



BREATHING PATTERN DISORDER DYSFUNCTIONAL BREATHING

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Physiotherapist
Interests: Quality Improvement
Health inequalities

OVERVIEW

- ❖ Background
- ❖ Local picture
- ❖ Screening tools
- ❖ Intervention

BACKGROUND

What are we talking about?

“An alteration in the normal biomechanical patterns of breathing that result in intermittent or chronic symptoms which may be respiratory and/or non-respiratory”



In essence?

- ❖ Inefficient breathing
- ❖ Symptoms can mimic or exacerbate symptoms of asthma
- ❖ Symptoms without/ in excess of expectation



BREATHING PATTERN DISORDER

Hyperventilation

Why is it important?

Participation in sport, physical activity, performance

In adult asthma breathing retraining improves:

- people's experience of asthma
- use reliever less often
- quality of life

Bruton et al, Lancet 2018



NORMAL BREATHING AT REST

Automatic, light and calm

Seemingly effortless inspiratory expansion

(no accessory muscles, no resistance from abdominals)

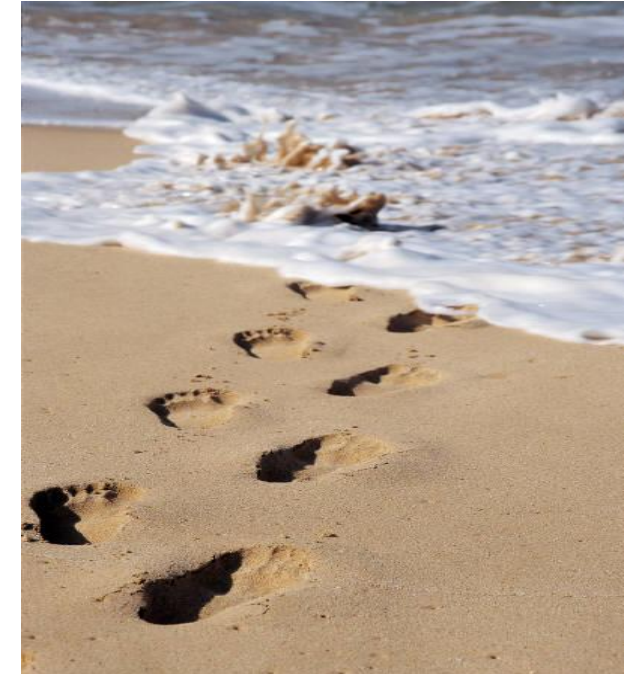
Expiration is passive, returning to resting state

Important phase, longer, regulates CO₂

(no active abdominal contraction)

Pattern/expansion surprisingly constant with occasional larger breaths

ONLY through your nose



WHAT COULD THE SYMPTOMS BE?

