

Moving and singing – breathing better with healthier lungs

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- Physical activity and lung disease
- Pulmonary rehabilitation
- Singing as a novel form of rehabilitation

- over to you...

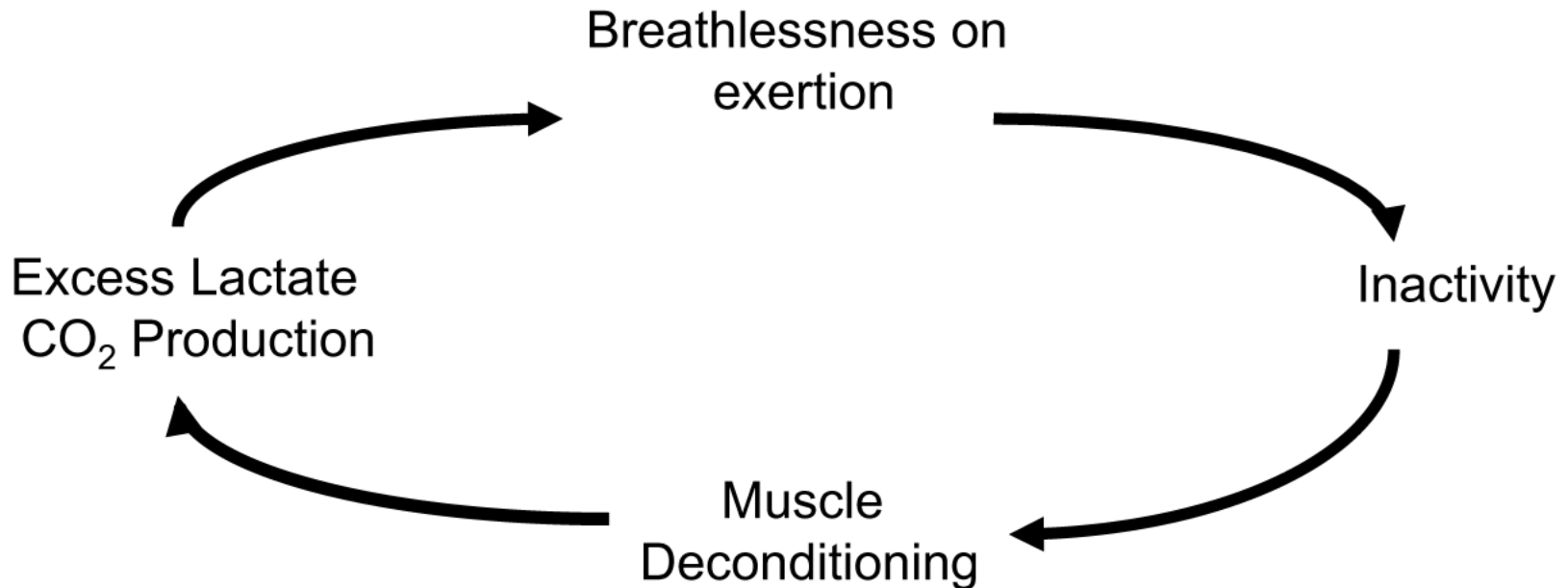
General effects of exercise



- Improve exercise capacity
- Improve lipid profile
- Reduce falls
- Reduce cardiac risk
- Treat depression
- Improve insulin sensitivity
- Protect against cognitive decline
- Protect against osteoporosis
- Improve systemic inflammation

