



*E & N News to Use  
for cancer patients, survivors and caregivers*

**EXERCISE & NUTRITION** during/after\* **CANCER**

CURRENT PEER-REVIEWED MEDICAL LITERATURE and EXPERT COMMENTARY  
from RELIABLE SOURCES and DR. BLEYER

\*Studies on cancer prevention are included if they have special relevance to cancer survivors

*September 2009*

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► Exercise

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**Phys ed: does exercise reduce your cancer risk?** [Prevention]

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[In a 17-year study of 2,560 middle-age Finns, those who exercised the most had the lowest rate of cancer, particularly colorectal and lung cancer](#)

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By Gretchen Reynolds / New York Times / August 18, 2009

Finnish researchers recently concluded that, if you wish to ward off lung or gastrointestinal cancer, you might want to spend your leisure time jogging instead of picking berries, mushroom gathering or fishing. In the study, published in late July on the Web site of the British Journal of Sports Medicine, scientists studied the health of a group of **2,560 middle-aged Finns over the course of about 17 years**. The subjects, all men living in eastern Finland, kept diaries of their daily activities for a year and then went about them.

At the start of the study, none had cancer. By the end, 181 had died of the disease. Parsing the men's activity levels, the researchers determined that, after controlling for cigarette smoking, fiber and fat intake, age, and other variables, **the most physically active men were the least likely to develop cancer, particularly of the gastrointestinal tract or the lung**. Even more striking, the **intensity of the exercise was key**. The more arduous it was, the more protective it proved. **Jogging was the most strenuous activity studied, fishing among the least**. The men who jogged or otherwise exercised fairly intensely for at least **30 minutes a day had "a 50 percent reduction in the risk of dying prematurely from cancer,"** says Sudhir Kurl, medical director of the School of Public Health and Clinical Nutrition at the University of Kuopio in Finland and one of the study's authors.

It seems fair and just that conscientiously working out should confer disease-fighting benefits, especially against cancer, and an accreting body of research suggests that under certain conditions and against certain forms of cancer, fitness may be remarkably protective. A major review article published in February on the Web site of the British Journal of Cancer synthesized the results of more than two decades' worth of studies and concluded that the most active people are 24 percent less likely to develop colon cancer than sedentary people are, regardless of their diets, smoking habits or body weight. Another study, this one presented in May at the annual meeting of the American College of Sports Medicine reported that women over age 30 who defined themselves as "highly competitive" by disposition and who exercised more than the average for the group had much less risk of developing breast cancer than women who worked out for less than 60 minutes per week.

What these recent studies, including the one from Finland, share is the **suggestion that, in order to use exercise to reduce the risk of cancer, you must make yourself sweat**. In the Finnish study, the most beneficial exercise was both frequent and demanding. The researchers used METs (an acronym for metabolic equivalent of task, a numerical comparison of the oxygen or energy used during an activity versus the amount used at rest) to characterize their subjects' exercise habits. A MET of 1 is the equivalent of lolling inertly on the couch. In his study, jogging steadily for 30 minutes or so represented a MET of about 10. The men whose METs reached at least 5 almost every day were the least likely to die of cancer, especially of the lung or the gastrointestinal tract.

Similarly, in one of the studies included in the colon cancer review, women who walked briskly for five to six hours a week were much less likely to develop colon cancer than those who strolled for 30 minutes per week. And in the bogglingly comprehensive 2008 national Physical Activity Guidelines Advisory Committee report prepared for the Secretary of Health and Human Services, which includes a chapter about exercise and cancer, the authors concluded that when it comes to breast cancer, "one hour per day of moderate or vigorous activity produces greater reduction in risk" than the two and a half hours of moderate exercise per week currently recommended by the surgeon general. The Finnish researchers admit that, like other scientists studying activity and cancer, they don't know just how or why brisk exercise affects risk or why only some types of cancer are affected. Exercise long has been known to speed the emptying of the colon, which may reduce the amount of time that carcinogens linger in the organ, the Finnish scientists point out. **Strenuous exercise also affects the production of sex hormones in men and women, and — particularly in the case of estrogen and breast cancer — may by that mechanism reduce cancer formation**. Other scientists have posited that the panting involved in strenuous exercise might rapidly move carcinogens out of the lungs. Still other researchers have written that alterations in how a **well-trained body handles insulin and some cellular growth factors could lessen the chances of tumors developing**.

