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negatively associated with breast cancer risk (hazard ratio = 0.85, 95% CI: 0.75, 0.95; P = 0.003 for linear trend), especially when tumors were estrogen receptor-positive/progesterone receptor-negative. Adherence to a diet comprising mostly fruits, vegetables, fish, and olive/sunflower oil, along with avoidance of Western-type foods, may contribute to a substantial reduction in postmenopausal breast cancer risk.

Svensk, A-, I. Öster, K. E. Thyme, et al. **Art Therapy Improves Experienced Quality of Life among Women Undergoing Treatment for Breast Cancer: A Randomized Controlled Study** *European Journal of Cancer Care*. 2009 01; 181: 69-77.

Women with breast cancer are naturally exposed to strain related to diagnosis and treatment, and this influences their experienced quality of life (QoL). The present paper reports the effect, with regard to QoL aspects, of an art therapy intervention among 41 women undergoing radiotherapy treatment for breast cancer. The women were randomized to an intervention group with individual art therapy sessions for 1 h/week (n = 20), or to a control group (n = 21). The WHOQOL-BREF and EORTC Quality of Life Questionnaire-BR23, were used for QoL assessment, and administered on three measurement occasions, before the start of radiotherapy and 2 and 6 months later. The results indicate an overall improvement in QoL aspects among women in the intervention group. A significant increase in total health, total QoL, physical health and psychological health was observed in the art therapy group. A significant positive difference within the art therapy group was also seen, concerning future perspectives, body image and systemic therapy side

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Breast Cancer

Cottet, V, M. Touvier, A. Fournier, et al. **Postmenopausal Breast Cancer Risk and Dietary Patterns in the E3N-EPIC Prospective Cohort Study.** *Am J Epidemiol*. 2009 Nov 15; 170:10: 1257-1267.

Since evidence relating diet to breast cancer risk is not sufficiently consistent to elaborate preventive proposals, the authors examined the association between dietary patterns and breast cancer risk in a large French cohort study. The analyses included 2,381 postmenopausal invasive breast cancer cases diagnosed during a median 9.7-year follow-up period (1993-2005) among 65,374 women from the E3N-EPIC cohort. Scores for dietary patterns were obtained by factor analysis, and breast cancer hazard ratios were estimated by Cox proportional hazards regression for the highest quartile of dietary pattern score versus the lowest. Two dietary patterns were identified: "alcohol/Western" (essentially meat products, French fries, appetizers, rice/pasta, potatoes, pulses, pizza/pies, canned fish, eggs, alcoholic beverages, cakes, mayonnaise, and butter/cream) and "healthy/Mediterranean" (essentially vegetables, fruits, seafood, olive oil, and sunflower oil). The first pattern was positively associated with breast cancer risk (hazard ratio = 1.20, 95% confidence interval (CI): 1.03, 1.38; P = 0.007 for linear trend), especially when tumors were estrogen receptor-positive/progesterone receptor-positive. The "healthy/Mediterranean" pattern was

effects. The present study provides strong support for the use of art therapy to improve QoL for women undergoing radiotherapy treatment for breast cancer

Colorectal Cancer

Kim, J, D. H. Kim, B. H. Lee, et al. **Folate Intake and the Risk of Colorectal Cancer in a Korean Population.** *Eur J Clin Nutr.* 2009 639: 1057-1064.

Background: Folate, a water-soluble B vitamin and one of the major micronutrients in vegetables, is known as an essential factor for the de novo biosynthesis of purines and thymidylate, and it plays an important role in DNA synthesis and replication. Thus, folate deficiency results in ineffective DNA synthesis, and has been shown to induce the initiation and progression of colorectal cancer (CRC). Recently, the incidence of CRC in Korea has increased markedly in both men and women; this trend may be related to the adoption of a more 'westernized' lifestyle, including dietary habits. Objective: A hospital-based case-control study was conducted to examine the relationship between folate intake and the risk of CRC within a Korean population. Methods: A total of 596 cases and 509 controls, aged 30-79 years, were recruited from two university hospitals. Site- and sex-specific odds ratios (ORs) were estimated using logistic regression models. Results: Cases were more frequently found to have a family history of CRC among first-degree relatives, to consume more alcohol, to be more likely current smokers and less likely to participate in vigorous physical activity than the controls. In the overall data for men and women combined, multivariate ORs (95% confidence interval (CI), P for trend) comparing the highest vs the lowest quartile of dietary folate intake were: 0.47 (0.32-0.69, <0.001) for CRC, 0.42 (0.26-0.69, <0.001) for colon cancer and 0.48 (0.28-0.81, 0.007) for rectal cancer. An inverse association was also found in women with dietary folate intake: 0.36 (0.20-0.64, <0.001) for CRC, 0.34 (0.16-0.70, 0.001) for colon cancer and 0.30 (0.12-0.74, 0.026) for rectal cancer, but not in men. In addition, the total folate intake of women was strongly associated with a reduced risk of rectal cancer (OR, 0.38; 95% CI, 0.17-0.88; P for trend=0.04). Conclusion: We found a statistically significant relationship between higher dietary folate intake and reduced risk of CRC, colon cancer and rectal cancer in women. A significant association is indicated between higher total folate intake and reduced risk of rectal cancer in women.

