



Reaching consensus on exercise recommendations for individuals living with lower limb lymphoedema: a Delphi study

Luke M. Davies , Louise Koelmeyer , Katrina Gaitatzis , Vincent Singh Paramanandam & Belinda Thompson

To cite this article: Luke M. Davies , Louise Koelmeyer , Katrina Gaitatzis , Vincent Singh Paramanandam & Belinda Thompson (25 Oct 2025): Reaching consensus on exercise recommendations for individuals living with lower limb lymphoedema: a Delphi study, Disability and Rehabilitation, DOI: [10.1080/09638288.2025.2578424](https://doi.org/10.1080/09638288.2025.2578424)

To link to this article: <https://doi.org/10.1080/09638288.2025.2578424>



© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



[View supplementary material](#)



Published online: 25 Oct 2025.



[Submit your article to this journal](#)



[View related articles](#)



[View Crossmark data](#)

RESEARCH ARTICLE



Reaching consensus on exercise recommendations for individuals living with lower limb lymphoedema: a Delphi study

Luke M. Davies^{a,b}, Louise Koelmeyer^{a,b}, Katrina Gaitatzis^{a,b}, Vincent Singh Paramanandam^{a,b} and Belinda Thompson^{a,b}

^aDepartment of Health Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia;

^bAustralian Lymphoedema Education, Research and Treatment (ALERT) Centre, Macquarie University, Sydney, Australia

ABSTRACT

Purpose: Existing exercise recommendations primarily focus on upper limb lymphoedema, with limited clarity on the most effective types, frequency, and intensity of exercise for individuals with lower limb lymphoedema. Given the differences observed between the upper and lower limbs, it makes intuitive sense to develop a framework of exercise recommendations for lower limb lymphoedema.

Materials and methods: We conducted a modified two round e-Delphi during February and March 2025. A draft framework was developed by the research team using relevant documents identified within the literature. The expert panel considered 68 exercise recommendations and three recommendations regarding compression garments whilst exercising. Over two rounds, panellists rated their level of agreement on whether each recommendation was important when prescribing exercise to individuals living with lower limb lymphoedema.

Results: A total of 54 panellists from 10 countries participated in round 1, with a high retention rate of 96% in round 2. The final framework consisted of 26 exercise recommendations across three domains: resistance ($n = 7$ recommendations); aerobic ($n = 15$); flexibility ($n = 4$); and three recommendations regarding compression garment use whilst exercising.

Conclusions: This framework outlines a set of exercise recommendations to guide healthcare professionals in prescribing multimodal programs for individuals living by lower limb lymphoedema.

ARTICLE HISTORY

Received 26 May 2025
Revised 16 October 2025
Accepted 17 October 2025

KEYWORDS

Lymphatic diseases;
lymphedema; exercise;
exercise prescription;
Lymphoedema

► IMPLICATIONS FOR REHABILITATION

- Current literature lacks clear guidance on effective exercise, types, frequency, and intensity for lower limb lymphoedema.
- Clinicians often adapt recommendations designed for upper limb lymphoedema, highlighting the need for tailored guidance for lower limb presentations.
- The purpose of this framework is not to dictate the way healthcare professionals must prescribe exercise; rather, it is to offer consensus-based exercise recommendations for individuals living with lower limb lymphoedema in the absence of strong scientific evidence.

Introduction

Lymphoedema, an incurable chronic condition, is characterised by the abnormal accumulation of protein-rich interstitial fluid resulting in swelling of the limbs or tissues [1,2]. Individuals living with lymphoedema often experience pain, heaviness, tightness, physical distortion, and impaired functionality of the affected limb [3]. It is estimated that approximately 250 million individuals globally are living by lymphoedema [1], including more than 25 000 Australians [4]. Complex lymphoedema therapy, also known as complex decongestive therapy, is considered best practice conservative management for this

CONTACT Luke M. Davies  luke.davies@mq.edu.au  Department of Health Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, NSW, Australia

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/09638288.2025.2578424>.

© 2025 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

condition [5]. This comprehensive, multimodal approach includes compression therapy, manual lymphatic drainage, skin care, patient education, and exercise [5,6].

