# ABSTRACT
# WITHDRAWN

**159**       **Poster Session (Board #K3), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## Comparing diets for weight loss and improvement in biomarkers in men with prostate cancer on surveillance: A pilot study.

*Sharon Benson; Rhode Island Hospital Comprehensive Cancer Center, Providence, RI*

**Background:** Weight loss is recommended for treatment of prostate cancer, yet the most efficacious diet is not clear. The diet should improve biomarkers for prostate cancer, not increase risk of other chronic diseases, and be acceptable for long term use. Ascertaining appropriate dietary treatment for men on surveillance is crucial in preventing future cardio-vascular disease, which is the leading cause of death in these men. **Methods:** Men with prostate cancer on surveillance and/or with untreated biochemical relapse followed 2 diets for 8 weeks of weight loss with random assignment to the order: (1) the diet recommended by the Prostate Cancer Foundation (PCF); (2) a plant-based, olive oil diet (PBOO), which included 3 tablespoons of extra virgin olive oil/ daily. After completing both diets, participants selected one of the diets for 6 months of follow-up (FU). **Results:** 30 started the protocol; 12 dropped out, 11 due to diet compliance (n = 3 PBOO; n = 8 PCF); 18 completed the 8 weeks of both diets and are reported here. Mean age: 66.6 + 5.9; baseline BMI: 30.9 + 2.7 kg/m$^2$. Thirteen of the 18 have chosen the PBOO for FU. **Conclusions:** These results suggest a benefit with the PBOO diet in lowering insulin and glucose, and improving insulin function compared to the PCF diet. Despite similar weight loss, energy intake was higher on the PBOO diet. In addition, the PBOO diet was preferred over the PCF diet for long-term use.

| Variable | PBOO | PCF | p value |
|---|:---:|:---:|:---:|
| **Weight loss (%)** | 2.8 + 3.7 | 2.5 + 3.1 | 0.86 |
| **Kcals reported wk 8** | 1,914.5 + 482.1 | 1,441.1 + 477.1 | **0.00** |
| **Total cholesterol (mg/dl)** | 162.5 + 27.4 | 161.6 + 29.4 | 0.65 |
| **LDL (mg/dl)** | 96.5 + 24.7 | 93.7 + 30.2 | 0.29 |
| **HDL (mg/dl)** | 45.6 + 13.4 | 44.3 + 13.8 | 0.12 |
| **Triglycerides (mg/dl)** | 89.8 + 42.5 | 102.3 + 62.3 | 0.18 |
| **Insulin mU/L** | 11.5 + 4.4 | 13.7 + 7.0 | **0.02** |
| **Glucose (mg/dl)** | 99.1 + 9.6 | 104.9 + 9.9 | **0.01** |
| **HOMA-IR** | 2.9 + 1.2 | 3.6 + 2.1 | **0.02** |

**160**  **Poster Session (Board #K4), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## Prevalence of sarcopenia and predictors of body composition among women with early-stage breast cancer.

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**Background:** Body mass index (BMI) does not accurately reflect body composition, particularly among cancer survivors. Sarcopenia (low skeletal muscle mass) and low muscle radio-density (MD; suggesting fat infiltration into muscle, compromising function) increase risk of surgical complications and chemotherapy toxicity and are associated with worse survival in advanced cancer. Little is known about the prevalence or predictors of sarcopenia and low MD in early-stage breast cancer. **Methods:** We studied 2,914 Kaiser Permanente members diagnosed with Stage I-III breast cancer from 2005-2013. Using computed tomography (CT) scans of the third lumbar vertebra from clinical care, we determined sarcopenia (skeletal muscle index $< 41$ muscle [$cm^2$]/height [$m^2$]) and low MD ($< 25$-Hounsfield Units for non-obese; $< 33$ for obese) using published cut points. We assessed associations with characteristics including age, race, BMI, age, stage, lifestyle and co-morbidities with logistic regression. We also examined moderate/vigorous physical activity among a subset of 672 women with activity questionnaires. **Results:** At diagnosis, mean age was 56 years and time to CT was 1 month. Both sarcopenia and low MD were common among early-stage breast cancer survivors (40% and 38% respectively). In multivariate analyses, the odds of sarcopenia and low MD increased with age (per 5 years, Odds Ratio [OR] 95% Confidence Interval [CI] of OR = 1.33; 95%CI: 1.27, 1.39 and OR = 1.41; 95%CI: 1.35, 1.47 respectively). The odds of sarcopenia decreased with greater BMI (OR = 0.80; 95%CI: 0.78, 0.82 per kg/m$^2$), while the odds of low MD increased (OR = 1.03; 95%CI: 1.01, 1.04 per kg/m$^2$). Black race was associated with lower odds of sarcopenia and low MD, while physical activity levels were associated with lower odds of sarcopenia and more favorable MD. **Conclusions:** Sarcopenia and low MD are highly prevalent among breast cancer survivors. While older age is strongly associated with these conditions, they occur across ages and stages. Differences in body composition by race and age may underlie differences in the association of BMI with cancer outcomes; understanding these may help guide clinical interventions.

