

## Healthy Habits and Colorectal Cancer Survival

Colorectal cancer is one of the most preventable cancers but for those who do develop this disease, emerging research suggests ways that a healthy lifestyle may help.

**A**ICR estimates that half of US colorectal cases can be prevented with diet, physical activity and staying a healthy weight. Now, two recent studies are adding to the research on the role of diet and exercise habits both before and after a colorectal cancer diagnosis.

### Before diagnosis

Following AICR Recommendations for Cancer Prevention before a diagnosis – eating high amounts of plant foods, keeping to a healthy weight and being active, to name a few – links to an improved likelihood of prolonged survival among people diagnosed with colorectal cancer, suggests one large study. The findings, published in *BMC Medicine*, found that each recommendation followed reduces the risk of mortality to some degree.

In this study, researchers analyzed data of 3,292 participants who had developed colorectal cancer after joining the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort. Researchers developed a scoring system based on AICR's recommendations. A full or half point was given for meeting or partially meeting, respectively, each recommendation. (Two recommendations were not measured because there was not enough data.)

Four years after diagnosis, survivors who had most adhered to AICR recommendations in the years before diagnosis were 30 percent less likely to die from colorectal cancer and 21 percent less likely to die at all compared to those who least followed the recommendations. The higher the score, the lower the mortality risk. Every one point increment linked to a 10 percent lower risk of dying from colorectal cancer and a 7 percent lower risk from dying from any cause. When the individual recommendations were studied, it was found that having a

healthy weight and high plant food consumption had the strongest associations with survival.

Lifestyle was measured only once before diagnosis, so it is not possible to know if habits changed during follow-up or after diagnosis, note the authors.

### After diagnosis

Research investigating how lifestyle after a colorectal cancer diagnosis affects survival is sparser, yet this is a time when survivors can alter their diet and activity habits, notes the authors of a paper that summarizes the research. Here, the evidence on physical activity appears most clear.

After a diagnosis of colorectal cancer, being physically active appears to lengthen survival time, according to the paper in the *Journal of Clinical Oncology*.

In one analysis of studies that included approximately 7,500 survivors, the more active people were, the lower their risk of dying from both the cancer or any cause. Increments of 15 MET/hours per week – walking about five hours a week – linked to a 38 percent lower risk of dying from any cause and about that same lower risk as dying from colorectal cancer.

“The key for survivors is to undergo standard of care treatments (surgery, chemotherapy when recommended, radiation when recommended), since diet and lifestyle are principally studied as adjuncts to standard treatments and not replacements,” says Jeffrey A. Meyerhardt, MD, MPH, at Dana-Farber Cancer Institute, co-author of the study. “After standard of care, the most consistent data are for exercise on a regular basis, trying to achieve a goal of 150 minutes of exercise weekly, but any level is probably better than inactivity.”

Trials consistently report that physical activity and/or structured exercise are safe and feasible for patients with colorectal cancer, both during and after treatment. “As with any exercise recommendation, an individual patient should discuss exercise risks for their own situation, however,” adds Meyerhardt, who is also an advisor on AICR's *CancerResource*®, a toolkit for survivors during and after treatment.

Data for diet have mainly come from two large US cohorts, with more studies needed

to understand what foods and dietary patterns consistently help survivors, the review concludes. And in many studies diet did appear to improve outcomes. In one study, for example, those who most followed a Western diet that included red and processed meats, desserts and refined grains had a nearly three-fold increase in recurrence compared to those who least followed this dietary pattern.

Patients should consider a well-balanced and healthy diet consistent with the overall US diet recommendations, since survivors are at risk for other diseases that those diet recommendations address (including cardiovascular disease and diabetes). An estimated 40 percent of colorectal cancer patients have another serious health condition, such as type 2 diabetes or congestive heart failure. Healthy eating, along with exercise, are recognized for improving outcomes of these conditions.

For now, the review authors conclude, patients should follow a set of guidelines,\* which take AICR Recommendations for Cancer Prevention into account. AICR recommends survivors of colorectal cancer – and other cancers – aim to follow the recommendations for prevention. ♦



\*Visit [aicr.org](http://aicr.org) for guidelines.

