



Breast Cancer Prevention: Exercise and Healthy Diet

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Figure 1. Regular fun physical activity, like yoga, can help prevent breast cancer

Worldwide, breast cancer accounts for 25% of all cancer cases and it is the most common cancer in women. Since 2008, the rate of breast cancer has increased by over 20% in the United States, which means that a woman has about a 1 in 8 chance of being diagnosed with breast cancer during her lifetime.¹ Although there are no guarantees, several expert reports now estimate that 25-30% of all breast cancer cases may be preventable by lifestyle improvements, such as a healthy diet and regular physical activity.² This article presents the basics of breast cancer, associated risk factors, and preventative lifestyle changes.

What is Breast Cancer?

Cancer occurs when a group of cells (the basic building blocks of the human body) begin to divide uncontrollably and become harmful to the body. Breast cancer occurs in the cells of the breast. A tumor, which is a cluster of these abnormal

body cells, can either be benign (non-cancerous) or malignant (cancerous). Benign tumors grow locally and do not spread to other parts of the body. Malignant tumors are able to invade other parts of the body, sometimes traveling through vessels to areas far from the origin, where they can continue to expand and cause additional health concerns. This process is known as metastasis. Although primarily seen in women, men can also get breast cancer. For men, the lifetime risk of breast cancer is about a 1 in 1,000 chance.¹

Anatomy of the Breast & Symptoms of Breast Cancer

The breasts are made up of lobules, ducts, and stroma (fatty tissue and connective tissue that gives the breast shape), with the areola surrounding the nipple. Most often, breast cancer occurs in the tissues of the ducts, which bring the milk made in the lobules to the nipple in women who are breastfeeding.

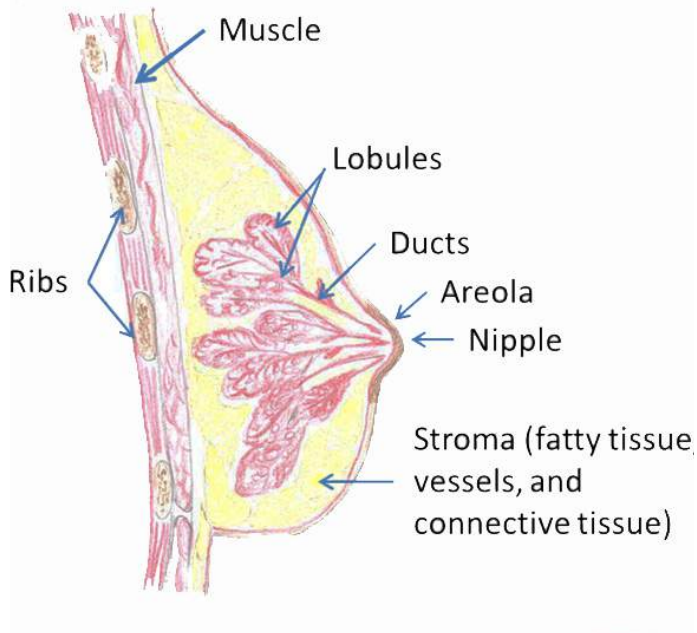


Figure 2. Anatomy of the breast

Breast cancer may also arise in the lobules that produce the milk. The least common source of breast cancer is the stroma, which is comprised of several different tissues and vessels. (See Figure 2.)

A woman who has breast cancer may find a new lump or mass. They can be painless or painful. Most breast lumps and masses are not cancerous (benign), but all lumps should be checked by a physician. Other possible symptoms of breast cancer include: swelling of a breast, skin irritation or changes, nipple pain, nipple retraction (turning inward), and nipple discharge (other than breast milk). Always consult a physician if bodily abnormalities are suspected.

Aging Breasts, What is Normal?

