



Breathing for Lymph Flow

May 28 2022

ALA conference Hobart

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YA AAYT C-IAYT Fitness Australia ALA

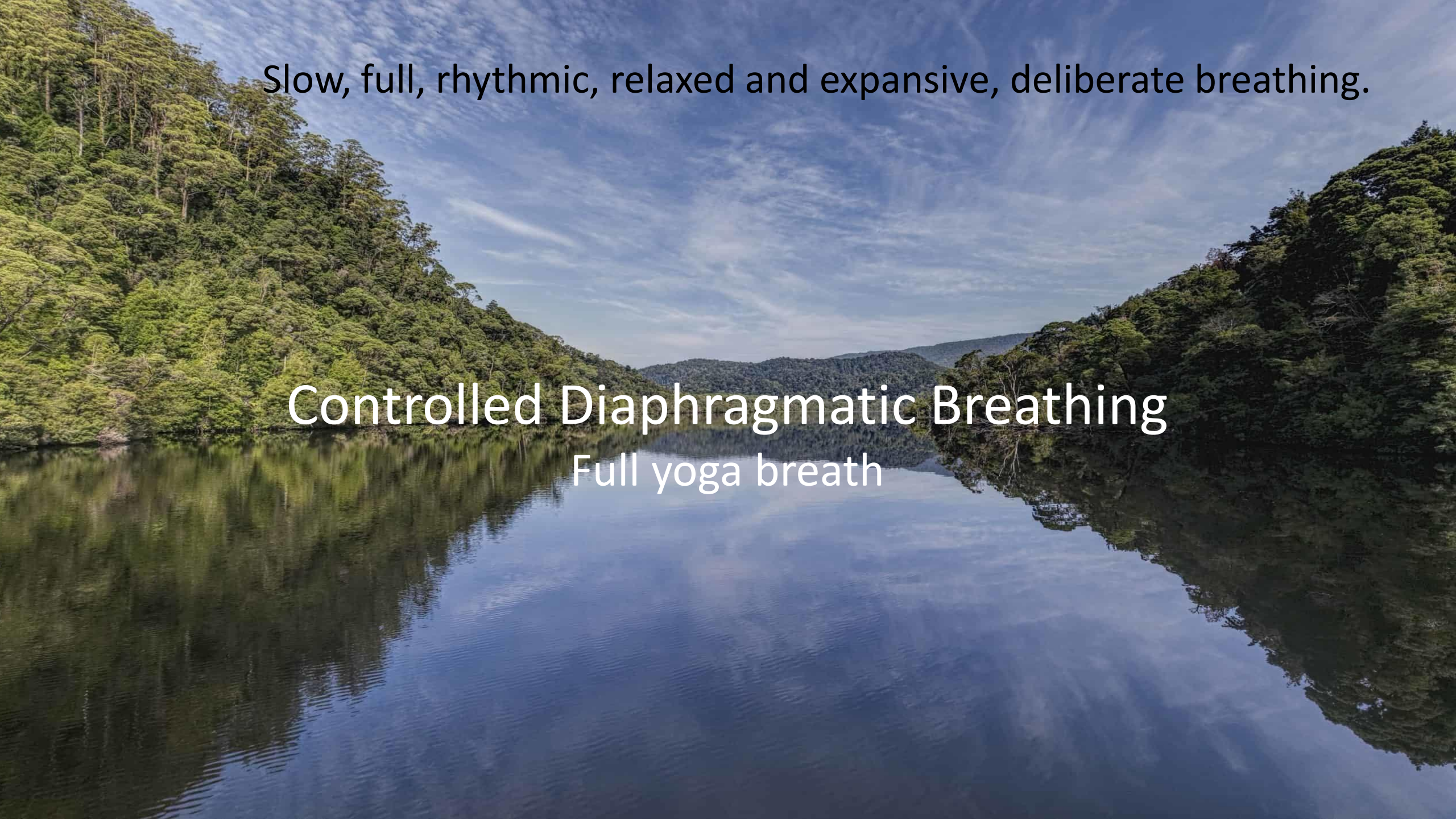
MMed Sc; BA; Dip Ed;

Grad Certs TESOL, Leadership and Management

Dips Fitness, Ex Sc., Yoga and Yoga Therapy

Cert IVs Pilates, Remedial Massage, Working with Special Populations, Workplace Training and Assessment, Personal Training

Certs Yoga and Yoga Therapy GB



Slow, full, rhythmic, relaxed and expansive, deliberate breathing.

Controlled Diaphragmatic Breathing

Full yoga breath

A coastal landscape featuring a rocky, gravelly path that leads from the foreground towards the ocean. On the left side of the path, there is a dense patch of low-lying green plants with numerous bright purple flowers. The background shows a wide expanse of blue ocean with white-capped waves breaking against a rocky shoreline. In the distance, there are low, hilly landmasses under a clear blue sky.

