



RESPIRATORY CHANGES IN LONG COVID

Serifat Taiwo & Melissa Sundrum

On Behalf of NEL Long COVID/ Post COVID services



Is Long COVID still around?



Estimated prevalence of 1.9 million in UK (ONS 2023)



1.5 million people (79%) report day-to-day activities adversely affected



381,000 (20%) report "limited a lot"



First had suspected COVID-19: 12 weeks previously: 83,000 (4%)
>1 year previously: 1.7 million (69%)
> 2 years previously: 762,000 (41%)



patient
described

Out of all the patients with long covid, it shows that 33% of experienced respiratory symptoms which they commonly as breathlessness (National office of statistics, 2022)

What is Breathlessness?

- ▶ Shortness of breath —known medically as dyspnea —is often described as an intense tightening in the chest, air hunger, difficulty breathing, breathlessness or a feeling of suffocation



Causes of Breathlessness



Breathlessness can be caused by Lung, Heart or neurological conditions.



Mental health cause i.e-Anxiety .



Anaemia : Low oxygen levels .



Fatigue: Usually worsens breathlessness as opposed to a cause.



An abnormality in breathing pattern

Effect of Breathlessness.



Test your breathing

1. When sitting resting, do you breathe through

Your Nose ?

Your Mouth ?

2. Can you hear your breathing?

Yes

No

3. How many breaths do you take in one minute?

8-12

13-16

17+

Test your breathing.

4. Place one hand on your tummy and one on your chest:

Does your tummy expand when you breathe in? Yes No

Does your upper chest move when you breathe in? Yes No

▶ 5. Time how long you can hold your breath.

Did you hold your breath for:

Less than 30 secs

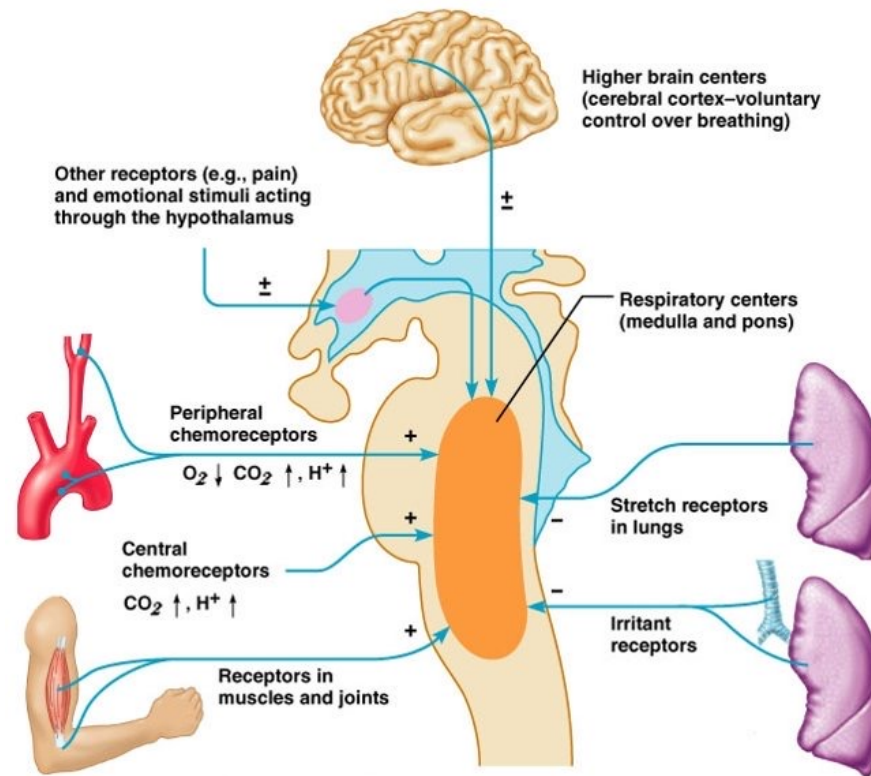
More than 30 secs ☐

▶ 6. Do you sigh or yawn a lot?

