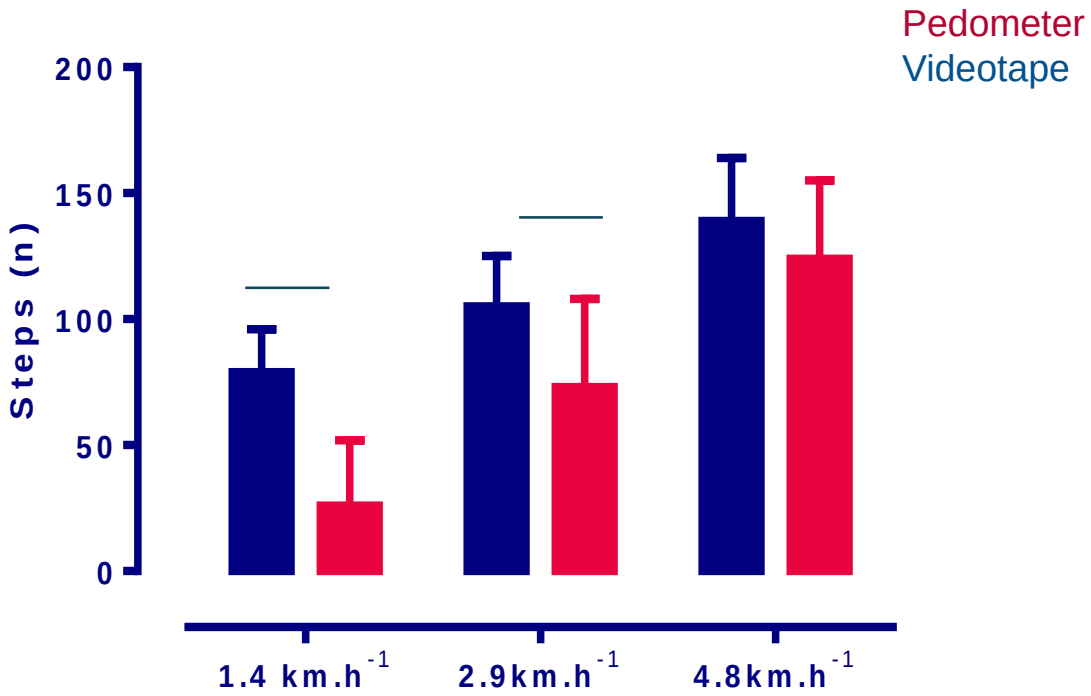
Stappenteller / wearables



CAVE: onderschatting van het aantal stappen bij traag wandelen

Furlanetto, Arch Phys Med Rehabil, 2010

Meten van fysieke activiteit: doel?

Goedkoop, gemakkelijk in gebruik, snelle inschatting van fysieke activiteit

Vragenlijsten

Self-reported, registeert vooral de uitersten,

Gevalideerd voor patiënten met COPD, uitgebreid rapport beschikbaar

Accelerometers

Geen directe feedback, Hogere kost in aankoop

Directe feedback, gemakkelijk te gebruiken, synchroniseerbaar met andere toestellen,

Stappentellers / wearables

Over- en onderestimatie van fysieke activiteit (matige accuraatheid)

