

## Response to yoga protocol for treatment of breast cancer-related lymphedema

Dear Sir,

In their recent article, Narahari *et al.*<sup>[1]</sup> cite and examine our article, “Yoga management of breast cancer-related lymphoedema: A randomised controlled pilot-trial”<sup>[2]</sup> and make several important factual errors, the most significant of which is that they incorrectly call our publication a “Protocol for Yoga and BCRL.” In fact, the aim of our publication is quite different:

This paper presents the results for the primary outcomes of arm volume of lymphedema and extracellular fluid and the secondary outcomes of tissue induration, sensations, and their limiting effects and quality of life.<sup>[2]</sup>

We believe the incorrect assumptions that Narahari *et al.* have made are based on their interpretation of Table 1 in our publication which provided a list of the practices and postures used in our trial. This table did not provide a detailed explanation of the way the postures were carried out or of their purpose and was intended to be understood as a basic outline only. We also provided reference to the rationale for our choice of practices in an earlier publication by our team.<sup>[3]</sup> Our intention is to publish the yoga protocol used in our trial

**Table 1: Brief overview of positions of Satyananda postures modified and ordered to promote lymphatic clearing. Women were also offered the choice to sit in a chair for each posture**

Position	Posture (with modifications)
Lying	Neck turns Greeva Sanchalana
(sitting variation offered)	Add outward rotation of opposite arm Utthanpadasana-variation
	Knee hugs-leg lock Supta Pawanmuktasana
	Shoulder circles Shandha Chakra
	Bent arm opening, chest towards knees Naukasana-variation combined with Namaskarasana-variation of arms
	Lying archer Akarna Dhanurasana-variation
	Lying rotation Supta Udarakarshanasana-variation
	Arm/leg stretch
Sitting	Sitting rowing Nauka Sanchalana
Standing	Standing archer Akarna Dhanurasana
(sitting variation offered)	Modified rope climbing Rajju Karshanasana-variation
	Modified arm raise, knee bend Tadasana-variation
	Modified side bend Trikonasana-variation
	Standing rotation Kati Chakrasana
	Standing cat Marjari-asana-variation
	Modified one-legged prayer balance Eka Pada
	Pranamasana
Sitting	Sitting neck turns Greeva Sanchalana

which will offer the full description of how yoga was used to maximize lymphatic clearing, improve kinematic movement patterns, stability of the shoulder and lower body, improve posture, and reduce stress. Nevertheless, we shall address some of the incorrect assumptions made by Narahari *et al.*

Firstly, the positions of our postures and ease of movement during positional change have been misrepresented. The position in which the postures were actually carried out is given in Table 1 below, reflecting ease of positional change. In addition, contrary to what Narahari *et al.* postulate, our practices were based on clearing the lymphatic system proximal to distal and using the breath with each movement.<sup>[3]</sup> The peripheral joints of wrists, fingers, ankles, and feet were fully used, based on the method described by Moseley *et al.*<sup>[4]</sup> Our reasoning for using the three-part yoga breath for this cohort of women will appear in our protocol publication.

As Narahari *et al.* point out, we did not use *bhastrika*. To clear the lymphatic system back into the venous system, we used the full yoga breath, chanting, and abdominal contraction with exhalation, including several postures with abdominal contraction and strong exhalation.<sup>[3]</sup> The focus in our trial was on safety and as is the practice in Australia, we were conservative in our choice of *pranayama* techniques for this cohort of women, only two of whom had previously done yoga. We consider different cultural applications of yoga for breast cancer-related lymphedema a benefit.

Unlike our randomized controlled study, Narahari *et al.* provide no evidence of a control group. We stated that in comparison to the control group, there was no reduction in arm volume of lymphedema measured by circumference; however, within the yoga intervention group, there was a significant reduction. This result, we believe, would be a fairer comparison for Narahari *et al.* to make. One month after the completion of the yoga intervention, the significant reduction in arm volume for the yoga intervention group had changed back to the original volume and we proposed that a longer trial was needed to maintain the volume difference. As the trial of Narahari *et al.* was over 3 months, the reduction their women experienced adds evidence to our supposition. However, perhaps a valid comparison of these two trials is difficult as the method used by Narahari *et al.* to calculate arm

volume was not reported. In addition, we note that yoga is only one component of the integrated intervention they offered their eight women.

While we believe that our yoga protocol has been incorrectly interpreted from the brief description in the paper discussing the primary outcomes of our pilot trial, we invite discussion with Narahari *et al.* on this important area of yoga. We believe the philosophy of yoga supports collaboration and unity to improve the condition of those with lymphedema who live in a variety of cultures and environments. As researchers in this field, we share with Narahari *et al.* our dedication to support valid research methodology to improve the lives of this cohort of people worldwide.

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### Conflicts of interest

There are no conflicts of interest.

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