Yes

No

How do we breathe.....?



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Breathing Pattern Disorder

- ▶ Can be Physiological i.e Asthma, exaggerated response to CO₂, caffeine, Aspirin.
- ▶ Biomechanical i.e Postural adaptation, chronic mouth breathing, pain, upper limb dysfunction, MSK problem.
- ▶ Physiological i.e Anxiety, stress, panic, phobia.
- ▶ Abnormal breathing Pattern can present as:
 - Increase respiratory rate.
 - Increase breathing volume.
 - Increase work of breathing.
 - CO₂ intolerance.//Reduce amount of CO₂ in blood.
 - Inadequate CO₂ level can affect O₂ delivery to tissue and organs.

Effect of an abnormal breathing pattern

- ▶ Headache.
- ▶ Breathlessness.
- ▶ Fatigue.
- ▶ Brain fog.
- ▶ Tingling sensation in hands/feet.
- ▶ Dizziness.
- ▶ Blurred vision.
- ▶ Cold hands/feet.

Management of Breathlessness.

Breathing Techniques

Positioning

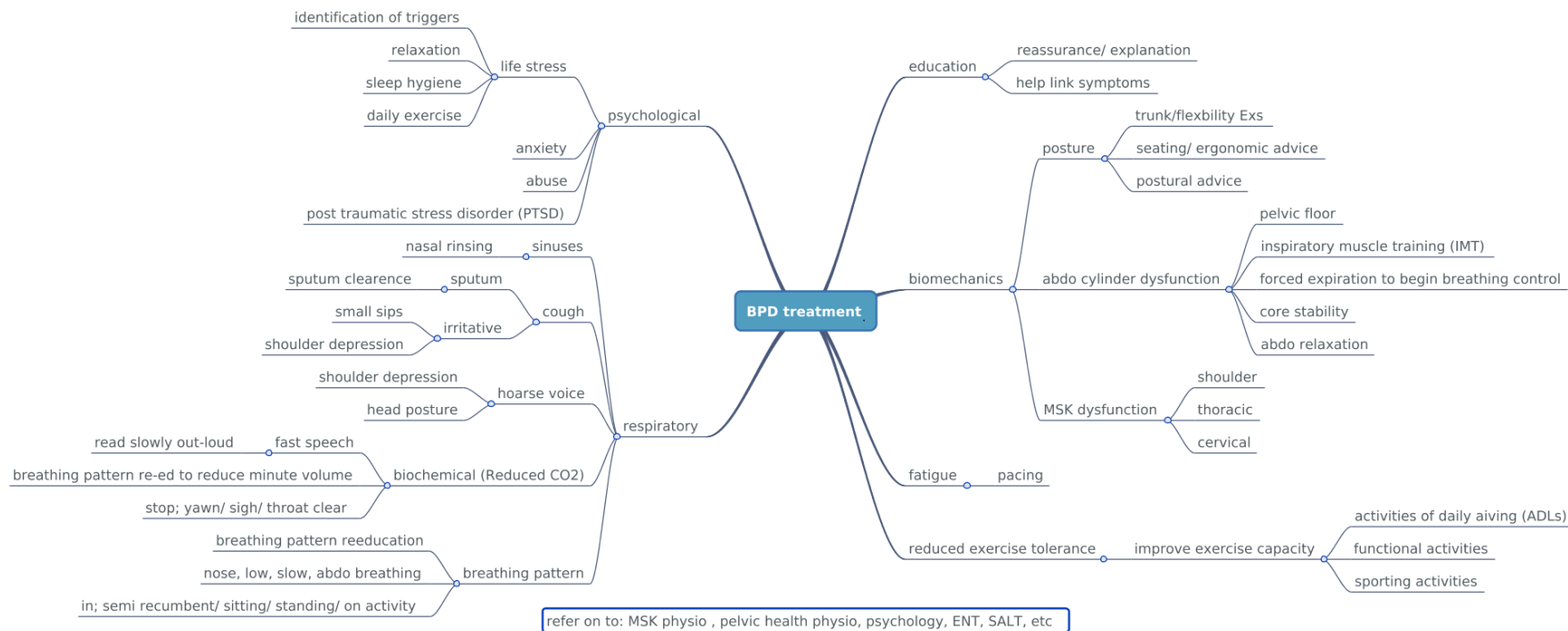
Exercise

Therapy for emotional wellbeing

Breathing Pattern Disorder



Breathing Pattern Disorder (BPD) Treatment Selection Mind Map



Professional video for LC.



