Yoga and Secondary Lymphoedema from cancer treatment

©Annette Loudon

(C- IAYT; AAYT; YA; AUS-active; ALA; SMA)

MMedsc; Grad Certs TESOL; Leadership & Management; BA

Dip Ed; Dip Ex Sc; Dip Fitness

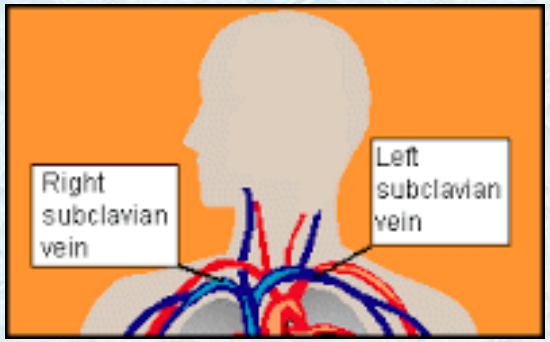
Certs yoga therapy; yoga (GB)

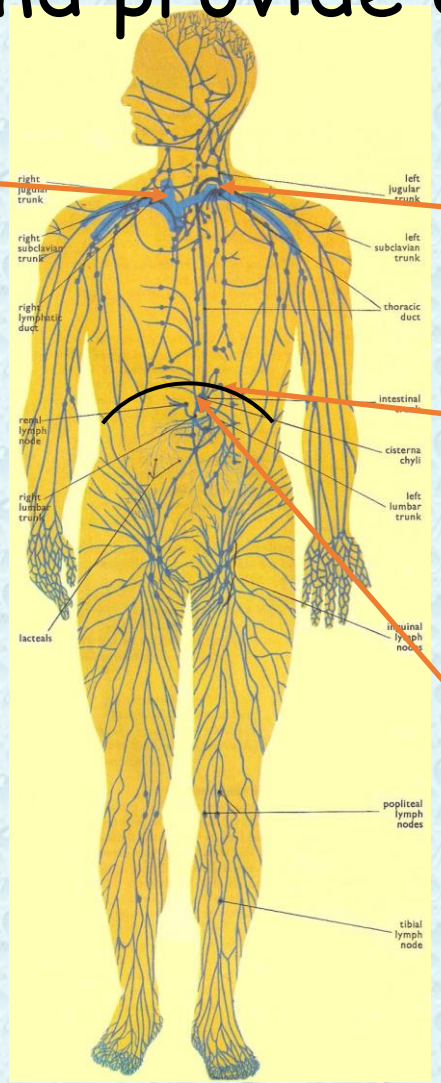
Cert IVs Pilates; massage; special populations; personal trainer

Function?

Maintain fluid balance and provide effective immune response

Right Lymphatic duct (trunk) flows into the right subclavian vein.





