Pilates for Cancer – special focus on Lymphoedema

by Katharina Hesse

Lymphoedema is a disease of the lymphatic system. Generally observable as a chronic swelling, it indicates problems in lymphatic drainage. As teachers, most of us will develop an interest in lymphoedema when we work with anyone affected by surgery, particularly cancer - breast cancer, ovarian, prostate or bowel cancer. We should also be aware of lymphoedema when we are working with anyone affected by inflammatory diseases, including rheumatoid arthritis or eczema, circulatory problems such as varicose veins, or decreased mobility, as these can also lead to increased lymph and lymphoedema. The fascia is closely linked to the lymphatic system.

Regular movement is considered to be part of the management of lymphoedema. We know that movement moves lymph – whether it is walking, dancing or Pilates. But what about lymphoedema? Is Pilates safe for anyone who has or is at risk of lymphoedema? Yes it is, but only if we modify the work.

Pilates is practiced by many breast cancer survivors and has been found to be beneficial in many ways. One study found the following:

Statistically significant improvements emerged for shoulder abduction and internal rotation on the affected side, neck rotation toward the unaffected side, and neck flexion. […] Significant improvements were reported in quality of life, mood, and body image. The improvements in physical and psychological outcomes are promising and deserve further evaluation in a randomized, controlled study (Stan et al, 2012).

However, the authors also found that ‘The affected side arm volume and the interlimb volume discrepancy increased’ [a sign of lymphatic swelling!] and suggested that ‘The increase in affected arm volume also warrants additional investigation.’ The study suggests that one of the possible causes for this increase in lymph may be that ‘Pilates requires sustained isometric contractions of the periscapular and arm muscles at levels of intensity far above those of daily activities or light isometric exercise.’ Before you stop reading (and doing Pilates!), let me quickly add that this study did not look at modified Pilates – the Pilates that, I assume, most of us in the UK teach these days – but looked at the mainly classical repertoire.

So what is the potential problem with the classical repertoire for anyone with lymphoedema, what modifications are needed and how can we design a Pilates class for those who have or are at risk of lymphoedema? This article aims to explain how Pilates teachers can work safely with anyone at risk of or affected by lymphoedema.

Let’s start at the beginning and explain the disease, its causes and management to give us a good understanding of how we can modify our classes.

**What is lymphoedema?**
Lymphoedema is a chronic disease where one or more parts of the body are swollen. It commonly affects a limb – leg or arm – but can affect any part of the body, for example, the face, torso or genitals. The last often goes undiagnosed, as those affected by it find it hard to talk about it.

If a swelling is caused by an abnormal build-up of lymph fluid – that is, interstitial fluid containing high molecular weight proteins – it is called lymphoedema. Swelling, particularly of the legs, might also indicate heart or kidney failure, so a GP should always be asked for a diagnosis.

**Can you cure lymphoedema?**

Unfortunately, there is no known cure for lymphoedema. Once it has become chronic, lymphoedema can only be managed.

However, if lymphatic swelling is spotted before it has become chronic and is treated quickly enough, it might not develop into lymphoedema. So if someone is at risk, say they have undergone surgery and they spot an unusual swelling, immediately advise them to contact their hospital or another medical person who is aware and knows about lymphoedema (www.mld.org.uk).

**What causes lymphoedema?**

We don’t really know what causes lymphoedema, but there are certain risk factors. Risk factors don’t mean that a person affected by any of them will definitely develop lymphoedema.

Those who have undergone cancer surgery and subsequent radiotherapy treatment are at risk, as the treatment often affects the lymph nodes and vessels. Excessive scar tissue (keloids) also potentially impairs lymphatic flow. So anyone who has undergone surgery, including cosmetic surgery or joint replacement surgery, might be at risk. I have even come across someone who developed lymphoedema after a caesarean birth.

Infection and inflammatory conditions can be risk factors too. This includes conditions such as rheumatoid arthritis or eczema as well as other skin infections. Cellulitis is also often a side effect of lymphoedema.

