Reader Clarifies Concepts of Structured Exercise Programs in Managing Fatigue

Authors Emma Ream, BSc (Hons), MSc, RN, and Alison Richardson, BN (Hons), MSc, PhD, RN, PGDE, RNT, are to be congratulated for their well-conceived, concise article, "From Theory to Practice: Designing Interventions to Reduce Fatigue in Patients With Cancer" (*Oncology Nursing Forum* [*ONF*], Vol. 26, pp. 1295–1303). Because it represents a high degree of conceptual clarity, I believe this article is destined to become one of the definitive classics in this area. Without detracting from the quality of this article, however, I would like to comment on three common misperceptions reflected in this article.

First, under the section "Exercise Interventions," the initial work in exercise and fatigue is attributed to Winningham, MacVicar, and Johnson (1985). The initial work was actually begun in 1981, inspired by the book *Do Not Go Gentle* by Herbert Howe, a doctoral student who exercised while undergoing treatment for cancer. My dissertation work, part of which was presented in "Effects of a Bicycle Ergometry Program on Functional Capacity and Feelings of Control in Women With Breast Cancer," completed in 1983 at Ohio State University, examined the effects of the Winningham Aerobic Interval Training (WAIT) protocol on multiple quality-of-life-related measures: functional capacity, feelings of control (using the Levinson Locus of Control), and emotional response (using the Profile of Mood States). This exploratory study involved comparing the response of six patients with breast cancer receiving adjuvant chemotherapy who participated in the WAIT protocol with a group of six healthy women who exercised, and four patients with breast cancer receiving adjuvant chemotherapy who received no intervention. Clinical monitoring of symptom status and for complications for which exercise would be contraindicated was achieved through weekly administration of the Symptom-Activity Checklist. None of the women in this study developed any problems requiring them to miss sessions or be dismissed from the study. The exercising patient group showed improvement in all parameters.

Second, all exercise interventions are not created equal. The WAIT protocol was designed specifically for patients with cancer and to alternate higher with lower workloads, thus minimizing the stress of the exercise stimulus. Indeed, my goal in designing this protocol was twofold: (a) to produce the optimal benefit in the minimal investment of time without inducing fatigue and (b) to optimize development of all three energy systems in each person while minimizing lactic acid accumulation. The result of this protocol, used in a number of subsequent studies, cannot be extrapolated to other exercise interventions. Based on decades of research, interval training is the most effective and efficient way to stimulate optimal performance improvements. The development of this particular WAIT protocol was the result of a year-long study of the anabolic and catabolic responses to exercise stimuli.

To be effective, intervention exercise must be based on a dose-response prescription. The criteria for an appropriate cancer-exercise prescription must include (a) status of the individual, (b) type of exercise, (c) intensity of exercise, usually dosed by measuring heart rate, (d) frequency of exercise sessions in days per week, (f) duration of each exercise session, and (g) frequent reassessment of status and progress. Monitoring for symptomatic and pathological complications using a survey such as the Symptom-Activity Checklist should be conducted throughout. Several versions of the Symptom-Activity Checklist have been designed for use with lung cancer, breast cancer, and general cancer populations.

Finally, work at Ohio State University, as well as subsequent clinical work I have conducted, has involved patients with other types of cancer and other types of exercise. At no time has any patient suffered any ill effects related to the exercise or testing protocols. Extensive research with other cancer populations, including bone marrow transplant recipients and patients receiving high-dose chemotherapy, has included sophisticated research published by the Courneya group at the University of Alberta, Pinto and associates at the Miriam Hospital in Rhode Island, and Dimeo and associates at the Free University of Berlin, Germany. Courneya and Pinto have focused, in particular, on psychosocial measures, including fatigue; Dimeo not only focused on biophysical (including invasive) measures but also included measures of fatigue and functioning. These studies all have been of the highest quality and support earlier work that demonstrated the power of appropriate prescriptive exercise on the physical as well as symptomatic and emotional well-being of patients with cancer. No other intervention has demonstrated such dramatic potential.