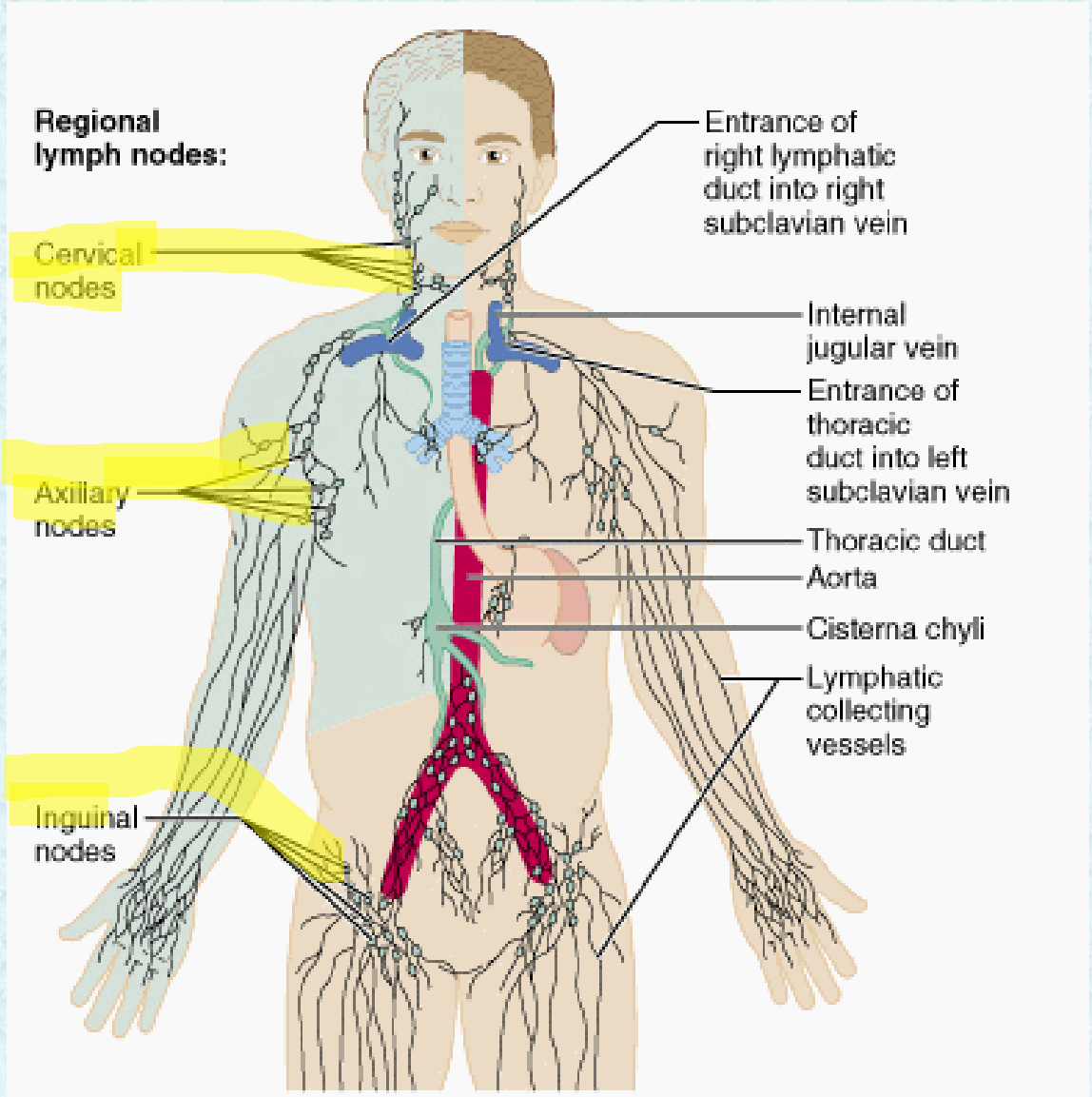
Thoracic trunk (left lymphatic duct) flows into the left subclavian vein.

Diaphragm

Cisterna chyli that collects the lymph from the intestines, lumbar and lower body and allows it to flow to the thoracic trunk.

National Lymphoedema Partnership. Consensus statement on the chronic oedema–lymphoedema interface. 2015. https://tinyurl.com/yyhvo62g