Q&A



Important links:

- ▶ <https://www.physiotherapyforbpd.org.uk>
- ▶ <https://www.asthmaandlung.org.uk>
- ▶ <https://www.brit-thoracic.org.uky>
- ▶ <https://www.csp.org.uk>



Best care by the best people

Long Covid Respiratory Management

Patrick Thoeung

Senior Physiotherapist in NELFT Long Covid Team

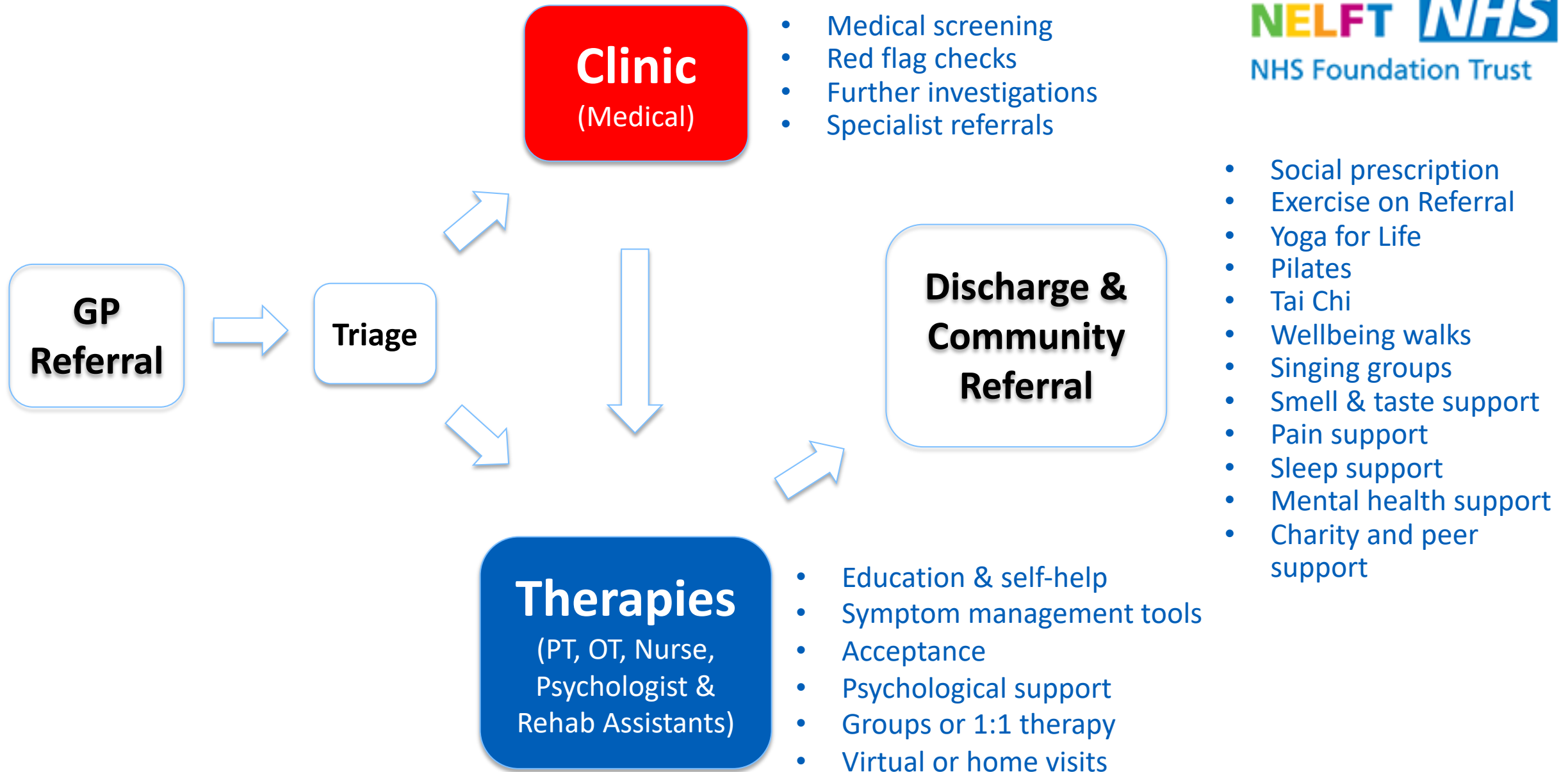
BaAppSc (Physiotherapy), University of Sydney

