

Concise review on the safety of exercise on symptoms of lymphedema

Casie Morris, Karen Y Wonders

Casie Morris, Department of Exercise Science, Sinclair Community College, Dayton, OH 45435, United States

Casie Morris, Karen Y Wonders, Maple Tree Cancer Alliance, Dayton, OH 45404, United States

Karen Y Wonders, Department of Kinesiology and Health, Wright State University, Dayton, OH 45404, United States

Author contributions: Both authors contributed equally to this work; Morris C wrote the body of the manuscript; Wonders KY edited and added abstract, introduction, and conclusion wording.

Conflict-of-interest statement: There are no conflicts of interest for this minireviews.

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Correspondence to: Karen Y Wonders, PhD, FACSM, Professor, Department of Kinesiology and Health, Wright State University, 3640 Colonel Glenn Hwy, Dayton, OH 45404, United States. karen.wonders@wright.edu
Telephone: +1-937-7752637
Fax: +1-937-7754252

Received: May 12, 2015
Peer-review started: May 16, 2015
First decision: June 3, 2015
Revised: June 21, 2015
Accepted: June 30, 2015
Article in press: July 2, 2015
Published online: August 10, 2015

Abstract

Lymphedema is an atypical accumulation of high-protein

fluid located just beneath the skin, which often occurs in the arm or leg. Exercising with lymphedema was traditionally considered to be unsafe. However, recent research indicates that exercise may be beneficial to individuals with lymphedema. Studies indicate that exercise can improve the range of motion and strength of the afflicted limb(s), as well as overall fitness and functional quality of life, and can be performed without exacerbating symptoms of lymphedema.

Key words: Quality of life; Lymphedema; Exercise; Breast cancer

© **The Author(s) 2015.** Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: Recent research lends credibility to the safety and efficacy of strength training in women with breast cancer-related lymphedema. Appropriately prescribed upper body resistance exercise, carried out under the supervision of a certified cancer exercise trainer is not likely to cause an increased risk of lymphedema or symptom exacerbation.

Morris C, Wonders KY. Concise review on the safety of exercise on symptoms of lymphedema. *World J Clin Oncol* 2015; 6(4): 43-44. Available from: URL: <http://www.wjgnet.com/2218-4333/full/v6/i4/43.htm> DOI: <http://dx.doi.org/10.5306/wjco.v6.i4.43>

INTRODUCTION

Lymphedema is an atypical accumulation of high-protein fluid located just beneath the skin, which often occurs in the arm or leg^[1]. The fluid, or lymph, is a part of the lymphatic system. It is a colorless fluid containing white blood cells, which make it very important to the immune system. Its primary purpose is to remove toxins from the body by draining through the lymphatic system into the bloodstream. As cancer attacks the

tissue, white blood cells flood the area in support of healing. The lymphedema experienced by individuals battling cancer is known as secondary lymphedema and is primarily seen following surgery or radiation. The most common cancers with this side effect are melanoma, breast cancer, testicular and prostate cancer, bladder and colon cancer, or any surgery that requires the removal of the lymph nodes^[1]. Those afflicted with these forms of cancer often have multiple lymph nodes removed during treatment.

Signs and symptoms of lymphedema

Patients experiencing secondary lymphedema often describe it as a heavy feeling in the affected limb(s), tightness of the skin or tissue, decreased flexibility in the limb, or tightness and/or difficulty fitting into clothing in^[1]. Lymphedema presents further risks such as cellulitis and lymphangitis, which are swelling of the connective tissues and lymphatic vessels. Signs and symptoms of lymphedema should not be ignored and should be treated by a medical professional or a certified lymphedema therapist.