Short of breath

Chest tightness

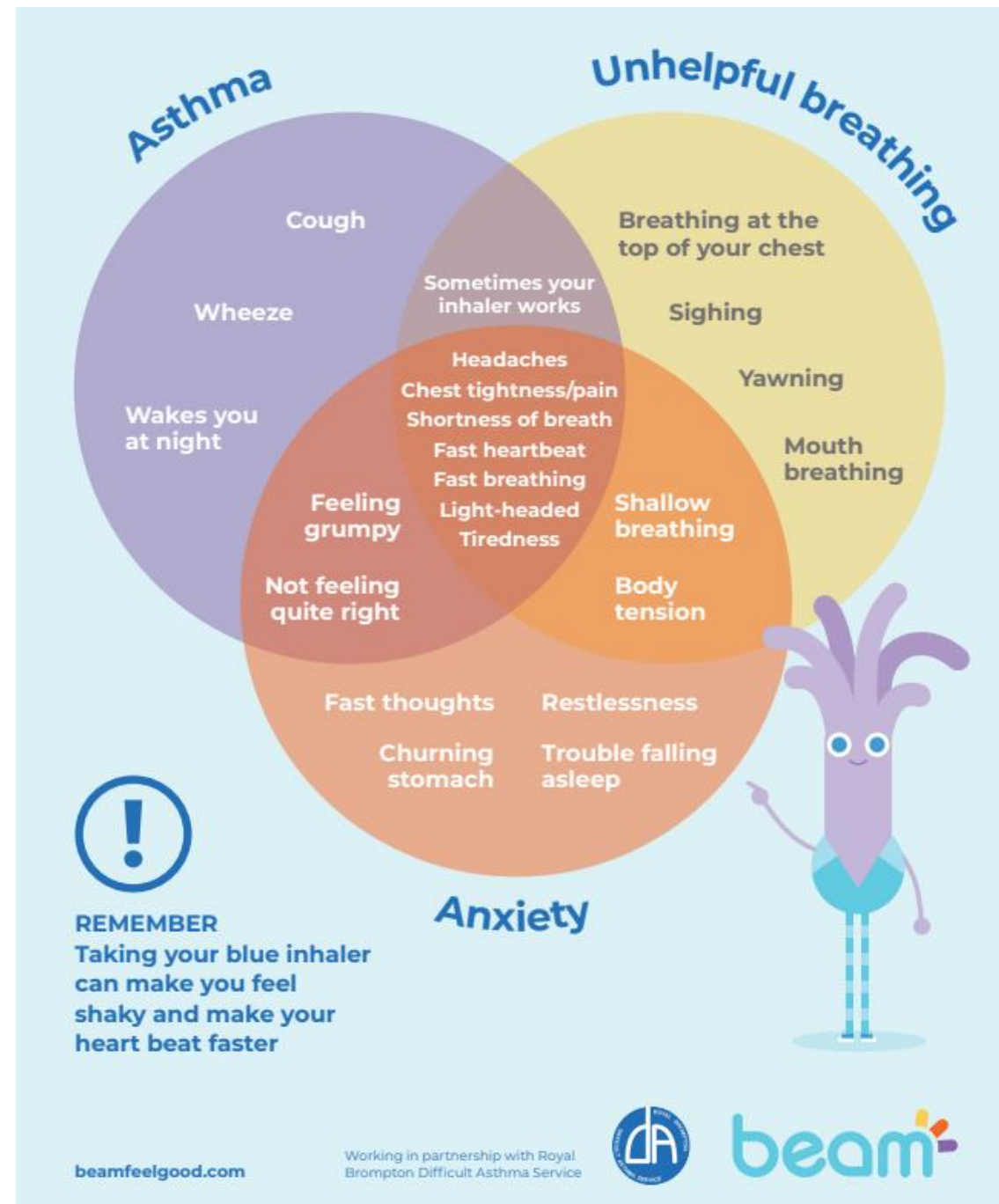
“Can’t get a big breath in”

Onset within 5 mins of exercise,
resolves quickly

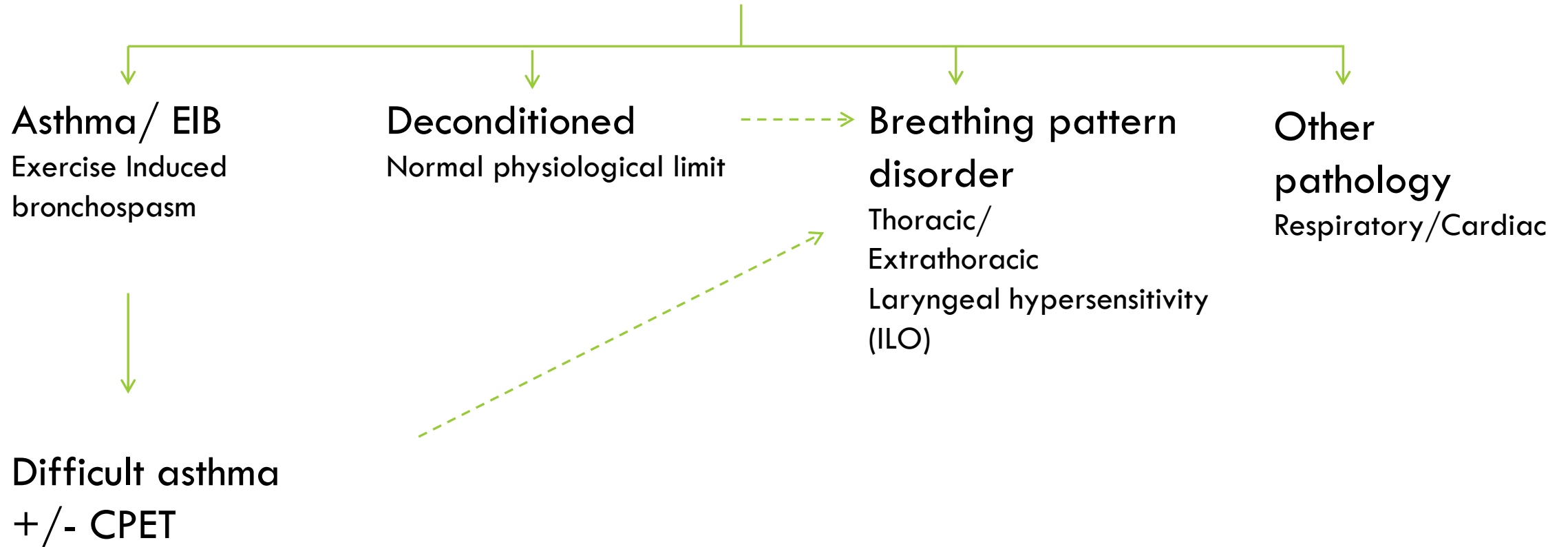
Over use of reliever inhaler (and
reported poor response)