Post-grad Certificate in Education, LSBU

MSc (Advance Physiotherapy), University of Hertfordshire







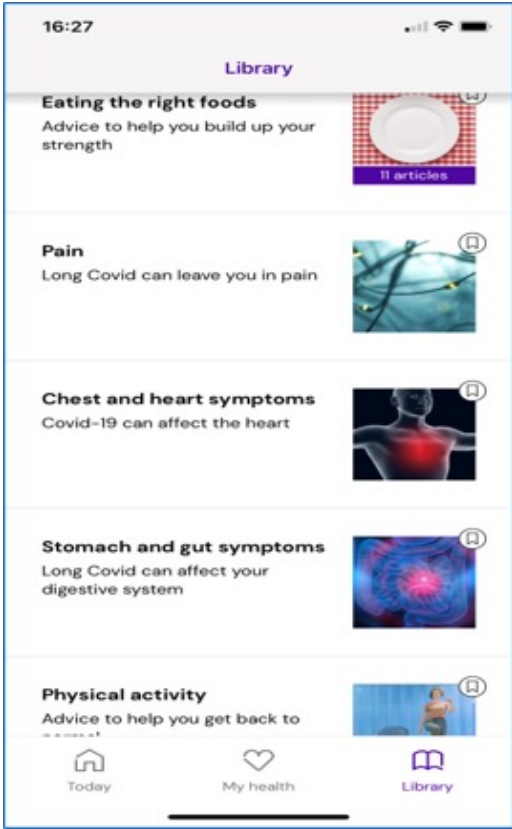
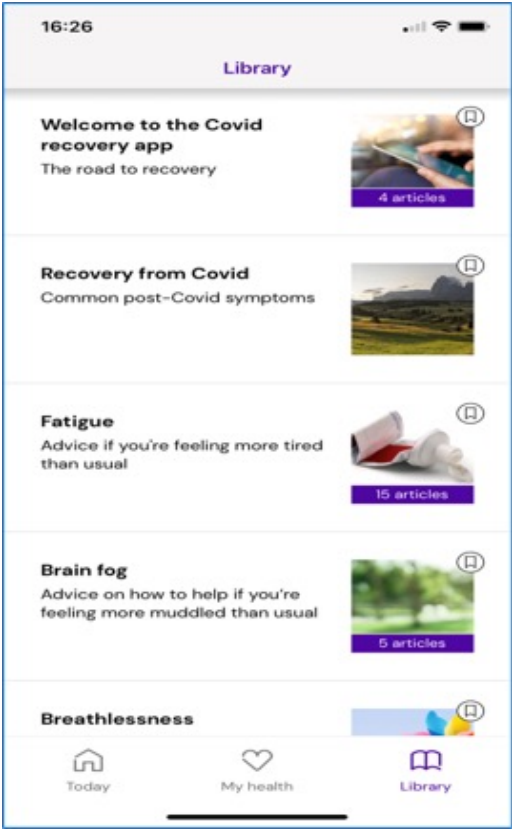
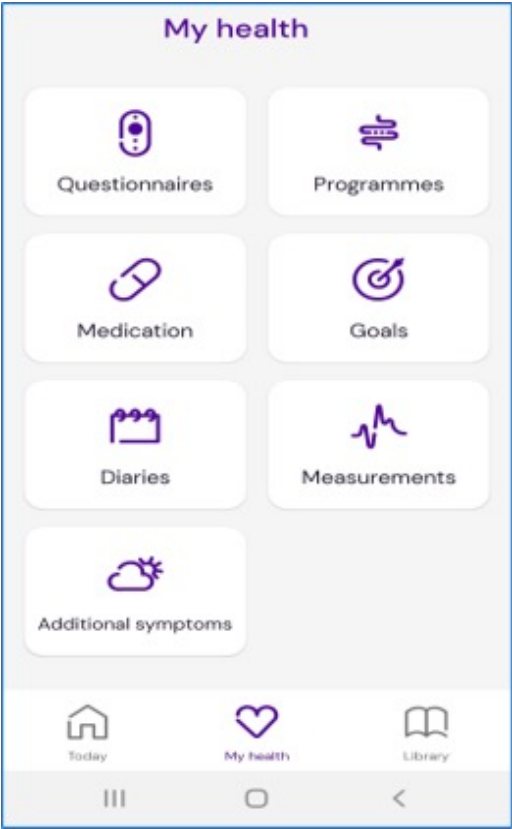
Clinic investigations