Meten van fysieke activiteit

Populatie

Vragenlijsten

Screenen

Onderzoek

Accelerometers

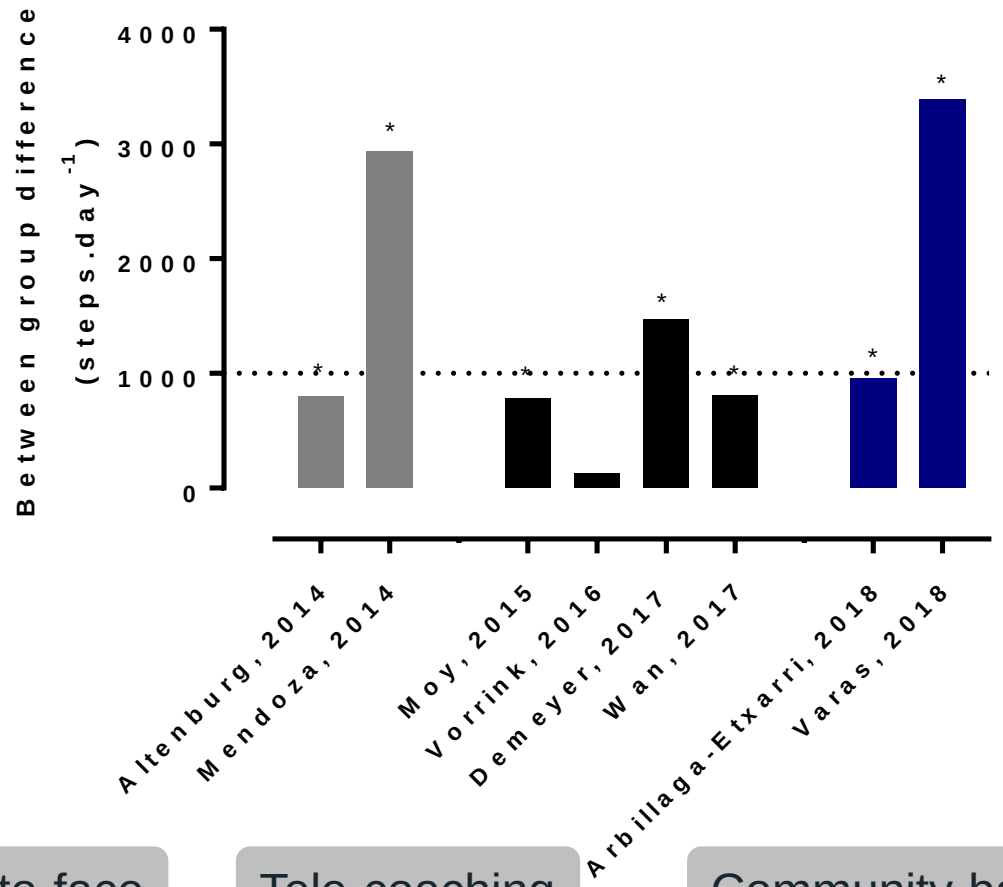
Meten

Individu

Stappentellers / wearables

Coachen

Fysieke activiteit verbeteren



Face-to-face

Tele-coaching

Community-based

Weighted mean: +1163 steps/day

Fysieke activiteit verbeteren