Other risk factors might be venous-related diseases, including deep vein thrombosis or varicose veins.

Those with decreased mobility in muscles or joints might also be at risk. Remember that the lymphatic system hasn’t got a ‘pump’, but relies largely on the movement of muscles and skin to pump it back to the thoracic ducts, where lymph re-enters the blood circulation.

In the third world, the most common cause of lymphoedema is of parasitic origin.

Finally, there is also primary or congenital lymphoedema, in which there is a genetic cause or predisposition.
How does lymphoedema affect people?

Lymphoedema is a chronic disease and can lead to complications. It can severely affect movement, mobility and balance as well as the emotional wellbeing and quality of life. You need to be aware of these issues when teaching movement and rehabilitation classes.

**Mobility:** Try (or imagine) the following: Strap heavy weights around one limb and possibly even strap tight extra weights around the joints of the ‘affected’ limb. This will give you some idea of the effect of lymphoedema. You will find that you have one very heavy limb that is difficult to move, not just because of its weight, but also due to the reduced mobility in the joints of that limb. I recommend doing this as a teacher when preparing a class for anyone with lymphoedema.

**Balance:** Having one heavy limb means the body has to work harder to maintain balance. Muscles (and connective tissue) throughout the body – including the torso – will start to develop unevenly. Reduced joint mobility will also affect the balance mechanism, as effective balance relies on micro-movements in ankles, knees, hips and arms. Furthermore, proprioceptors (nerve endings) that send information to the brain about where we are located in space and which are therefore vital for balance are unlikely to work as efficiently.

**Tightness:** Movement and stretching are important for those with lymphoedema, and yet on some days this might feel painful and restricted because the skin can be stretched tight by the swelling. It might feel like trying to move in clothes that are too tight for you. And yet gently stretching the skin (and the connective tissue in general) is one way to improve lymphatic flow: pulling the collagen fibres of the connective tissue is thought to open the initial lymphatics, thereby helping to move lymph from the interstitial space/connective tissue into the lymphatic vessels (Wittlinger, 2004). Moving muscles is part of the ‘lymphatic pump’ that helps the lymphatic vessels pump lymph back to the thoracic ducts, where it rejoins the blood stream (see below for more details).

How do you manage lymphoedema?

The recommended elements for managing lymphoedema are:

1. manual lymphatic drainage: a specialised, gentle ‘massage’, opening the lymph nodes and directing and rerouting lymph from congested areas to non-congested areas and then back to the thoracic ducts, where it re-joins the blood stream.

2. decongestion therapy: There are two stages: initial intensive compression therapy, and then, once the limb size has reduced, maintenance by compression hosiery. This prevents backflow of lymph, directing lymph towards the midline. If fitted (not everyone with lymphoedema will be fitted!), compression hosiery should be worn during exercise.

3. skin care: due to a compromised immune system, minor injuries (cut, sting etc) can be potentially dangerous to the person suffering from lymphoedema. Further injury and infection
can result in increased swelling or cellulitis.

4) exercise: movement moves lymph! The lymphatic system does not have a pump of its own, unlike the cardiovascular system. Instead, it is moved by auxiliary pumps: ‘the musculature of the lymphatic vessels, the pressure differences in the thorax by breathing, the movement of the skeletal muscles, peristaltic movement of the intestine and pulsation of the arteries’ (Wittlinger, p 53).

Movement is thought to reduce swelling due to three main actions: 1. Increased uptake of lymph by the initial lymphatics – ‘suction pumps’ that move lymph from the connective tissue into the lymphatic vessels; 2. Increased pumping of lymphatic vessels – the network that moves lymph back to the thoracic ducts, where it can rejoin the bloodstream; and, finally, 3. Emptying of venous system, which reduces pressure on the lymphatic system (Vagas et al, 2003).