Na La

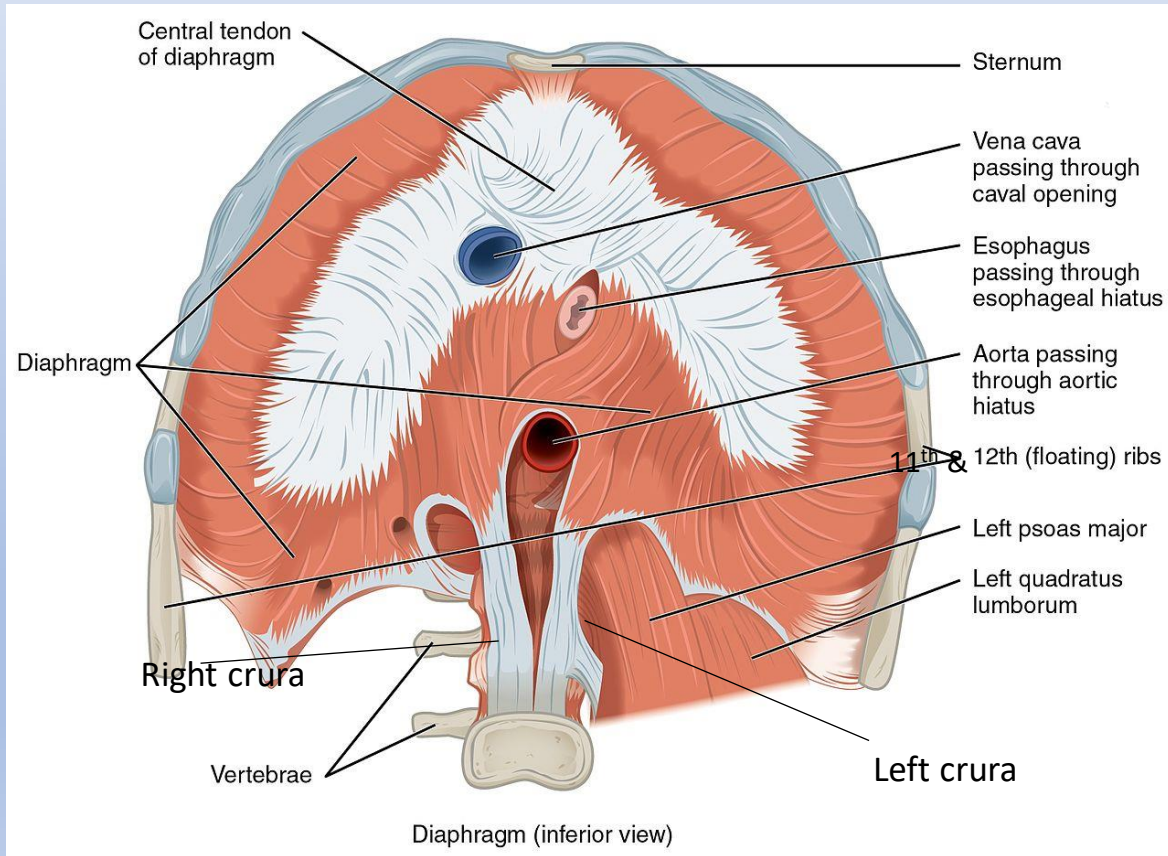
Ni Li

Na-a-a-a-

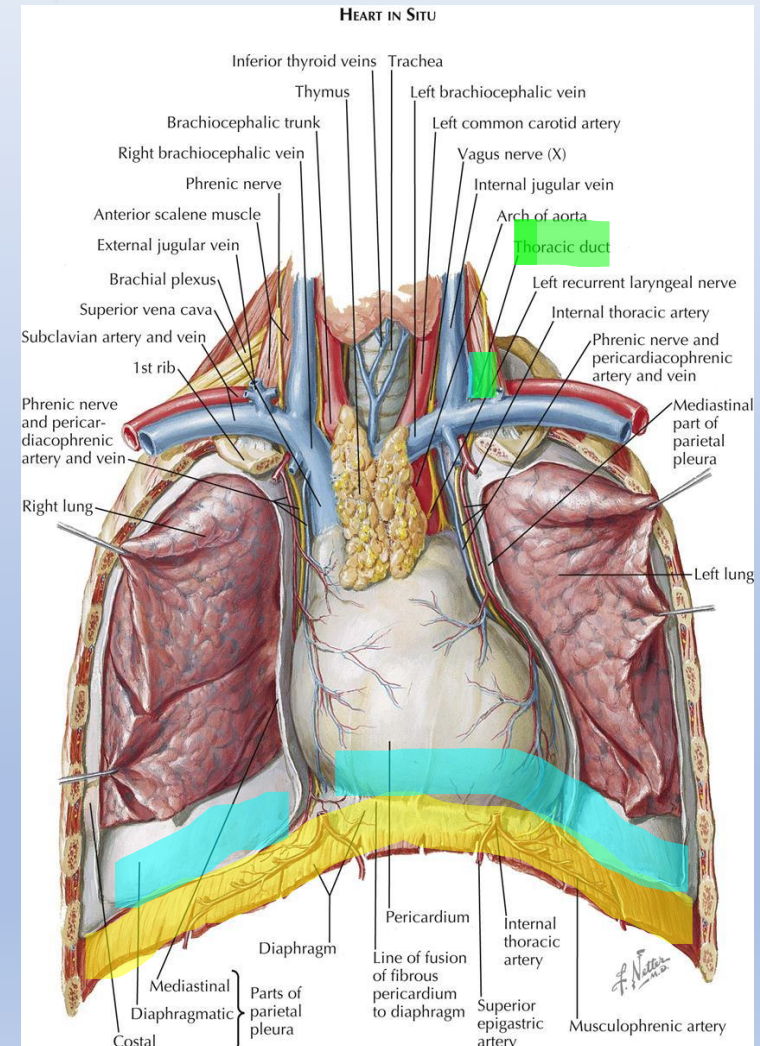
Palawa elders after Donalley fires Jan 2013

