

Program Design For
Cancer Exercise Specialists –
An Instructor’s Guide*

by Bonnie J. Oringer**

This Manual is intended to serve as a guide for instructors who have been certified as Cancer Exercise Specialists. Set forth below are guidelines and practical suggestions for creating an effective group exercise class for those with cancer diagnoses. Many of these suggestions and guidelines result from evidence-based studies combined with my own personal experience working with this population over many years.

Introduction

A cancer diagnosis is always overwhelming, and often contributes to a feeling of a loss of control over one’s body. There indeed are many aspects of having cancer that patients and survivors cannot control, both during and following cancer treatment. The decision to exercise-- where, when and how to do so - is, however, something over which people can take charge. The very decision to exercise, particularly given the many physical benefits that exercise brings, can be extremely empowering and can help those dealing with cancer regain a sense of control during a difficult time of upheaval.

As an increasing number of recent, well-respected studies and reports (e.g., 2019’s “Your secret weapon during cancer treatment? Exercise!” from the Mayo Clinic) have confirmed, we now know that exercise is a powerful tool in relieving cancer-related fatigue and addressing other physical and psychological complaints. Exercise also offers many other health benefits-- some are specific to

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cancer survivorship and many are the same as those experienced by the general population. These include physiological benefits such as lowering blood pressure, cholesterol and blood sugar, and improvements in sleep, digestion and metabolism; as well as psychological benefits such as feelings of wellness and empowerment.

The American Institute on Cancer Research recommends 30 minutes of daily exercise for those in cancer treatment and the recovery period that follows. This recommendation turns out to be the same recommendation that is often made for the general public. Particularly in the case of a cancer patient, though, engaging in an exercise program should be subject to a physician's approval and appropriate hiatuses after surgical procedures.

Recently, the American College of Sports Medicine together with other organizations, including the American Cancer Society and the National Cancer Institute, addressed the scientific evidence about the benefits of exercise for prevention, treatment, recovery and improved survival. Resulting guidelines include a recommendation to exercise both during and after cancer treatment to alleviate fatigue, improve quality of life and reduce anxiety and depression.

At one time, there was concern that exercise could exacerbate lymphedema. The research, however, did not bear this out. To the contrary, there seems to be other evidence, discussed below, that exercise can actually help prevent and manage lymphedema.

General Guidelines for Cancer Exercise Classes

The components of a total-body exercise program include cardiovascular activity, strength or resistance training, and flexibility/stretching. Every session should include aspects of each component with emphasis on building endurance, strength and flexibility in a slow, steady and careful manner, minimizing the risk of injury and avoiding setbacks.

It is necessary for the instructor who is endeavoring to design an effective exercise program to understand any specific limitations that the participant may have. First and foremost, limitations resulting from the type of cancer and related treatment must be carefully considered. Where people are in their cancer

journeys may or may not be solely determinative of the level of exercise that they can undertake. Some people will need to participate in a restorative exercise program, which is more therapeutic in nature, while others may be able to exercise more rigorously.

Safety is of paramount importance! An instructor must keep in mind whether there are any other limitations that a person may have as a result of any injuries or other conditions. Since many participants are older people, often they may have pre-existing orthopedic, cardiac or other metabolic conditions that might interfere with their ability to perform certain exercises. It is therefore necessary to identify the source of a participant's issues, which may or may not be a result of the cancer diagnosis, so that appropriate modifications can be made to keep the participant safe.

Every session should begin with the instructor reminding each participant to "listen to your body." This caution is especially significant when working in a group setting because an instructor may not be able to focus on any one participant's issue at any given time. Remind the group that, if something does not feel right, especially if it is causing pain or extreme discomfort, that particular movement should probably be discontinued. Instructors should invite participants to tell them after class if there was a specific exercise or movement that caused concern. Modifications can always be made.