### In This Issue

Breast Cancer and Preventing Weight Gain • 2

Your Health-Inspired Summer Reading List • 2

Using War Metaphors in Cancer Prevention • 3

Spotlight on: Rosemarie Schmandt, PhD • 4

Science Shorts • 4

### AICR's Interactive Weight Loss Program

NEW AMERICAN PLATE

Challenge  
12 WEEKS TO A  
HEALTHIER YOU



Integrate this free program into your practice, classes and support groups.

Starts September 21, register now.

[napchallenge.org](http://napchallenge.org)

# Breast Cancer and Preventing Weight Gain

Postmenopausal women who are overweight – and especially obese – have a greater risk of developing breast cancer, finds a recent study that highlights the importance of preventing weight gain as it also raises questions about whether losing weight necessarily reduces that risk.

The study adds to a consistent body of research showing that overweight and obesity increases women’s risk of postmenopausal breast cancers. It was published in *JAMA Oncology*.

AICR estimates that one-third of US breast cancers could be prevented if women were at a healthy weight throughout life, were active and did not drink alcohol.

In this study, as other research has seen, the heavier the women, the greater the risk. Women categorized as the most obese were at almost double the risk of the most common type of breast tumors, including ER-positive and PR-positive. These tumors are fueled by the hormones estrogen and progesterone, respectively.

The study used data from approximately 67,000 women who were part of the Women’s Health Initiative (WHI) trials. That study focused on preventing certain cancers, heart disease and osteoporosis. When the women entered the study in the mid-1990s they were 50 to 79 years old and they were weighed. They also answered questions about their lifestyle habits, medical history and other health risk factors. After that, they were weighed annually and had regular mammograms. Women were placed into weight categories based on their BMI.

After an average followup of 13 years, 3,388 of the women had been diagnosed with invasive breast cancer.

Compared to women at a healthy BMI (18.5 up to 25), women who were overweight had a 17 percent increased risk and that risk increased to 58 percent among women who were in the highest BMI categories (having a BMI over 35). Breast cancer deaths were also more than 2-fold higher among women who were the most obese compared with those with normal BMI.

Women who started the study with a healthy BMI but who gained more than 5 percent of their body weight over

the 13 years also were at increased breast cancer risk.

For the women who started the study overweight or obese, losing – or gaining – weight did not affect breast cancer risk. These results may be clouded because it’s unknown whether some of that weight loss was intentional or unintentional, notes lead author Marian L. Neuhouser, PhD, RD, at the Fred Hutchinson Cancer Research Center. “For the overweight and obese women, it could be that if they had been overweight or obese for a while that the ‘damage may have been done.’”

And while “we can’t tell definitively from these data whether weight loss would be helpful or effective for women already overweight or obese.... This finding underscores the importance of prevention and of achieving and maintaining a healthy weight throughout the life cycle,” says Neuhouser.

This study is one of the largest to add to a growing body of research on how weight change may affect women’s risk of breast cancer. Other studies are mixed and many focus on weight over the entire lifespan, having women recall their weight as teens.

But in short-term intervention trials, which don’t run long enough to see clinical cancer outcomes, we do see beneficial changes in estrogen, insulin and markers of inflammation, says AICR Nutrition Advisor Karen Collins. “Since these are the mechanisms through which research suggests obesity increases cancer risk, these changes suggest potential to reduce risk.”

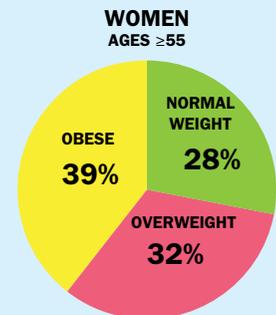
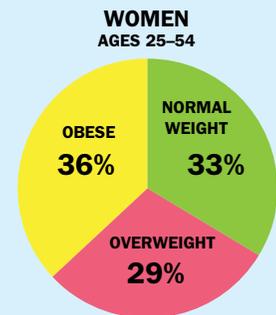
“However, though 5 percent weight loss is enough to show beneficial effects on markers of heart disease risk, these benefits are greater with weight loss of 10 percent ... so perhaps for some women, it takes a slightly greater loss than could be seen in the WHI study grouping.”

Two-thirds of US women are currently overweight or obese and for these women, weight loss and maintaining that healthy weight has numerous health benefits, including lowering risk of heart disease and type 2 diabetes. Overweight and obesity also links to 9 other cancers, aside from breast cancer, many of which are common among women.