And I would add 5) breath. As mentioned above, breath is one of the auxiliary pumps, moving lymph through the pressure difference in the thorax. Breathing also affects stress levels. I once read that the ‘guru’ of stress, Hans Selye, found that stress affected the lymphatic system. I am not surprised and can think of many reasons, including more blood being pumped to the skeletal muscles as well as a general tightening in muscles and connective tissue. Breathing and possibly even meditation might therefore be beneficial for those with lymphoedema. Lisa Linsdell, a British Wheel of Yoga teacher who has lymphoedema and is currently writing a book about that subject, reports that she has had great success with meditation and breathing, not just for her lymphoedema but also for the side effects of lymphoedema, such as scoliosis and back pain that was a direct result from the uneven weight of her legs.

**Planning a movement intervention for someone with (or at risk of) lymphoedema:**

The general guidelines for a movement intervention for the lymphatic systems are:

1) Gentle stretches to move skin and connective tissue in order to:
   a) help open the initial lymphatics and thus increase the removal of lymph;
   and b) to remove ‘obstructions’ such as excessive scar tissue (keloids), which hold fluid

2) Encourage the natural ‘lymphatic auxiliary pumps’ to move lymph back to the thoracic duct by
   a) moving muscles (this also helps venous return, another cause for swelling);
   b) improved peristalsis (Can you sometimes hear your students’ stomachs gurgling with contentment? If yes, there you have an example of how Pilates and Yoga can affect peristalsis!);
   and c) improved breathing (which might also help with stress and wellbeing)
3) mobilise joints – areas with large numbers of lymph nodes and also dense connective tissue – to prevent stagnation in these areas and to improve balance.

4) Take your inspiration from manual lymphatic drainage (MLD). There are different schools of MLD, the most well-known being Leduc and Vodder. Leduc (1993) describes specific ‘pathways’ of lymphatic flow (Leduc et al, 1993) like a road map of the lymphatic system, whilst Vodder prescribes specific sequences (Wittlinger, 2004). These manual techniques can easily be translated into movement.

**Pilates-specific ideas:**

Many of the exercises we teach actually work on the areas specified and can be modified easily – once you really take account of the above information about lymphoedema and lymph, it just takes a little bit of imagination.

Most of us these days work with modified exercises in any case: exercises which are much gentler than the classical repertoire and which are quite suitable for rehabilitation – in my experience also for those with lymphoedema.

When designing a programme, remember the following (they are pretty obvious, but I mention them here anyway):

Always warm up: mobilisation and gentle stretches will not just help the body to warm up (and open the initial lymphatics), they are also good guides for how the person is feeling on that day and give a good indication of limitations in particular areas.

Don’t overwork a person who is at risk or has lymphoedema in the area at risk. That guideline includes the number of repetitions and weight-bearing work as well as speed, so:

- I would avoid too much weight-bearing work – at least initially. So no planks, push-ups or side planks, leg pulls. Certainly not early on, and maybe not later either, depending on the person. Weight-bearing work should be built up slowly over weeks, months, maybe even years. Equally, don’t work with too much resistance if you are working on the apparatus.

  Incidentally, you can adapt some of the above exercises for the wall, especially the plank or side plank. These versions work equally well on the core muscles but largely avoid the weight-bearing.

- Limit repetitions of any one exercise, especially those affecting the area.

- Even avoid too much focus on one particular area of the body at any one time: move to another area and come back to the area later! So if someone is at risk of lymphoedema of the upper body after breast cancer treatment, for example, do some arm work and then focus on the legs or core for a while before coming back to the arms.
• Work slowly with awareness. Speed can easily lead to a lack of attention and potentially injury. Even more interesting, Bose et al. (2010) suggest that slow yoga postures might enhance lymph flow (not surprising if you consider the above section where we say that muscle pump moves lymph) – so that should apply to our modified Pilates work too!