Once regarded as potentially exacerbating or triggering for lymphoedema, exercise is now recognised as a fundamental component in lymphoedema management [3]. Evidence suggests that appropriately prescribed exercise neither exacerbates nor worsens the condition [5,7]. Rather, it can enhance lymphatic function, reduce swelling, and improve overall quality of life [8]. Individualised exercise programs focusing on strength, flexibility, and aerobic fitness are now an essential part of care [9]. Exercise has shown to assist in alleviating symptoms, restoring functional capacity, and improving quality of life in individuals living with lymphoedema [9,10]. Despite evidence supporting the role of exercise in lymphoedema management and providing guidance on its prescription, the majority of research has been conducted in the upper limb [5], often neglecting the lower limb.

Within the literature, there appears to be a lack of clarity regarding recommendations for the most effective types of exercise, the optimal frequency, and the appropriate intensity for individuals living with lower limb lymphoedema [11]. As such, clinicians are often required to adapt existing recommendations developed for upper limb lymphoedema to address lower limb presentations. Given the observed differences such as limb size, the dependant position of the leg and the effects of locomotion [12], generalising recommendations from the upper limb to the lower limb may not be appropriate. Therefore, the aim of this study is to develop an internationally relevant framework of exercise recommendations for individuals living with lower limb lymphoedema.

Materials and methods

Overview

This framework has been developed using the lens of the American College of Sports Medicine's domains of frequency, intensity, type, and time to assist clinicians in prescribing exercises to individuals living with lower limb lymphoedema [13]. This framework will establish consensus on key exercise prescription principles, offering an evidence-informed blueprint to support clinicians in their decision-making, particularly in settings where specialised expertise in lymphoedema management may be limited. We established an international Delphi panel and conducted a modified two-round e-Delphi survey between February and March of 2025. The Guidance on Conducting and Reporting Delphi Studies (CREDES) was used to promote quality of reporting [14]. Ethical approval was obtained from Macquarie University (#18534). [Figure 1](#) outlines the study phases.

Survey development

An initial draft framework was developed by the research team that generated a list of potential recommendations from several relevant documents identified from a search of the literature. These documents included position statements on exercise in cancer care from the Clinical Oncology Society of Australia [15] and Exercise and Sport Science Australia [16], consensus statements on exercise guidelines for cancer survivors [17,18], a systematic review on the effect of exercise for the prevention and treatment of cancer-related lymphoedema [10], as well as the American College of Sports Medicine exercise management for cancer [19]. Recommendations for exercise modalities, including aerobic, resistance, and flexibility were mapped to the domains of frequency, intensity, type, and time. The final draft framework comprised 68 recommendations across the four domains, as well as three recommendations regarding the use of compression garments during exercise.

Delphi panel

An international Delphi panel of experts in the field of exercise delivery for lower limb lymphoedema was established to reach consensus on the framework. The panel consisted of:

- i. Allied health professionals with experience providing exercise to individuals living with lower limb lymphoedema
- AND
- ii. Researchers involved in lower limb lymphoedema research

