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### **Breast cancer research award for Karen Steindorf**

**For her research on the prevention of breast cancer, Karen Steindorf received the 2015 Claudia von Schilling Award on January 13, 2016. Steindorf works at the German Cancer Research Center (DKFZ) and the National Center for Tumor Diseases (NCT), where she is studying which type of exercise improves cancer patients' quality of life most significantly and might possibly even increase their chances of being cured. In addition, she is pursuing the question of how a person's individual cancer risk can be reduced most effectively by physical activity.**

Steindorf shares the award, which is accompanied by a monetary prize of €20,000, with Sibylle Loibl from the German Breast Group in Neu-Isenburg. Steindorf and colleagues have obtained widely recognized results on the effects of exercise during and after anticancer treatment, particularly in two studies that she initiated, BEATE (Physical Activity and Progressive Muscle Relaxation as Adjuvant Treatment against Cancer-related Fatigue) and BEST (Progressive Resistance Training and Progressive Muscle Relaxation during Radiotherapy as Adjuvant Treatment against Cancer-related Fatigue). Last November, the DKFZ researcher was also honored for her work with the 2015 Quality of Life Award by the Lilly Foundation.

Recently, Steindorf reported that resistance training in breast cancer patients can prevent cancer-related fatigue, a debilitating syndrome that afflicts many cancer patients, already during chemotherapy and radiotherapy. With her newly established Division of "Exercise, Prevention Research and Cancer" at the DKFZ, she is further developing exercise programs in order to ensure maximum benefits for cancer patients. To this end, she collaborates closely with the working group "Exercise Oncology" at the NCT. In this patient-oriented area, Steindorf plans to analyze in detail which type of training yields most benefits for which type of patient. Further studies are planned with the goal of examining whether breast cancer patients during chemotherapy benefit more from resistance training or from endurance training and whether exercise also has an effect on patients' treatment tolerance and survival prognosis.

In addition, Steindorf and her colleagues are interested in the molecular and physiological causes behind the favorable effects of physical activity. For these studies, the researchers at the DKFZ and the NCT are building large collections of blood, urine and saliva samples in which they will analyze the levels of various biomarkers and search for potential links with physical activity levels. The investigators plan to analyze inflammatory markers or messenger substances that regulate the formation of blood vessels. "For these investigations, the DKFZ and the NCT Heidelberg offer an ideal setting, with experts from various disciplines close at hand," says Steindorf.

Preventing that cancer develops, or primary prevention, is another chief goal of Steindorf's work. With her previous research on physical activity in the general population, she and her colleagues have already made major contributions toward this goal."

By now, it is considered proven that regular physical activity protects from cancer. For bowel cancer, postmenopausal breast cancer and cervical cancer, this has already been proven with high certainty. For other types of cancer, there is strong evidence for this preventive effect. Scientists assume that 15 percent of cancer cases in Europe are linked to insufficient physical activity.

“Therefore, we want to find out for various types of cancer exactly which physical activity prevents from cancer and at which level of intensity,” Steindorf explains. To this end, large epidemiological studies in the general population are needed. Steindorf can use data from, among others, the EPIC and MARIE studies, in which the DKFZ is involved.

It is up to each and every one of us to do something against insufficient physical activity. “The potential of physical activity is generally not yet sufficiently exploited,” Steindorf thinks. “This is true both for cancer prevention in the general population and for cancer patients as a useful adjuvant measure during cancer therapy.” In collaboration with colleagues from the University of Heidelberg and NCT, she is therefore investigating the reasons that still keep many cancer patients from becoming physically more active. For this project, the team receives financial support from German Cancer Aid (Deutsche Krebshilfe).

Steindorf’s goal is to reach out to as many people as possible with exercise programs that are geared to their individual needs. Summarizing her plans for the future, she says: “The more reliable findings we collect about the favorable effects of a physically active lifestyle, the more we are obliged to make this knowledge broadly available. Only in this way can we make a noticeable contribution to public health.”

A picture of Karen Steindorf is available at:

[www.dkfz.de/de/presse/pressemitteilungen/2016/bilder/Steindorf\\_Karen.jpg](http://www.dkfz.de/de/presse/pressemitteilungen/2016/bilder/Steindorf_Karen.jpg)

Photo: private

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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