Just as the body ages as we grow older, it is perfectly normal for breasts to change throughout a woman's lifetime. It is especially common for women to experience benign changes in their breasts during puberty, menstrual periods, breastfeeding, menopause, or with the use of hormones (such as birth control or hormone therapy). As women get older, breast tissue becomes fatter and less dense, and weight loss or gain can affect the size of the breasts. The menstrual cycle may also cause the breasts to feel painful or sore.

What are the Risk Factors of Breast Cancer?

There are two categories of common risk factors of breast cancer: innate (which you are born with and/or cannot control) and lifestyle (factors you can control).

Innate risk factors include gender, age, family history, and genetics. Women are much more likely to get breast cancer than men, and the risk of cancer increases with age. Most breast cancers and breast cancer deaths occur in women aged 50 and older.³ Family history and genetics also play a large role in the risk of breast cancer. Risk increases in individuals with a first-degree family member (example: mother and daughter, or sisters) that has also been diagnosed with breast cancer. Research has shown that certain genes can mutate (change in DNA, the hereditary materials of life) to cause breast cancer. Women who have family members with breast cancer may consider genetic testing to detect certain genes mutations.⁴ Talk to your physician about assessing your risk of breast cancer and the importance of monitoring your breast health throughout life.



Figure 3. Family history plays a role in the risk of breast cancer

Lifestyle risk factors include physical fitness, alcohol consumption, tobacco consumption and smoking, overweight or obesity, and breastfeeding in mothers. Over one-fourth of breast cancer cases may be preventable by healthy lifestyle modifications.² Exercise is one of the most important lifestyle components, not only to maintain overall health and wellness, but also to reduce the risk of breast cancer, other cancers, and many other diseases. Research is showing just how crucial regular exercise is to cancer and disease prevention. A regular exercise schedule, especially with physical activity that increases heart rate, leads to a greater fitness level of the body and greatly reduces the risk of many diseases.⁵ Research has also demonstrated a link between alcohol consumption and several diseases, including cancer. Excess alcohol consumed on a regular basis increases the risk for breast cancer. Alcohol should be consumed in moderation to avoid negative health consequences. Tobacco consumption is

also harmful to overall health for numerous reasons. Smoking during adolescence or early adulthood increases risk of breast cancer, and it can cause lung and other cancers. Tobacco and smoking should be avoided to prevent the development of many diseases and cancers. Being overweight or obese is another common lifestyle risk factor for breast cancer, as well as other kinds of cancers and many diseases.¹⁻³ Breastfeeding appears to protect against breast cancer. Research suggests breastfeeding for longer than six months can reduce the risk of breast cancer.^{3,6} Possible explanations for this effect are 1) breastfeeding inhibits menstruation, therefore there is less exposure to hormones like estrogen that can promote breast cancer cell growth, and 2) structural changes that occur in the breast following breastfeeding, which may make breast cells more resistant to breast cancer.³

How Can I Reduce My Chances of Getting Breast Cancer?

While there is no sure way to prevent breast cancer, there are things you can do that may reduce your chances of getting breast cancer such as following healthy lifestyle recommendations and getting annual breast health checkups (regular mammograms with monthly breast self-exams). General guidelines for mammograms are to begin at age 40 and have them every one to two years. The American Cancer Society advises women with an average risk to begin screening with mammograms yearly at age 45 until age 54, and for

women age 55 and older to continue every two years with the choice to continue yearly screening.¹ If your risk is high (family history, personal history, overweight, etc.), ask your physician what you can do to reduce your breast cancer risk.

How Does a Healthy Diet Reduce My Risk of Breast Cancer?

