

Exercise in the Rehabilitation from Cancer

Stacey Young-McCaughan

More and more, the media are emphasizing the benefits of exercise as a method of health promotion, disease prevention, and maintaining quality of life. However, we often do not think about patients with serious or chronic illnesses, such as cancer, as the perfect candidates for exercise. In this issue, Dr. Stacey Young-McCaughan shares her expertise about the importance and benefits of exercise for patients with cancer.

— Linda Yoder, PhD, MBA,
RN, AOCN®, FAAN

Exercise is good for everyone, even patients who are undergoing treatment for cancer or who are recovering from cancer treatment. However, this was not always obvious. In 1988, Meryl Winningham rocked the cancer community with her groundbreaking series of studies of women undergoing chemotherapy for breast cancer. Women who were randomized to a bicycle exercise group experienced less chemotherapy-induced nausea (Winningham & MacVicar, 1988), increased their functional capacity (MacVicar, Winningham, & Nickel, 1989), and increased their lean muscle tissue (Winningham, MacVicar, Bondoc, Anderson, & Minton, 1989) both over time and

as compared to nonexercise control groups. What was so revolutionary 18 years ago seems so obvious today.

In a growing body of research that has investigated exercise in patients with cancer, dramatic improvements in physiological and psychological functioning have been documented in patients participating in aerobic exercise programs. Over 150 studies have been published showing the nearly universal benefits of exercise in this patient population (Courneya, 2001, 2003; Courneya & Friedenreich, 1999; Fairey, Courneya, Field, & Mackey, 2002; Friedenreich & Courneya, 1996; Galvão & Newton, 2005; Knols, Aaronson, Uebelhart, Franssen, &

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Figure 1.
Mr. D's Story

I was in the latter stages of chemotherapy and radiation treatments for lung cancer when a nurse introduced herself while I was waiting for a radiation oncology appointment and explained a little about an exercise study program. I have never been an exercise person. Even while I was in the military, I always managed to find some way to skip on the annual exercise test. I couldn't believe this nurse had asked me if I would be willing to participate in an exercise program for 12 weeks. I thought, "Why not?" At that time, I would often have to stop and rest while walking from the parking lot to the hospital for treatments, partly because the treatments were kicking my butt and partly because I was just in poor physical condition. When I went to the hospital for my initial exercise interview, I remember that we started up the stairway to the third floor and I couldn't even make it to the second floor. We had to go back down and take the elevator. I knew that I wasn't looking like a very good candidate at that time and was surprised they kept me.

I changed my mind a dozen times before finally going to my first exercise session. I wanted to do it, but didn't think I could. There I found other people in the same condition as me, some younger, some older, but all with cancer in one form or another. At this first session I was introduced to the program Project Director, an exercise specialist. I was afraid I was going to embarrass myself the first day but the Project Director managed to get me through a few dumbbell lifts and some step exercises before putting me on the treadmill. I was only on it for a few moments but it seemed like hours. I was extremely exhausted after that first session and remember having to stop several times while walking back to my car.

I really wanted to give up after that first day, but I had 'homework.' The Project Director had given me a list of exercises to do at home in between formal sessions. She also left me with a feeling I had to do these exercises and had to do a little better each time. Gradually, through the supervised exercises twice a week in the hospital plus the 'homework,' I was able to improve to the point where I could spend 15, then 25, then 35, and finally 45 minutes on the treadmill. I could not believe how well I was feeling at the end of my participation in the study. I felt like a totally different person. I wasn't afraid to try anything. I even did a 5K organized walk, which I never would have tried without the conditioning this program provided. I don't get as tired as I used to and I sleep 100% better than I have in years. Rest cannot be over-emphasized for cancer patients. It makes all the difference in the world in daily activities.

The added strength and endurance brought about through exercise allows me to work hard, sleep well, and feel better overall. I have gained a sense of contribution to my own well-being. Doctors, nurses, medicines, and treatments can do marvelous things and those things can only improve if the patient has the proper attitude and conditioning to increase the odds of success. If all cancer patients were afforded the opportunity to participate in a study of this type, I feel that we would not lose as many as we do. I sincerely hope that many other people will have the opportunity I have had and I hope the entire medical community will support it until exercise intervention for patients with cancer becomes commonplace.

Aufdemkampe, 2005; Oldervoll, Kaasa, Hjermsstad, Lund, & Loge, 2004).