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**Feasibility of an electronic implementation method of an evidence-based exercise intervention among testicular cancer survivors (TCS).**

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**Background:** Cardiovascular (CV) disease results in significant morbidity among TCS. The effects of exercise on mitigating these late effects remain unknown in this population. Exercise for Cancer Patients (EXCAP) is a self-directed, individually tailored intervention that has been shown to improve CV fitness in cancer patients. We conducted a randomized phase II feasibility study of a novel electronic implementation method (mHealth) of EXCAP. **Methods:** We developed mHealth-EXCAP that integrates data from a wearable digital activity tracker (DAT) into a patient's electronic medical record (EMR), allowing providers to monitor and adjust EXCAP prescriptions via a patient-centered virtual portal. We randomized TCS ( $<$ 69 yr at diagnosis, any treatments, not in active or maintenance stage of exercise behavior) into 3 study arms: Arm 1 (mHealth-EXCAP), Arm 2 (EXCAP) and Arm 3 (usual care). Both Arm 1 and 2 completed a 12 week EXCAP program with the goal of 12,000 daily steps and daily resistance exercises and Arm 1 has integration of mHealth. Arm 3 received a TCS care plan that encourages exercises. **Results:** 52 TCS were screened (23 ineligible; 12 declined), 17 consented and 13 (80.9%) completed study (3 withdrew; 1 lost to follow up) as of May 31, 2016. Median age (yr) was 34 (Arm 1; n = 6), 52 (Arm 2; n = 3), and 48 (Arm 3; n = 4). In Arm 1, 83% TCS wore DAT and synced daily step data to EMR $>$ 90% of days. Further, EXCAP prescriptions were adjusted via EMR portal on average 5 times over 12 weeks for each TCS and their weekly daily step goals were met 73% of the time. The number of daily steps recorded by DAT and those synced from DAT to EMR differed by a mean of 1.5% steps ($\pm$1.8). Median baseline number of daily steps were 5,432 (Arm 1), 6,737 (Arm 2), and 5,875 (Arm 3) and increased by 6,161, 1,742, and 1,921 respective steps, with only Arm 1 (50% TCS) achieving $>$ 12,000 daily steps at study completion. On average, TCS in Arm 1 and 2 performed resistance exercises 15 minutes a day/2 times a week and 34 minutes a day/3 times a week, respectively. **Conclusions:** mHealth-EXCAP is feasible to implement among TCS and may decrease sedentary behavior. Ongoing research will examine its effects on CV risk factors and cardiopulmonary function.

**162**       **Poster Session (Board #K6), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## Factors and barriers associated with changes in physical activity after cancer diagnosis.

*Sally A. D. Romero, Qing Susan Li, Jun J. Mao; Memorial Sloan-Kettering Cancer Center, New York, NY*

**Background:** Cancer patients experience a variety of symptoms (e.g., pain, fatigue) that can impact their ability to maintain physical activity (PA) levels. The objectives of this study were to examine factors associated with decreased levels of PA following cancer diagnosis and to identify barriers to PA. **Methods:** We recruited cancer patients from one urban academic medical center and 11 affiliated community hospitals to participate in a cross-sectional study. We conducted chi-square tests and multivariate logistic regression models to examine patient demographics, clinical characteristics and self-reported barriers associated with decrease in PA levels since cancer diagnosis. **Results:** Among 662 participants, mean age (SD) was 59.9 (11.6) years. The majority were female (65%), White (81%), and overweight/obese (65%). Common cancer types were breast (32%), lung/thoracic (15%), and hematological (15%), 53% had non-metastatic disease, and 53% were $> 12$ months post-cancer diagnosis. The majority received chemotherapy (88%), radiation (53%), and/or surgery (53%). Since their cancer diagnosis, 499 (75%) participants reported decreasing their PA levels, 16% maintained, and 4% increased their PA levels. In multivariate analyses, decreased PA levels were significantly associated with receiving chemotherapy [Adjusted Odds Ratio (AOR) 3.54, 95% CI 2.06-6.06] and having metastatic disease (AOR 1.64, 95% CI 1.07-2.52). For barriers to PA, the most common were fatigue (78%), pain (71%), difficulty getting motivated (68%) and difficulty remaining disciplined (65%). In bivariate analyses, the presence of symptoms (i.e., pain, nausea, fatigue, treatment side effects, or surgical complications), difficulty getting motivated, difficulty remaining disciplined, and sadness were significantly associated ($p < 0.05$) with decreasing PA levels. **Conclusions:** The majority of cancer patients, especially those who received chemotherapy and those with advanced disease, decreased their PA levels since cancer diagnosis. In addition, physical and psychological barriers exist that influence PA levels. Interventions targeting these barriers are needed to promote maintenance of PA levels throughout the cancer continuum.