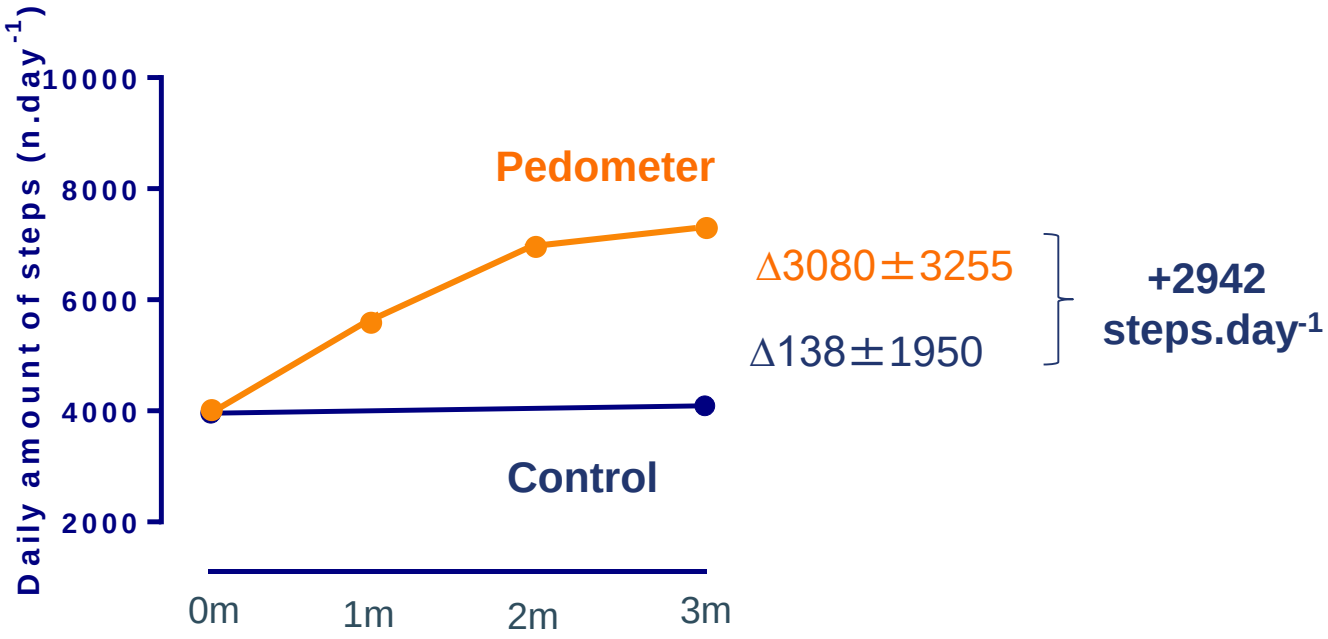
Feedback

Persoonlijk doel

Maandelijks contact (face-to-face)

<6000 verhoog met 3000 stappen
<9000 behaal 9000 stappen
>9000 behoud of verhoog

	Interventie n=52	Controle n=50
Leeftijd	69 (10)	68 (8)
BMI (kg/m^2)	27 (5)	27 (4)
6MWD (m)	463 (83)	470 (72)
FEV_1 $\%_{pred}$	66 (18)	66 (21)