Consider the story of this 62-year-old man with Stage III non-small cell lung cancer. Mr. D. was just finishing chemotherapy and radiation therapy when he joined an exercise study (Young-McCaughan et al., 2003) (see Figure 1).

Mr. D.'s experiences highlight several issues. A simple invitation to exercise can be very powerful and just the motivation for some people to start a program. Patients with cancer who do not stay active during treatments decondition quickly, which can start a vicious downward spiral of decreased energy leading to decreased activity. Exercise can increase patients' energy levels. Patients with cancer want to maintain control of their lives; exercise can provide them with some control. A multi-disciplinary team is essential to provide quality, holistic care to these patients. So what is the nurse's role in advising patients with cancer about how to exercise safely?

An Exercise Prescription for Patients with Cancer

For the general population, the American College of Sports Medicine (ACSM, 2006) recommends that comprehensive exercise regimens include aerobic and strength training to develop and maintain cardiorespiratory fitness, body composition, muscular strength, and endurance. Frequency, intensity, time, and type of exercise all need to be considered (the FITT Principle). *Frequency* is the number of sessions per week, *intensity* is how hard the person is exercising, *time* is the duration of the exercise session, and *type* is the activity mode (see Table 1).

Type of exercise. Aerobic exercise includes walking (on a treadmill, in a mall, or outside), cycling, swimming, using elliptical machines, or attending aerobic classes. In general, intermit-

Table 1.
The FITT Principle

F	Frequency – Number of sessions per week
I	Intensity – How hard the person is exercising
T	Time – Duration of the exercise session
T	Type – Activity mode

Source: ACSM, 2006.

tently aerobic activities, such as dancing, gardening, and housework, are not considered exercise because these activities do not sustain an increased heart rate for at least 20 minutes. Walking is the most common form of aerobic exercise in which people engage. It only requires comfortable shoes with good support and clothing appropriate to the weather. Motivators to walking can be going with a spouse, significant other, or friend. Walking a dog can be terrific exercise. Some people like to listen to the radio or music while walking. More commonly today, people walk and talk on their cell phones.

Resistance training can be accomplished with stretch bands, weight machines, or free weights. Soup cans also may serve as weights to perform arm, shoulder, and chest exercises at home. Form is very important for safe exercise of specific muscles. Exercising in front of a mirror can help people ensure they are performing the exercises correctly, as can working with a trainer.

Many people like to keep a record of their exercise. Schwartz (2004) provided a sample log. Examples of other logs can be found at various Web sites, including Lance Armstrong's site (www.laf.org). Using an activity monitor and recording the number of steps or calories also can be a motivator to exercise.

Frequency, intensity, and time. The range for the FITT principle for aerobic training is a frequency of three to five sessions per week, an intensity of 70%-85% of maximal heart rate, and a time of 20-60

minutes per exercise session (ACSM, 2006). Maximum heart rate can be estimated by subtracting the person's age from 220. Someone 60 years old has an estimated maximum heart rate of 160 ($220 - 60 = 160$). This person should exercise to attain a heart rate of 112-136. The range for the FITT principle for resistance training is a frequency of two to three sessions per week, an intensity of one to three sets of 8-15 repetitions, and a time of less than 60 minutes to exercise eight major muscles (ACSM, 2006).

Having patients monitor their exercise intensity by heart rate does not work for people taking beta-blockers (for example, atenolol [Tenormin®]) because these drugs temper the heart rate. These patients can use a self-rating of perceived exertion to monitor their exercise intensity. The Borg Scale is commonly used (Borg, 1998) (see Table 2). Patients should aim to exercise at an exertion between 12 and 16 (*somewhat hard to hard*) (ACSM, 2006).

Having patients work with an exercise physiologist or fitness trainer can be very helpful to ensure progression in the program at a pace appropriate to the patients' fitness level and program goals.

Safety. Patients with cancer should check with their primary care provider about the safety of starting or continuing an exercise program. Patients should be instructed to avoid exercise for 24 hours after vomiting or experiencing severe diarrhea; if their temperature is greater than 101°F; or if

Table 2.
The Borg Scale

6	No exertion at all
7	
8	Extremely light
9	
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard (heavy)
16	
17	Very hard
18	
19	Extremely hard
20	Maximal exertion

Source: Borg, 1998.

acute nausea, difficulty breathing, chest pain, or unusual muscular weakness is experienced during exercise (Winningham, MacVicar, & Burke, 1986).