**163**  **Poster Session (Board #K7), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

**Virtual weight loss program for African-American breast cancer survivors: Preliminary results.**

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**Background:** Obesity is associated with higher breast cancer recurrence and death, and poorer health and quality of life. African-American (AA) women have the highest prevalence of obesity, obesity-related comorbidities, and breast cancer mortality compared with other racial/ethnic groups. Weight loss after breast cancer diagnosis may lower rates of recurrence and improve fitness, fatigue, and quality of life. **Methods:** This 6-month randomized controlled trial pilot-tests the use of a Fitbit activity tracker (Fitbit only group) versus Fitbit plus SparkPeople, a free web-based weight loss program (combined group) among 70 AA breast cancer survivors. Paired t-tests assess changes from baseline to 6-months among each participant in primary (weight, body mass index [BMI], percent body fat) and secondary (24-hour caloric intake, daily number of steps, quality of life, self-monitoring strategies, self-efficacy) outcomes. Two-group t-tests assess differences in outcomes between the two groups. **Results:** Currently, 36 of 46 (78.3%) eligible participants have enrolled and completed baseline assessments. Mean age of participants is 61.7 years (SD 8.7) and mean BMI is 36.9 (SD 7.0). Analyses of the first 25 participants who completed 3-month assessments (Fitbit only N = 12; combined group N = 13) show significant weight loss in both groups; Fitbit only: mean weight change -6.73 pounds, SD 4.61, $p < 0.001$; mean BMI change -0.96 kg/m$^2$, SD 0.84, $p = 0.002$; combined group: mean weight change -5.95 pounds, SD 5.84, $p = 0.003$; mean BMI change -1.03 kg/m$^2$, SD 0.77, $p < 0.001$. All participants significantly increased tracking of diet (Fitbit only $p = 0.016$; combined group $p < 0.001$) and physical activity (Fitbit only $p < 0.001$; combined group $p = 0.001$). Though not significant, combined group participants showed greater increases in self-efficacy for eating healthy and reducing fat and calories, and increases in daily steps (+1308 vs. +285 for Fitbit only group). Preliminary analyses show no statistically significant difference in changes in outcomes from baseline to 3 months between the two groups. **Conclusions:** Both programs show potential as convenient and efficient weight loss methods for African-American breast cancer survivors. Clinical trial information: NCT02699983.

**164**     **Poster Session (Board #K8), Fri, 12:15 PM-1:45 PM and
5:15 PM-6:15 PM**

**Building a healthy body after cancer: Results of a focus group with young adult survivors to inform an intervention for exercise after treatment.**

*Brittany Kimball, Gladys Asiedu, Carrie A. Thompson; Mayo Clinic, Rochester, MN; Division of Hematology, Mayo Clinic, Rochester, MN*

**Background:** Adolescent and young adult (AYA) cancer survivors have distinctive and often unmet needs, may lead long lives after treatment, and are a population for whom targeted health supports are limited. Exercise in particular has become increasingly recognized as a vital part of cancer survivors' health needs, yet, little is known about what interventions would be most appropriate for this population. This ongoing study reports early data on barriers and facilitators to exercise in AYA lymphoma survivors. **Methods:** We conducted a focus group with five young adult lymphoma survivors. Participants completed questionnaires to assess quality of life, exercise habits, and knowledge about evidence for exercise after cancer treatment. Charts were abstracted for demographic and treatment-related details. The focus group was audio recorded and transcribed. Data is being analyzed thematically to generate applied findings and identify areas for action. **Results:** Participants were 24-35 years old, 60% male, and an average of 2.97 years from the time of diagnosis. All reported some form of physical activity, with 80% active and 20% moderately active. Preliminary analysis identified fatigue, weight gain, and lack of time as barriers to exercise. Participants identified fatigue particularly in the early survivorship period, and discussed the issue of non-cancer survivor peers not relating with or recognizing fatigue after treatment. 100% of participants reported that someone from their doctor's office had talked with them about exercise, but indicated during the focus group that this recommendation did not motivate them to exercise. Other themes revolve around the relationship between healthy diet and physical activity. In terms of an intervention, survivors were interested in activity trackers and fitness apps, exercise variety, and fitness groups targeted specifically for AYA survivors. **Conclusions:** Fatigue, weight gain, and time are barriers to exercise for AYA survivors. Interventions that incorporate fitness tracking technology, provide variety, and/or include other AYA survivors may be successful in this unique population.

**165**    **Poster Session (Board #K9), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## Exercise, metabolic syndrome, and cardiovascular fitness in breast cancer survivors.

*M. Tish Knobf, Albert Sinusas, Margaret Holland, Sangchoon Jeon; Yale Univ School Nursing, Orange, CT; Yale University School of Medicine, New Haven, CT; Yale University School of Nursing, Orange, CT; Yale University, Orange, CT*