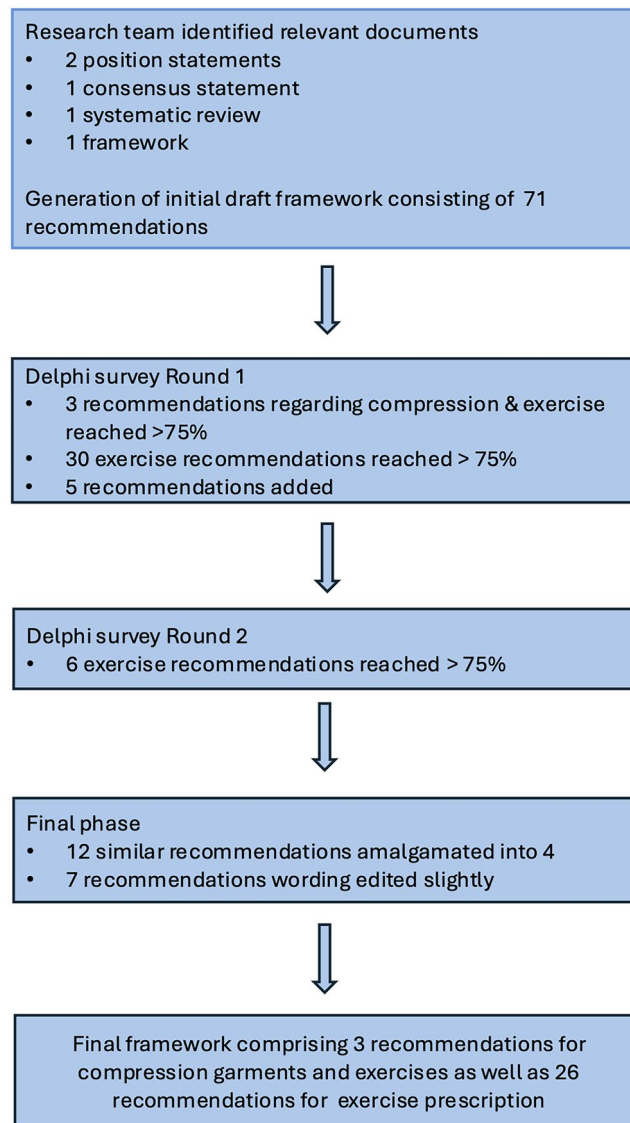


Figure 1. Development of exercise recommendations framework for individuals impacted by lower limb lymphoedema.

Further eligibility criteria for clinicians were (i) must be a registered healthcare professional (according to respective national professional registration bodies) and (ii) must have delivered exercise interventions to at least 10 individuals living with lower limb lymphoedema over the past two years. Inclusion criteria for researchers were: (i) must have published in the area of lower limb lymphoedema and exercise in the past two years OR (ii) been invited as a keynote speaker at a national or international conference.

The research team generated a list of potential participants drawing on their clinical, research, and academic networks, an internet search of clinicians delivering exercise interventions to individuals living with lower limb lymphoedema, and international lymphoedema organisations. A snowball method was used, inviting potential panel members to forward the invitation to colleagues they believed met the eligibility criteria. Advertisements were also placed on social media (Facebook, Instagram, and X). A series of screening questions at the beginning of round 1 of the survey ensured potential panellists met the eligibility criteria. Only participants who completed round 1 of the Delphi were invited to complete the second round via email.

E-Delphi survey

Panellists were asked to rate each of the 68 exercise recommendations across the four domains (frequency, intensity, type, and time) for resistance, aerobic, and flexibility exercises, as well as three recommendations regarding the use of compression garments during exercise. Using an online software tool

(Qualtrics, Provo, UT), the research team developed a purpose-built survey that was delivered over two rounds. Panellists were only permitted access to the survey if they met the inclusions criteria. Rounds 1 and 2 were open for two weeks, with three reminder emails sent to non-responders to encourage completion. Each round took approximately 20 min for participants to complete the survey.

Round 1

In round 1, panel members were asked to rate each individual recommendation for resistance, aerobic, and flexibility exercise across four domains (frequency, intensity, type, and time) as “unimportant”, “important”, or “essential”. Panel members were also invited to suggest additional recommendations that were not already captured in the draft framework via a free text box option at the end of the survey. Consensus was defined as 75% of the panel [20,21] agreeing that the recommendation was either “important” or “essential”. Recommendations achieving consensus thresholds below 50% were excluded from the framework, whilst those reaching consensus levels between 50% and 74% were advanced to round 2 for further deliberation.

Round 2

In round 2, panel members were presented with the recommendations reaching between 50 and 74% consensus in round 1, along with any new recommendations suggested by the panel. They were asked to rate their level of agreement on how important the exercise recommendations were for those living with lower limb lymphoedema using a five-point Likert Scale (strongly disagree, disagree, neutral, agree, and strongly agree). Summary panel data (expressed as percentage of the panel agreeing) were presented alongside individual recommendations to assist in this process. Recommendations reaching consensus (defined as 75% of the panel “agreeing” or “strongly agreeing”) were retained for the final framework.

Final phase

During the final phase of the study, two members of the research team (LD, BT) reviewed the final framework of recommendations to identify and remove any redundancies, as well as refine wording across the domains. Those recommendations that were similar in nature were merged to avoid replication.