Laryngeal symptoms: stridor, throat
closing/tight, dysphonia

Stewart et al, Delphi consensus 2021



Exercise Induced Dyspnoea



Modified from Depiazzi and Everard 2016

DIFFICULT

Non-adherence to medication

Persistent environmental exposures

Psychosocial factor

****Dysfunctional breathing****

“Asthma that is
asthma management

Step 1: Confirm Diagnosis

Step 2: Identify Comorbidities

Step 3: Assess basic modifiable factors

Step 4: Assess complex modifiable factors (nurse specialists)

Step 5: Continued regular clinic follow-up

Brompton Cook et al 2017

WHO ARE THESE CHILDREN AND YOUNG PEOPLE?

❖ A retrospective audit of patients being referred to physiotherapy for disordered patterns of breathing



❖ 81 referrals

❖ **77 referrals included in analysis**



WHO IS BEING REFERRED FOR PHYSIOTHERAPY?

Teenagers?

Anxious?

Sporty?



High achieving?

WHO IS BEING REFERRED FOR PHYSIOTHERAPY?

Teenagers?

Anxious?

Sporty?

Relationship to
asthma?

High achieving?



Type of symptoms?

Previous A&E
attendance?

QUESTION 1

What is the average age of patients referred to physiotherapy for help with dysfunctional breathing?

- A) 11
- B) 12
- C) 14

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Pre-teens

2:1 Female:Male

QUESTION 2

What proportion of patients referred have a confirmed asthma diagnosis?