**Background:** Metabolic syndrome (MetS) has been reported higher in breast cancer survivors (BCS) compared to age-matched postmenopausal women. The risk for cardiovascular disease and diabetes is significantly increased in women with MetS. Lifestyle behaviors are recommended first line interventions to reduce risk for MetS. **Methods:** From a 12 month randomized controlled trial (RCT) of a fitness center exercise intervention compared to a home physical activity group, the criteria for MetS (3 of 5 components: waist circumference [WC] $\geq$ 80cm, triglycerides $\geq$ 150mg/dL, HDL cholesterol $<$ 40 mg/dL, blood pressure [BP] $\geq$ 130/85 mmHg, fasting blood sugar [FBS] $>$ 100mg/dL) were used to identify BCS with MetS. General estimating equation was employed for longitudinal changes. Heart rate recovery (reduction in heart rate from peak heart rate at one minute after exercise stress test) was used as a measure of cardiovascular fitness. Pearson correlation coefficients assessed associations between heart rate recovery and metabolic outcomes. **Results:** Of 148 subjects in the RCT, 21.6% (N = 32) met the criteria for MetS, with a higher baseline incidence in the home (30.1%) versus fitness center (13.3%) groups (p = 0.01). Of subjects on Tamoxifen, 30.9% had MetS, compared to 17.1% on an aromatase inhibitor and 20.7% not on endocrine therapy; these were not significantly different (p = .28). Among those with MetS at baseline, we observed a significant decrease in MetS (p $<$ .01) with significant changes in HDL (p = 0.02) and FBS (p = .01) after the 12 month intervention. The fitness center and home physical activity groups both resulted in fewer subjects meeting MetS criteria at 12 months, but only the home group had a significant change over time (OR = 0.66 (0.44, 0.98) p = .04). Heart recovery rate at 6 months was significantly associated with all 5 MetS components: WC (-0.28 p $<$ .01), triglycerides (-0.32 p $<$ .01), HDL (0.20 p = .04), systolic BP (-0.38 p $<$ .01), diastolic BP (-0.27 p $<$ .01) and FBS (-0.35 p $<$ .01). **Conclusions:** All-cause mortality now exceeds breast cancer specific mortality. MetS identifies a unique vulnerable population of BCS at high risk for cardiovascular disease. Lifestyle behaviors represent critical risk reduction strategies.

**166**     **Poster Session (Board #K10), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## Self-monitoring and reminder texts to increase physical activity after colorectal cancer (Smart Pace): A pilot trial.

*Erin Van Blarigan, Katherine Van Loon, Stacey A. Kenfield, June M Chan, Yoshimi Fukuoka, Angela Laffan, Emily Mitchell, Hilary Chan, Daniela Rodriguez-Jaquez, Jeffrey A. Meyerhardt, Alan P. Venook; University of California, San Francisco, San Francisco, CA; Dana-Farber/Partners CancerCare, Boston, MA*

**Background:** Colorectal cancer (CRC) survivors can improve their quality-of-life (QOL), and potentially survival, by engaging in physical activity. The aim of this pilot randomized controlled trial (RCT) is to determine the feasibility of a technology-based physical activity intervention for CRC survivors. **Methods:** 40 CRC survivors will be randomized (1:1) to a 12-week physical activity intervention (Fitbit Flex, daily text messages) or usual care. Eligible individuals must: 1) have stage I-III colon or rectal adenocarcinoma; 2) have completed therapy; 3) be considered cancer-free; 4) be English speaking; 5) have no contraindications to moderate physical activity; 6) engage in $< 150$ min/week of moderate physical activity; and 7) have Internet and a phone that can receive text messages. Our primary outcomes are adherence (e.g., Fitbit wear time, text response rate) and acceptability assessed via survey. Secondary outcomes include change in physical activity via 7-days of ActiGraph GT3X+ accelerometers and QOL. **Results:** We have screened 350 individuals with stage I-III CRC at the University of California, San Francisco (UCSF) for eligibility. Of these, 181 (52%) were not eligible [non-English speaking (46%), $\geq 150$ min/week of physical activity (22%), contraindications to physical activity (22%), not cancer-free (7%), did not own a mobile phone (2%)]. We invited the remaining 169 eligible CRC survivors to participate by mail, e-mail, phone, or in clinic; 76 (45%) actively declined and 59 (35%) did not respond after up to 3 contact efforts. As of October 2016, 34 CRC survivors have been randomized to intervention (n = 16) or control (n = 18). These individuals are: 55% female; 64% Non-Hispanic White; 73% have a 4-y college degree; and 64% work full-time. The median (IQR) age and BMI are: 56 (50, 65) y and 26.4 (23.2, 32.4) kg/m$^2$, respectively. **Conclusions:** The results of this pilot study will inform a definitive RCT to determine whether a technology-based physical activity intervention improves QOL and survival after CRC diagnosis. Funding: This research was supported by the NIH (K07CA197077, KL2TR000143), Mt. Zion Health Fund and UCSF Helen Diller Family Comprehensive Cancer Center.

**167**          **Poster Session (Board #K11), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## The long-term benefits of the LIVESTRONG at the YMCA program.

*Erin L Ratterman, Kelly Standage, Lynda M. Beaupin; Indiana University School of Medicine, Indianapolis, IN; Buffalo-Niagara YMCA, Buffalo, NY; Roswell Park Cancer Institute, Buffalo, NY*