Results

Table 1 describes the characteristics of the Delphi panel. A total of 54 participants from 10 countries completed the round 1 survey. Most participants were physiotherapists (62%), followed by occupational therapists (17%) and exercise physiologists (4%). The most common practice areas were a public hospital setting (37%), followed by private practice (35%). The majority of clinicians had completed recognised specialist lymphoedema training (96%). In round 2, 52 participants were retained representing 96% retention of round 1 participants.

Delphi rounds and final phase

Figure 1 provides an overview of the Delphi rounds. In round 1, three recommendations regarding compression and exercises as well as 30 exercise recommendations reached consensus as being “essential” or “important” for inclusion and were retained for the final framework. Thirty-four exercise recommendations reached between 50 and 74% of consensus and were retained for re-rating in round 2 and four recommendations achieved less than 50% consensus and were removed from the framework (supplementary 1). The panel generated five new recommendations for inclusion in round 2 (supplementary 2). In round 2, 33 recommendations did not reach consensus and were removed from the final framework (supplementary 3). Six recommendations reached consensus and were retained for the final framework of exercise recommendations for individuals living with lower limb lymphoedema. During the final phase, 12 recommendations with overlapping meanings were consolidated into four distinct recommendations to minimise redundancy (supplementary 4), as well as minor word edits to recommendations (supplementary 5). The final framework comprised 26 recommendations spanning the domains of resistance,

Table 1. Characteristics of the participants in the Delphi panel.

Participants	Round 1 (N = 54)	Round 2 (N = 52)
Panellist classification, n (%)		
Physiotherapist	34 (62)	33 (64)
Occupational therapist	9 (17)	9 (18)
Exercise physiologists	2 (4)	2 (4)
Myotherapist	1 (2)	1 (2)
Osteopath	1 (2)	1 (2)
Physiatrists	1 (2)	1 (2)
Researcher	6 (11)	4 (8)
Gender, n (%)		
Male	4 (7)	4 (8)
Female	50 (93)	48 (92)
Country of residence ^a , n (%)		
Australia	32 (59)	30 (58)
Canada	2 (4)	2 (4)
Denmark	1 (2)	1 (2)
France	1 (2)	1 (2)
India	1 (2)	1 (2)
Netherlands	2 (4)	2 (4)
New Zealand	2 (4)	2 (4)
Switzerland	1 (2)	1 (2)
UK	1 (2)	1 (2)
USA	11 (20)	11 (20)
Clinical practice area, n (%), n = 54		
Community health care service		4 (8)
Private practice		19 (35)
Hospital setting – private		3 (6)
Hospital setting – public		20 (37)
University or education institution		2 (3)
Research setting		6 (11)
Completed recognised specialist lymphoedema training, n (%), n = 48		
Yes		46 (96)
No		2 (4)
Years of clinical experience, n (%), n = 48		
Less than 5 years		11 (23)
5–9 years		14 (29)
10–14 years		7 (14)
15–19 years		6 (13)
20+ years		10 (21)

^aWill not add to 100% due to rounding.

aerobic, and flexibility exercise, in addition to three recommendations regarding the use of compression garments during exercise (Figure 2).

Discussion

This study aimed to reach consensus on a framework of exercise recommendations for individuals living with lower limb lymphoedema. The purpose of this framework is not to dictate the way healthcare professionals must prescribe exercise; rather, it is to offer consensus-based exercise recommendations for individuals living with lower limb lymphoedema in the absence of strong scientific evidence. It is important for healthcare professionals to consider the individual's presentation, their goals, apply sound clinical reasoning, and adopt a holistic approach to optimise both safety and effectiveness when prescribing an exercise program as part of a management plan.