Diaphragm Location

Inferior view

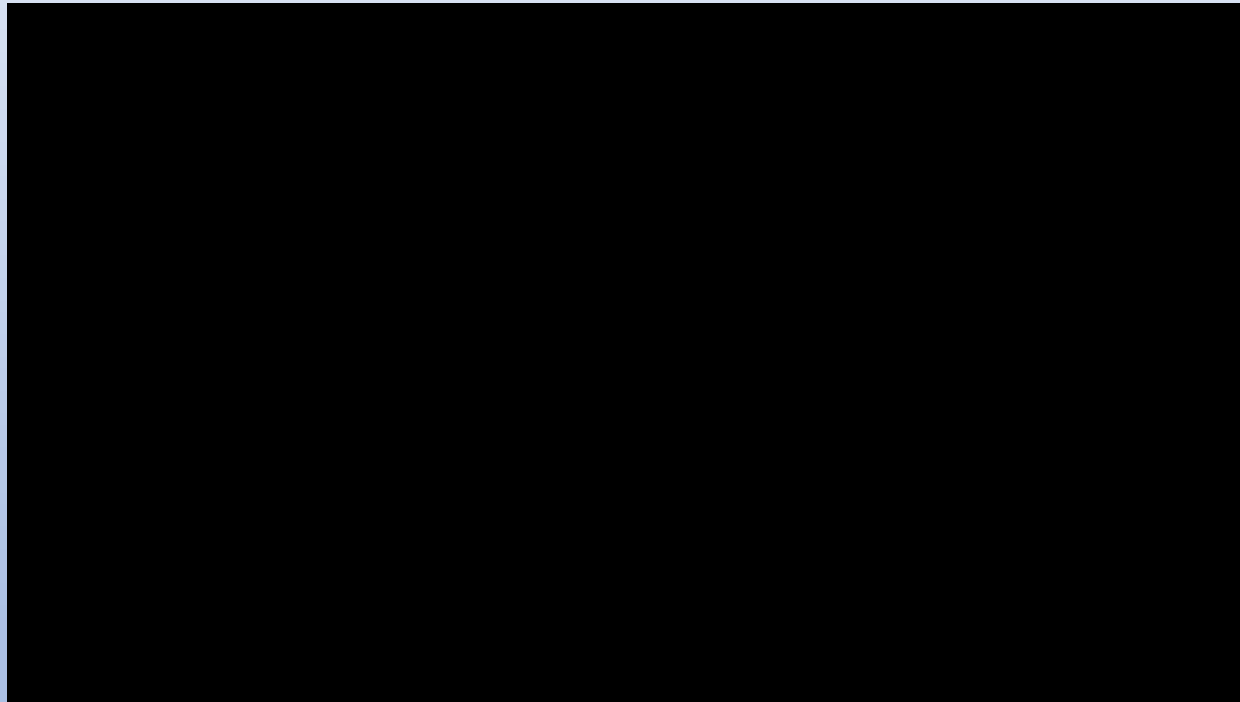


Anterior view

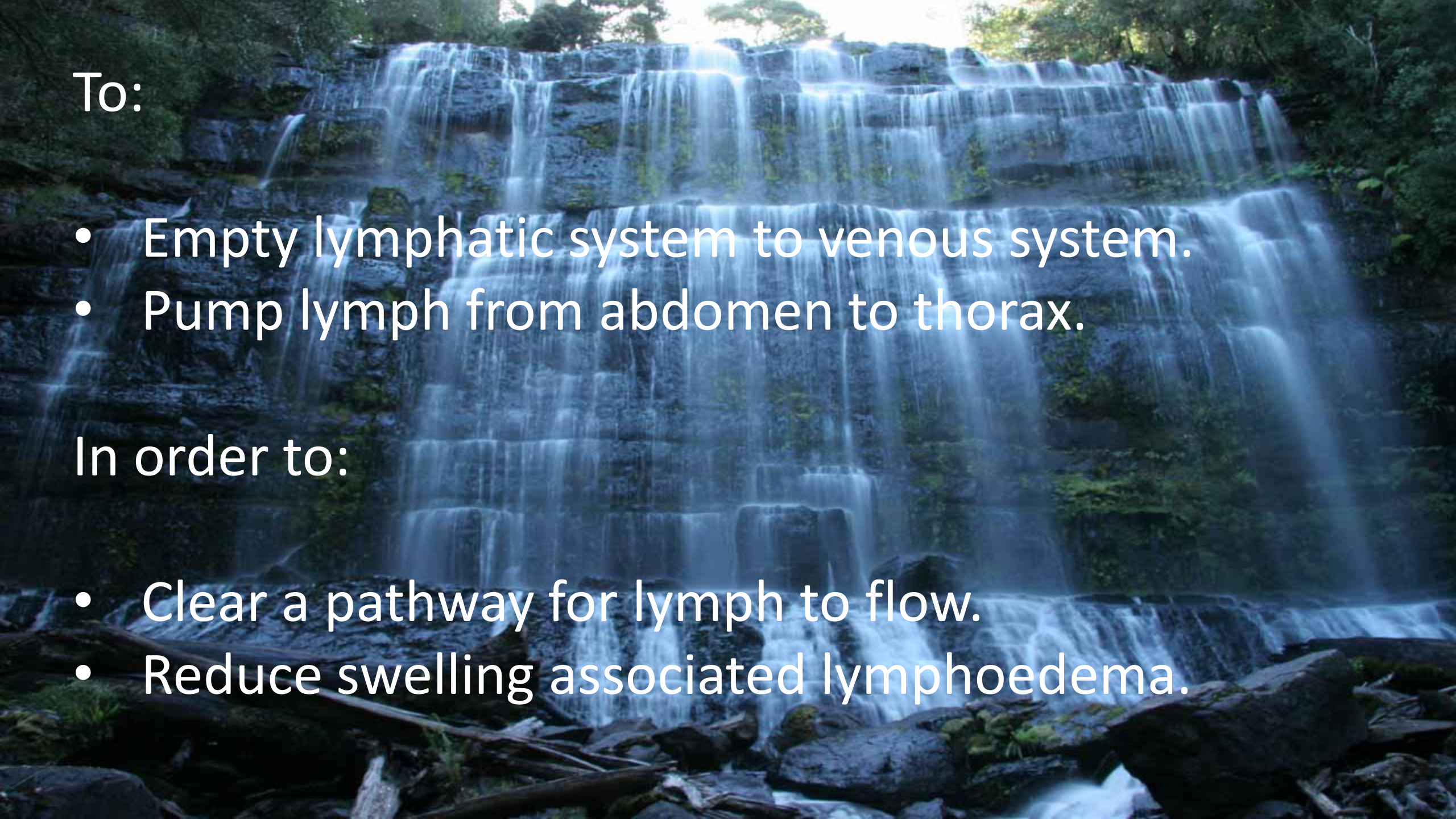


Controlled Diaphragmatic Breathing

movement of ribs



<https://www.youtube.com/watch?v=SAk77hTiwY>



To:

- Empty lymphatic system to venous system.
- Pump lymph from abdomen to thorax.

In order to:

- Clear a pathway for lymph to flow.
- Reduce swelling associated lymphoedema.

Controlled Diaphragmatic Breathing

Easeful expansion and relaxation on inhalation and exhalation.

Full movement of the ribcage so diaphragm can move.

Create venous return so lymph can empty back into the venous system at sub-clavian veins – inhalation (Ratnayake et al. 2018).