Mendoza, ERJ, 2014

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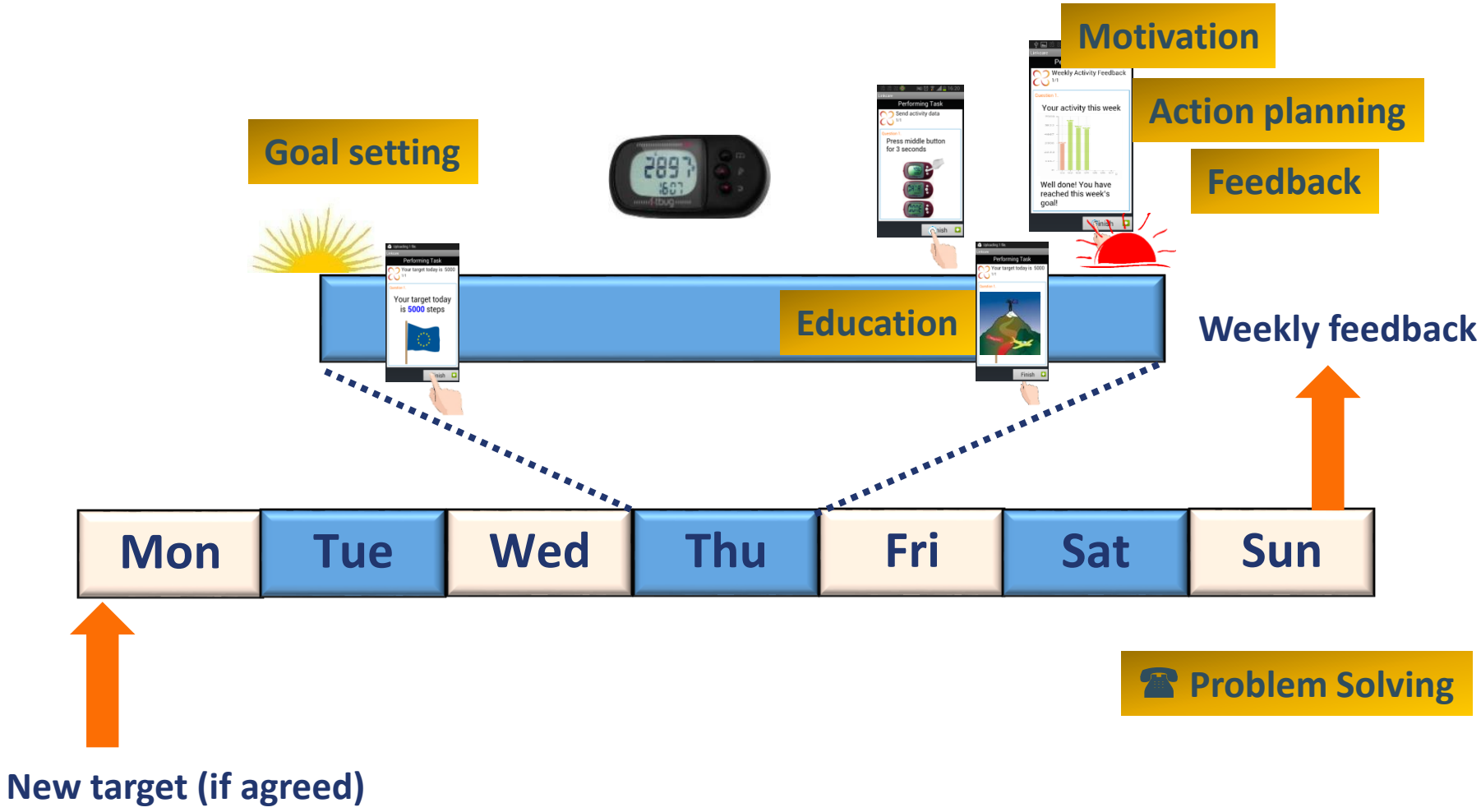
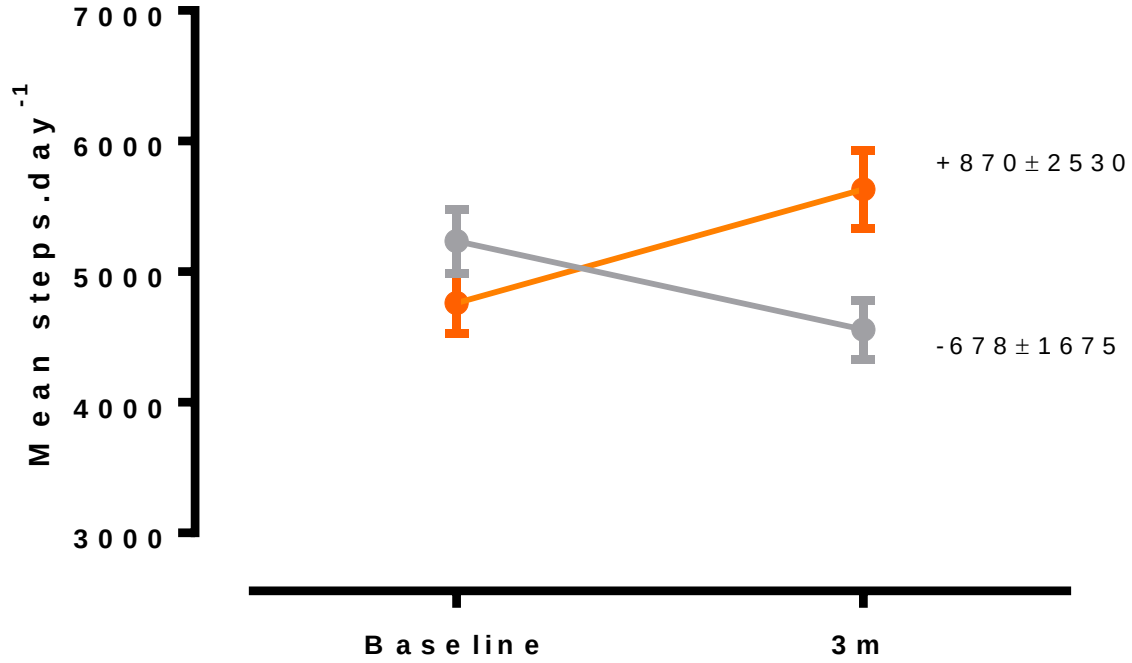
Fysieke activiteit verbeteren