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The Authors Respond

We would like to thank Dr. Winningham for taking the time to write an informative and constructive response to our article. Her detailed commentary provides clarity on the evolution and potential sophistication of structured exercise programs in the management of cancer-related fatigue. The information she provides augments the overview we provided in a review that was constrained by word limitations.

Dr. Winningham draws attention to the importance of individualized and structured exercise programs. Such interventions that take account of a person's health status and exercise capacity, in addition to the intensity of the chosen exercise program, enable the benefits of exercise to be maximized safely. Although ad hoc exercise may not compromise well-being, it unlikely will prove to be effective in reducing fatigue or enhancing functional capacity.

Unfortunately, with the passage of time and difficulty accessing unpublished work, the origins of ideas and approaches can become lost. Dr. Winningham's remarks serve as a constant reminder to researchers and clinicians to publish their work clearly in future publications, cite references and sources accurately, and be resolute in accessing all published and unpublished work when researching a specific area.

Given the diverse range of scientific journals that have published articles on the utility of exercise in patients with cancer, it can be difficult for clinicians to access and apply this information. Perhaps it is now timely that different exercise programs are critiqued and the outcomes published. This will enable cancer-care professionals from all disciplines to appreciate the nature of

programs introduced to date, the samples in which they have been tested, and the outcomes against which they have been measured. The current evidence can be difficult for teams caring for these patients to access, interpret, and utilize appropriately. In an era of evidence-based cancer care, this must be addressed.

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Article on Deep Vein Thrombosis Should Address Primary Brain Tumors

We are writing in response to the article "Management of Thromboembolism in Patients With Cancer" (*ONF,* Vol. 26, pp. 1625–1632), by Pamela Hallquist Viale, RN, MS, CS, ANP, OCN®. We were delighted to read such an informative article on the diagnosis and management of deep vein thrombosis (DVT) in patients with cancer. Unfortunately, primary brain tumors were excluded from the discussion.

DVT is reported to occur in 20%–50% of patients with primary malignant gliomas (Altshuler, Moosa, Selker, & Vertosick, 1990). Various studies have examined the potential risk factors for the development of thromboembolic disease in this patient population. These include hemiparesis (Ruff & Posner, 1983), intracranial surgery, corticosteroids treatment, age, performance status and immobility (Scates, 1992; Vacadares & Hankinson, 1980), and tumor size and location within the central nervous system (Sawaya, Cummins, & Kornblith, 1984). Furthermore, researchers have postulated that the release of thromboplastin (Kayser-Gatchalian & Kayser, 1975) or plasminogen activator inhibitor (Sawaya, Ramo, Glas-Greenwalt, & Wu, 1991) by brain tumor cells contributes to the hypercoagulable state. Muchmore, Dunlap, Culicchia, and Kerstein (1989) also found that patients with brain tumors are at higher risk for developing DVT during chemotherapy.

The presentation of DVT in this patient population can be altered. Patients often are on corticosteroids for management of cerebral edema. By blocking the inflammatory response, steroids can mask the classic signs of DVT, such as redness, edema, or pain in the extremity. In practice, patients usually are found to have a palpable cord that is painful with manipulation only. In addition, patients often remain symptomatic until pulmonary embolism has occurred, leading to clinical features such as restlessness.

Treating thombotic disease in patients with malignant brain tumors has been examined in several studies. Patients generally are treated with systemic anticoagulation, placement of an inferior vena cava (IVC) filter, or both. Ruff and Posner (1983) strongly supported the use of systemic anticoagulation, finding that 50% of patients who were not treated after thromboembolic disease died from pulmonary embolism and not the tumor. Patients treated with systemic anticoagulation had a 1.9% incidence of intracranial hemorrhage, comparable to a group of patients without thromboembolic disease (2.2% incidence of spontaneous hemorrhage). Results with an IVC filter as a solitary treatment have been variable. One study supports the use of prophylactic IVC filter placement, citing a low incidence of complications (6%) and a low incidence of recurrent pulmonary emboli (2%) (Schwarz, Marrero, Conlon, & Burt, 1996). However, another study found that IVC filter placement was associated with a high complication rate (62%) and a high failure rate (12%), measured as recurrent pulmonary emboli (Levin et al., 1993). In this study, the combination of IVC filter and anticoagulation resulted in a lower incidence of treatment failure and complications. These studies also indicated a high recurrence rate if anticoagulation is stopped.