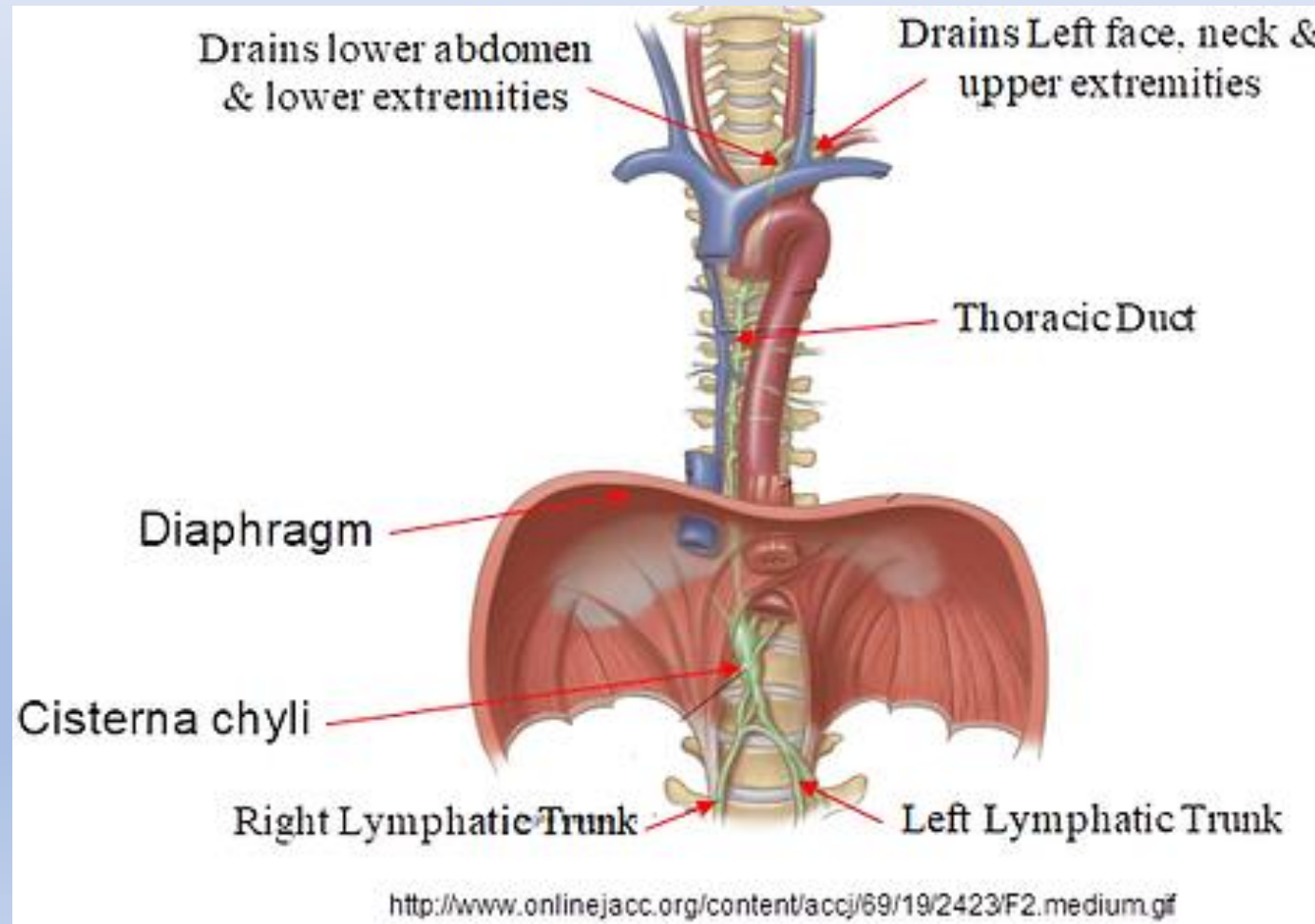
Create pressure changes for lymph to flow upwards from lower body – exhalation (Olszewski et al. 2008; Kocjan et al. 2017; Ohhashi et al., 2015).

Pump cisterna chyli & thoracic duct (Olszewski et al. 2008; Hinton et al. 2021; Ohhashi et al. 2021).

Have a sympatholytic effect which dilates the lymph collector vessels, increasing the overall lymph vessel capacity, and further enhancing lymph flow. (Douglass 2022).