Self-management tool



Living With ¹²⁺
The Living With app
Living With Ltd
Free



Outcome Measures

Respiratory:

- Dyspnoea-12
- MRC

Mood, Anxiety & Depression:

- GAD-7
- PHQ-8

Fatigue & Brain Fog:

- FACIT (fatigue)
- PDQ-5 (brain fog / mental fatigue)

General Recovery & Quality of Life:

- Covid Recovery
- EQ-5D-5L
- WSAS
- Health Service Use
- Daily Physical Activity



Additional Outcome Measures

Screening Questionnaires:

- FAS (fatigue)
- Self-rated fatigue score (out of 10)
- BPD questionnaire [Test your breathing - Physiotherapy for breathing pattern disorders \(physiotherapyforbpd.org.uk\)](#)
- Breath-Hold (Bolt score) [Buteyko - What is it? - Buteyko Breathing Centre UK](#)

Functional Outcomes:

- 6-Minute Walk Test
- 1-Minute Sit-to-Stand Test



Education, awareness & support

- 10-week therapy-led educational programme (virtual)
- Opportunity for Q & A
- Opportunity for peer support
- Resources and signposting
- Guided relaxation / meditation

Sleep Hygiene
Improving habits during day and before bed to support sleep

Behaviors:

- ✓ Avoid stimulants
- ✓ Set a regular bedtime
- ✓ Physical activity during the day
- ✓ Reduce screen time
- ✓ Warm bath before sleep
- ✓ Have a wind down routine (sleep ritual)