A) 31%

B) 57%

C) 72%

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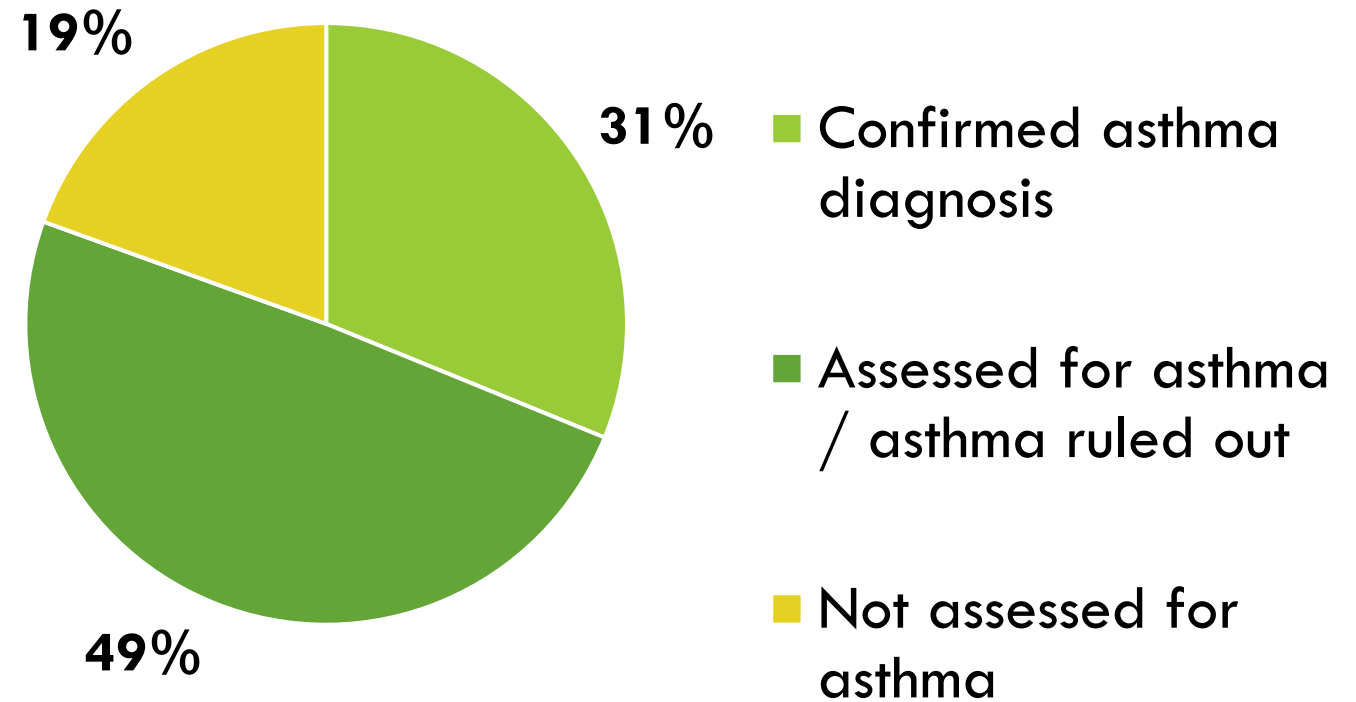
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QUESTION 3

What proportion of individuals referred to physiotherapy for dysfunctional breathing have a history of competitive sport, or training regularly?

A) 30%

B) 43%

C) 76%

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QUESTION 4

Aside from breathlessness, what is the most commonly reported symptom brought on by exercise?