Ganesh, B, S. D. Talole and R. Dikshit. **A Case-Control Study on Diet and Colorectal Cancer from Mumbai, India.** *Cancer Epidemiology.* 2009 October; 333-4: 189-193.

Colorectal cancer is more common in the western countries. Studies have reported on risk factors for colorectal cancer across the globe but no study results are reported yet from India. This is the first hospital-based case-control study on colorectal cancer from

India. This study conducted at Tata Memorial hospital, Mumbai, India, included 203 cases of colorectal cancer and 1628 hospital controls. Data was collected on chewing, smoking, alcohol habits and dietary habits. The results indicated no significant excess risk for chewers, smokers and alcohol drinkers compared to those without the habits. However some significant findings emerged regarding the dietary habits. Cabbage-eaters had a 50% reduction in risk among both the sexes, compared to those who did not eat cabbage. Sprout eaters also had an 30-50% reduction in risk. There was an enhanced 1.6-fold risk among men who ate 'dry-fish' compared to those who did not eat dry-fish (OR = 1.6; CI: 1.0, 2.6). Among women, meat-eaters had a 2.4-fold excess risk than non-meat-eaters. Likewise for fresh-fish eaters, there was a 40-70% reduction in risk compared to those who did not eat fresh-fish. Dark-green-leafy-vegetables and 'other vegetables' did not show any protective effect for colorectal cancer in this study.

Nutrition

Aune, D, E. De Stefani, A. Ronco, et al. **Legume Intake and the Risk of Cancer: A Multisite Case-Control Study in Uruguay.** *Cancer Causes and Control.* 2009 November; 209: 1605-1615.

Background: Previous studies have suggested that a high intake of legumes may decrease the risk of stomach and prostate cancer and some other cancers. However, the evidence is still limited. To further explore the association between legume intake and cancer risk we conducted a case-control study of 11 cancer sites in Uruguay between 1996 and 2004, including 3,539 cancer cases and 2,032 hospital controls. Results: The highest versus the lowest tertile of legume intake was associated with a significant decrease in the risk of cancers of the oral cavity and pharynx (OR = 0.48, 95% CI: 0.34-0.68), esophagus (OR = 0.54, 95% CI: 0.38-0.77), larynx (OR = 0.55, 95% CI: 0.40-0.77), upper aerodigestive tract (OR = 0.50, 95% CI: 0.40-0.63), stomach (OR = 0.69, 95% CI: 0.49-0.97), colorectum (OR = 0.43, 95% CI: 0.32-0.59), kidney (OR = 0.41, 95% CI: 0.24-0.71), and all sites combined (OR = 0.68, 95% CI: 0.59-0.78). No significant association was observed between legume intake and cancers of the lung (OR = 1.03, 95% CI: 0.83-1.27), breast (OR = 0.89, 95% CI: 0.65-1.20), prostate (OR = 0.87, 95% CI: 0.64-1.18) or bladder (OR = 0.82, 95% CI: 0.57-1.17). Similar results were found for both beans and lentils. Conclusion: Higher intake of legumes was associated with a decreased risk of several cancers including those of the upper aerodigestive tract, stomach, colorectum, and kidney, but not lung, breast, prostate or bladder. Further investigations of these associations in prospective cohort studies are warranted.

Vitamin D

Edlich, R, S. S. Mason, M. E. Chase, et al. **Scientific**

Documentation of the Relationship of Vitamin D Deficiency and the Development of Cancer. *Journal of Environmental Pathology, Toxicology & Oncology.* 2009 282: 133-141.

It is well known that vitamin D plays a key role in calcium homeostasis and is important for optimal skeletal growth. The major function of vitamin D is to enhance the efficiency of calcium absorption from the small intestine. Most physicians relate vitamin D deficiency to disorders of skeletal muscle. Vitamin D deficiency in children can manifest itself as rickets. In adults, vitamin D deficiency results in osteomalacia. **Because most physicians do not appreciate the role of vitamin D deficiency in predisposing the development of cancer, we have written this important report as a wake-up call to physicians and other healthcare workers in documenting the relationship of vitamin D deficiency and cancer.** Epidemiological data show an inverse relationship between vitamin D levels and breast cancer incidence. In addition, there is a well-documented association between vitamin D intake and the risk of breast cancer. Low vitamin D intake has also been indicated in colorectal carcinogenesis. A vitamin D deficiency has also been documented in patients with prostate cancer, ovarian cancer, as well as multiple myeloma. Larger randomized clinical trials should be undertaken in humans to establish the role of vitamin D supplementation in the prevention of these cancers.