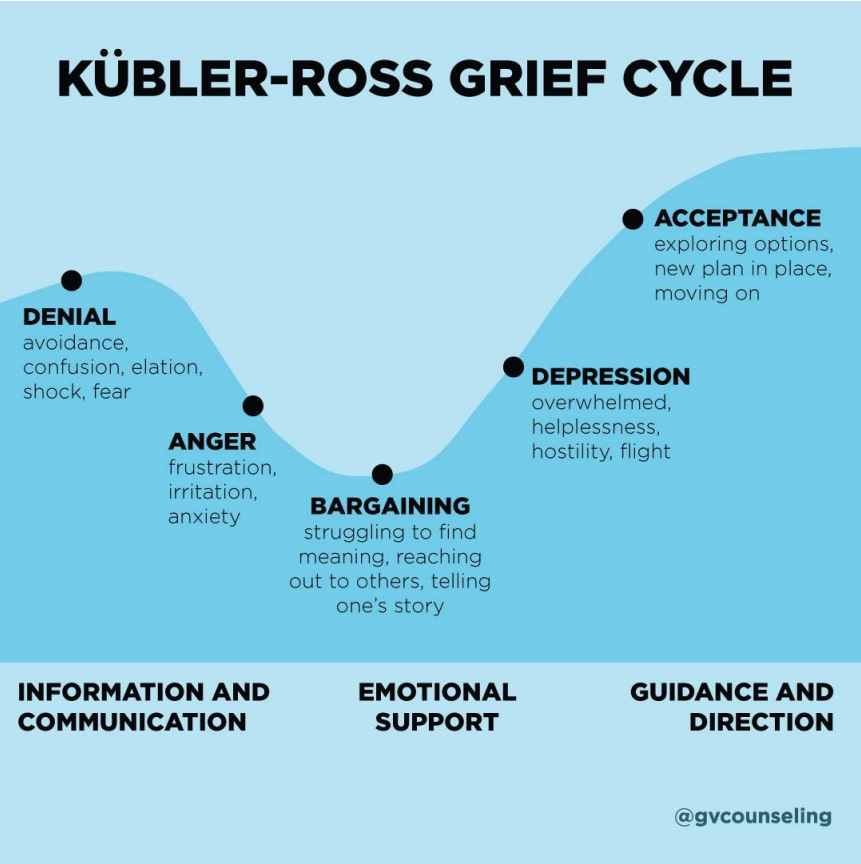
Best care by the best people

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Thoeung Patrick



Acceptance & ownership



Role of physiotherapy in breathing dysfunction

Best care by the best people



Understanding breathing dysfunction



Acute Covid

- Cloudy CXR / CT
- Low SaO₂
- Abnormal LFT
- Needs O₂ Therapy
- Clear lung pathology

Long Covid

- Normal CXR / CT
- Normal SaO₂
- Normal LFT
- No indication for O₂
- Unclear lung pathology



- Report breathlessness
- Display increase WOB
- Limits mobility and function



Theory: altered autonomic control

Parasympathetic

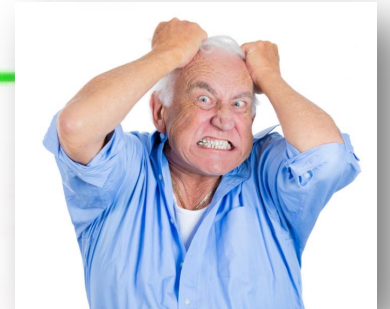
Sympathetic

REST AND DIGEST

FIGHT OR FLIGHT REACTIONS

- Effortless/Easy Breathing
- Ability of Diaphragm & Pelvic Floor to lengthen
- Confident 'Spring', 'Light' Movement Behaviour
- Awareness of Movement Patterns
- Clear Sensory Awareness of Body
- Movement Variability
- Good Weight Distribution Through The Feet
- Controlled Breathing Through Movement

- Increased Breathing Rate & Depth
- Decreased Movement of Diaphragm & Pelvic Floor
- Protected Postures & Movement Patterns
- Decreased Awareness Or Recruitment
- 'Smudged' Motor Maps For Patterns of Movement
- Decreased Movement Variability
- Rigidity
- Poor Weight Distribution Through Feet
- Poor Control of Movement With the Breath



[Post-Covid-Syndrome-breathing-final.pdf](https://physiotherapyforbpd.org.uk/Post-Covid-Syndrome-breathing-final.pdf)
(physiotherapyforbpd.org.uk)