In keeping with the instruction to "listen to your body," encourage participants that in addition to any periods of rest between exercises, they should feel free to take a break, drink water and sit down if necessary. In a group setting, people often feel that they have to keep up with others, but, here, that tendency should not be encouraged. As with all exercise groups, but here even more, safety and injury prevention are paramount.

It is important to keep in mind that in a group setting participants should still be viewed as individuals. This is especially important to remember when the group consists of people with various different types of cancer, people who have undergone different kinds of treatment or people who are at differing stages in their recovery.

Although it may sound obvious, make sure participants are dressed appropriately for exercise, wearing comfortable clothes and sneakers. Occasionally a

participant will arrive at class without proper footwear, and it then becomes necessary to explain the importance of wearing supportive non-slip sneakers or other similar footwear for safety purposes.

Effective Program Design for Group Exercise

1. **Breathing Techniques:** A good way to begin all cancer exercise classes is to instruct participants to inhale slowly through the nose, and exhale even more slowly through the mouth, cuing them that they are breathing in the good air, and breathing out the bad. Demonstrate diaphragmatic (belly breathing) techniques. This can be done by having participants gently placing their hands on their lower abdomen and cuing them to expand that area as they inhale, feeling the rise and fall of the area when they exhale. Encourage people to practice this technique on their own. Cancer is stressful, and mindful breathing can be an effective and calming tool for destressing.

Another benefit of diaphragmatic breathing is that, along with providing good oxygenation during exercise, it will help teach participants to connect to their core muscles. This is especially important for lymphatic drainage exercises, as discussed below.

2. **Warm-up:** As with every exercise class, cancer exercise sessions should begin with a five- to-10-minute warm-up. Due to limitations that many participants may have, warm-up should be limited to low-impact aerobic movements such as marching in place, modified jumping jacks (no jumping), etc. Be creative, but at the same time keep it simple. Remind the members of the group to work at their own pace, slightly out of their comfort zone but not excessively so. For some, the warm-up will provide a majority of their cardiovascular activity, so, where possible, keep things moving for approximately 10 minutes.

3. **Flexibility:** Gentle stretching is a good way to wind down after the warm-up. This is also a good time to remind the class about breathing (exhaling into the stretches) while they recover and prepare for the strength portion of the work. Additional stretching of individual muscle groups should be performed throughout the class following periods of resistance exercise. Many of the participants will be older people who are generally less flexible, and it is

important to stretch tight muscles to prevent injury. Stretches should be done to the point of resistance or very mild discomfort, but never to the point of actual pain. Remember to cue people not to bounce in and out of the stretch position--stretches should be static and held for 20-30 seconds to be effective.

4. Strength: Cancer patients often experience significant loss of muscular strength as a result of various aspects of their diagnoses and treatments. Loss of both muscle mass and strength will naturally occur as people age, but the degree of loss may be increased as a result of cancer. The cancer itself may not be the biggest culprit, and more likely periods of inactivity following surgeries, chemotherapy and radiation, as well as other medications such as hormone treatments, will have a primary deleterious effect on strength. The necessity to perform resistance exercises to combat these losses is therefore even more important for cancer survivors than for the general public.

Performing appropriate strength exercises for those with cancer can be very challenging. The reasons for this are varied. In some cases, certain muscles will have been compromised as a result of surgery. For example, women who have undergone mastectomies with reconstruction involving implants placed under the chest muscles, may not (and never will) be able to perform certain exercises such as chest presses or push ups. Another example of compromised muscles can be found in women who have undergone a DIEP flap procedure where the lower abdomen is cut and blood vessels, skin and fat are transferred to the chest to reconstruct the breast. While this procedure is not supposed to sacrifice any of the abdominal muscles, many women experience a loss of core strength following the procedure.

Both free weights and resistance bands can be effective tools for strength training. However, both form and progress are easier to monitor when using free weights than when using resistance bands. The degree of stretch, and how and where a band is held, are variables that are not easily controlled. Dumbbells or other weighted equipment (i.e., kettlebells) are easily measurable. Thus, for this group, light hand-held weights will provide a more effective method to both increase strength as well as to track progress.