Major clearing nodes



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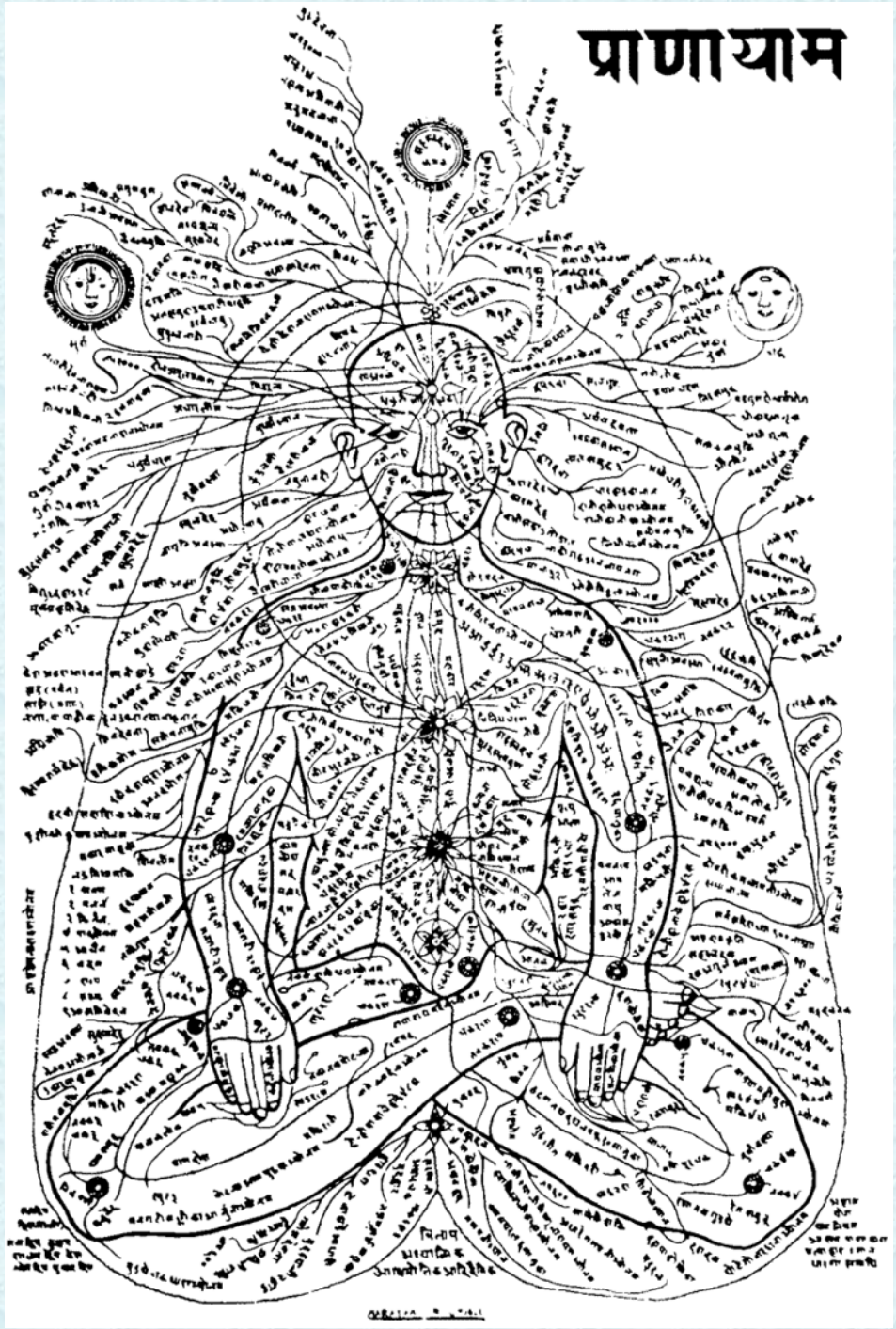


Lymph pumps by:

Breathing.

Muscle movement.

The arterial pulse.

Contraction of smooth muscle that lines the lymphatic vessels.

In the brain by deep sleep.

Lymphoedema

is swelling due to an

impaired lymphatic transport system,

the fluid doesn't flow and swelling occurs.

Protein-rich fluid backs up in the interstitial space.

Cancer treatment risks

(Usually diagnosed in the first two years can be diagnosed up to 20 years later)

Changed treatment to reduce the risks; less invasive surgery and sentinel node biopsy

- Surgery
- **Removal of lymph nodes and number**
- Metastases in lymph nodes
- **Radiation especially near areas of lymph nodes**
- Predisposition eg faster filtration system
- Genetics
- High BMI
- Chemotherapy (taxanes)

Cancer Australia (2023) Lymphoedema what you need to know. Cancer Australia. Australian Government 2023

Rates of lymphoedema

Secondary lymphoedema:

vulval cancer is estimated at 36-47%;
breast cancer 20%;
cervical cancer 24%;
melanoma 9-29%;
prostate 25-66%;
head and neck 50%;

and others between 7 to 38% eg bowel cancer.