Theory: altered CO₂ tolerance

High PaCO₂
> 6 kPa



Normal PaCO₂
4.6 – 6 kPa

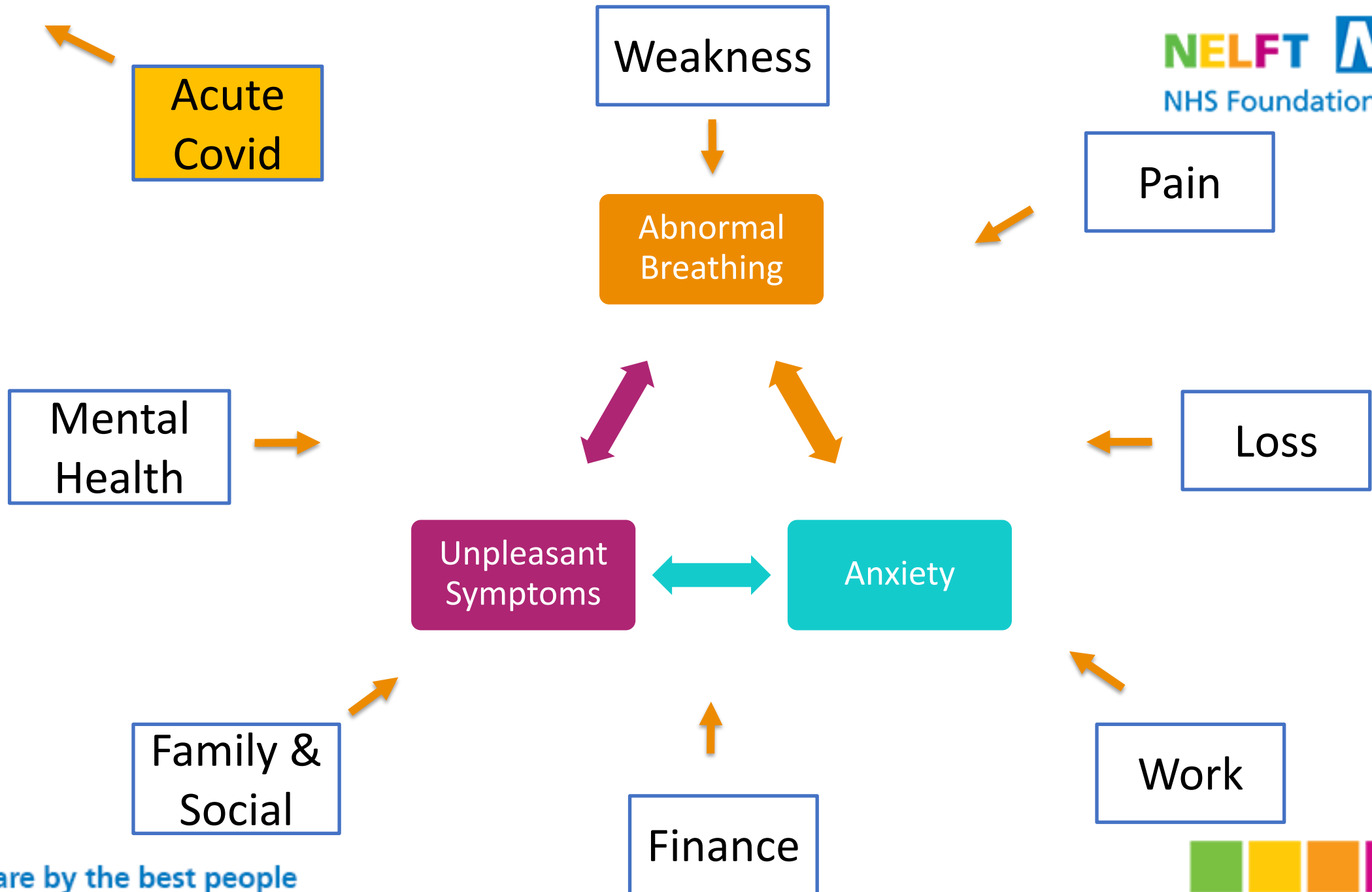


Low PaCO₂
< 4.6 kPa

← New normal

- Rapid breathing during Acute Covid may have caused excessive and prolonged CO₂ clearance.
- Overtime, this may have led to the body becoming acclimatised to a lower PaCO₂ range.
- Therefore, the body believes it must keep breathing rapidly to maintain the new normal.
- Hence, what some people describe as not getting enough air may just be intolerance to normal CO₂.