“Since we know that weight loss based on healthy eating and physical activity clearly brings other health benefits, for women who are overweight or obese, these findings should not discourage efforts to reach and maintain a moderate weight loss,” says Collins. ♦

## New Obesity Estimates

Approximately two-thirds of women in the US – 64 percent – are overweight or obese, according to research that used the most recent data from NHANES to categorize women’s BMIs by sex, age and race/ethnicity.\*

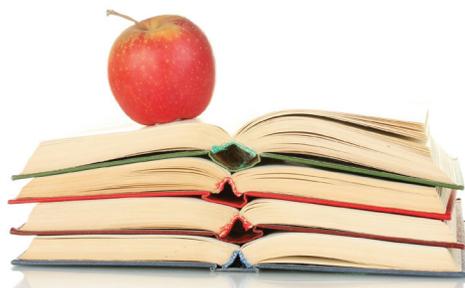


Source: Lin Yang, Graham A. Colditz. Prevalence of Overweight and Obesity in the United States, 2007-2012. *JAMA Internal Medicine*, 2015.

\* Underweight not included.

## Your Health-Inspired Summer Reading List

Before summer winds down, there’s still time to relax with a good book. We asked some trusted scientists and other health professionals to share their favorite health-related reads – for professional development, pure enjoyment or both. Happy reading.



### Savor

by Thich Nhat Hahn and Dr. Lilian Cheung

This book, written by a Buddhist teacher and Harvard researcher and lecturer, provides a guide to mindful eating within a mindful life. It is not a diet craze or fad book, but rather it discusses the effects of unmindful eating on health and how to make practical changes that will help individuals eat well and be healthy (with all of the indirect benefits of these including weight loss).

– Shawna McNally, MScPH, RD, Senior Research Manager, Healthy Dining

### Buzz: The Science and Lore of Alcohol and Caffeine

by Stephen R. Braun

I am a coffee addict at work and enjoy the occasional (?) frosty adult beverage with my running buddies. The book describes the physiologic effects of caffeine and alcohol on the body and includes a lot of fun historical trivia about

the use of both coffee and alcohol through the ages.

– Rosemarie Schmandt, PhD, M.D. Anderson Cancer Center

### Slim by Design: Mindless Eating Solutions for Everyday Life

by Brian Wansink

I love this new book by Brian Wansink, who also wrote one of my other favorite health books, *Mindless Eating*. In his new book, he focuses less on eating mindfully and more on changing your environment so you can mindlessly eat well. Since so many of us live hectic lives, eating mindfully isn’t always realistic. He describes specific strategies to change the layout of your house and workplace and modify the way you go grocery shopping.

– Sonja Goedkoop, MSPH, RD, Massachusetts General Hospital Weight Center



## Rosemarie Schmandt, PhD

An avid runner, Rosemarie Schmandt, PhD, Associate Professor at The University of Texas M.D. Anderson Cancer Center, combines her passion for exercise with her professional interest in cancer prevention. Not only does she run regularly with a Houston running club, she works with a local couch-to-5k running group that helps with her studies on the effect of physical activity in reducing the incidence and recurrence of gynecologic tumors. Now, in an AICR-funded study, she is testing how exercise may slow ovarian tumor growth by affecting a protein produced by visceral fat.



### Q: Tell us about your research on exercise and cancer.

**A:** My research focuses on gynecological cancers, including ovarian cancer, which is most often detected when the disease is advanced. Most patients with ovarian cancer respond really well to chemotherapy and radiation, but the cancer that usually comes back is chemoresistant and aggressive. What we've been doing is working with an animal model of recurrence so that we can study how fitness and diet impact recurrence.

One of the things we've been looking at is a protein called omentin. It is an adipokine, many of which are bad players when it comes to cancer. But omentin seems to be a good player. The leaner and fitter you are, the more omentin you have.

### Q: What is known about omentin and cancer risk or recurrence?

**A:** There is not a whole lot of information on omentin and cancer. People have looked at it related to cardiovascular disease and type 2 diabetes and evidence suggests that it has anti-inflammatory properties, but we don't know exactly what it does. I am collaborating with scientists at our institution to find out more.