Demeyer and PROactive consortium, Thorax, 2017

Fysieke activiteit verbeteren

Intervention
Control



Between-group difference 1469 [973-1966] steps.day^{-1}
$p < 0.0001$

Demeyer et al. Thorax 2017.

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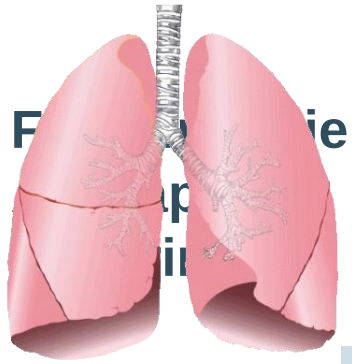
Gedragsverandering

Inactiviteit bij COPD: gevolgen

COPD



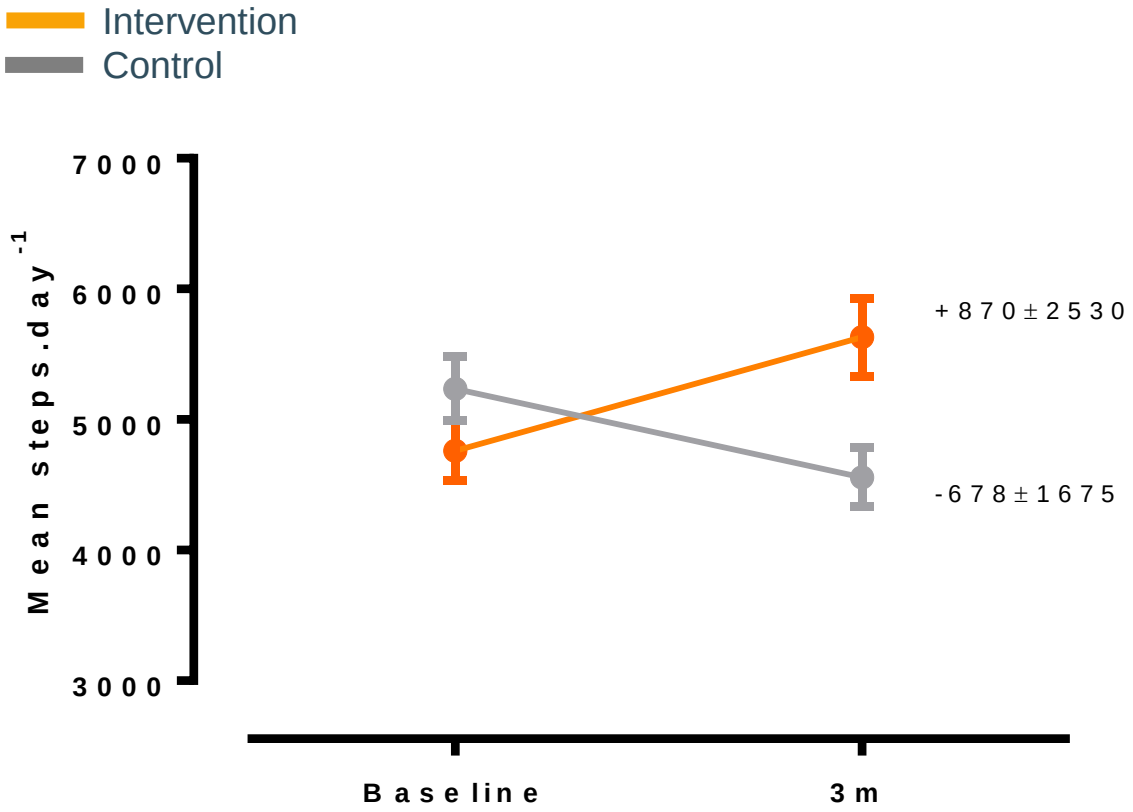
Dyspnoe

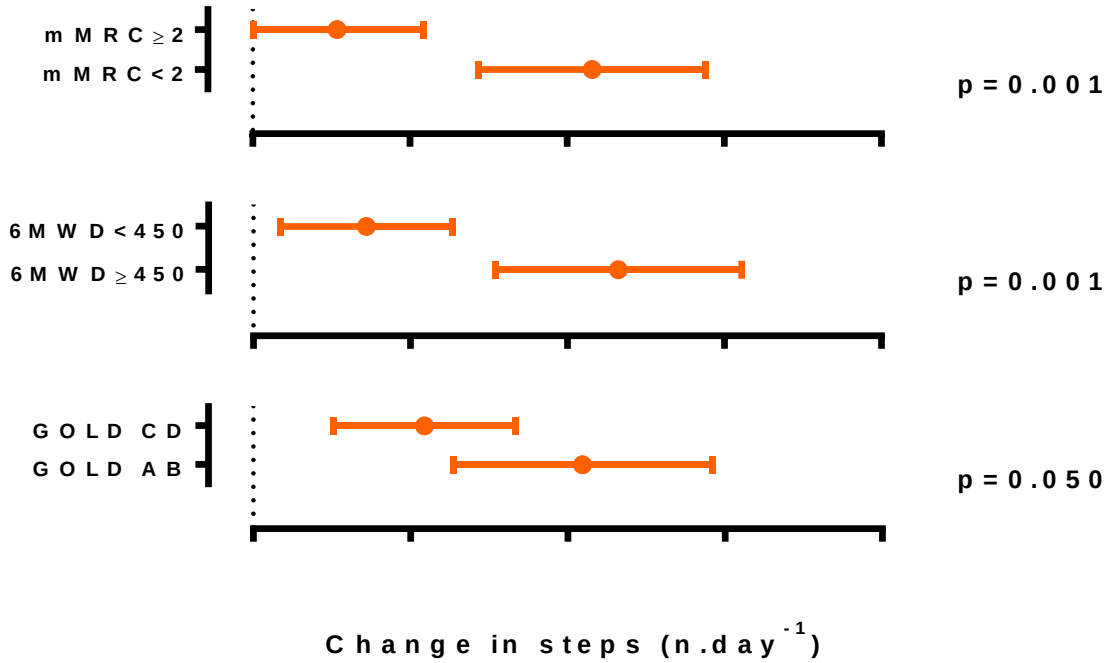
Deconditionering

Inactiviteit

Gedaald inspannings vermogen

Coaching: voor wie en wanneer?





Between-group difference 1469 [973-1966] steps.day^{-1}
p < 0.0001

Demeyer et al. Thorax 2017.