Spiral of Disability

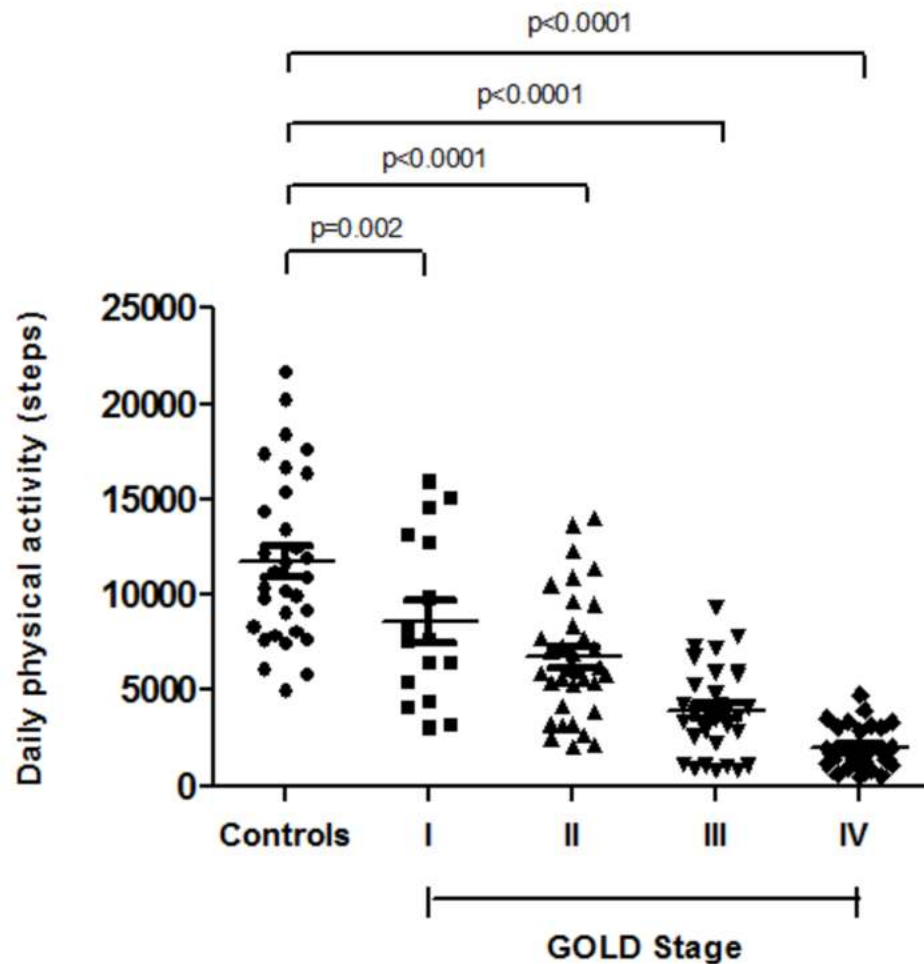
COPD – bronchitis, emphysema, respiratory muscle dysfunction, pulmonary vascular disease



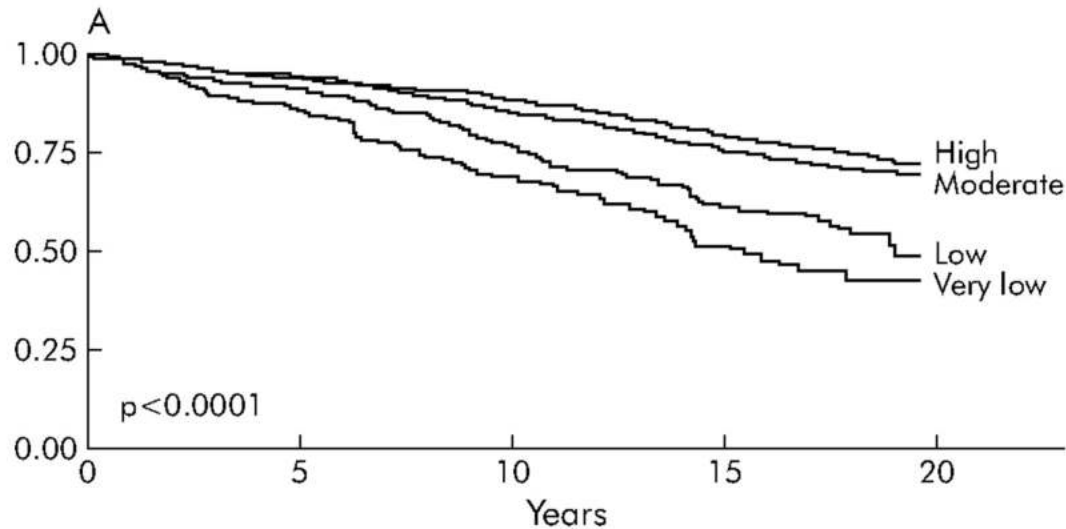
Skeletal muscle deconditioning is central to progressive deterioration in exercise capacity – exacerbates breathlessness and leg fatigue.