(Deng et al., 2012; DiSipio et al., 2013, Rockson et al., 2019,
Cancer Australia - https://canceraustralia.gov.au/clinical-best-practice/lymphoedema Sourced 11.11.18

Effects of lymphoedema

Physical

- Swollen limbs
- Symptoms of heaviness, tingling, discomfort
- Compromised immune system -
  - Infection such as cellulitis
- Fibrosis as it worsens -
- Altered movement, functional patterns including in ROM, stability, and strength.

Mental - Emotional

- QOL
- Changed body image

Optimum Treatment

Early diagnosis – pre-surgery and repeated measurements.

Complete Decongestive Therapy.

Manual Lymphatic drainage.

Compression.

Exercise.

Self-management eg skin care.

Laser/Pneumatic pumps/Hyperbaric treatment.

Surgery.

What can make lymphoedema worse?

- Not being treated.
- One position eg driving if arm, sitting if legs.
- Repetitive actions.
- Heat or cold.
- Abrasians to the affected skin.
- Being overweight.
- Air travel for some.
- Individual variation.

Exercise

Huge changes over 30 years

Mostly breast cancer research showing no increase in swelling or symptoms as long as supervised and gradual:

- Dragon boat racing (McKenzie et al., 2003).
- **Resistance training** (Schmitz et al., 2009) changed exercise guidelines.
- Other (2005 to present): aerobic, water based, tai-chi, yoga, pilates, chi gong, one-off exercise regimes.
- From 2016 many reviews and meta-analyses finding exercise ok for those with lymphoedema as long as supervised, gradual with warm-up and cool-down (Singh et al., 2016).

Most recent Meta analysis

Hayes, SC;Singh, B; REul-hirche, H; BLoomquist, K; Johansson, K; Jönsson, C; Plinsinga, M L. The Effect of Exercise for the Prevention and Treatment of Cancer-Related Lymphedema: A Systematic Review with Meta-analysis. Medicine & Science in Sports & Exercise 54(8):p 1389-1399, August 2022. | DOI: 10.1249/MSS.0000000000002918

Most comprehensive to date on all exercise modes that did NOT worsen lymphoedema swelling and symptoms. N = 12 prevention
36 intervention.

- **All exercise should be promoted and encouraged in line with personal interest and follow personal protocol for co-morbidities and symptoms of lymphoedema as they arise.**
- **Can follow evidence-base for exercise for cancer patients.**
- Need not be supervised: reduce financial burden and need for supervised exercise options available.
- (Hayes et al., 2019).

Yoga Reviews and Meta Analyses

There have been a few, but most recent is most vigorous study:

Levenhagen, K; Davies, C; Perdomo, M; Ryans, K; Gilchrist, L. Effect of Yoga Among Women at Risk and With Breast Cancer–Related Lymphedema: A Systematic Review. Rehabilitation Oncology 41(3):p 129-138, July 2023. | DOI: 10.1097/01.REO.0000000000000340

Included 9 studies (3 RCTs); some for people at risk of lymphoedema:

- All studies based on lymphatic clearing for women with BCRL.
- All studies followed breathing, postures, relaxation and home-practice.
- None exacerbated lymphoedema; improved wellbeing, and some showed improvements in ROM and strength.
- None had lasting effects; so people who do yoga longer may get better results.
- Need longer RCTs with larger numbers.
- **Yoga can be recommended for people undergoing treatment for breast cancer and may help as long as a qualified yoga therapist with knowledge about effects of cancer and lymphoedema creates individualized practice.**

Evidence base of yoga and BCRL - RCTs

4-week RCT

Control group usual care.