A healthy diet consists of fruits, vegetables, lean proteins, complex carbohydrates (fiber), and healthy fats. Adopting a healthy diet is also a great way to manage or lose weight, which can help reduce several breast cancer risk factors including: being overweight or obese and large weight gains in adulthood.² In fact, being obese or gaining about 45 pounds or more in adulthood may double the risk of breast cancer, as well as many other diseases.^{2,7} Research has also shown a link between high fruit and vegetable consumption and a reduced risk of breast cancer.⁸

Recommendations for a healthy diet also advise low consumption of alcohol on a daily basis. Drinking alcohol excessively can increase the risk of breast cancer, and many other diseases with lifestyle risk factors.^{1,2,8}

The Mediterranean diet is an excellent diet plan to follow for optimal health benefits.⁹ The Mediterranean diet is a plant-based diet, with emphasis on fruits, vegetables, fish, and olive oil. (See Figure 4, Mediterranean diet pyramid) Research is beginning to show that components of the Mediterranean

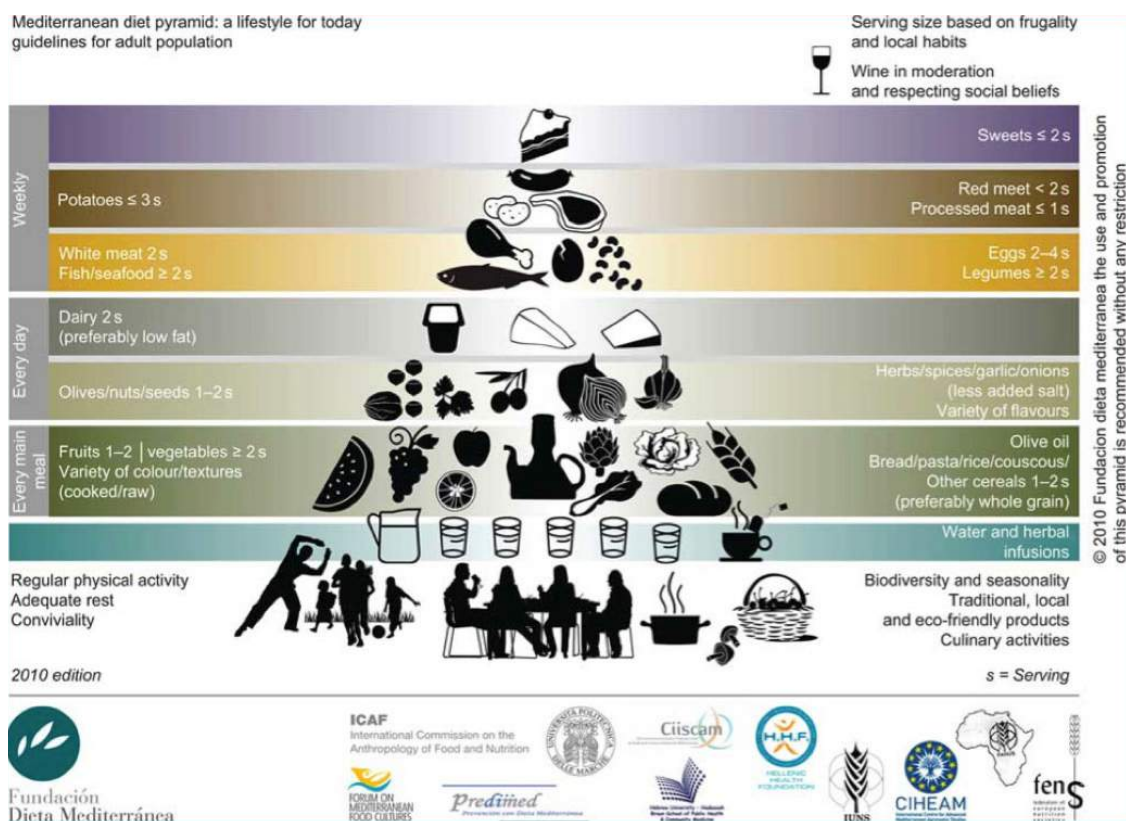


Figure 4. Mediterranean diet pyramid

diet may be linked with a reduction in the risk of several cancer types, including breast cancer.¹⁰ The Mediterranean diet includes fish/seafood as a main source of lean proteins. Fish and other seafood are great sources of omega-3 fatty acids. Two or more servings (4-oz per serving) per week of fish may reduce the risk of breast cancer. In addition to fish, the Mediterranean diet emphasizes olive oil. One study found that following the Mediterranean diet supplemented with extra-virgin olive oil reduced the risk of breast cancer by 62%, when compared to a control diet.¹¹

How Does Regular Physical Activity Reduce My Risk of Breast Cancer?