Implications for Nurses

Nurses can play a critical role in encouraging patients to start or maintain an exercise program. Patients' abilities will vary greatly depending on their previous fitness level and where they are in their treatment trajectory. An active woman with breast cancer just starting adjuvant chemotherapy or an active man with prostate cancer just starting radiation therapy should be encouraged to maintain a regular exercise regimen as long as possible.

Hospitalized patients are a special challenge. Often bone marrow transplant units have stationary bicycles in the patient rooms to encourage exercise. Patients who can leave their rooms can be assisted to walk around the unit several times a day.

Likewise, patients severely deconditioned from a recent hospitalization or treatment need additional guidance in determining a realistic exercise goal. While an exercise intensity of 70% to 85% of maximal heart rate and a time of 20 to 60 minutes per exercise session

are recommended by the ACSM (2006), patients just beginning an exercise program after a severe illness will need to start at a lower intensity and exercise for a shorter time. Patients can be encouraged to let their bodies tell them how much they can do and not to overdo their exercise, especially when beginning the program. A referral to a physical therapist, exercise physiologist, or other trainer specialized in treating patients with cancer may be indicated to help patients develop an individual, safe, and tailored exercise program.

Nurses play a very important role in monitoring patients. Exercise should *not* result in sore or stiff muscles. If it does, the patient is overdoing the exercise by either doing too much or progressing too fast. An exercise specialist can help the patient continue to progress so he or she does not get discouraged and stop exercising completely.

Many patients taking medication for hypertension or diabetes can reduce or eliminate their medications as they exercise more, thereby increasing their lean body mass, losing weight, and using insulin more efficiently. Nurses can help monitor patients' blood pressure and blood glucose and provide this information to their primary care providers for possible adjustment of medications.

Conclusion

Facing the prospect of cancer treatment, many patients appreciate the option to start or continue an exercise program. Instead of

chemotherapy or radiation therapy treatments being administered to them, patients can take control of their care by engaging in an exercise program. Once finished with therapy, many patients find themselves without clear direction as to the best way to recover. Patients become comfortable with the routine of traveling to the clinic or hospital for treatment, and they feel isolated when their therapy is complete with no need for frequent follow up with their health care providers. Nurses can suggest exercise confidently as part of the rehabilitation from cancer and guide patients and their families to a safe program. ■

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**Answer/Evaluation Form:
Exercise in the Rehabilitation from Cancer**

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 Registration fee: **Complimentary CNE provided as an educational service by C-Change (www.c-changetogether.org).**

Objectives

This continuing nursing educational (CNE) activity is designed for nurses and other health care professionals who care for and educate patients and their families regarding cancer and exercise. For those wishing to obtain CNE credit, an evaluation follows. After studying the information presented in this article, the nurse will be able to:

1. Discuss the importance of exercise during and after cancer treatment.
2. Explain the elements of a comprehensive exercise regimen for patients with cancer.
3. Describe nursing implications in assisting patients with cancer in starting and maintaining an exercise program.

Answer Form:

1. If you applied what you have learned from this activity into your practice, what would be different?

CNE Instructions

1. To receive continuing nursing education credit for individual study after reading the article, complete the answer/evaluation form to the left.
2. Photocopy and send the answer/evaluation form along with a check or credit card order payable to **AMSN to MEDSURG Nursing**, CNE Series, East Holly Avenue Box 56, Pitman, NJ 08071-0056.
3. Test returns must be postmarked by December 31, 2008. Upon completion of the answer/evaluation form, a certificate for 1.2 contact hour(s) will be awarded and sent to you.

Evaluation	Strongly disagree				Strongly agree
The offering met the stated objectives.					
2. By completing this activity, I was able to meet the following objectives:					
a. Discuss the importance of exercise during and after cancer treatment.	1	2	3	4	5
b. Explain the elements of a comprehensive exercise regimen for patients with cancer.	1	2	3	4	5
c. Describe nursing implications in assisting patients with cancer in starting and maintaining an exercise program.	1	2	3	4	5
3. The content was current and relevant.	1	2	3	4	5
4. The objectives could be achieved using the content provided.	1	2	3	4	5
5. This was an effective method to learn this content.	1	2	3	4	5
6. I am more confident in my abilities since completing this material.	1	2	3	4	5
7. The material was (check one) ___new ___review for me					
8. Time required to complete the reading assignment: _____minutes					
I verify that I have completed this activity: _____					

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Comments