Prostate Cancer

Steinbrecher, A, K. Nimptsch, A. Husing, S. Rohrmann and J. Linseisen. **Dietary Glucosinolate Intake and Risk of Prostate Cancer in the EPIC-Heidelberg Cohort Study.** *International Journal of Cancer.* 2009 01 Nov; 1259: 2179-2186.

Glucosinolates (GLS) are secondary plant metabolites occurring in cruciferous vegetables. Their biologically active break-down products show cancer preventive properties in animal and cell studies. So far, epidemiologic studies, using consumption of cruciferous vegetables as proxy for GLS intake, yielded inconsistent results. Here, we evaluated the association between dietary intake of GLS in comparison with consumption data of GLS-containing foods and the risk of prostate cancer. The study population comprised 11,405 male participants of the prospective EPIC-Heidelberg cohort study. During a mean follow-up time of 9.4 years, 328 incident cases of prostate cancer occurred. At recruitment, habitual food consumption was assessed by a validated food frequency questionnaire, and intake of individual GLS was estimated by means of a newly compiled database on food content of GLS. Adjusted hazard ratios (HR) for prostate cancer were calculated using the Cox proportional hazard model. Median daily intake of total GLS was 7.9 mg/day (interquartile range 5.1-11.9 mg/day). The risk of prostate cancer decreased significantly over quartiles of total GLS intake (multivariate HR [4th vs. 1st quartile] 0.68, 95%

CI 0.48-0.97, ptrend 0.03). Associations with GLS-containing food intake were weaker. Among GLS subgroups, aliphatic GLS showed the strongest inverse association with cancer risk. Analyses stratified by tumor stage and grade gave hint to inverse associations for localized and low-grade cancers. This study shows an inverse association between dietary intake of GLS and the risk of prostate cancer. Because this is the first prospective study using individual GLS intake data, confirmation in other studies is warranted.

We are grateful to the **Prostate Cancer Foundation BC** for their generous support.



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Exercise

Antonelli, JA, L. W. Jones, L. L. Banez, et al. **Exercise and Prostate Cancer Risk in a Cohort of Veterans Undergoing Prostate Needle Biopsy** *J Urol.* 2009 Nov; 1825: 2226-2231.

PURPOSE: Epidemiological and molecular evidence suggest potential associations between exercise and prostate cancer risk reduction. We further characterized this relationship by examining exercise and cancer risk among men undergoing prostate needle biopsy. **MATERIALS AND METHODS:** A total of 190 men who underwent prostate biopsy at the Durham Veterans Affairs Medical Center completed a questionnaire on current exercise behavior. Participants were asked average frequency of mild, moderate and strenuous intensity exercise in a typical week, as well as average duration as assessed by the Godin Leisure Time Exercise Questionnaire. Total current exercise was calculated in terms of metabolic equivalent task hours per week. Primary outcome measures were prostate biopsy result and Gleason sum. **RESULTS:** After adjusting for age, race, body mass index, prostate specific antigen, digital rectal examination, family history, previous prostate biopsy and comorbidity score, men who reported 9 or more metabolic equivalent task hours per week of exercise were significantly less likely to have cancer on biopsy (OR 0.35, CI 0.17-0.75, $p = 0.007$). Furthermore, among men with malignant biopsy results, reporting moderate exercise (3 to 8.9 metabolic equivalent task hours weekly) was associated with a lower risk of high grade disease (Gleason 7 or greater, OR 0.14, CI 0.02-0.94, $p = 0.04$). **CONCLUSIONS:** To our knowledge these results provide the first evidence of an association between exercise and prostate cancer risk as well as grade at diagnosis in men scheduled to undergo prostate biopsy. Specifically moderate exercise was associated with a lower risk of prostate cancer and in men with cancer, lower grade disease. Further investigation using an objective measure of exercise in a larger sample size is required to confirm these findings.

Griffith, K, J. Wenzel, J. Shang, C. Thompson, K. Stewart and V. Mock. **Impact of a Walking Intervention on Cardiorespiratory Fitness, Self-Reported Physical Function, and Pain in Patients Undergoing Treatment for Solid Tumors.** *Cancer.* 2009 15 Oct; 11520: 4874-4884.