**Background:** Up to 35% of cancer survivors report physical dysfunction. Exercise programs are beneficial for cancer survivors, yet adherence to exercise long-term remains a challenge. This study examines the efficacy of the Livestrong at the YMCA Program on the physical function of cancer survivors and its influence on habitual exercise. **Methods:** This retrospective study analyzed data from 158 participants between 2013-16. Each 12-week program consisted of two 1.5 hour sessions per week led by YMCA trainers with LIVESTRONG certification. Sessions included group exercises and education on nutrition and healthy eating, yoga and meditation. Demographic forms completed upon enrollment and Functional Assessments performed at the beginning and close of each 12-week program were analyzed. The demographic data was compiled to produce aggregate characteristics and matched Functional Assessments scores were used to determine changes in each measure over the course of the program. Data analysis included who obtained YMCA membership and continued to have active membership. **Results:** Matched pre- and post-program Functional Assessments and demographic data were available for 112 participants (71%). Thirty-four percent were over 65 years of age, 94% Caucasian, 52% had breast cancer, and 55% completed treatment within the past two years. We observed improvements in all measures within the Functional Assessment, including upper and lower body strength, flexibility, balance, and 6-minute walk test. Thirty-nine percent are currently YMCA members, and 78% of those have checked into the YMCA within the last 3 months. A post-program potluck dinner is hosted and attendance from prior participants is over 50%. Participant feedback indicates that the program promotes socialization and peer support among cancer survivors. **Conclusions:** Similar to other exercise programs, the Livestrong at the YMCA program improves physical function scores. Nearly 40% of participants maintain a YMCA membership and over 75% of these members continue to exercise at the YMCA. Promotion of peer support and education on healthy lifestyle behaviors by the Livestrong at the YMCA program may have an impact on the long-term adherence to exercise among cancer survivors.

**168**     **Poster Session (Board #K12), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

**Milk and other dairy foods in relation to prostate cancer progression: Data from the Cancer of the Prostate Strategic Urologic Research Endeavor (CAPSURE).**

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**Background:** Recent research suggests a positive relationship between intake of high-fat dairy, particularly whole milk, and prostate cancer (PC) mortality. However, data are limited in men after PC diagnosis. **Methods:** We conducted a prospective cohort study among 1336 men with non-metastatic PC in CaPSURE. The men answered a food frequency questionnaire (FFQ) in 2004-2005 (median time from diagnosis to the FFQ: 2 y) and were followed for PC progression until April 2016. PC progression was defined as: prostate cancer death, bone metastasis from PC, biochemical recurrence, or secondary treatment. Multivariate Cox Proportional Hazards regression was used to calculate hazards ratios (HR) and 95% confidence intervals (CI) for associations between total, whole fat, and low-fat milk; total, high-fat, and low-fat dairy; and specific dairy items and PC progression. We adjusted for time from diagnosis to FFQ, calories, age at diagnosis, CAPRA score, smoking, BMI, walking pace, and primary PC treatment. **Results:** 314 events were observed (mean follow-up: 7.2 y). Whole milk was associated with an increased risk of PC progression when adjusting for age, calories, and time since diagnosis (HR ≥1 vs. <1 serving/wk: 1.37; 95% CI: 1.03, 1.84; *p*-value: 0.03). This association was slightly attenuated, and not statistically significant, when adjusting for clinical and other lifestyle factors (HR: 1.27; 95% CI: 0.91, 1.77; *p*-value: 0.15). High-fat dairy intake also appeared associated with an increased risk of PC progression, but the association was not statistically significant (adjusted HR ≥4 vs. <1 servings/day: 1.40; 95% CI: 0.92, 2.13; *p*-trend: 0.18). Post-diagnostic intakes of low-fat milk and other dairy foods were not associated with PC progression. **Conclusions:** Post-diagnostic intake of milk and other dairy foods was not associated with PC progression. Research in populations with greater intake of whole milk is warranted to further investigate whether post-diagnostic whole milk intake increases risk of PC progression. Funding: This work was funded by the DOD Prostate Cancer Research Program (W81XWH-13-2-0074) and the NIH (K07CA197077).

**169**                    **Poster Session (Board #L1), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

**Implementation of an exercise behavior change clinic for men with prostate cancer: Baseline results.**

*Sarah Weller, Maria Spillane, Phil Pollock, Monita Sundar, Larry Goldenberg, Lindsay Hedden, Celestia S. Higano; Vancouver Prostate Centre, Vancouver, BC, Canada; Vancouver Prostate Centre and Department of Urologic Sciences, Vancouver, BC, Canada; Centre for Clinical Epidemiology and Evaluation, Vancouver, BC, Canada; University of Washington, Fred Hutchinson Cancer Research Center, Seattle, WA*

**Background:** Regular physical activity (PA) and resistance training (RT) has been shown to improve the health of prostate cancer survivors (PCS), however participation rates are low. To address survivorship needs and support behaviour change, the Prostate Cancer Supportive Care (PCSC) program implemented an Exercise Physiology (EP) clinic using one-on-one exercise counselling. Our objective was to understand the PA and RT characteristics of PCS and examine the effect of an EP clinic on behaviour change. **Methods:** After enrolment in the PCSC program, PCS were offered a consultation with an Exercise Physiologist. Subsequent consultations occurred at 3, 6 and 12 months. Clinical data collected at each consultation included physical measures, stage of change (TTM), current exercise (GLTEQ and exercise summary), fatigue (FACIT Fatigue and SIFIR), barriers and facilitators to exercise and a safety screening (PAR-Q+). Information was used during the EP clinic to set PA goals and create an action plan for behaviour change, reviewed each visit. **Results:** 71 PCS, median age 67 (range 50-86) attended the EP clinic between July 2015 and August 2016. 76% had received primary treatment and 24% were on active surveillance. At first consultation, 63% had an at-risk health profile, with an average BMI of 27kg/m2 (overweight), average waist circumference of 102.6cm (high) and insufficient PA, with only 15% meeting both PA and RT guidelines (150 mins moderate-to-vigorous PA and 2 RT sessions weekly). Average reported fatigue was moderate (4/10 on SIFIR). Stage of change (TTM) showed 44% of PCS at pre-contemplation, contemplation or preparation stages and 54% at action or maintenance stages. Self-reported barriers to exercise included lack of time (24%), laziness (19.7%) and fatigue (18%), while exercising with a spouse/friend/team was the main facilitator to exercise (16.9%). **Conclusions:** The baseline PA and RT levels of EP clinic PCS is similar to population norms in that the majority of PCS are not meeting current guidelines. Our results demonstrate that the implementation of an EP clinic is feasible. Future follow-up of this cohort will evaluate whether the program creates sustainable PA behaviour change in PCS.