To our knowledge, no previous study has examined exercise recommendations to guide healthcare professionals in prescribing exercise for individuals with lower limb lymphoedema. Our findings align with existing exercise recommendations for lymphoedema [2] and are consistent with intervention studies conducted in individuals with lower limb lymphoedema [22]. For example, among the four studies reporting on land-based exercise included in a recent systematic review examining the effects of exercise in individuals with lower limb lymphoedema [22], similarities were observed across both resistance and aerobic exercise domains. These included frequency (resistance: two sessions per week; aerobic: 2–5 times per week), intensity (resistance: 2–3 sets of 10 reps; aerobic: Borg scale of 11–14), type (resistance: resistance bands, free weights; aerobic: cycling, walking), and time (resistance: 40 min; aerobic: 30–60 min per session, 10–15 min per session 3–5 times per day) [22]. Collectively, these findings highlight the

Consensus-based exercise recommendations for individuals impacted by lower limb lymphoedema

Recommendations for wearing compression garments while exercising			
- When participating in exercise a compression garment should always be worn OR - If wearing a garment is a barrier to performing exercise individuals can trial readily available sports compression (e.g. 2XU and skins) and closely monitor their response OR - If wearing a garment is a barrier to performing exercise individuals can trial exercise without a garment and closely monitor their response			
	Resistance Exercise	Aerobic Exercise	Flexibility Exercise
Frequency	- Perform 2-4 resistance exercise sessions each week - If performing >3 sessions per week develop a split program that ensures at least 48 hours recovery before exercising the same muscle groups	- Spread aerobic exercise across 5 days of the week - Perform 3-7 aerobic exercise sessions per week - Perform aerobic exercise on most days of the week	
Intensity	Minimum of 2 sets of 8-15 reps with at least 60% of 1RM	- Perform aerobic exercise at a moderate intensity - Perform aerobic exercise of at least moderate intensity, unless individual preference is for low intensity - Perform aerobic exercise at 11 to 14/20 on the Borg Rating of Perceived Exertion scale	Stretch to limits of mild discomfort (you should be able to feel a stretch, but it should not be painful)
Type	- Free weight - Body weight - Resistance bands	- Walking - Swimming - Water based exercises - Stationary cycling - Exercises that use large muscle groups - Any activity the individual prefers or enjoys	- Static stretching (for a minimum of 30-60 second holds at least twice) - Dynamic stretching (pre-exercise perform dynamic stretches actively moving through range of motion) - Mobility exercises (e.g., range of motion)
Time	The session duration should be between 20-30 minutes	- Perform aerobic exercises of 5-40 minutes per session; weekly total of 150 minutes - Build up to or over 150 minutes per week of moderate intensity - Perform continuous or intermittent aerobic exercise (minimum of 10-minute bouts accumulated during the day) of 30-60 minutes	

Figure 2. Final framework of exercise recommendations.

importance of prescribing combined varied modes of exercise, as well as tailoring exercise intensity to different thresholds for individuals living with lower limb lymphoedema. This multimodal approach is likely to provide additional benefits for individuals with lower limb lymphoedema.

The literature presents mixed views on the use of compression garments for lymphoedema during exercise. For example, some studies indicate that compression may support fluid reduction, whereas others report no significant difference in fluid levels whether compression is worn or not [23–25]. These outcomes may vary depending on the mode of exercise and the frequency with which it is performed. One point of difference between our framework and others are the use of compression garments whilst exercising. Our panel recommends that individuals use compression garments when exercising; however, if wearing a garment is a barrier to performing exercise, a practical recommendation is to consider the use of commercially available sports compression garments such as 2XU, SKINS, or Under Armour. Prior research supports the use of compression during exercise, with a study examining the combined effects of exercise and compression therapy demonstrating significant reductions in limb volume, highlighting the beneficial impact of this approach [26]. Additionally, our framework agrees with existing exercise guidelines in recommending that, if the use of compression garments presents a barrier to exercise, individuals may trial exercise without a garment whilst closely monitoring their response [16].

Our findings provide guidance on the recommended type and amount of exercise for individuals living with lower limb lymphoedema to support optimisation of clinical outcomes. Although many individuals may not initially meet these thresholds, it is essential that health professionals actively support and guide individuals towards progressive attainment of these exercise recommendations. For instance, prescribing activities such as walking may provide modest initial benefits; however, it is important to adopt a progressive approach aimed at increasing exercise levels over time to meet recommended exercise guidelines [27]. This approach is supported by evidence demonstrating that higher levels of physical activity and exercise are associated with greater reductions in all-cause mortality [28]. Additionally, research shows engaging in exercising at recommended levels is associated with the prevention of co-morbidities and chronic conditions including, but not limited to dyslipidaemia, hypertension,

sarcopenia, obesity, and type 2 diabetes [29–32]. This is important given that many individuals living with lower limb lymphoedema may often present with associated co-morbidities [33].