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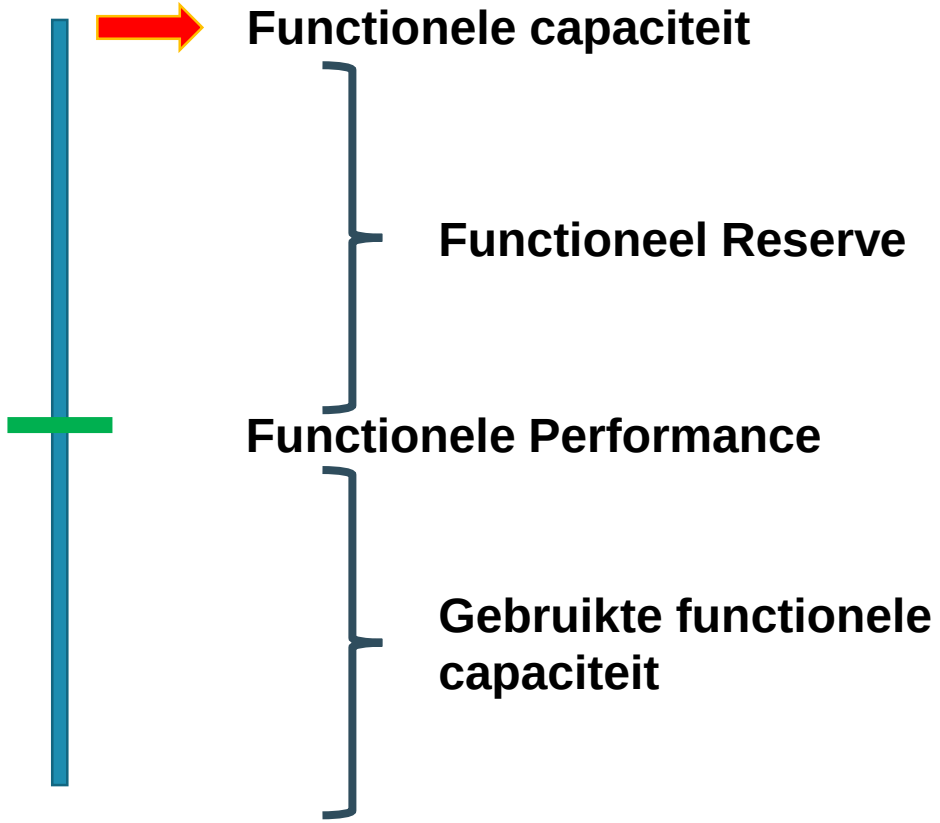