Although primary brain tumors constitute only about 2% of all cancers, the incidence is increasing. This, along with the high incidence of thrombosis in this patient population, warrant mention in such a review article. We would appreciate your inclusion of this material in a subsequent issue of the journal.

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The Author Responds

I appreciate Armstrong and Gilbert's letter regarding my article and would like to respond to their concerns.

This article was intended to review the management of venous thromboembolism in the general population of patients with cancer, increasing the awareness of oncology nurses of this potential problem, with a special focus on innovative treatment options. Specific tumor types were mentioned under the etiology section, and brain tumors were not excluded from the discussion. Indeed, brain tumors were listed as associated with thromboembolism on page 1626, along with gastric, lung, colorectal, pancreatic, ovarian, and breast cancer. Although several of the tumor types (including brain tumors) could have warranted more in-depth discussion in a different paper, this article focused on a more general approach, with emphasis on treatment. Additionally, individual tumor types were discussed within the context of a specific review of chemotherapy agents and thromboembolic events.

The presence of thromboembolism in patients with brain tumors is indeed an important factor to consider, and I thank the authors for further increasing oncology

nurses' recognition of this fact. Thromboembolism occurs most commonly in patients with mucin-secreting adenocarcinomas of the pancreas, gastrointestinal tract, lung, and ovary as well as in patients with tumors of the brain and breast, whereas reports of thrombosis in the prostate and skin are very rare. Oncology nurses should be aware of the risk factors for thromboembolism in patients with cancer. Thrombotic events in patients with cancer with Trousseau's syndrome can present as recurrent and migratory events, occurring in unusual sites such as the upper extremities, neck, and axillary and subclavian veins. Patients may be able to receive treatment with either standard heparin therapy or low molecular-weight heparin.

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Chemotherapy-Induced Hair Loss Is a Profound Human Experience

Motivated by Betty Ferrell's, PhD, RN, FAAN, compelling letter to the editor in the January/February issue of *ONF* (Vol. 27, p. 17), I retrieved the October 1999 issue to read "A Narrative Study of Chemotherapy-Induced Alopecia" by Jane Williams, PhD, RN, Carolyn Wood, PhD, RN, and Patricia Cunningham-Warburton, PhD, RN, CS (Vol. 26, pp. 1463–1468). As one hears in a gathering of friends, "My sister has spoken my mind."

I would like to add my affirmation of Ferrell's praise of the authors' research, writing, and message of the profound human experience of chemotherapy-induced hair loss. As they suggest, the stories *are* the story. I, for one, believe that I will never speak of chemotherapy-induced hair loss without keen awareness of their research and report.

As an American Cancer Society volunteer, I have been invited to present a chemotherapy overview to professional hair stylists and cosmetologists who are training to become "Look Good, Feel Better" providers. Although I believe that I addressed the issue of "altered sense of self" that chemotherapy can induce in many aspects of a patient's identity, I know that my presentation will be enhanced at future training opportunities by the profound sense of "experience" that the authors' qualitative narrative research illustrates so cogently. I thank them for their work and writing.

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Reader Appreciates Straightforward Approach to Rituximab Therapy

This letter is in regards to the article in the January/February *ONF*, "Rituximab: A New Monoclonal Antibody Therapy for Non-Hodgkin's Lymphoma" (Vol. 27, pp. 51–59) by Cheryl Kosits, RN, MSN, OCN®, and Mary Callaghan, RN, MN, AOCN®.

I would like to compliment the authors on this article, which is well-written and understandable at the staff nurse level. Most articles I've seen throw statistics everywhere and include information that I would prefer not to dig through. This article gives the bedside nurse the information that he or she needs to care for patients and administer the therapy safely. The article also gives enough educational information to teach patients.

Thank you for brightening my day. I will be rereading the article again, which I rarely do!

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