But it remains difficult to tease out the specific molecular effects of regular, brisk exercise from the generally healthy habits of exercisers. Although the Finnish study controlled for diet, the scientists write that other, unspecified "lifestyle factors" and the luck (good and bad) of genetics may well have affected their results. Still, their findings offer a prescription for potentially reducing your risk of certain cancers that has few obvious, undesirable side effects, except among the intractably lazy. "At least moderately intense physical activity is more

beneficial than low intensity physical activity in the prevention of cancer,” the authors conclude. The takeaway, in other words, is that jogging trumps berry picking.

**Dr. Bleyer:**

- ☑ These results are, in general, consistent with prior reports of the benefit of exercise in reducing *recurrence of cancer* in patients with breast, colorectal and prostate cancer, and hence are included in this month's news for patients/survivors *with cancer*
- ☑ They emphasize the “no pain, no gain” principle, which may be rephrased as “no sweat, mo' cancer”, in that the degree of benefit was directly proportional to the intensity of regular exercise

► **Nutrition**

***Tea polyphenols decrease serum levels of prostate-specific antigen, hepatocyte growth factor, and vascular endothelial growth factor in prostate cancer patients and inhibit production of hepatocyte growth factor and vascular endothelial growth factor in vitro***

[Oral administration of the putatively-active antineoplastic compounds in green tea to men scheduled for prostate cancer surgery was associated with a decrease in the markers of their cancer during a relatively short interval before surgery](#)

Jerry McLarty, Rebecca L.H. Bigelow, Mylinh Smith, Don Elmajian, Murali Ankem, James A. Cardelli  
Louisiana State University Health Sciences Center; and Overton Brooks VA Medical Center, Shreveport, Louisiana

**Objective:** The purpose of this study was to determine the effects of short-term supplementation with the active compounds in green tea on serum biomarkers in patients with prostate cancer.

**Results:** Twenty-six men with positive prostate biopsies and scheduled for radical prostatectomy were given daily doses of Polyphenon E, which contained 800 mg of (-)-epigallocatechin-3-gallate (EGCG) and lesser amounts of (-)-epicatechin, (-)-epigallocatechin, and (-)-epicatechin-3-gallate (a total of 1.3 g of tea polyphenols), until time of radical prostatectomy. Serum was collected before initiation of the drug study and on the day of prostatectomy. Serum biomarkers hepatocyte growth factor (HGF), vascular endothelial growth factor (VEGF), insulin-like growth factor (IGF)-I, IGF binding protein-3 (IGFBP-3), and prostate-specific antigen (PSA) were analyzed by ELISA. Toxicity was monitored primarily through liver function enzymes. Changes in serum components were analyzed statistically using the Wilcoxon signed rank test. Cancer-associated fibroblasts were treated with EGCG, and HGF and VEGF protein and mRNA levels were measured.

**Results:** HGF, VEGF, PSA, IGF-I, IGFBP-3, and the IGF-I/IGFBP-3 ratio decreased significantly during the study. All of the liver function tests also decreased, five of them significantly: total protein, albumin, aspartate aminotransferase, alkaline phosphatase, and amylase. The decrease in HGF and VEGF was confirmed in prostate cancer-associated fibroblasts in vitro.

**Conclusions:** Our results show a significant reduction in serum levels of PSA, HGF, and VEGF in men with prostate cancer after brief treatment with EGCG (Polyphenon E), with no elevation of liver enzymes. These findings support a potential role for Polyphenon E in the treatment or prevention of prostate cancer.

**Dr. Bleyer:**

- ☑ The authors should be complimented for studying the putatively active anti-neoplastic ingredients of green tea rather than the tea itself as such; this enables potential identification of the most important compounds mediating cancer progression
- ☑ The limitation of this open-label, single-arm, phase II clinical trial is that it did not control for the possibility that the improvement in serum markers of cancer could have occurred independently of the treatment; a randomized trial would have been more convincing and will need to be done before the results can be accepted

► **Related Articles**

***Our U.S. Representative, Greg Walden asks the NIH for answers on studies it's funding***

[From the titles of research supported by the NIH, a natural reaction is to challenge why the studies are being done and what relevance and priority they have overall in the NIH research program; two primary examples are of potential effects of E&N on cancer](#)

By Keith Chu / The Bulletin / September 28, 2009

WASHINGTON — The National Institutes of Health has put millions into studies with funny-sounding names — from the **effect of dragon boat racing on cancer survivors**, to examining drug use in Brazilian rave culture — and U.S. Rep. Greg Walden, R-Hood River, wants an explanation.