Leg Fatigue
Leg Weakness

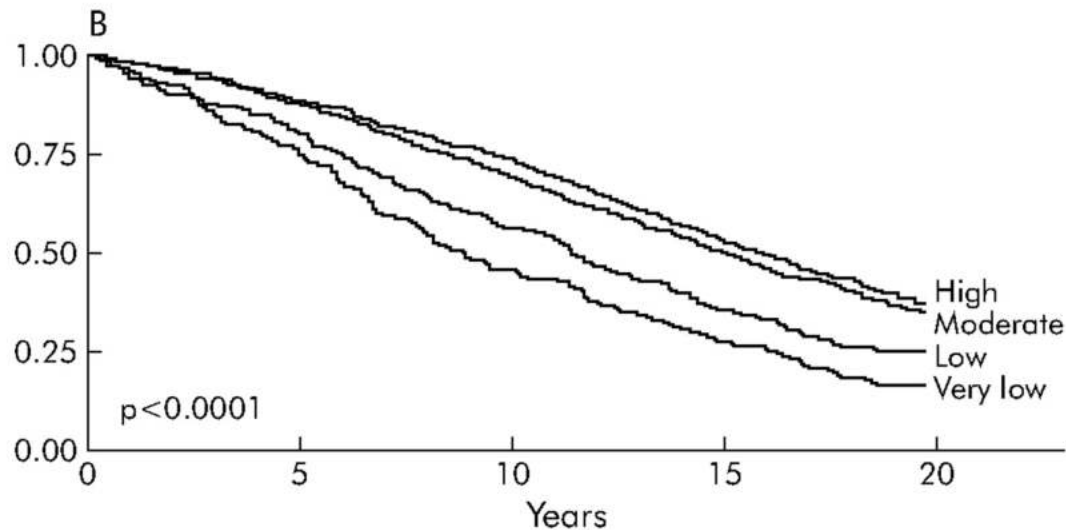
Physical activity is significantly reduced even in early COPD



Physical activity levels predict hospitalisation and death in COPD independent of disease severity



Time to first
hospital
admission
with COPD



Survival

What is pulmonary rehabilitation?