1.5 hour class - based on modified Satyananda yoga.

30 min daily home-practice – Yoga Nidra.

N = 35

No increase in level of lyphoedema.

(Douglass et al., 2012)

Evidence base of yoga and BCRL - RCTs

8-week RCT

Control group usual care.

1.5 hour class and 45 min daily home-practice based on modified Satyananda yoga.

N=28

Results 1 – Lymphoedema – no increase; QoL – symptoms reduced; tissue density – upper arm improved (Loudon et al. 2014).

Results 2 – Abduction strength of shoulder and pelvic stability improved (Loudon et al. 2016).

Evidence base of yoga and BCRL

Results 3 –

Improved wellbeing;

Increased awareness of physical body;

Improved physical, mental and social functioning;

Benefit of group;

Nine women = transformative journey through illness.

(Loudon et al. 2017)

Evidence base of yoga and BCRL

8-week RCT

Control group = usual care.

2 x teacher-led classes a week and weekly home-practice DVD.

based on Vivekenanda yoga (developed by Narahari).

Results:

No increase in lymphoedema;

EORTC QLQ-C30 after 8 weeks: physical and emotional functioning.

(Pasyar et al., 2019)

Evidence base of yoga and LLL

Narahari's team in Kerala.
Ayurveda, Western Dermatology, Yoga.
2 weeks in clinic then home and come back for testing 3 monthly.

Reduced infection

Reduced lymphoedema

Improved gait

Thousands have been tested now.

(Aggithaya et al. 2015)

Yoga and Lymphoedema based on lymphatic clearing

While not exacerbating effects of lymphoedema.

Aim:

Increase prana (immune function);

Improve each kosha to that person's potential:

Physically, energetically, mentally and emotionally.

While considering whole person, eg other co-morbidities.

Yoga and Lymphoedema based on lymphatic clearing

While not exacerbating effects of lymphoedema

Follow usual protocol:

Breathing/Mindfulness

Asana/Mindfulness

Relaxation/Meditation

Breathing/Mantra

Keep clearing lymph back to venous system before during and after session.

Students to self-monitor changes so they know if swelling will become worse.

Yoga and Lymphoedema based on lymphatic clearing

While not exacerbating effects of lymphoedema.

- Slow warm up and cool down.
- Elevation before and after and during session if necessary.
- Pressure changes for lymph to clear from lower to upper and back to venous system:
  - Slow diaphragmatic breathing with holds and abdominal contractions;
  - Mantra;
  - Isometric contractions eg fist in hand to pump lymph back to axilla.

(Loudon et al., 2017 b)

Yoga and Lymphoedema based on lymphatic clearing

While not exacerbating effects of lymphoedema.

- Clear central to peripheral: abdomen, neck, axilla, cubital, wrist then whole again.
- 5-7 repetitions of each movement; lymph pumps slowly.
- Rest after each series as lymph will continue to flow.
- Moving of fascia to reduce fibrotic tissue, slowly building to stability and strength (non-weight-bearing at first).

(Loudon et al., 2017 b)

Yoga and Lymphoedema based on lymphatic clearing

Contraindcations

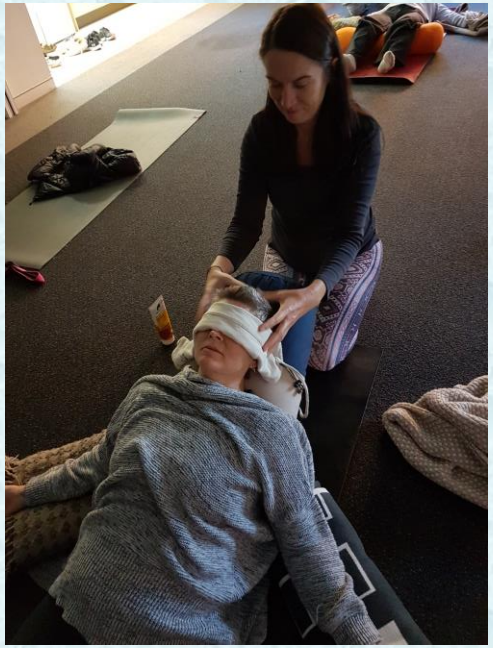
- Extremes of temperature ie hot or cold; definitely NOT hot yoga.
- Build up to strength slowly and follow with lymphatic clearing.
- Avoid tight clothing and tight bra straps.
- Check environment eg no splinters on floor or insects.
- Compression to be worn during or straight after session.
- Monitor for any changes in swelling and stop immediately if have any.