A variety of stakeholders can benefit from using the framework including healthcare professionals, educators, and individuals living with lower limb lymphoedema. Evidence suggests that healthcare professionals' overall knowledge of lymphoedema is lacking [34]. Therefore, the implementation of this framework provides healthcare professionals with limited or no experience in prescribing exercise for individuals with lower limb lymphoedema a guide for making evidence-based informed exercise prescriptions. This framework can also be used in lower limb lymphoedema training courses. Embedding the framework within training programs supports healthcare professionals in delivering safe and effective exercise interventions, provided exercise prescription falls within their scope of practice. Additionally, this framework may serve as a resource for individuals living with lower limb lymphoedema, helping them understand the expected frequency, intensity, type, and duration of exercises when an exercise program is prescribed by a healthcare professional.

Strengths of our study include a diverse range of lymphoedema therapists, with 96% of the panel having completed specialist training in lymphoedema from 10 countries. Additionally, the size of our panel ($n = 54$) and high retention rates (96%) represent notable strengths of this study. Although there is no ideal Delphi panel size, the literature suggests that typical panels are between 10 and 100 participants [35]. Given the niche scope of our investigation, the size of our panel may be considered large. However, it is important to note that the panel lacked representation from experts with diverse linguistic backgrounds, and only 2% of the panel were from middle-income economies. Therefore, this may limit the generalisability of our framework to low- and middle-income economies and other healthcare settings with differing contextual factors.

In conclusion, our framework communicates a set of exercise recommendations that serve as a blueprint for healthcare professionals prescribing exercises for individuals living with lower limb lymphoedema. Furthermore, the framework emphasises the importance of prescribing a multimodal exercise program that integrates resistance, aerobic, and flexibility components, recognising that a combination of exercise modalities is essential to address the diverse needs of individual's living with lower limb lymphoedema.

Author contributions

CRedit: **Luke M. Davies:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing; **Louise Koelmeyer:** Conceptualization, Methodology, Writing – review & editing; **Katrina Gaitatzis:** Conceptualization, Methodology, Writing – review & editing; **Vincent Singh Paramanandam:** Conceptualization, Methodology, Writing – review & editing; **Belinda Thompson:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Consent form

All participants provided written informed consent prior to participating.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethical approval

Ethical approval was obtained from Macquarie University (#18534).

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Data availability statement

The data that support the findings of this study are available from the corresponding author, (LD), upon reasonable request.

