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Resistance training reduces cancer-related fatigue

A 12-week program of resistance training in conjunction with radiation therapy increases the quality of life of breast cancer patients and reduces symptoms of fatigue, as shown by scientists from the German Cancer Research Center and Heidelberg University Hospital in a trial involving 160 women.

Numerous studies are currently being conducted to investigate whether exercise and physical activity increase the quality of life of cancer patients. One focus of these studies is "fatigue syndrome," a state of extreme tiredness and exhaustion which can adversely affect the lives of cancer patients even years after the completion of treatment. Up to now, physicians have found few if any effective methods of reducing this severe side effect of many types of cancer.

Scientists in the group of Prof. Dr. Karen Steindorf at the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) and Heidelberg University Hospital have recently investigated whether resistance training in conjunction with radiation therapy might help prevent or relieve fatigue symptoms in breast cancer patients.

"Many exercise programs are already known to have a positive effect on patients just by offering them a group experience," says Karen Steindorf, lead investigator in the trial. "We wanted to find out whether exercise programs have benefits on the fatigue symptoms and general quality of life of patients beyond these purely psychosocial effects."

To answer this question the Heidelberg team chose a design for the trial that compared resistance training with a relaxation training program that was also group based. The 160 breast cancer patients who participated in the study were randomly assigned to one of the two groups. Each involved an hour session carried out twice a week. Before and after the twelve-week program, study participants completed a detailed questionnaire on their psychological and physical states and were subjected to a physical examination.

The study showed that breast cancer patients in the resistance training group experienced significantly fewer fatigue symptoms than patients in the relaxation group. Moreover, important aspects of their quality of life improved, including – as expected – an increase in their physical strength. However, the scientists found no differences in emotional and cognitive parameters of the two groups. This finding was not surprising because relaxation exercises also have positive effects on patients' psychological well-being.

"Overall, however, resistance training led to a much better evaluation," Karen Steindorf says. "This appears to be an effective method to prevent or reduce the debilitating symptoms of fatigue in breast cancer patients. In addition, the improved physical fitness of the patients has benefits in their daily lives. Our data are so convincing that we recommend incorporating resistance training into routine care for breast cancer patients already during the phase of their treatment." In this way, the researchers believe, patients receive a double benefit, through the positive effects of resistance exercises themselves alongside the psychosocial effects of participating in a group activity.

K. Steindorf, M. E. Schmidt, O. Klassen, C. M. Ulrich, J. Oelmann, N. Habermann, P. Beckhove, R. Owen, J. Debus, J. Wiskemann, K. Potthoff: Randomized Controlled Trial of Resistance Training in Breast Cancer Patients Receiving Adjuvant Radiotherapy: Results on Cancer-related Fatigue and Quality of Life. Annals of Oncology 2014, DOI: 10.1093/annonc/mdu374

The German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) with its more than 3,000 employees is the largest biomedical research institute in Germany. At DKFZ, more than 1,000 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. The staff of the Cancer Information Service (KID) offers information about the widespread disease of cancer for patients, their families, and the general public. Jointly with Heidelberg University Hospital, DKFZ has established the National Center for Tumor Diseases (NCT) Heidelberg, where promising approaches from cancer research are translated into the clinic. In the German Consortium for Translational Cancer Research (DKTK), one of six German Centers for Health Research, DKFZ maintains translational centers at seven university partnering sites. Combining excellent university hospitals with high-profile research at a Helmholtz Center is an important contribution to improving the chances of cancer patients. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg.

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