In a letter to the NIH, Walden, the top Republican on the Energy and Commerce Oversight Subcommittee, and Texas Republican Joe Barton asked why the U.S. government funded a dozen studies “that do not seem to be of the highest scientific rigor, which raises questions about how the NIH peer review system is working.” Peer review at the NIH is a process of submitting research to scrutiny by other experts in a field to ensure it’s worthy of funding. Republican Energy and Commerce Committee staffers highlighted 12 grants, totaling about \$4.5 million, that they say may not meet NIH priorities, or have “high scientific caliber.”

In response to questions from *The Bulletin*, the NIH defended its grant process in a written statement. While some studies may be easy to mock, about half of diseases in the U.S. are caused by unhealthy behaviors, from alcohol abuse to risky sexual behavior or drug use, so studying those behaviors is important to slowing the spread of disease, the agency said.

“Some research on sex-related and substance abuse behavior is easy to ridicule if it is taken out of its public health context. The fact is, we need to explore a range of research avenues in vulnerable populations around the world to learn the best ways to (slow) the spread of disease.”

The studies Walden questioned include:

- \$191,000 to study HIV/(Sexually Transmitted Infection) prevention among alcohol-abusing women in Mongolia
- **\$73,000 to examine the impact of dragon boat racing on cancer survivorship, and**
- **\$168,750 to study soy almond bread as a complementary therapy for prostate cancer.**

Walden spokesman Andrew Whelan said the NIH has funded valuable research, but Walden and Barton want to be sure public funds are being used correctly.

“On the face of it, these sound a little suspicious, but they’re asking the NIH to provide more information about the process: who peer reviewed it, what the justifications are for these specifically,” Whelan said.

**Two of the researchers working on grants Walden questioned told *The Bulletin* that their projects have definite public health merits.**

**Dr. Cindy Carter, a professor at the Medical University of South Carolina,** is conducting the dragon boat research. Dragon boats, essentially canoes decorated with dragons, originated in China. **Dragon boat races became associated with breast cancer survivors after a Canadian researcher found evidence that upper body exercise could reduce some post-cancer symptoms — particularly swelling of the arm on the side where women received cancer treatment, Carter said.**

Now there are dozens of dragon boat races across the United States. **The Portland dragon boat race, which took place Sept. 12 and 13, attracted more than 60 teams,** according to its Web site.

There’s nothing special about dragon boats, in particular, Carter says. Rather, it’s a popular group activity that includes **upper body and aerobic exercise.**

“We’re very much interested in learning more about various physical activities that may promote improved quality of life and be beneficial” to cancer survivors, Carter said.

**Ohio State University Associate Professor Yael Vodovotz** is studying the **effect of soy almond bread as a way to slow or prevent prostate cancer.** Compounds that occur in soybeans have been linked to preventing certain types of cancer. Studies, though, have used a variety of soy products to test the impact, Vodovotz said. Her study uses a bread that includes almonds (which contain an enzyme that increases the effectiveness of those compounds), to better regulate the amount of soy given to test subjects.

“If we can get a food to work for something, it would be of high importance because it’s an excellent means of trying to prevent disease if you can,” Vodovotz said. “It’s a shame those particular people can’t really see the value of this kind of work, which actually we’re highly praised for.”

#### **Dr. Bleyer:**

- It’s remarkable, isn’t it, that two of the three studies challenged by Rep. Walden and Rep. Barton and both of the studies pursued by *The Bulletin* for an explanation of NIH support are studies of **E&N** on cancer
- Having worked at the NIH and having conducted NIH-funded investigations for my entire medical career totaling >\$75m, I’m satisfied with the explanation provided by the NIH, and with the defense offered by the two principal investigators interviewed by *The Bulletin*
- I am also supportive of the peer-review system that leads to selection and denial of research project proposals; it’s far from perfect but it is the best system available anywhere
- I am less sanguine about the fact that both cancer studies are investigating **E** and **N** *separately*, rather than studying the effect of the combination of **E&N** on cancer survivors
- I am also less hopeful that a study of a single food product or group will have a meaningful effect on outcome, either of quality or quantity of life; a more relevant trial would be on the studies a broader nutritional impact such as a plant-based diet (that may include soy, almonds and bread)
- DEFEATcancer should invite Rep. Walden to present his finding at one of our monthly meetings