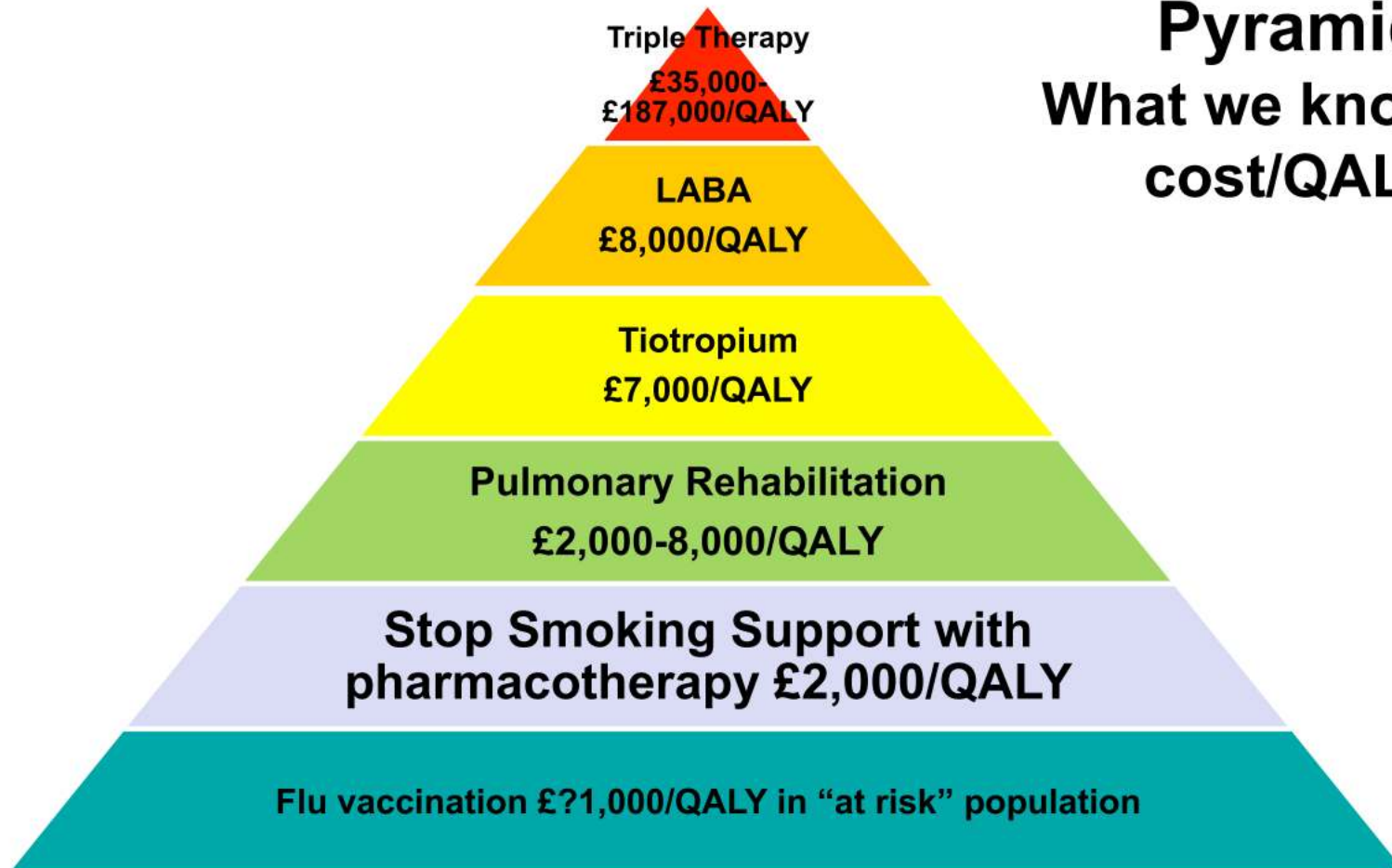
‘Pulmonary rehabilitation is an interdisciplinary programme of care for patients with chronic respiratory impairment that is individually tailored and designed to optimise each patients physical and social performance and autonomy. Programmes comprise individualised exercise programmes and education’

BTS Guideline on pulmonary rehabilitation 2013



COPD 'Value' Pyramid

What we know....
cost/QALY



“Standard” rehabilitation

- ~8 week course
- Twice weekly sessions
- Home exercise encouraged
- Mixture of aerobic and strength training
- Supervised by health professional
- Venue
 - Hospital gym/community gym
 - In-patient
 - Patient’s own home
- Integrated into clinical management