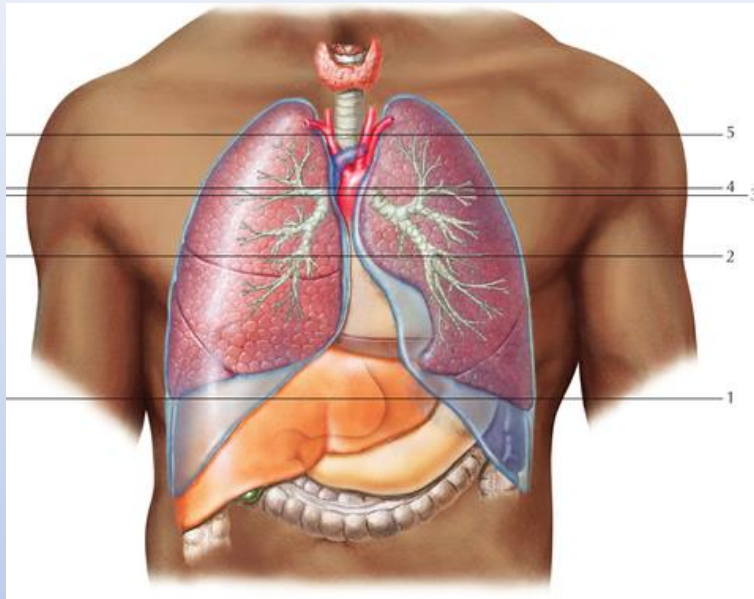
Controlled Diaphragmatic Breathing

Cysterna chyli + Thoracic Duct

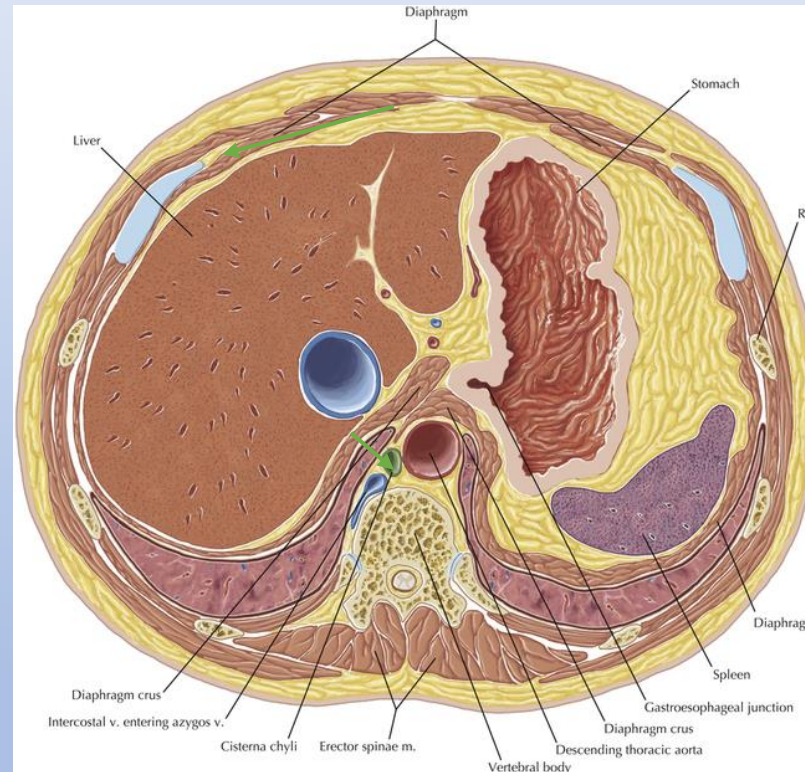


CT Scan Cysterna Chyli and Thoracic Duct

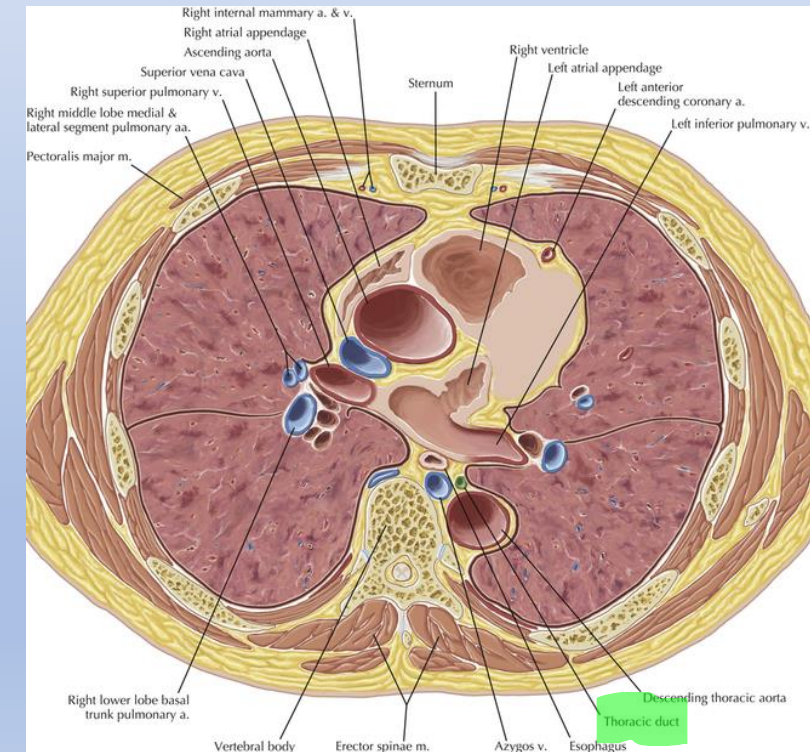
CAT Scan



1.



2.



<https://radiologykey.com/cisterna-chyli-and-thoracic-duct/#s0010>

Controlled Diaphragmatic Breathing

lymph flow

With my sincerest thanks to Jan Douglass



Research

With thanks to Robyn Sierla and Neil Piller

The diaphragm is a lymphatic pump, 60% of all lymph nodes in human body are just under diaphragm. Diaphragmatic breathing creates negative pressure pulling lymph through lymphatic system. **Lymphatic absorption depends on rhythmicity and stretching of diaphragm, then on intra peritoneal pressure and posture of the individual. The importance of the pumping of the diaphragm on cisterna chyli - should be considered in rehabilitation** (Kocjan et al. 2017).

Inhalation central venous pressure drops leading to flow of lymph to venous system at subclavian veins. Review of studies using **cadavres and anaesthetised humans, mice and dogs (formerly sheep)**. (Ratnayake et al. 2018)

Pressure changes in limbs with lymphoedema can be helped by muscle contractions such as through the diaphragm. (Olszewski et al. 2008) **whereas usually only 30%** (Scallan et al. 2016).

Abdominal breathing of humans for 30 mins in supine position is effective at inducing lymph drainage (Ohhashi et al., 2015) as well as manual massage on cisterna chyli in anaesthetised rats (Ohhashi et al. 2021)

Supine and Trendelenburg position increased diameter of thoracic duct (TD) at terminal TD on full inspiration and decreased on full exhalation of healthy volunteers using ultrasonography (Hinton et al. 2021)

Still a lot of debate and emerging research using imaging techniques eg high intra abdominal pressure for people with comorbidities or in ICU after surgery (Tayebi et al, 2021) .

Research

Controlled Diaphragmatic Breathing & movement - lymphoedema

None has studied effect of diaphragmatic breath alone.

ULL: BCRL - benefits

focussed diaphragmatic breathing (+ chant to extend exhalation = yoga).

Yoga (Douglass et al. 2012; Loudon et al. 2014; 2016; Pasyar et al. 2019)

Chi Gong (Fong et al. 2014)

Tai Chi (Mosely et al. 2008).

LLL: filariasis - benefits

Focussed diaphragmatic breath + chants to extend exhalation + variety of breathing techniques.

Yoga + dermatology + Ayurveda.(Aggithaya et al. 2013).

Protocols

Controlled Diaphragmatic Breathing - lymphoedema

Filariasis: LLL and ULL

Recommended (Vaqas and Ryan 2003)

Protocol Kerala

yoga + dermatology + Ayurveda

recommended for filariasis management and prevention in India – as part of AYUSH (traditional medicine treatments) (Narahari et al. 2020).

Protocol (Douglass et al. 2019) trialled in two RCTS (Douglass et al. 2020a; 2020b)

diaphragmatic breathing + lymph clearing exercise with the breath + walking + elevation + dermatology.

BCRL:

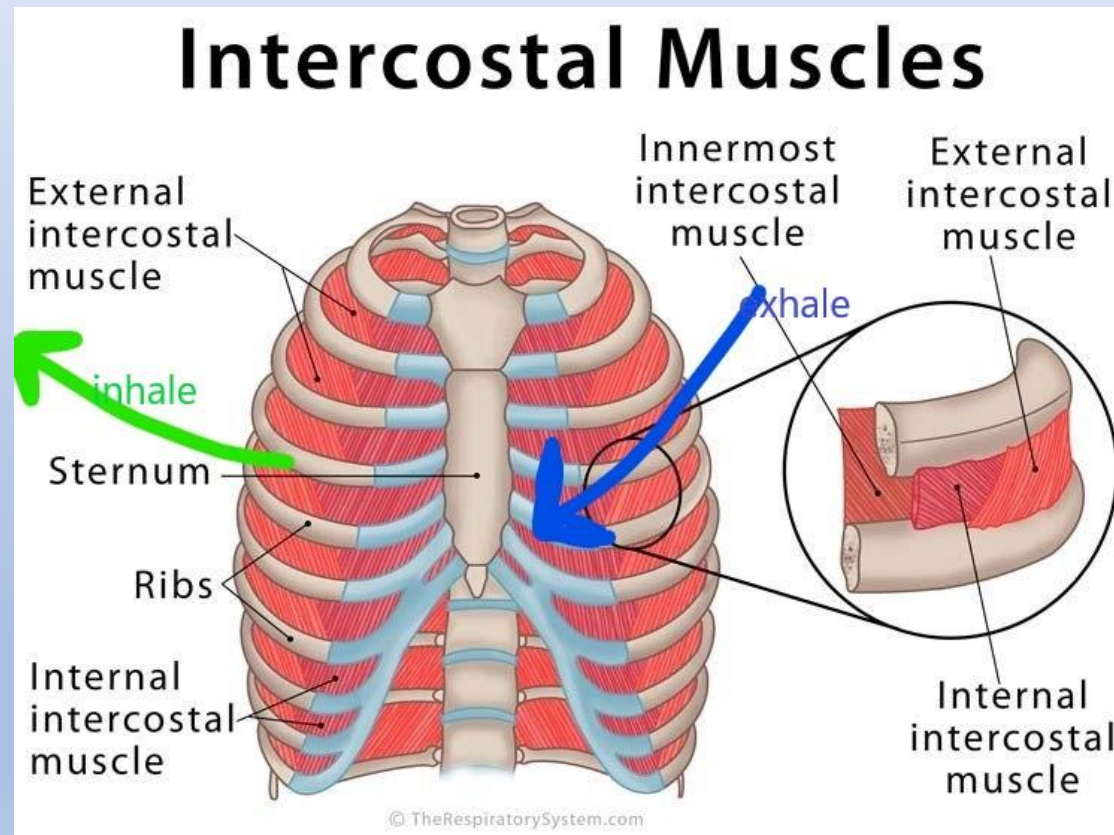
Protocols for

Yoga (Loudon et al. 2017).