# ABSTRACT
# WITHDRAWN

**172**                    **Poster Session (Board #L4), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

**Mind-body medicine epigenetic technique (MET), cognitive flexibility, and brain-derived neurotrophic factor (BDNF) gene expression.**

*Francisco Ventura Munoz; Pomona Valley Hospital Medical Center, Pomona, CA*

**Background:** This is a pilot study update on the potential of MET to up-regulate BDNF gene expression with breast cancer patients assessed with high cognitive flexibility. MET is a technique developed to manage chronic stress and anxiety. BDNF gene expression is associated with learning and memory. Cognitively flexibility is defined as the ability to focus and sustain attention. It also implies vivid imagination and holistic thinking. **Methods:** The selection process for the study participants was nonrandom. The following was the eligibility criteria. 1. Inclusion Criteria: Breast Cancer, Stages II, III 2. Exclusion Criteria: Cognitively impaired, weak or ill. The study utilized two groups. Each group was assigned two research participants. Group One received one session of MET. Group Two received two sessions of MET. Each MET session was approximately 25-35 minutes in duration. Blood samples were taken at baseline and post-MET sessions to provide evidence in gene expression changes. For Group Two, the post-MET session blood draw was done 7 days after baseline. 1. Primary Endpoint: To determine whether MET can up-regulate BDNF gene expression. 2. Secondary Endpoint:To determine whether there is a correlation between up-regulated BDNF gene expression and cognitive flexibility. The blood samples were sent to genomics labs at the Children's Hospital of Los Angeles and the University of Nevada Las Vegas for mRNA extraction and microarray analysis. The gene expression was measured by DNA microarray results using the "PrimeView gene chip" and "Partek Genomics Suite" statistical software. **Results:** One participant from Group 1 evidenced a biologically significant up-regulation of BDNF gene expression. This participant was assessed with high cognitive flexibility. One major limitation of these findings is the statistical insignificance of the results due to the small number of participants. **Conclusions:** This pilot study evidenced the up-regulation of BDNF gene expression potentially due to MET and provided evidence for the potential correlation of BDNF gene expression and cognitive flexibility. This study also provided a foundation for a larger study with more participants.

**173**     **Poster Session (Board #L5), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

## A prospective study on contraceptives used by reproductive-aged patients with breast cancer and the assessment of information.

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**Background:** For reproductive-aged breast cancer (BC) patients, contraception is needed during and after treatment. Few data are available concerning the methods used in the real life and the comprehension of patients. The main objective of our study was to describe the contraceptive practice and to identify the need of information for these patients. **Methods:** We conducted a survey in young BC patients treated at the National Institute of Oncology Rabat-Morocco. We analyzed the contraceptive methods used. Then, we assessed the level of information and counseling about contraception for this population. The SPSS 10.0 software was used for statistical analysis. **Results:** 72 patients respond to the survey. The mean age was 41.4 ± 6.3 years. 79.2% had localized disease. 97.2 % were under treatment. The sexual activity was maintained in 69.4%. The contraceptive methods used before the diagnosis and after the announcement are summarized in the Table. 52 pts were informed that the hormonal contraception were not recommended. 86.5% had this information from doctors. 67.3% were informed at the moment of announcement of diagnosis, 17.6% at the consultation of surgery, 29.4% before starting chemotherapy, 35.3% during chemotherapy and 17.6% at the end of treatment. After information about the contraceptive methods, 50 % used a masculine condom, 15.7% had a copper IUD, 18.6% used external ejaculation, 14.3% on patient had a tubal ligation and 14.3% didn't use a contraception method. 66% patients of patients had not asked about contraceptive methods. The reasons: abstinence: 31.3%, the disease is more important than the contraception: 14.6%. **Conclusions:** Our study found that there is a lack of information concerning contraception for young BC patients. A contraceptive counseling is highly needed to decrease the risk of pregnancy during treatment.

| | % patients used | % patients didn't use | For patients using contraception, which methods? | | | |
|---|---|---|---|---|---|---|
| **Contraception before diagnosis of BC** | 98.2% | 1.8% | 93% oral contraception | 5.6% intrauterine system | 1.4% masculine condom | |
| **Contraception after announcement diagnosis of BC** | 75% | 25% | 24.1% oral contraception | 18.4% intrauterine system | 55.6% barrier method | 1.9% tubal ligation |

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## Patient and family caregiver perceptions of a cancer-related in-home Reiki experience.