Topics to cover

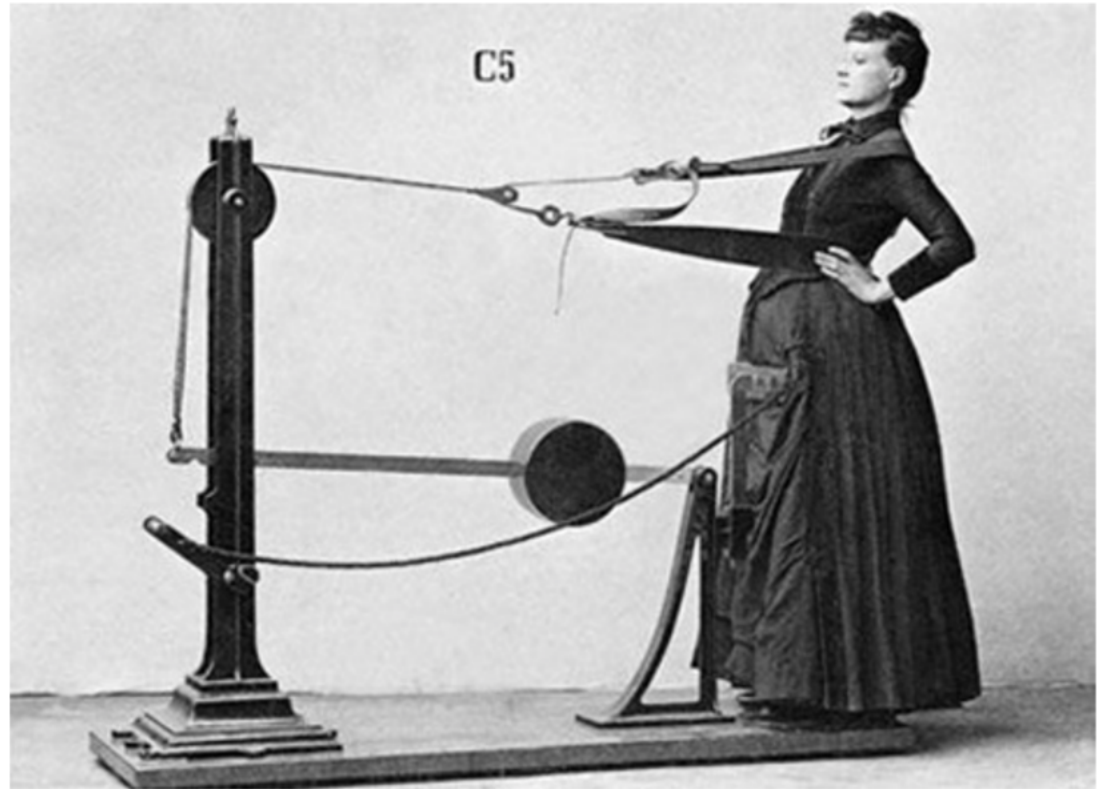
- Breathing strategies
- Proper use of medications
- Smoking cessation
- Exercise
- Dealing with anxiety/panic attacks
- Early treatment
- Contacting health provider
- Eating properly
- Travel/sex/leisure
- Lung function

“Move from teaching to self-management”



Compliance issues – why PR doesn't work

- Under diagnosis
- Under-referral
- Limited provision
- Poor understanding
 - Staff/patients
- Anxiety / depression
- Expected benefit
- Living alone
- Transport



Singing for breathing

Group workshops

- 10 - 20 mins postural work / physical stretches
- 10 mins breath-observation and management
- 10 mins vocal exercises
- 10 – 20 mins songs



Results

	Singing n=15	Control n=13	
Δ breath hold time (s)	- 0.3 (6.9)	+ 5.3 (5.7)	0.029*
Δ single breath counting	+ 0.3 (7.7)	+ 2.0 (2.7)	0.46
Δ HAD anxiety	- 1.1 (2.7)	+ 0.8 (1.7)	0.033*
Δ HAD depression	- 1.1 (2.5)	- 0.1 (1.7)	0.21
Δ SF36 Physical component score	+ 7.5 (14.6)	- 3.8 (8.4)	0.02*
Δ SF36 Mental component score	+ 2.5 (20.9)	- 3.2 (10.5)	0.38
Δ SGRQ Total	- 1.1 (10.6)	- 0.4 (5.6)	0.81
Δ ISWT (m)	+ 26 (52.6)	+ 11.3 (83.0)	0.58
Δ ISWT Subjective recovery time	+ 9.9 (60.7)	- 7.4 (81.7)	0.53
Δ O ₂ saturation recovery time	+ 47.3 (67.6)	+ 32.2 (124.7)	0.69
Δ HR recovery time	+ 29 (63.8)	+ 19.4 (110.0)	0.78

Open workshops: evaluation

257 participants (Feb 09 - Sept 2010)

Did you feel physically different after the workshops?