5. Endurance: In order to improve muscular endurance, keep weights relatively light and add more repetitions and eventually more sets. A good method to

improve cardiovascular endurance while weight training is to alternate a set of upper extremity exercises with a set of lower extremity exercises. The cardiovascular challenge created by this is called peripheral heart action -it helps keep blood circulating through the body and prevents lactic-acid buildup in any one muscle group.

6. Progression: The appropriate time to progress an exercise is when the participant has mastered using a certain weight or performing a certain movement, and no longer finds it challenging when doing three sets of at least 12 (up to 15) repetitions. A safe, effective way to progress an exercise is first to increase the number of repetitions (up to 12-15), then the number of sets (up to three), and then to add a small increase in weight where applicable. Progressions can be done safely when the current version is done for two-to-three weeks in a row without being challenging.

Total Body Exercise Program

When designing a total body exercise class, keep in mind that many exercises emphasize the same muscle groups. For example, squats and lunges primarily focus on glutes, hamstrings and calves. In classes where participants are not accustomed to these exercises, it is best to choose one exercise per muscle group per class, at least until such time that they have made progress in their fitness levels.

As mentioned above, each class should start with warm-up and some cardiovascular activity. Follow this with legs, back, shoulders, biceps, triceps (and maybe chest) and core.

Breast Cancer Recovery

Many of the recommendations above already include specific directions for those who have had breast cancer and various forms of surgery and treatment. The reason that this population requires additional mention is twofold. First, there tend to be a large number of women with this diagnosis seeking exercise

guidance; and, second, the nature of the treatment creates specific limitations that are well-addressed by exercise.

Already discussed above are some of the limitations for those who have undergone mastectomies with different types of reconstruction. Women who have undergone lumpectomies, which are almost always followed with radiation, may have other concerns. Generally, those who have undergone lumpectomies will have an easier time regaining strength, but that will not always be the case. While lumpectomies themselves are much less invasive than mastectomies, they can create their own set of limitations, especially when followed with radiation. Lumpectomies and radiation can result in tightness and pulling in the skin, burns and loss in range of motion. As always, regardless of the type of surgery, it is necessary to proceed slowly and carefully considering the individual needs of the participant.

Managing Lymphedema

An important consideration for breast cancer patients and survivors is the concern about developing lymphedema. Lymphedema in a person with breast cancer generally refers to swelling in an arm (or in a small number of cases even in the breast itself) potentially resulting from a blockage in the lymphatic system that prevents lymphatic fluid from draining properly. This buildup of fluid leads to swelling

The most common cause of lymphedema is the removal of or damage (e.g., from radiation) to lymph nodes. If lymphedema (outside of the breast) occurs, it will be in the limb closest to the affected nodes. Although anyone who has experienced damage to lymph nodes is at some degree of risk for developing lymphedema, there are certain factors that may increase the likeliness of occurrence. These include excess weight and inactivity, two things that exercise can help control.

Lymphedema can occur at any time—it may appear immediately following treatment, or many years later. While there is no cure for lymphedema (although recently successful lymph node transplants have been accomplished), with early

detection and diligent care of the affected limb, the condition can be managed and further progression can be avoided.

Early-stage lymphedema has been shown to respond well to exercise.

Lymphedema, in its earliest stages may appear as a slight swelling in the arm or hand. Stage 1 lymphedema is sometimes referred to as “pitting” lymphedema because, when gentle pressure is applied to the affected area, it will leave a slight depression. Lymphedema in its later stages is difficult to manage, and can be a very serious problem. As such, it is a good idea to suggest that participants see a lymphedema specialist if they suspect that they are developing or show signs of lymphedema.