According to the American Cancer Society, regular physical activity can reduce the risk of cardiovascular disease, obesity, diabetes, osteoporosis, and may reduce the risk of several cancers, including breast cancer.¹² Recommendations suggest engaging in at least 150 minutes of moderate intensity or 75 minutes of vigorous physical activity per week. Moderate intensity activity includes walking, bicycling, and leisure sports, while vigorous physical activity usually includes activities like running, dancing, weight training, high intensity sports, and heavy manual labor.¹² Combining data from many studies on modifiable risk factors and breast cancer cases estimated 9% reduced risk of breast cancer with 150 minutes of vigorous physical activity per week.¹³ Promotion of physical activity and avoidance of sedentary behavior may contribute to reduced risk of breast cancer in women.

Potential cancer-reducing biologic mechanisms of physical activity include: lowering sex hormone concentrations (particularly in premenopausal women), lowering levels of insulin and chronic low-grade inflammation, improving antioxidant capacity and immune responses, and helping with weight management and the reduction of excess body fat.^{14,15}

How Hormones Affect You?

Hormones and Breast Cancer

Many bodily functions are regulated by hormones, which are the chemical messengers of the body. There are two important hormones that control various aspects of the female anatomy and reproductive cycle. Estrogen supports female sex characteristics, like the breasts and bone health, while progesterone (in conjunction with estrogen) regulates the menstrual cycle and pregnancy.

Both estrogen and progesterone are produced by the ovaries, which also make and release eggs, in women who have not experienced menopause yet. After menopause, other tissues like fat and skin continue to release these hormones.

Some breast cancer patients may be sensitive to natural bodily hormones, such as estrogen and progesterone. These hormone-sensitive cancers and tumors may be stimulated to grow or metastasize by hormone interaction. Some breast cancers are reactive to estrogen and progesterone. The National Cancer Institute estimates approximately 70% of breast cancers are estrogen-responsive, and most likely also progesterone-responsive.¹⁶ When a possible tumor in the breast is identified, physicians can take tumor samples and test for estrogen receptors to examine the specific hormone sensitivity. If the tumor sample has estrogen or progesterone receptors, they act as a dock for the hormones, causing certain genes to be expressed and the tumor to grow. However, some breast cancers may be hormone-insensitive, and estrogen and progesterone will not affect the growth or spread of tumors in these types of cancer.

Some women using menopausal hormone therapy to relieve hot flashes and other menopausal symptoms may increase their risk of developing breast cancer. The risk declines over time once a woman stops taking the menopausal hormone



Figure 5. Regular physical activity is a step towards preventing many diseases

therapy. Any woman taking or considering menopausal hormone therapy should talk with her physician about the risks and benefits, along with alternative options.

Conclusions

Researchers are finding that healthy eating habits and regular physical activity everyday can reduce the risk of breast cancer. In addition to these preventative behaviors, monthly breast self-exams, regular mammograms, and clinical breast exams by your physician can help reduce your risk and the severity of breast cancer. Innate risk factors cannot be changed, but lifestyle habits (healthy diet and regular physical activity) are easily modified to benefit your overall health and wellness.

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Abstract

Research has shown a correlation between a healthy diet and reduced risk of breast cancer. Additional research is also demonstrating a link between regular physical activity and the reduction of breast cancer risk. A healthy diet is beneficial for the prevention of numerous diseases, including breast cancer. Regular physical activity is preventative for many diseases and health concerns, including breast cancer. This article outlines basic information about breast cancer, risk factors related to diet and physical activity, and breast cancer prevention through healthy diet and physical activity.



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