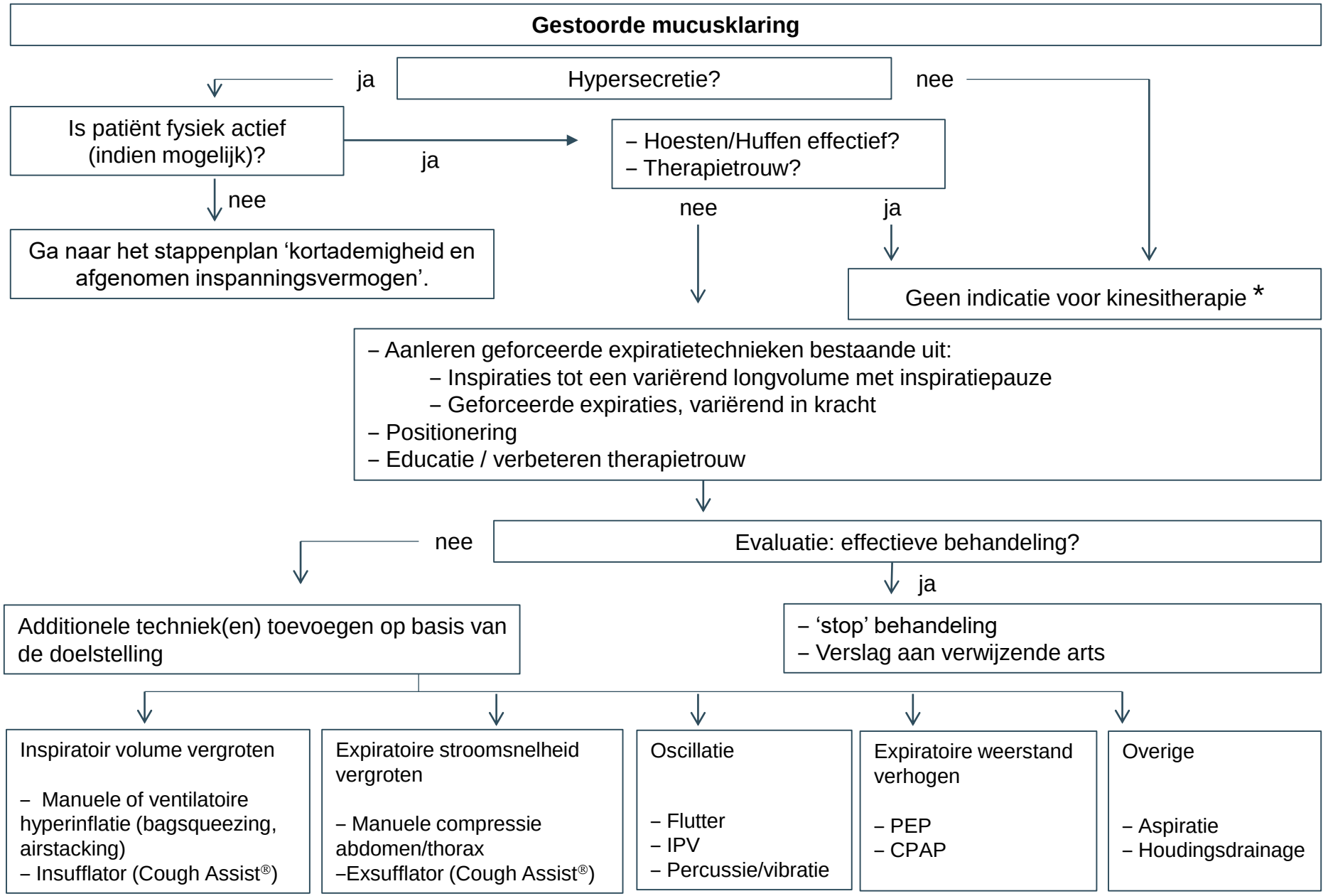
Coaching: voor wie en wanneer?