Yoga + dermatology + Ayurveda (Narahari et al. 2016).

Diaphragmatic Breathing

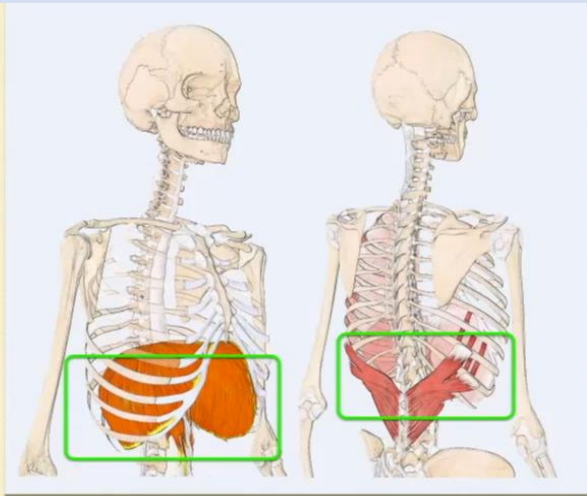
Intrinsic muscles



+ natural recoil
+ tone of abs on exhale

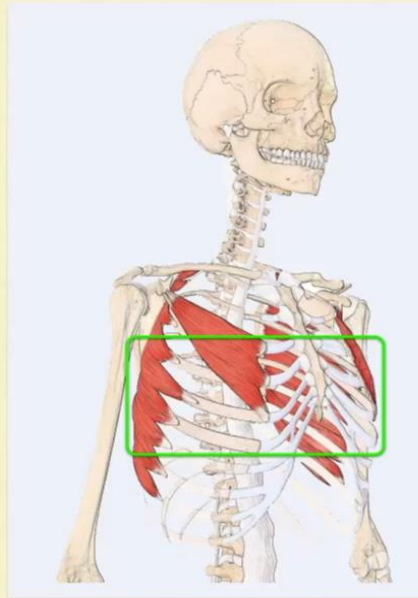
Controlled Diaphragmatic Breathing

Secondary muscles - inhale



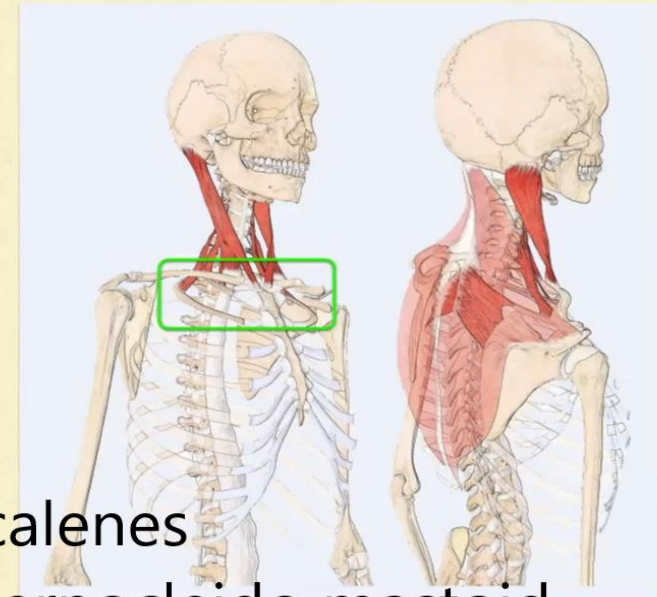
Diaphragm

serratus posterior