- A) Throat tightness
- B) Dizziness
- C) Chest tightness

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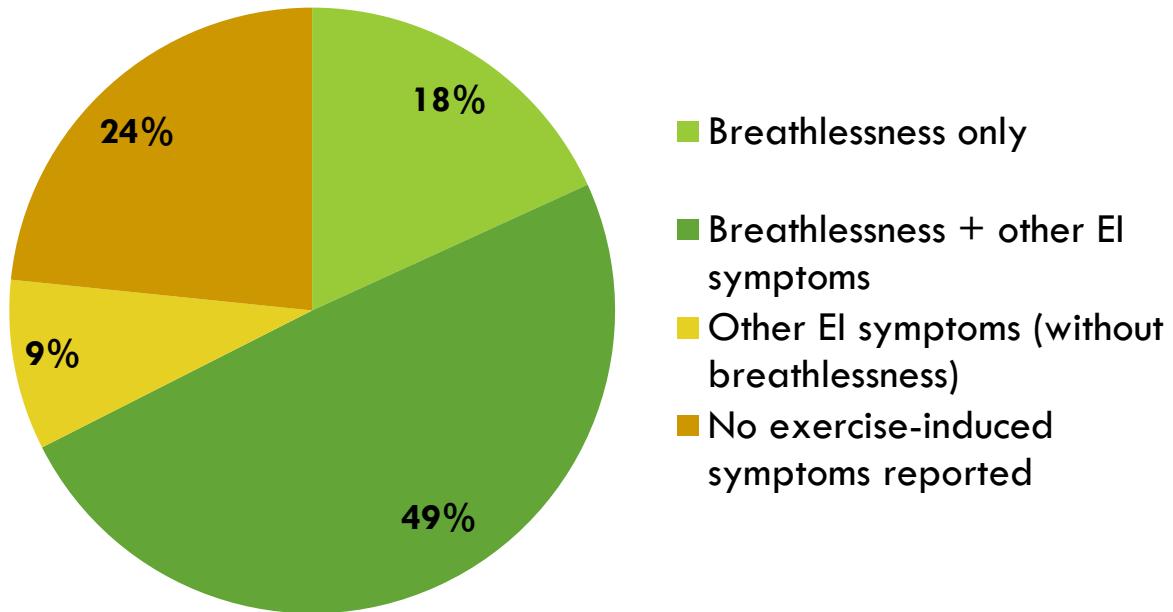
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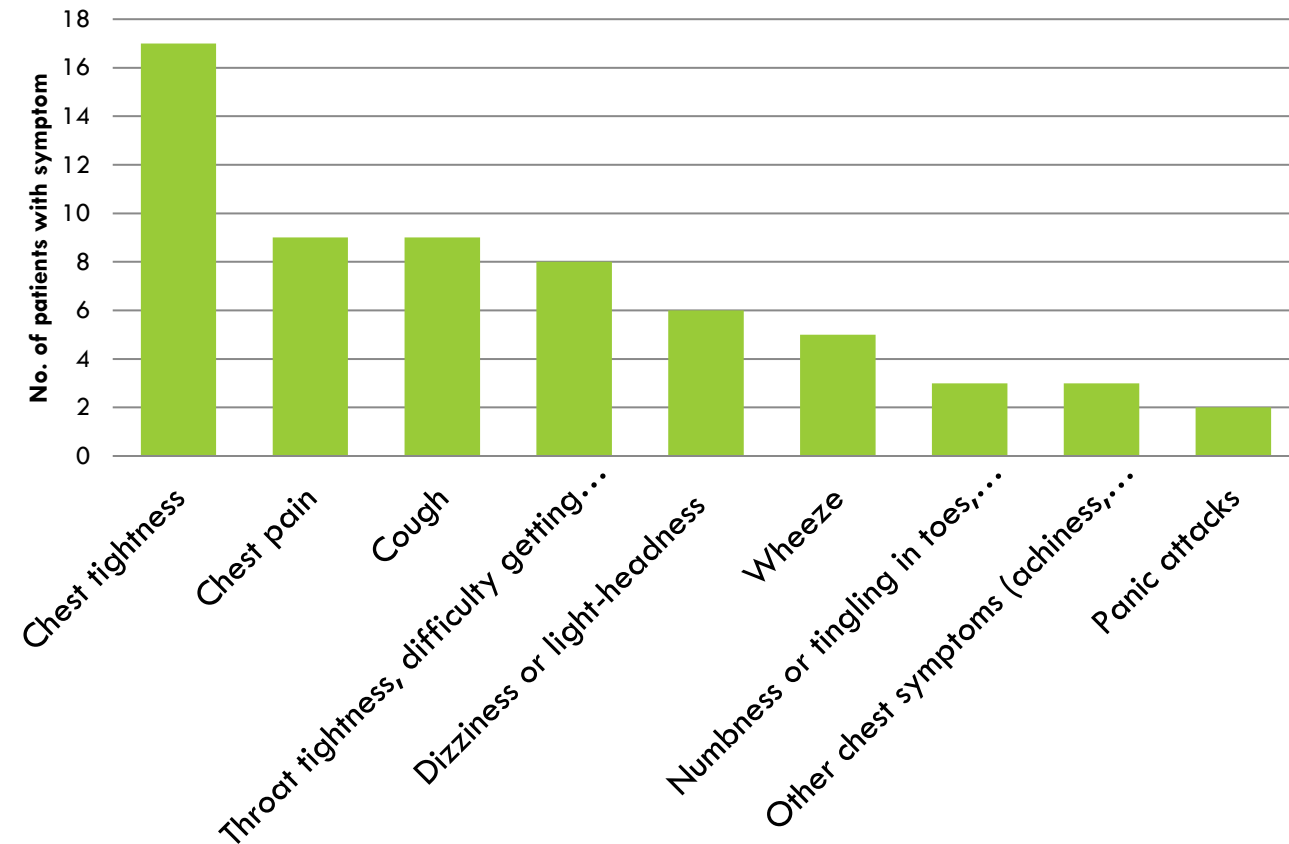
C) Chest tightness

QUESTION 4

Exercise-induced symptoms



Other exercise-induced symptoms



QUESTION 5

In what proportion of referrals was anxiety mentioned?

A) 25%

B) 36%

C) 52%

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NORMAL BREATHING PATTERN?