Om actief te zijn in dagelijks leven, heb je functionele capaciteit nodig!





Therapeutisch proces gestoorde mucusklaring (aangepast naar KNGF richtlijn)

* Uitzondering: preventieve therapie wordt toegepast bij patiënten met Peak Cough Expiratory Flow (PCEF) < 270 l/min.

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Take home message

Assessment is de basis voor goede training

Intensity = key

Every step counts

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Casus

Anamnese

- Man, 47 jaar, COPD
- Actief roker: 40 Pakjaren
- Werkstatus: werkloos 1,5 jaar (vroeger arbeider)
- Sociaal: Alleenstaand (zorg voor moeder)
- Hobby’s: vroeger wandelen, nu vrienden
- 2 AECOPD in afgelopen jaar (1 hospitalisatie)

Onderzoek

Antropometrie	
Lengte (m)	1.80
Gewicht (kg)	70
BMI (kg/m^2)	22
Longfunctie	
FEV1 (l)	2.08
FEV1 (%pred)	53%
FVC (l)	5.03
FVC (%pred)	104%
FRC	5.73
FRC (%pred)	160%
DLCO (%pred)	41%

Functioneel	
6MWD (m)	520
6MWD (%pred)	64%
BORG dyspneu (einde)	5
BORG zwaarte (einde)	0
Saturatie	98% - 89%
Quadriceps kracht	102 Nm (51% pred)
Symptomen	
mMRC (0-4)	1

Casus

1. Heb je nog additionele testen nodig? Welke?
2. Behandelplan: wat zal je eerste focus zijn? Wat neem je mee in tweede tijd?
3. Stel een trainingsschema op voor deze patiënt:
   - Modaliteiten?
   - Intensiteit?
   - Duur- of intervaltraining?
   - Aantal sessies per week?

4. Hoe zou je de fysieke activiteit verhogen bij deze patiënt?