Many women with breast cancer will be aware of the risk of lymphedema, and will have already either seen a physical or massage therapist who specializes in treatment. Some women may have been prescribed a compression sleeve and possibly a glove and will have been advised to wear it during exercise. There is some controversy about whether wearing the compression garment during exercise is beneficial for those who really have shown limited, if any, signs of lymphedema. However, if a participant has been told by a medical professional to wear a sleeve, then do not recommend against it.

Exercises to Prevent and Manage Lymphedema

A five-minute aerobic warm-up is recommended prior to performing the following exercises. Deep abdominal breathing is also advised prior to each exercise. The order of these exercises should be closely followed.

If participants are able to lie on a mat without difficulty, have them begin with pelvic tilts, followed by modified sit ups as described below. If they are unable to lie on a mat, then additional deep abdominal breathing is recommended.

1. Pelvic Tilts: Lying flat on the back, bend knees and keep feet flat on the floor. Tilt hips and press the small of the back against the floor. Hold for 3-5 seconds. Repeat 6-8 times.
2. Modified Sit-Ups: Lying flat on the back, bend knees and keep feet flat on the floor. Exhale and lift shoulders and chest off the floor, maintaining

space between the chin and chest by not rolling the head forward. Slowly lower back to starting position. Repeat and try to do 6-8 repetitions or as many as can be done comfortably.

3. Isometric Shoulder Retraction: Make fists and bend elbows 45-90 degrees and hold arms parallel to floor. Inhale through nose and then pull arms back and squeeze shoulder blades together while exhaling. Relax and repeat 6-8 times.
4. Isometric Chest Presses: Place both palms together while holding elbows out at shoulder level. Press palms together firmly while exhaling. Inhale and release palms. Repeat 6-8 times.
5. Shoulder Shrugs: Lift both shoulders towards the ears and inhale. Then depress shoulders as low as possible, reaching fingertips towards the floor while exhaling. Return to relaxed position and repeat 6-8 times.
6. Shoulder Rolls: Lift shoulders towards ears and rotate forward and down 6-8 times. Repeat rotating shoulders back and down 6-8 times.
7. Shoulder Circles: Hold arms out to the side at shoulder height with palms facing floor. Circle arms forward 6-8 times then circle arms back 6-8 times. Encourage participants to increase the size of the circle and range of motion being mindful of their comfort level.
8. Fist Clench: With arms extended overhead (or as high as comfortable) open hands and stretch fingers. Close into fist, one finger at a time and open one finger at a time. Repeat 6-8 times.
9. Wrist Circles: Extend arms overhead (or as high as comfortable) make fists. Rotate first from wrist inward 6-8 times then rotate in the other direction 6-8 times.

10. Wrist Extension and Flexion: Extend arms overhead with hands open. Flex wrists so palms are facing towards ceiling and then bend so palms are facing floor. Repeat 6-8 times.

11. Neck Stretches: Tilt head to right side (bringing ear towards right shoulder). Place right hand on head and apply gentle pressure to assist in the stretch. Left hand should be straight at the side and with flexed wrist, pressing down toward floor. Hold for several seconds and then turn head toward right underarm. Hold again for several seconds and return head slowly to neutral position. Repeat on opposite side. This stretch, followed by several cleansing breaths is also a good way to end classes.

Additional Information:

As noted above, 30 minutes of exercise should be done daily, but what that exercise will look like for different people will vary. Walking is the easiest way for people to begin a regular regime because they can do it at their own pace and intensity. For those who are unable to sustain 30 minutes of exercise in one session, they can break it up by doing several shorter bouts throughout the day totaling 30 minutes.

Strength training exercises should be performed 2-3 times a week with at least a day of rest in between. Many participants will attend only one class per week, so encourage people to exercise on their own, keeping in mind the instruction always to stay safe.

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The good news in the cancer exercise arena is that physicians and other healthcare professionals now recognize that exercise can be one of the most important cancer treatments. An exercise program can reduce depression and anxiety, increase energy and strength and reduce pain, both during and after treatment. Indeed, exercise may well be the secret weapon in the fight against cancer!