Mid Chest

serratus anterior
pec minor



scalenes

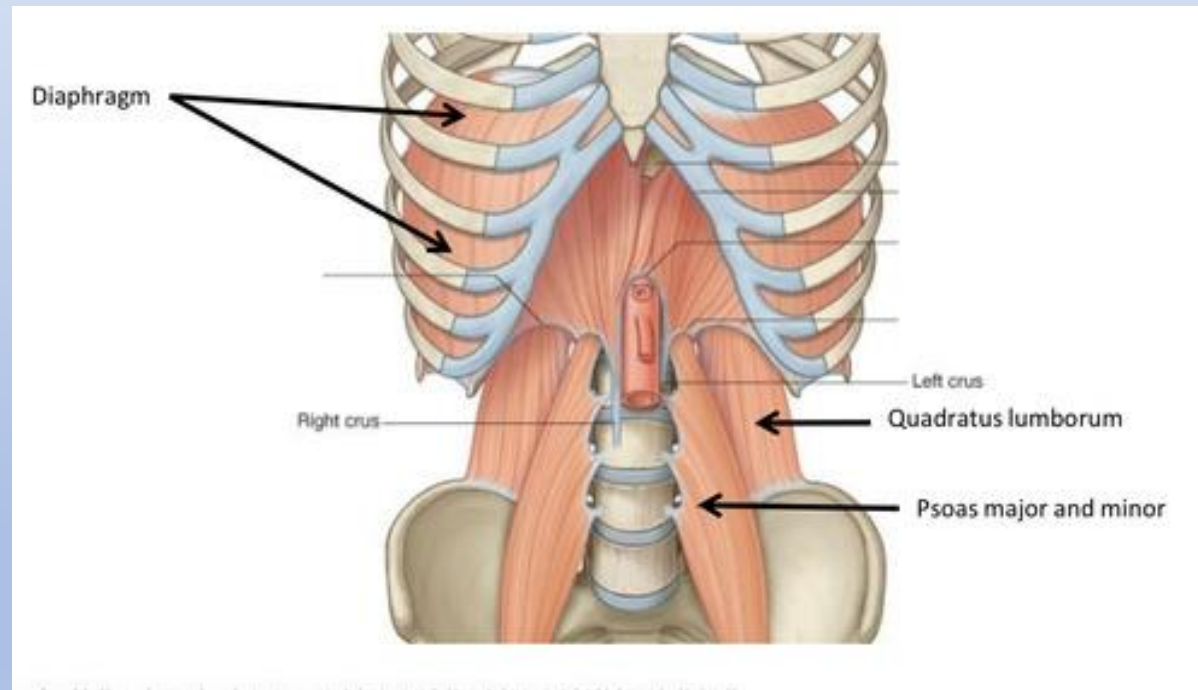
serratus posterior superior

Top Chest

sternocleidomastoid

Controlled Diaphragmatic Breathing

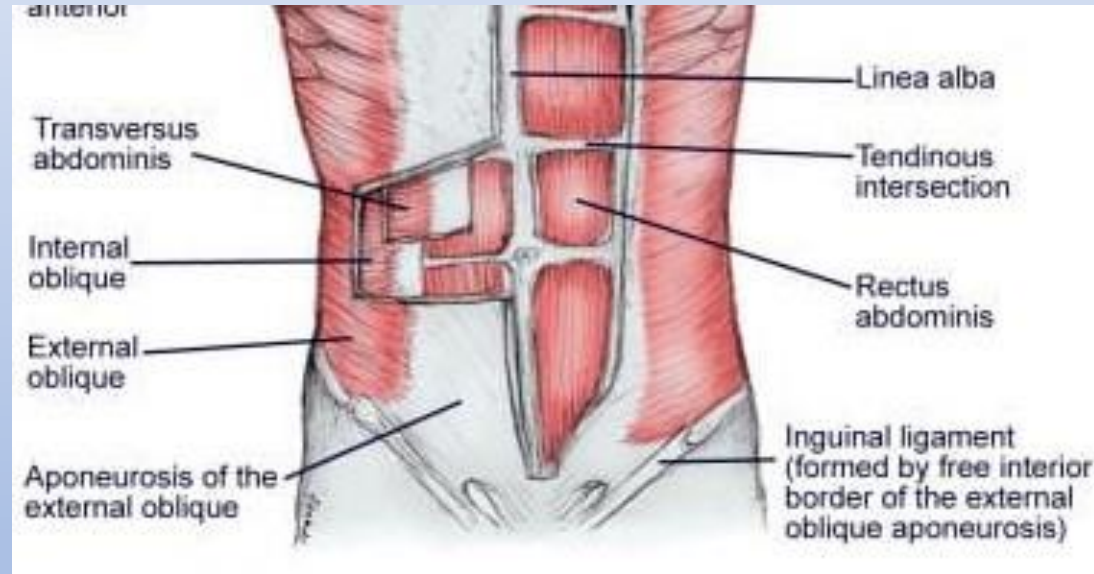
Secondary muscles



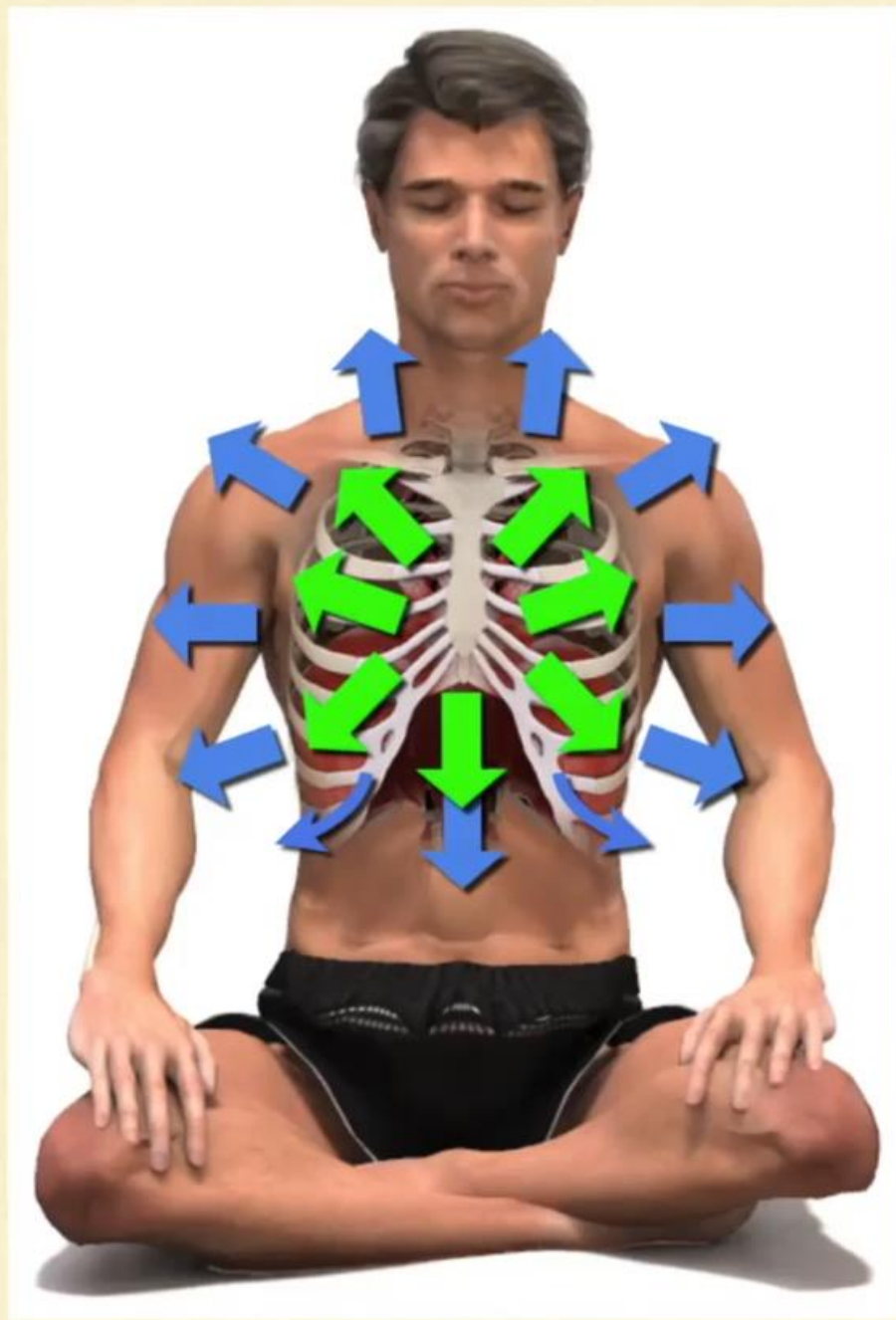
<https://jennyputtppt.com/2020/05/09/the-diaphragm-more-than-just-a-muscle/>