"I would never have realised that singing could help breathing – it did!"

"It helped me to think about breathing during singing; which **will be of benefit during my ordinary activities**"

"My whole body feels so much different just within one single session, **from tension to relaxation. Something that medical intervention won't achieve!**"

"My breathing felt **stronger!**"

"It taught me how to use the different breathing muscles for singing and other uses."

"**I normally panic** with breathing so the singing and breathing truly helped"

Conclusions

- Singing improved anxiety and some aspects of QOL
- No improvement in breathing control measures
- No improvement in functional exercise capacity or recovery time
- Patients reported significant benefit in interviews
- Overwhelmingly positive response from participants in the open workshops
 - These are consistent with likely acute effects of singing
- Translation into long term benefit may be more difficult and relate to psychological rather than physical factors
 - ?longer treatment
 - ?other measures

Discussion

Technology, lung disease and physical activity

Green gyms, lung disease and physical activity

YOUR PROGRESS

★ GOALS »

You have currently completed **0** of your **3** goals

- ☐ Reduce Salt in cooking
Category: Diet
- ☐ Reduce salt I add to the food on my plate
Category: Diet
- ☐ Stop smoking
Category: Smoking

CREATE A NEW GOAL
Click the button to the right to create a new goal for you to complete in the future. **CREATE**

🔥 STRESS »

2/10
on 05/07/2012

Your stress level is down **0** since your last update.

(0) = No stress / 10 = Very stressed

UPDATE YOUR STRESS LEVEL
Drag the slider to your current level
 0 **SUBMIT**

✈️ BMI »

Your height: **170cm**
Current weight: **70kg** (05/07/2012)
Current BMI: **24.2** (normal weight)

UPDATE YOUR WEIGHT
Weight (kg) Date

👤 LIFESTYLE »

Try eating oily fish
Oily fish is not a regular part of your diet.
It contains the fat Omega 3, which is a positive part of a cardio protective diet.

LIFESTYLE UPDATES
You can update your Lifestyle Profile after each stage of the Activate Your Heart programme.

💰 SMOKING »

£77.00 SPENT
on smoking since 01/07/2012

UPDATE YOUR HABIT
Click the button below if you've started.

ACTIVATE YOUR HEART

EXERCISE DIARY

You have completed **0** of **5** days
Complete 30 minutes (cumulative) exercise a day for 5 days over a 7 day period