When sitting resting, do you breathe through:	Your mouth, or a mixture of mouth and nose	Your nose
Can you hear your breathing?	Yes	No
Place one hand on your tummy and one on your chest: Does your tummy move/rise when you breathe in?	No	Yes
Does your upper chest move when you breathe in?	Yes	No
Does your breathing have a regular rhythm?	No, sometimes speeds up and slows down or some breaths are bigger than others	Yes, steady size and rate
Do you sigh or yawn a lot?	Yes	No

AIR HUNGRY?

Time how long you can do an easy breath hold on a normal size breath, stop when you feel the first signs of wanting a breath	More than 20 seconds	Less than 20 seconds	
How many breaths do you take in a minute	Less than 18	18-24	25+
Count as far as you can on a normal sized breath. Stop when you feel you want another breath	Counted to more than 15	Did not manage to count to 15 on one breath	

LARYNGEAL HYPERSENSITIVITY?

Newcastle Laryngeal hypersensitivity questionnaire

3) I have pain in my throat:

All of the time 1	Most of the time 2	A good bit of the time 3	Some of the time 4	A little of the time 5	Hardly any of the time 6	None of the time 7
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(P/Th)



4) I have a sensation of something stuck in my throat:

All of the time 1	Most of the time 2	A good bit of the time 3	Some of the time 4	A little of the time 5	Hardly any of the time 6	None of the time 7
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(O)



5) My throat is blocked:

All of the time 1	Most of the time 2	A good bit of the time 3	Some of the time 4	A little of the time 5	Hardly any of the time 6	None of the time 7
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(O)



6) My throat feels tight:

All of the time 1	Most of the time 2	A good bit of the time 3	Some of the time 4	A little of the time 5	Hardly any of the time 6	None of the time 7
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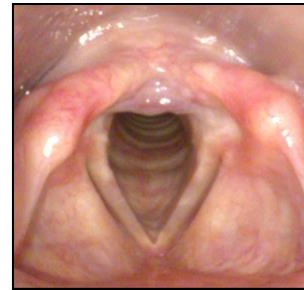
(O)



7) There is an irritation in my throat:

All of the time 1	Most of the time 2	A good bit of the time 3	Some of the time 4	A little of the time 5	Hardly any of the time 6	None of the time 7
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(O)



Open Vocal Cords
(Breathing)



Closed Vocal Cords
(Swallowing, Coughing and Voicing)



INTERVENTION

Diaphragmatic breathing

Air diet (BOLT score) at rest

Marching while breath holding

Posture

Pacing breathing with running/activity

Deconstriction exercises (ILO)



KEY TAKEAWAYS & REFLECTIONS

- ❖ Anxiety and competitive sports are part of the picture but only for a sub-set
- ❖ Patients often present with multiple symptoms, and not always on exertion
- ❖ The timing of onset of symptoms, trajectory and life-stage (transition to secondary school) – how is this affecting participation in sport for those we're not seeing?

RESOURCES FOR CHILDREN AND YOUNG PEOPLE



Breathing Pattern Training for Children and Young People


Information for patients, parents and carers

Step 1	Check your breathing	Page 2
Step 2	Three quick tests and activity questions	Page 3
Step 3	Think about stress or anxiety	Page 4
Step 4	Set your goals	Page 4
Step 5	Breathing retraining. Practise breathing	Page 5
Step 6	Practice an 'air diet'	Page 6
Step 7	More training- Breath-hold walking and recovery	Page 6
Step 8	Learning to pace your breathing when you exercise	Page 7
	Other tips and advice for those with Asthma	Page 8
	We are here to help- next steps	Page 8

Royal Brompton and
Harefield Hospitals

Asthma and altered
breathing patterns





Physiotherapy in the management of children with asthma and altered breathing patterns - resources

We have created some learning resources, including a series of videos featuring exercises and interactive demonstrations, that you can use with your child to help them learn about breathing patterns and breath training, techniques to help control asthma symptoms, and how exercise and physical activity can boost lung health and overall wellbeing.

Click on each heading below to see supportive information, handouts and videos.

Read more about our [physiotherapy service for children with asthma](#).

[How to support your child with asthma](#)



[How we breathe](#)



[Observing your breathing pattern](#)



[Telling symptoms apart](#)



[Breathlessness](#)



[Posture](#)



[Exercise](#)



[Exercise safety information for children with asthma \(for parents and carers\)](#)



[All downloadable handouts](#)



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THANK YOU AND QUESTIONS?