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**Background:** Complementary care modalities are needed for residential patients and family caregivers, in addition to traditional cancer treatments, to effectively alleviate associated symptoms. Reiki is one of the biofield energy modalities which is generally known to provide non-invasive, non-pharmacological, and beneficial relaxation. It has been commonly practiced to cancer patients in clinical and cancer support facilities. However, little is known about providing Reiki at home especially by informal caregivers. This study aims to describe and understand the perceptions of an in-home Reiki practice as experienced by patients with cancer and their family caregivers. **Research Question:** What are the perceptions of patients and caregivers of their experiences with an in-home Reiki practice? **Methods:** A descriptive phenomenological approach (Husserl) was used to explore the perceptions of cancer patients and family caregivers of an in-home Reiki practice through narratives of six dyads of participants; six patients with active cancer and six family caregivers were interviewed. Participants were recruited at three sites in Northeast Ohio. Participants' narratives were analysed according to Colaizzi's thematic analysis method. Bracketing, peer debriefing, and external audits were performed to enhance the trustworthiness of findings. **Results:** Seven major themes were identified: 1) exchange of emotional energies, 2) sensory experiences of energy exchange, 3) physical symptom relief, 4) detachment from stressful circumstances, 5) restoration of spiritual wellbeing, 6) recognition of a valued technique, and 7) lifestyle accommodation. **Conclusions:** Study participants perceived that in-home Reiki was a beneficial self-care practice that improved the health of patients with cancer. An understanding of patient and caregiver perceptions of Reiki practice in home settings may lead to the development of stand practice and guidelines for a successful patient-caregiver intervention, suitable for a daily schedule or lifestyle. Further study is needed to understand the process underlying in-home Reiki in connection with health outcomes related to cancer.

**175**　　　　　　　　**Poster Session (Board #L7), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

**Magnesium oxide supplements for the treatment of post-chemotherapy sleep disturbance.**

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**Background:** While every cancer patient suffers from anxiety and sleep disturbance during cancer treatment, many physicians do not recognize that these problems can continue long after treatment has ended. Many cancer patients feel increased anxiety immediately after treatment ends when they find themselves "on their own," without the protection of the medical armamentarium. The fear of recurrence, uncertainty about the future, a sense of vulnerability, awareness of mortality, and grief for the loss of a disease-free life all contribute to anxiety and sleep disturbance long term. Magnesium has been used for sleep induction and relaxation for centuries. The primary mechanism by which sleep is enhanced is by muscle relaxation. Magnesium induces muscle relaxation by preventing calcium from binding to troponin, parvalbumin, myosin, and calmodulin, thereby blocking muscle contraction. High levels of free magnesium competitively bind these proteins, and the slow dissociation of bound magnesium provides prolonged relaxation. It is for this reason that magnesium has a long history of use as a tocolytic in labor, as an adjunct to asthma treatment, and as a powerful laxative. **Methods:** 23 patients in a primary care practice reported continued anxiety and difficulty with sleep initiation following chemotherapy and/or radiation for various forms of cancer. Rather than use SSRIs, benzodiazepines, or sleep medications, all patients were started on an over the counter 1,000 mg magnesium oxide supplement, taken 1 hour before bedtime for 2 weeks. **Results:** Four patients dropped out before the end of the study period due to magnesium-induced diarrhea. 19 patients completed the 2-week study. Of these, 14 reported a noticeable reduction of sleep latency and an improvement in sleep quality. 11 also reported a subjective sense of reduced anxiety overall. 5 reported an improvement in nocturnal leg cramps, which had been interfering with sleep quality. **Conclusions:** Overall, magnesium proved to be a well-tolerated treatment for sleep disturbance and anxiety in the majority of the patients studied.

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## Growing Healing Touch as supportive cancer care in western New York.

*Suzanne M Hess, Lynda M. Beaupin; Roswell Park Cancer Institute, Buffalo, NY*

**Background:** Healing Touch (HT) is a specific energy medicine modality that incorporates several techniques to balance the human energy field to help promote healing. It is a safe and non-invasive therapy that complements traditional, standard care and is recognized by NIH's National Center for Complementary and Integrative Health. HT was first introduced to cancer survivors at our NCI-designated Comprehensive Cancer Center in 2013. We demonstrate HT is well-received and easy to integrate into traditional cancer care. **Methods:** A Certified Healing Touch Practitioner taught pediatric survivors and families HT techniques, as well as trained staff and volunteers to participate in the pilot program and to offer HT sessions throughout the year. **Results:** See Table. Qualitative analysis of participant's feedback indicate benefits in the following themes: 1. Physical Symptom Relief 2. Emotional Issue Relief 3. Spiritual/Grief Support 4. Recommendation to Other Patients. **Conclusions:** Healing Touch is an energy medicine modality that is easy to teach, simple to integrate into routine cancer care, and beneficial for caregivers and survivors alike.