Entry List **Add entry**

1. Select the exercise you completed
Walking 📌

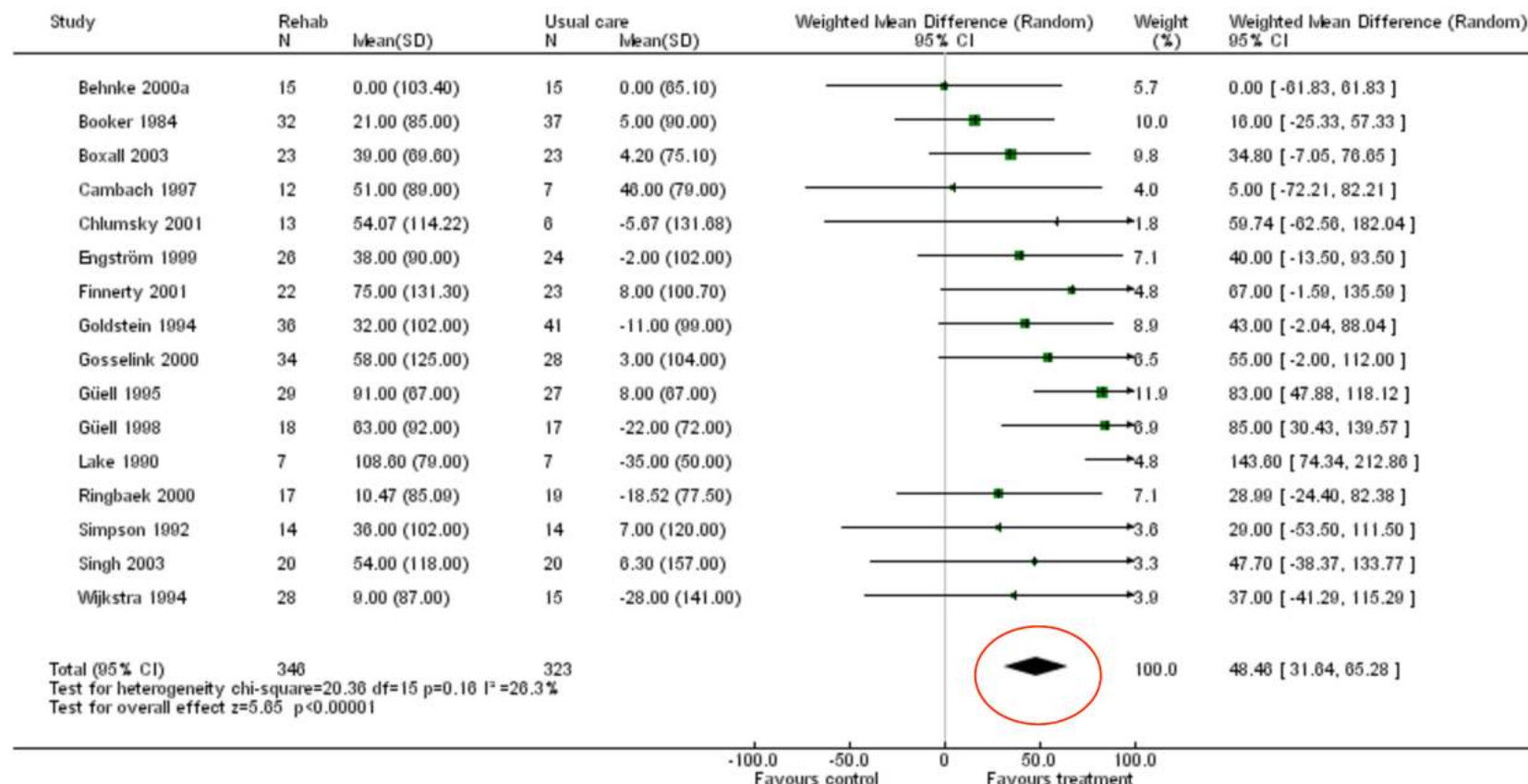
2. Date of exercise:

Current section: **Your Progress** ▾ **Menu**



Pulmonary rehabilitation for COPD

Functional exercise capacity



Non-pharmacological management for breathlessness

- Breathlessness has sensory and affective components
- Pulmonary rehabilitation is known to be effective
- Can changing pattern of breathing improve symptoms?
- Limited evidence for benefit of interventions targeting breathing directly -
 - diaphragmatic breathing
 - pursed lip breathing exercises
 - yoga
 - Singing
 - laughter
- Singing requires control of posture & breath

- Physical activity
 - prevents disease
 - reduces disease severity
- Physical activity is low carbon
 - walk don't drive
 - avoids need for treatment
 - low carbon compared to pharmaceutical costs

Qualitative interviews

- Participants underwent structured interviews by a health psychologist
- Positive physical effects reported relating to breathing retraining
- Themes included
 - Physical sensation
 - achievement/efficacy
 - general well-being
 - mood/pleasure
 - community/social support
- No negative effects reported

- Technology to encourage physical activity
- “Green gym” exercise programs

- Divide up into groups
- Consider
 - Reasons why physical activity relevant
 - Forms of physical activity
 - Barriers to implementation
 - Strategies to engage stakeholders