Treatment of lymphedema

While there is no cure for lymphedema, there are tactics that can be used to treat the symptoms, manage ongoing edema, and prevent injury due to swelling. The two most popular methods of control are pressure garments and compression devices. Pressure garments are often made specifically for the afflicted patient, and are worn at all times, whereas compression devices are used intermittently. Compression devices are pumps that are attached to a sleeve that is wrapped around the area^[2]. Both work by keeping constant pressure on the area, keeping lymph from building up by helping the fluid move. During exercise, one should wear a pressure garment while exercising the affected limb to further prevent swelling.

EXERCISE AND LYMPHEDEMA

Exercising with lymphedema was traditionally considered to be unsafe. However, recent research indicate that exercise may be beneficial to individuals with lymphedema^[1,3]. A recent 8-wk home-based exercise study on postmastectomy patients experiencing lymphedema revealed an improvement in the affected limb regarding both volume and circumference, as well as an improved quality of life^[4]. The weight loss that often accompanies exercise can help reduce the effects of lymphedema by improving overall circulation, which

helps remove the lymph out of the affected area and can decrease swelling^[3].

A second study involving heavy resistance exercise for the upper body revealed that exercise was effective in improving muscular strength, endurance, and quality of life. In addition, no differences were noted with regards to arm swelling and symptom severity. Therefore, the researchers concluded resistance training was safe in patients with lymphedema.

A systemic review of existing literature concluded that resistance exercise was did not exacerbate breast cancer-related lymphedema. Provided the exercise trainer had the proper training, researchers concluded that it was safe for breast cancer survivors to perform both aerobic and strength training exercise during and after cancer treatment^[5].

CONCLUSION

In conclusion, research indicates that resistance exercise is safe and effective in women with lymphedema^[6]. Women with breast cancer-related lymphedema who perform appropriately prescribed upper body resistance exercise under the supervision of a certified cancer exercise trainer can do so without fear of an increased risk of lymphedema or symptom exacerbation^[7]. Exercise can improve the range of motion and strength of the afflicted limb(s), as well as overall fitness and functional quality of life.

REFERENCES

- 1 "What Is Lymphedema?" *What Is Lymphedema?* National Lymphedema Network, 1 Jan. 2013
- 2 "Lymphedema: Treatment of Lymphedema." *National Cancer Institute*. National Institute of Health, 12 Dec. 2013
- 3 "Common Cancer Types." *National Cancer Institute*. National Institute of Health, 26 Jan. 2015
- 4 **Gautam AP**, Maiya AG, Vidyasagar MS. Effect of home-based exercise program on lymphedema and quality of life in female postmastectomy patients: pre-post intervention study. *J Rehabil Res Dev* 2011; **48**: 1261-1268 [PMID: 22234669 DOI: 10.1682/JRRD.2010.05.0089]
- 5 **Kwan ML**, Cohn JC, Armer JM, Stewart BR, Cormier JN. Exercise in patients with lymphedema: a systematic review of the contemporary literature. *J Cancer Surviv* 2011; **5**: 320-336 [PMID: 22002586 DOI: 10.1007/s11764-011-0203-9]
- 6 "Position Statement of the National Lymphedema Network. Topic: Exercise." *Lymphnet.org* National Lymphedema Network (NLN), 1 Jan. 2013
- 7 **Cormie P**, Pumpa K, Galvão DA, Turner E, Spry N, Saunders C, Zissiadis Y, Newton RU. Is it safe and efficacious for women with lymphedema secondary to breast cancer to lift heavy weights during exercise: a randomised controlled trial. *J Cancer Surviv* 2013; **7**: 413-424 [PMID: 23604998 DOI: 10.1007/s11764-013-0284-8]

P- Reviewer: Kapoor NS, Riccardi C **S- Editor:** Song XX
L- Editor: A **E- Editor:** Wu HL





Published by **Baishideng Publishing Group Inc**

8226 Regency Drive, Pleasanton, CA 94588, USA

Telephone: +1-925-223-8242

Fax: +1-925-223-8243

E-mail: bpgoffice@wjgnet.com

Help Desk: <http://www.wjgnet.com/esps/helpdesk.aspx>

<http://www.wjgnet.com>