Pratyahara (yama/niyama)

Limb elevation before and after session

Position

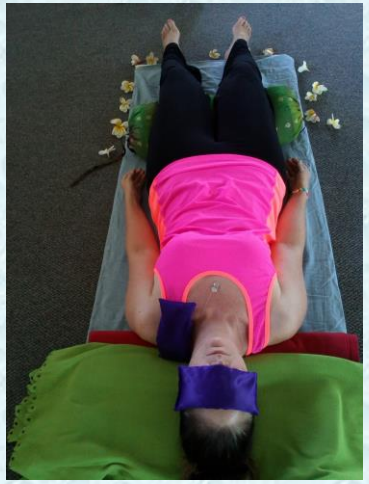
Head and neck



LLL

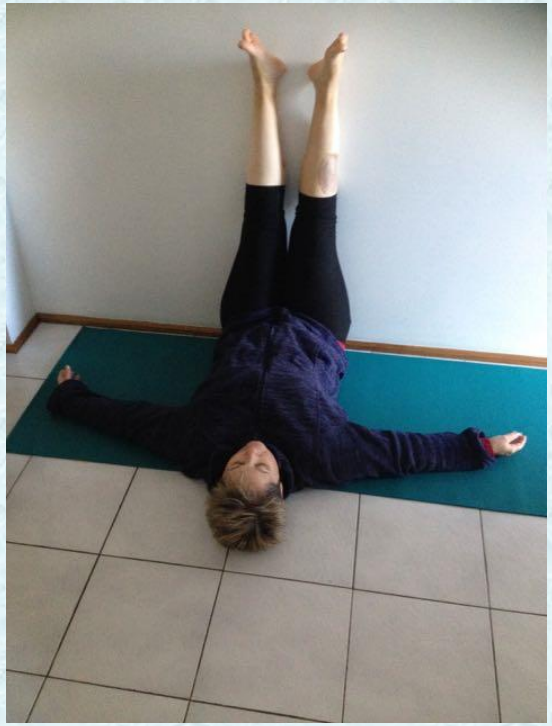
ULL arm

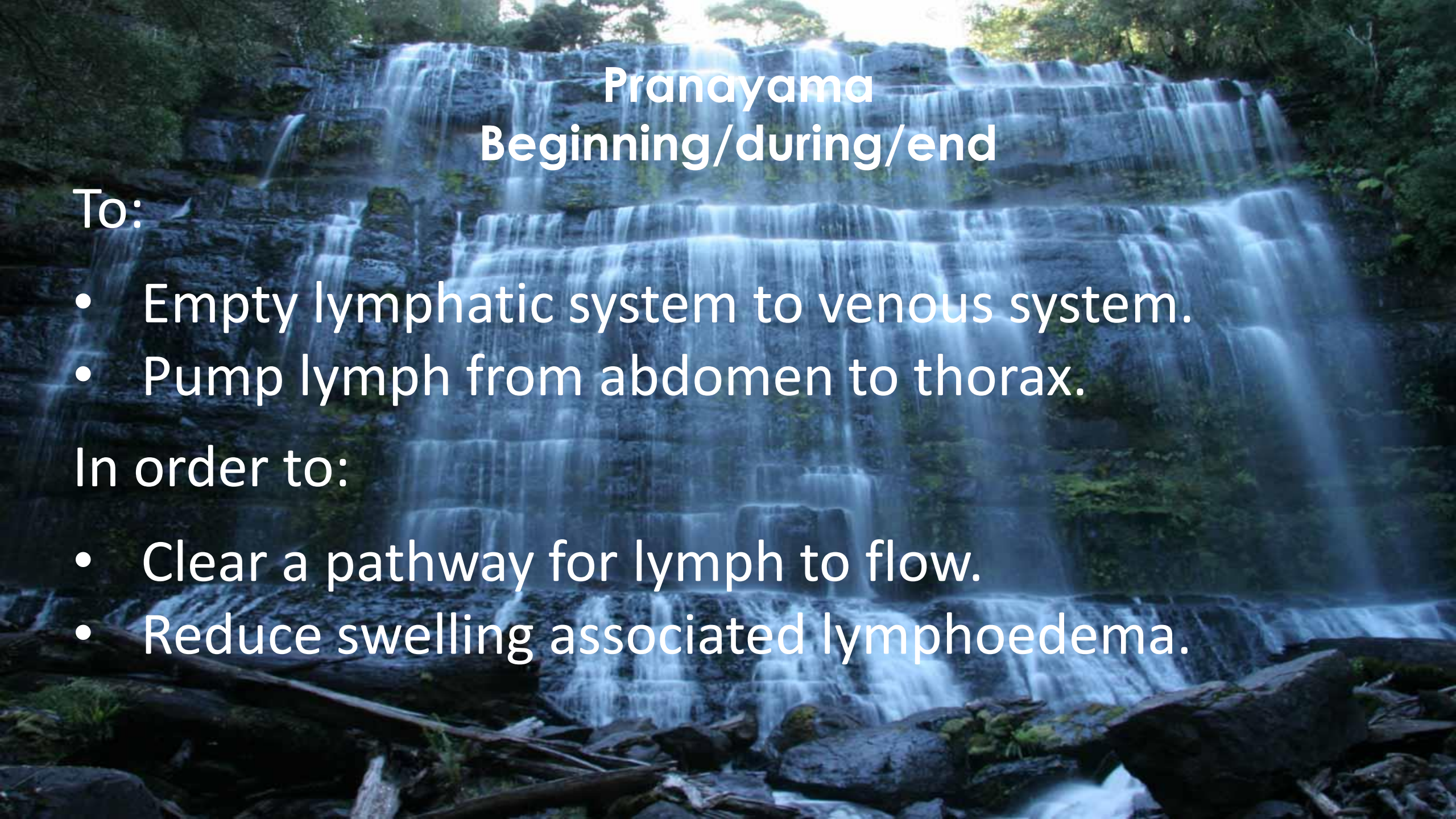
breast



Limb elevation before and after session

Individualised





Pranayama
Beginning/during/end

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 at al 2017; Ohhashi et al,. 2015).

Pump cysterna 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).

Commence and finish with a chant

(Ryan, 2012)