Management approach

1. Mindfulness & Meditation



2. Breathing restoration



Breathing restoration key principles

1

Breathe
through
your nose

[YOUR-Guide-to-Nose-Breathing-.pdf
\(physiotherapyforbpd.org.uk\)](https://www.physiotherapyforbpd.org.uk/your-guide-to-nose-breathing-.pdf)

2

Know your
breath-hold
score

[Buteyko - What is it? - Buteyko
Breathing Centre UK](https://www.buteyko-breathing-centre.co.uk/buteyko-what-is-it/)

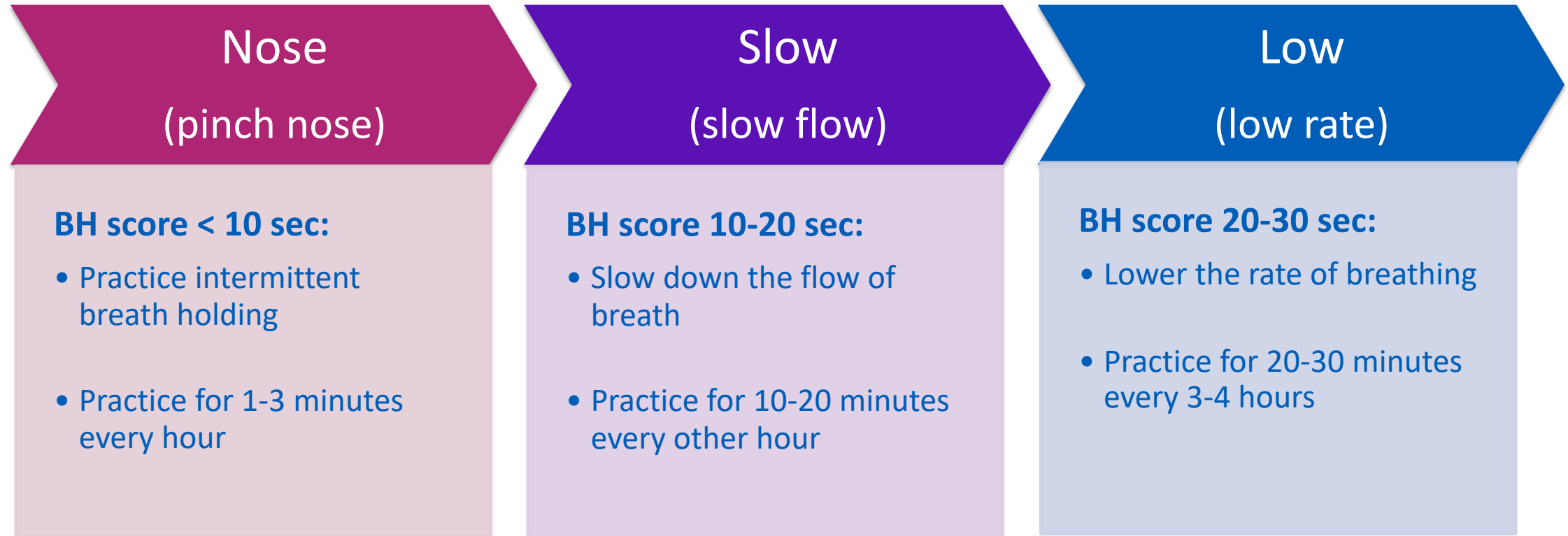
3

Progressive
breathing
exercises

[https://youtu.be/JG6b0C32izA?si
=t5bRBxbCDfeEG70o](https://youtu.be/JG6b0C32izA?si=t5bRBxbCDfeEG70o)



Progressive breathing exercises



<https://youtu.be/JG6b0C32izA?si=t5bRBxbCDfeEG70o>



Signposting and referrals



EVERYONE ACTIVE'S GP EXERCISE
REFERRAL SCHEME

THE YOGA FOR LIFE
PROJECT

Yoga + Health

We are a community of specialist yoga teachers & therapists committed to using yoga to improve health

We work together with the NHS and health professionals providing therapeutic yoga to support physical and mental health

RAMBLERS
WELLBEING
WALKS
Havering



ENO Breathe

A breathing and wellbeing programme for people recovering from the effects of COVID-19