Controlled Diaphragmatic Breathing

Secondary muscles – exhale

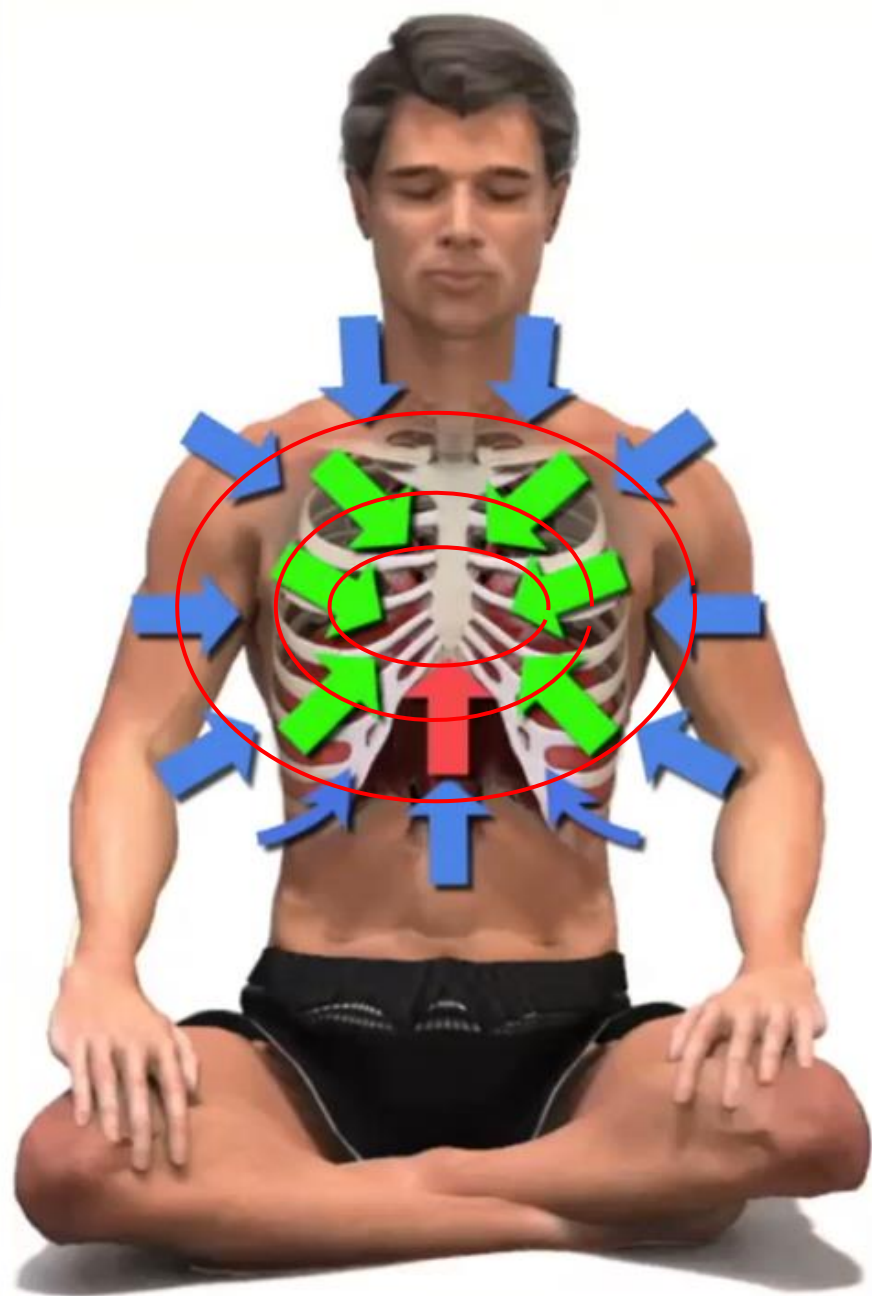


+ Sound / Abdominal contraction



Inhalation

Keller 2021



Exhalation

Controlled Diaphragmatic Breathing

We need:

Relaxed state

Posture

Ribs, muscles and fascia to move

Difficulties:

Conditions

Anxiety

Controlled Diaphragmatic Breathing – Method

Relaxation response

Position

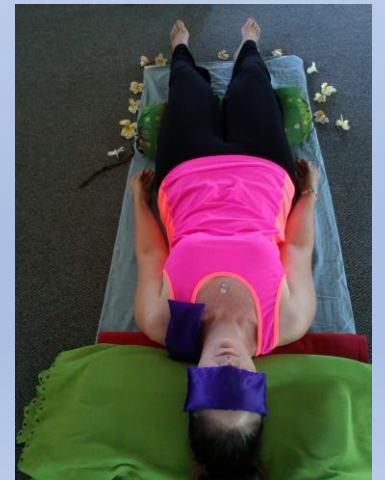
Head and neck

LLL



ULL arm

breast



Controlled Diaphragmatic Breathing – Method

Relaxation Response - individualised



Controlled Diaphragmatic Breathing – Method

Awareness to the lower rib area

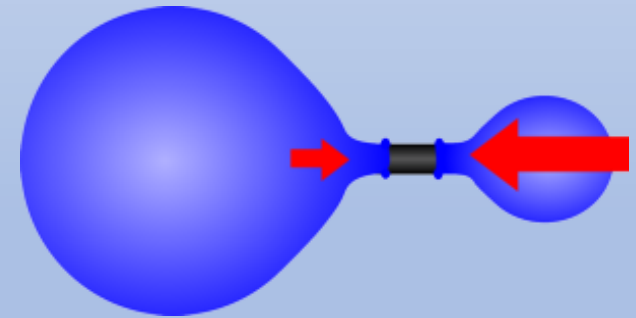
Movement eg twists, abdominal contractions, then feel the area of lower ribs.



Controlled Diaphragmatic Breathing – Method

Awareness to whole rib expansion

Imagery



Controlled Diaphragmatic Breathing – Relaxation + Awareness to whole rib expansion and relaxation Stepped breathing

Hand positions



Relax at end of inhale and breathe in some more.

At end of exhale, make ssshhhh sound and breathe out a little more.

Controlled Diaphragmatic Breathing – Method

Create more movement so ribs can move

Movement – soften fascia

- lengthen tight areas



For example: rib area with side bends



Controlled Diaphragmatic Breathing – Method

Create more movement in the ribcage

Positions:

One side



other side



then whole



Controlled Diaphragmatic Breathing – Method

Awareness to whole rib area

Positions to promote



Controlled Diaphragmatic Breathing – Method

Add movement to enhance



Controlled Diaphragmatic Breathing – Method

Extend breath

Sound – mantra or other sounds

Aaa (silent) on breath in

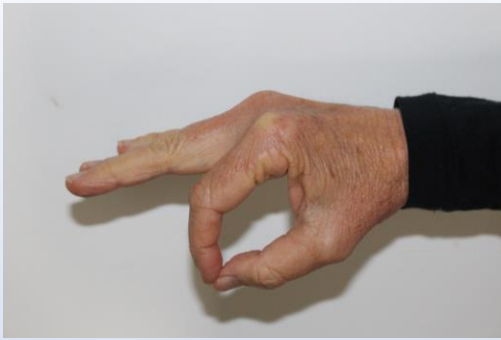
Aahhh sshhhh on breathe out

Please take care and participate
in a way that is safe for you.



Hand positions for Breathing plus traditional sounds

Pranava Darshana



Lower ribs - A



Middle ribs - U



Upper ribs – M + NG for head and neck



Full diaphragmatic breath A - U - M

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