• Have small breaks: Telles et al. (2000) suggest that short breaks between series of Yoga poses might help empty lymphatic vessels. Just an idea: you could add some deep breathing in these breaks (see below for more on breathing).

• Don’t just focus on working the muscles. I know that we aim to build eccentric (that is, long) muscle power in Pilates – but it’s still a contraction. So include some gentle stretches and mobilisation exercises throughout the class.

• Breathe, breathe, breathe – and don’t limit your breath work to lateral breath. Use the belly breathing techniques and the full three-part breath taught in many yoga classes. Some breathing and retention techniques taught in yoga are also thought to help lymphatic flow. So get breathing!

• Be aware of the kind of work that anyone with lymphoedema needs that is beyond the flow of lymph, the mobility and range of movement in the affected area: think spine, back and balance, for example.

We all tend to work on posture and on the spine, which will help those with lymphoedema, as the extra weight will tend to cause a kind of scoliosis. However, not everyone works on balance and gait, and yet this might be really helpful to those affected by lymphoedema. Make sure you offer a chair or the wall to hold onto if you do any balancing, though.

• Always refer back to the person affected and try to find out what they feel they need.

**General contra-indications and safety rules (repeating some of the above):**

1. Where a compression garment, such as a sleeve, has been fitted the person should wear this for exercising. It will help to guide lymph back, away from the periphery to the centre.

2. Watch out for signs of increased swelling, redness of the skin or skin that is hot to touch. Exercise can bring more blood to an area. Increased blood means increased lymph which, in a compromised lymphatic system might mean more swelling that cannot be transported away from the area as easily as in a healthy system. I would avoid too much exertion: too many repetitions, too much weight-bearing work over periods that are too long for those at risk of lymphoedema. But what is ‘too much’, ‘too many’, ‘too long’, ‘too heavy’? To be honest, I can’t tell unless I know the individual. A good rule is to keep an eye on the area. Reddening of the skin, skin hot to the touch and swelling might all indicate the need to take it a little easier. Finish off with a gentle cool-down – maybe a bit of breathing, or possibly even try to include some very gentle slow-moving stretches.
3. Avoid those exercises that risk even minor injuries – I am thinking minor muscle tears. Even minor injuries lead to inflammation and scar tissue. In a healthy person this might just feel uncomfortable. In someone at risk from lymphoedema this might just be too much for their system. Again, I can’t speak for everyone, but it’s just good to start thinking about what is safe and what might increase the risk.

4. As mentioned above: avoid too much weight-bearing work, too many repetitions, even too much focus on one area at any one time and, if doing yoga, long periods of holding a particular posture – anything that might lead to tension. Again, this depends on the individual.

5. Be aware of general safety issues and be inclusive: Balance exercises might present a lot of difficulties in those with lymphoedema, as might long periods of standing. Offer a chair or the support of the wall to those who want it. In mixed classes it might be good practice to let everyone practice with a support first so that those affected by lymphoedema don’t feel singled out.

**Conclusion**

Health conditions don’t present a limitation to teaching. They present an opportunity. Working with any health condition really allows us to work with a heightened sense of being present – as a practitioner, teacher or student. Working in rehabilitation encourages us to really listen and to respond in an imaginative way. The roles of teacher and student become less clear cut. Teaching becomes an exchange of ideas, an exchange between two human beings. Working with those affected or at risk from lymphoedema is no exception to this rule. Understanding the condition allows you to guide students to find their own way to develop a safe and yet imaginative and personal practice. Teaching students to listen to their own body, to be fully present, will encourage an exchange of ideas between you and your students which in turn will inform your teaching. This is the real gift. The gift of being present in that moment together. The biggest gift that mind-body work such as Pilates can give us.

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**References**


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Together with Kara Dressel, Kat is running some Pilates for Breast Cancer workshops for the Pilates Foundation, where we will explore the practical modifications that are mentioned above. If you are interested in her work, have any questions or comments on the above issues contact her on kat@rhythmoflife.org.uk.