Ovarian cancer is interesting to look at because we know from AICR that risk increases with obesity. Other studies have also shown that the higher a women's waist-to-hip ratio, the stronger the risk. We don't know that ovarian cancer responds to omentin. We know that ovarian cancer almost always spreads to the omentum [a large intraabdominal fat deposit], suggesting something is there that is attractive to the cancer cells. The slimmer you are, the lower your risk in general, and this may have something to do with abdominal fat.

### Q: What have you learned in your studies?

**A:** We exercise mice on wheels that are wifi connected so that it reports the number of rotations the mice run in whatever time range, allowing us to calculate the distance. We've found that exercise in mice increases omentin and that the lean exercising mice survive longer than the fat couch potato mice, suggesting that something about exercise – maybe omentin – is inhibiting tumor growth. The ovarian cancer tumors in the fat mice grow much more quickly.

Believe it or not though, in our model, more exercise may not be better. In our initial dose studies, mice were given 2, 4 or 8 hour daily access to the wheel. The 4-hour exercising mice fared better than either the 2 or the 8 hour mice.

### Q: Do you have a theory on why?

**A:** We think that 8 hours of daily exercise in mice might lead to inflammation – thinking of how I feel the day after a marathon – which is tumor promoting. We are still analyzing their blood to learn more.

### Q: Has any of this research been applied to people?

**A:** We have a program for the gynecological cancer fellows where they spend two years in research training before heading back to the clinic and they are a tremendous help in our studies. Biomarkers found in our laboratory mouse studies may ultimately be useful in the clinic.

Since we are a cancer hospital, we don't have a lot of healthy controls, so we are also working with local running clubs, one of them is a couch-to-5K group that is helping us with our studies. We are interested in seeing if there is a bigger change in their omentin levels as they move through the program.

### Q: What are some of the implications for your research?

**A:** This will all depend on the experiments we are doing now to identify what omentin actually does at the cellular and molecular level. We know in other cancers that exercise can help reduce the risk of cancer recurrence. One possibility is that omentin

can serve as a biomarker of fitness, and that serum levels can be monitored in patients in the hopes of improving outcomes. Patients could be encouraged to make beneficial changes in lifestyle that help keep omentin levels high. Hopefully our next set of experiments will help us figure that out.

### Q: What can cancer patients do now?

**A:** Current research, including our own, suggests that reducing abdominal fat with diet and exercise can also help reduce the risk of ovarian cancer and its recurrence. It's the hip to waist ratio that is of particular concern.... We don't know the mechanisms at play, but we do know that patients who exercise feel and do better. ♦

**"We've found that exercise in mice increases omentin and that the lean exercising mice survive longer than the fat couch potato mice..."**

## Science Shorts

### New Mechanism for Diet in Reducing Tumors

A study conducted in mice and published in *The Journal of Nutritional Biochemistry* finds that daily walnut consumption slows colon tumor growth while affecting micro-RNAs (miRNAs), small non-coding chunks of RNAs that appear to play a role in cell development and apoptosis. The study was funded by AICR and the California Walnut Commission.

In the study, a group of mice consumed ground walnuts equal to approximately two servings per day for humans. The control group consumed a similar diet, with corn oil in place of walnut fats.

After 25 days, colorectal tumors were smaller in the walnut-consuming mice compared to the controls. Smaller tumor size was associated with a greater per-

centage of omega-3s in tumor tissues.

Analysis found that tumors from the walnut-fed mice showed different miRNA expression levels for a number of the molecules compared to tumors from the control mice, suggesting a dietary influence.

### Flavonoids May Lower Early Mortality Risk

Older women who drank tea and ate other foods high in flavonoids had a lower risk of earlier mortality from cancer and cardiovascular disease, as well as any cause, found a study published in *The American Journal of Clinical Nutrition*.

This study adds to the research on how flavonoids impact cancer risk and mortality, many of which have found no link. The study included approximately 1,000 randomly se-



lected women over the age of 75. The women were part of a study related to fractures and at the start of the study in 2003, they had filled out questionnaires on what they ate.

Researchers used flavonoid content from the USDA and the Phenol-Explorer (PE) databases. Over the next five years, 129 of the women had died. Participants with highest total flavo-

noide intake were at approximately 40 percent lower risk of dying during the five years than those with the lowest levels. This was after adjusting for key risk factors for premature death, including obesity, inactivity, smoking and low fruit and vegetable intake. The majority of flavonoids came from drinking black tea, which supplied a class of flavonoids called flavonols.