BACKGROUND: Cancer treatment is associated with decline in measured and self-reported physical function and increased pain. In the current study, the authors evaluated the impact of a walking intervention on these outcomes during chemotherapy/radiation. **METHODS:** Patients with breast, prostate, and other cancers (N=126) were randomized to a home-based walking intervention (exercise) or usual care (control). Exercise dose during the intervention was assessed using a 5-item Physical Activity Questionnaire. Outcome measures were cardiorespiratory fitness, expressed as peak oxygen uptake (VO₂) measured during treadmill testing (n = 85) or estimated by 12-minute walk (n = 27), and self-reported physical function, role limitations, and pain derived from Medical Outcomes Study Short Form 36. Linear regression was used to evaluate pre-to-post intervention change outcomes between groups. **RESULTS:** The mean (standard deviation) age of the patients was 60.2 (10.6) years. Diagnoses included prostate (55.6%) and breast (32.5%) cancer. Treatment included external beam radiotherapy (52.3%) and chemotherapy (34.9%). Exercise patients reported worsening Medical Outcomes Study physical function role limitations by the end of cancer treatment (P = .037). Younger age was associated with improved Medical Outcomes Study physical function (P = .048). In all patients, increased exercise dose was associated with decreased Medical Outcomes Study pain (P = .046), regardless of diagnosis. The percent change of VO₂ between prostate and nonprostate cancer patients when adjusted for baseline VO₂ and Physical Activity Questionnaire values was 17.45% (P = .008), with better VO₂ maintenance in the prostate group. **CONCLUSIONS:** Exercise during cancer treatment improves cardiorespiratory fitness and self-reported physical function in prostate cancer patients and in younger patients, regardless of diagnosis, and may attenuate loss of those capacities in patients undergoing chemotherapy. Exercise also reduces the pain experience.

Study of the Month

Shu XO, Zheng Y, Cai H, Gu K, Chen Z, Zheng W, and W. Lu. **Soy Food Intake and Breast Cancer Survival.** *JAMA.* 2009 Dec 9;302(22):2437-43.

CONTEXT: Soy foods are rich in isoflavones, a major group of phytoestrogens that have been hypothesized to reduce the risk of breast cancer. However, the estrogen-like effect of isoflavones and the potential interaction between isoflavones and tamoxifen have led to concern about soy food consumption among breast cancer patients. **OBJECTIVE:** To evaluate the

association of soy food intake after diagnosis of breast cancer with total mortality and cancer recurrence. **DESIGN, SETTING, AND PARTICIPANTS:** The Shanghai Breast Cancer Survival Study, a large, population-based cohort study of 5042 female breast cancer survivors in China. Women aged 20 to 75 years with diagnoses between March 2002 and April 2006 were recruited and followed up through June 2009. Information on cancer diagnosis and treatment, lifestyle exposures after cancer diagnosis, and disease progression was collected at approximately 6 months after cancer diagnosis and was reassessed at 3 follow-up interviews conducted at 18, 36, and 60 months after diagnosis. Annual record linkage with the Shanghai Vital Statistics Registry database was carried out to obtain survival information for participants who were lost to follow-up. Medical charts were reviewed to verify disease and treatment information. **MAIN OUTCOME MEASURES:** Total mortality and breast cancer recurrence or breast cancer-related deaths. Cox regression analysis was carried out with adjustment for known clinical predictors and other lifestyle factors. Soy food intake was treated as a time-dependent variable. **RESULTS:** During the median follow-up of 3.9 years (range, 0.5-6.2 years), 444 deaths and 534 recurrences or breast cancer-related deaths were documented in 5033 surgically treated breast cancer patients. Soy food intake, as measured by either soy protein or soy isoflavone intake, was inversely associated with mortality and recurrence. The hazard ratio associated with the highest quartile of soy protein intake was 0.71 (95% confidence interval [CI], 0.54-0.92) for total mortality and 0.68 (95% CI, 0.54-0.87) for recurrence compared with the lowest quartile of intake. The multivariate-adjusted 4-year mortality rates were 10.3% and 7.4%, and the 4-year recurrence rates were 11.2% and 8.0%, respectively, for women in the lowest and highest quartiles of soy protein intake. The inverse association was evident among women with either estrogen receptor-positive or -negative breast cancer and was present in both users and nonusers of tamoxifen. **CONCLUSION:** Among women with breast cancer, soy food consumption was significantly associated with decreased risk of death and recurrence.

InspireHealth provides an integrated whole person approach to health for individuals living with cancer. Our medical doctors guide patients to explore and learn about a variety of wellness approaches to health and healing in addition to conventional cancer treatment. This integrated medical model, which engages people in their own care, improves quality of life and reduces the likelihood of cancer recurrence. The editorial board includes: Dr. Hal Gunn, CEO and Co-founder, Dr. Janice Wright, Dr. Teresa Clarke, Dr. Ron Puhky, Dr. Walter Lemmo, ND, and Julius Halaschek-Wiener, PhD.

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