References

- [1] Schulze H, Nacke M, Gutenbrunner C, et al. Worldwide assessment of healthcare personnel dealing with lymphoedema. *Health Econ Rev.* 2018;8(1):10. doi:[10.1186/s13561-018-0194-6](https://doi.org/10.1186/s13561-018-0194-6).
- [2] Luan B, Li Z, Yang Q, et al. The effects of ACSM-based exercise on breast cancer-related lymphoedema: a systematic review and meta-analysis. *Front Physiol.* 2024;15:1413764. doi:[10.3389/fphys.2024.1413764](https://doi.org/10.3389/fphys.2024.1413764).
- [3] Damato A, Rovnaya A, McGuigan P. Resistance training in patients with secondary lymphoedema: does it have any effect on functional and quality of life measures? *J Lymphoedema.* 2023;18:8–14.
- [4] Wang K, Piller N, Conway N, et al. International Lymphoedema Framework Australia—emerging issues and the way forward. *J Lymphoedema.* 2014;9:37.
- [5] Wang L, Shi YX, Wang TT, et al. Breast cancer-related lymphoedema and resistance exercise: an evidence-based review of guidelines, consensus statements and systematic reviews. *J Clin Nurs.* 2023;32(9–10):2208–2227. doi:[10.1111/jocn.16437](https://doi.org/10.1111/jocn.16437).
- [6] Rockson SG, Keeley V, Kilbreath S, et al. Cancer-associated secondary lymphoedema. *Nat Rev Dis Primers.* 2019;5(1):22. doi:[10.1038/s41572-019-0072-5](https://doi.org/10.1038/s41572-019-0072-5).
- [7] Tendero-Ruiz L, Palomo-Carrión R, Megía-García-Carpintero Á, et al. The effect of therapeutic exercise in the prevention of lymphoedema secondary to breast cancer: a systematic review. *Arch Med Sci.* 2023;19(6):1684–1692. doi:[10.5114/aoms.2020.101435](https://doi.org/10.5114/aoms.2020.101435).
- [8] Singh B, Disipio T, Peake J, et al. Systematic review and meta-analysis of the effects of exercise for those with cancer-related lymphedema. *Arch Phys Med Rehabil.* 2016;97(2):302–315.e13. doi:[10.1016/j.apmr.2015.09.012](https://doi.org/10.1016/j.apmr.2015.09.012).
- [9] Do JH, Choi KH, Ahn JS, et al. Effects of a complex rehabilitation program on edema status, physical function, and quality of life in lower-limb lymphedema after gynecological cancer surgery. *Gynecol Oncol.* 2017;147(2):450–455. doi:[10.1016/j.ygyno.2017.09.003](https://doi.org/10.1016/j.ygyno.2017.09.003).
- [10] Hayes SC, Singh B, Reul-Hirche H, et al. The effect of exercise for the prevention and treatment of cancer-related lymphedema: a systematic review with meta-analysis. *Med Sci Sports Exerc.* 2022;54(8):1389–1399. doi:[10.1249/MSS.0000000000002918](https://doi.org/10.1249/MSS.0000000000002918).
- [11] Kwan ML, Cohn JC, Armer JM, et al. Exercise in patients with lymphedema: a systematic review of the contemporary literature. *J Cancer Surviv.* 2011;5(4):320–336. doi:[10.1007/s11764-011-0203-9](https://doi.org/10.1007/s11764-011-0203-9).
- [12] Cemal Y, Jewell S, Albornoz CR, et al. Systematic review of quality of life and patient reported outcomes in patients with oncologic related lower extremity lymphedema. *Lymphat Res Biol.* 2013;11(1):14–19. doi:[10.1089/lrb.2012.0015](https://doi.org/10.1089/lrb.2012.0015).
- [13] Liguori G, American College of Sports Medicine. ACSM's guidelines for exercise testing and prescription. Lippincott Williams & Wilkins; Philadelphia, 2020.
- [14] Jünger S, Payne SA, Brine J, et al. Guidance on Conducting and REporting DElphi Studies (CREDES) in palliative care: recommendations based on a methodological systematic review. *Palliat Med.* 2017;31(8):684–706. doi:[10.1177/0269216317690685](https://doi.org/10.1177/0269216317690685).
- [15] Cormie P, Atkinson M, Bucci L, et al. Clinical Oncology Society of Australia position statement on exercise in cancer care. *Med J Aust.* 2018;209(4):184–187. doi:[10.5694/mja18.00199](https://doi.org/10.5694/mja18.00199).
- [16] Hayes SC, Newton RU, Spence RR, et al. The Exercise and Sports Science Australia position statement: exercise medicine in cancer management. *J Sci Med Sport.* 2019;22(11):1175–1199. doi:[10.1016/j.jsams.2019.05.003](https://doi.org/10.1016/j.jsams.2019.05.003).
- [17] Campbell KL, Winters-Stone K, Wiskemann J, et al. Exercise guidelines for cancer survivors: consensus statement from International Multidisciplinary Roundtable. *Med Sci Sports Exerc.* 2019;51(11):2375–2390. doi:[10.1249/MSS.0000000000002116](https://doi.org/10.1249/MSS.0000000000002116).
- [18] Schmitz KH, Courneya KS, Matthews C, et al. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Med Sci Sports Exerc.* 2010;42(7):1409–1426. doi:[10.1249/MSS.0b013e3181e0c112](https://doi.org/10.1249/MSS.0b013e3181e0c112).
- [19] Moore G, Durstine JL, Painter P, et al. ACSM's exercise management for persons with chronic diseases and disabilities. 4th edition. Human Kinetics; Champaign IL, 2016.
- [20] Diamond IR, Grant RC, Feldman BM, et al. Defining consensus: a systematic review recommends methodologic criteria for reporting of Delphi studies. *J Clin Epidemiol.* 2014;67(4):401–409. doi:[10.1016/j.jclinepi.2013.12.002](https://doi.org/10.1016/j.jclinepi.2013.12.002).
- [21] Davies L, Hinman RS, Russell T, et al. An international core capability framework for physiotherapists to deliver quality care via videoconferencing: a Delphi study. *J Physiother.* 2021;67(4):291–297. doi:[10.1016/j.jphys.2021.09.001](https://doi.org/10.1016/j.jphys.2021.09.001).
- [22] Wittenkamp MC, Christensen J, Vinther A, et al. The effect of exercise in patients with lower limb lymphedema: a systematic review. *Acta Oncol.* 2025;64:484–498. doi:[10.2340/1651-226X.2025.42560](https://doi.org/10.2340/1651-226X.2025.42560).
- [23] Wittenkamp MC, Juhl CB, Zerahn B, et al. Exercise and cancer-related lymphedema in the lower limbs—a randomized cross-over trial on high-intensity interval training (HIIT) with and without compression garments. *Support Care Cancer.* 2025;33(5):391. doi:[10.1007/s00520-025-09458-x](https://doi.org/10.1007/s00520-025-09458-x).
- [24] Barufi S, de Godoy HJP, de Godoy JMP, et al. Exercising and compression mechanism in the treatment of lymphoedema. *Cureus.* 2021;13(7):e16121. doi:[10.7759/cureus.16121](https://doi.org/10.7759/cureus.16121).
- [25] Hayes S, Singh B, Bloomquist K, et al. Do women with breast cancer-related lymphoedema need to wear compression while exercising? Results from a systematic review and meta-analysis. *Curr Breast Cancer Rep.* 2020;12(3):193–201. doi:[10.1007/s12609-020-00373-0](https://doi.org/10.1007/s12609-020-00373-0).
- [26] Fukushima T, Tsuji T, Sano Y, et al. Immediate effects of active exercise with compression therapy on lower-limb lymphedema. *Support Care Cancer.* 2017;25(8):2603–2610. doi:[10.1007/s00520-017-3671-2](https://doi.org/10.1007/s00520-017-3671-2).