Asana

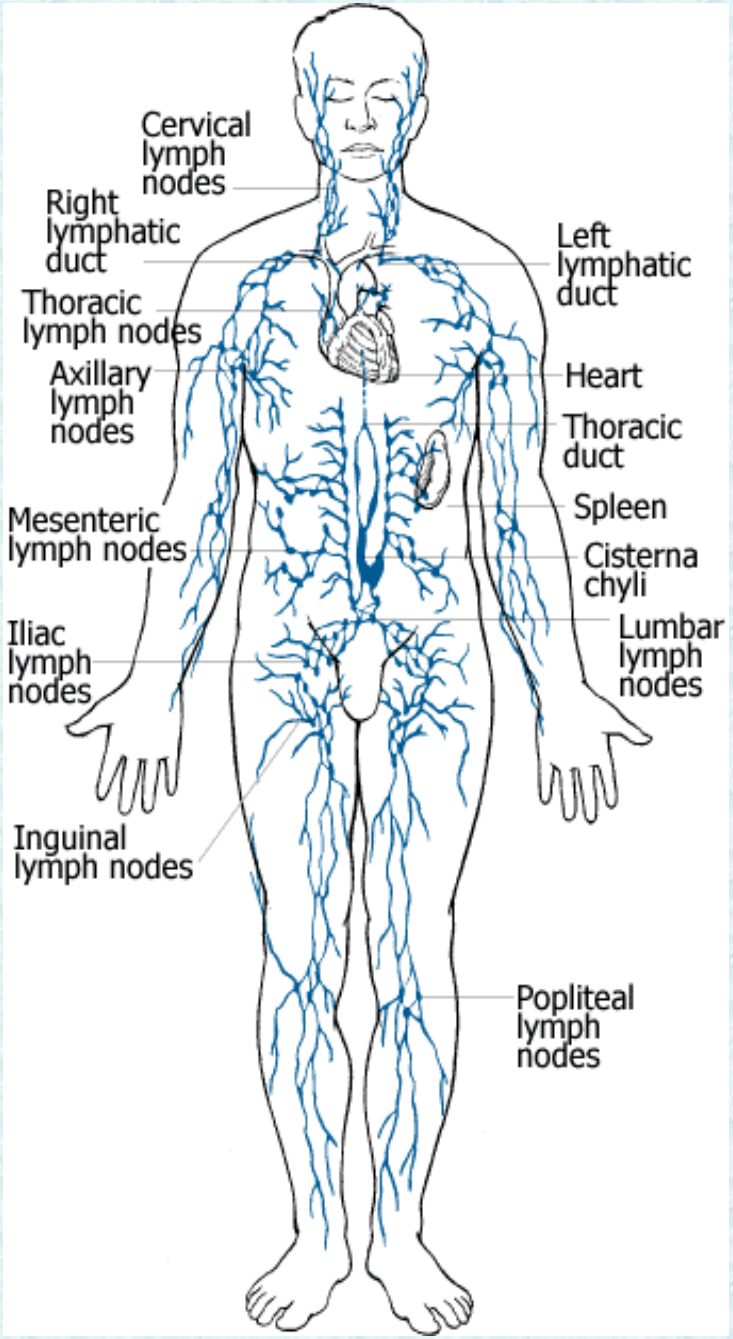
Clear nodes

Proximal to distal

Slow 5 – 7 reps

Rests after movement

(Casely-Smith, 1999)



Flowing and slow movement

To warm up/cool down

Work into fascial system

Pelvic, core and shoulder stability - *bandha*

Thoracic spine mobility

Kinematic movement patterns

Abdominal compression can aid lymphatic clearing

Abdominal contraction

Clenching
of the fist after
inhalation, and

Release on
Exhalation.

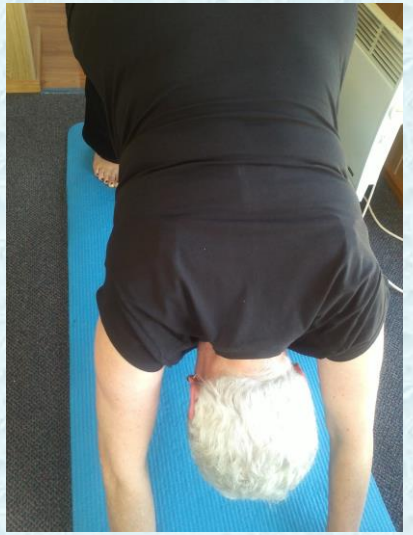
Dorsiflex ankle on inhalation

Plantar flex ankle on exhalation

Symmetry and balance

Gradually extending hold

And slowly introduce strength



Continue to clear lymph back to venous system

Eg Standing Cat / Rowing

Dharana/Dhyana
Relaxation and Meditation

Activate PNS

Clear/focus the mind

Long-term benefits
Clear brain lymph
Neuroscience

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