- [27] Australian Government Department of Health Disability and Ageing. Physical activity and exercise guidelines for all Australian; 2021 [accessed 2025 2024 May 1]. Available from: <https://www.health.gov.au/topics/physical-activity-and-exercise/physical-activity-and-exercise-guidelines-for-all-australians>
- [28] Wen CP, Wai JPM, Tsai MK, et al. Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *Lancet*. 2011;378(9798):1244–1253. doi:10.1016/S0140-6736(11)60749-6.
- [29] Bushman BA. Exercise for prevention of chronic diseases. *ACSM's Health Fitness J*. 2020;24(1):5–10. doi:10.1249/FIT.0000000000000533.
- [30] Muscella A, Stefano E, Marsigliante S. The effects of exercise training on lipid metabolism and coronary heart disease. *Am J Physiol Heart Circ Physiol*. 2020;319(1):H76–H88. doi:10.1152/ajpheart.00708.2019.
- [31] Anderson E, Durstine JL. Physical activity, exercise, and chronic diseases: a brief review. *Sports Med Health Sci*. 2019;1(1):3–10. doi:10.1016/j.smhs.2019.08.006.
- [32] Ross R, Freeman JA, Janssen I. Exercise alone is an effective strategy for reducing obesity and related comorbidities. *Exerc Sport Sci Rev*. 2000;28:165–170.
- [33] Rockson SG, Zhou X, Zhao L, et al. Exploring disease interrelationships in patients with lymphatic disorders: a single center retrospective experience. *Clin Transl Med*. 2022;12(4):e760. doi:10.1002/ctm2.760.
- [34] Yarmohammadi H, Rooddehghan A, Soltanipur M, et al. Healthcare practitioners' knowledge of lymphedema. *Int J Vasc Med*. 2021;2021:3806150. doi:10.1155/2021/3806150.
- [35] Avella JR. Delphi panels: research design, procedures, advantages, and challenges. *Int J Doct Stud*. 2016;11:305.