| Year | Healing Touch | Outcomes |
|------|---------------|----------|
| **2012** | HT Level I techniques taught to hospital volunteers/staff | 5 volunteers<br>3 hospital staff |
| **2013** | 8-week pilot program to teach Pediatric Caregivers Level I techniques | • 50% attended all sessions<br>• Feedback surveys indicate: |
| | 30 participants | - Training duration was adequate |
| | • 7 pediatric/adolescent survivors, 19 parents/caregivers, 4 siblings<br>• 8 2-hour sessions | - Expectations were met<br>- Would use HT for their children |
| **2014** | Collaboration with Hospice and Palliative Care Center of Western New York | Trained volunteers Level I techniques |
| **2014-2016** | Healing Touch for Cancer Survivors and Caregivers | 372 sessions given to 115 cancer patients/survivors/caregivers |
| | • 30 minute sessions with a trained volunteer offered 2x/month | -Pre-/Post-Assessment on overall feeling (1 – bad, 10 – awesome) indicate 96% of participants went up by at least 1 point, average by 4 |
| **2015 +** | Research pursuits<br>Integration to Patient Care<br>Workshops/Retreats | Role of HT in Gamma Knife Radiosurgery?<br>Healing Touch in Chemo-Infusion Clinics<br>Annual patient retreats, various lectures to students, nurses, cancer survivors and caregivers |

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## Creating an integrative survivorship program within a conventional medical culture within a lean economic environment.

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**Background:** The Institute of Medicine report, *From Cancer Patient to Cancer Survivor: Lost in Transition* (2005) identified gaps in services for cancer patients upon completion of their initial phase of treatment. In response to these needs, the Commission on Cancer (CoC) (2015) defined survivorship as an official phase of treatment along the cancer care continuum. This case study examined the process of developing an integrative survivorship program that introduces complementary health approaches within a conventional oncology setting using limited financial resources. **Methods:** A case study design was applied to examine using complementary health approaches as the foundation of a newly implemented cancer survivorship program. A regional CoC accredited community was the research site. Data was collected from: empirical literature, a self-report inventory completed by participants, and archival data and was interpreted using the logic model framework. **Results:** Findings revealed that using a survivorship model with complementary health approaches as its foundation within a conventional cancer treatment facility resulted in positive outcomes for cancer survivors. Seven core concepts were identified as significant to the process of developing an integrative program. Findings also showed that using a volunteer-staffed program was an effective implementation plan within a lean economic environment. Additionally, this case demonstrated that complementary components resulted in self-reported improvements among cancer survivors in mood, pain, social connectedness, stress, fatigue, and coping capacity. **Conclusions:** Within this case study, there were seven elements significant to the process of successfully developing and implementing an integrative survivorship program within a conventional medical cancer setting. A cancer survivorship program that integrates complementary health approaches within a conventional cancer treatment facility appears efficacious in assisting cancer survivors in addressing long-term and late-onset side effects of cancer treatment. Using a volunteer-staffed program model was effective for implementing the program within a lean economic environment.

**178**            **Poster Session (Board #L11), Fri, 12:15 PM-1:45 PM and 5:15 PM-6:15 PM**

**Complementary and alternative medicine (CAM) use among patients with cancer undergoing palliative care: A pilot study of a single institution in Poland.**

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**Background:** Real life observations suggest CAM is frequently used by cancer patients. The profound knowledge of CAM use details is crucial for both efficacy and safety of anticancer and supportive therapy. **Methods:** Semi-structured pilot questionnaire about details of CAM use was presented to all 202 consecutive patients of Palliative Care Outpatient Clinic, E. Dutkiewicz SAC Hospice, Gdańsk, Poland (April-22 and September-30/2016). After excluding 112 patients (no-responders group = N-RES) due to low performance status (N = 64), lack of written agreement (n = 10), diagnosis of non-malignant disease (N = 26), others (N = 12), the final analysis included 90 patients (female: 72,0%, median age: 63,5, range: 24-94 yrs) with advanced cancer (responders = RES). Demographic and clinical data were collected at the same time, then statistically related to CAM use details. **Results:** RES patients were significantly younger (p = 0,0045) and in better performance status (p < 0,05) as compared to N-RES group (no difference with regard to gender, education level, primary cancer location, duration of malignant disease, marital status). Since the primary cancer diagnosis, CAM was used by 56 (62,2%) RES patients and mostly included vitamin/mineral formulations (36,7%), herbs (32,2%), alternative nutrition (24,4%), music therapy (11,1%) and Chinese medicine (5,6%). The main reasons for CAM use were: to enhance the effects of anticancer therapy (48,9%), to treat its side-effects (15,6%) or the lack of conventional therapy possibilities (5,6%). CAM was used more frequently by patients who experienced weight loss since diagnosis of cancer (p = 0,0028) or those who used CAM methods to control symptoms not related to cancer (p = 0,0109); age, gender, education level, marital status, religious practices frequency were not significantly related to CAM use. **Conclusions:** 1) CAM use is common among patients with advanced cancer under palliative care; 2) some factors might be in relation to higher CAM use (weight loss, CAM use to control symptoms not related to cancer); 3) further research is required to investigate better different aspects of CAM use such as safety, efficacy and outcomes in this population.

**179**            **Poster Session (Board #L12), Fri, 12:15 PM-1:45 PM and
5:15 PM-6:15 PM**

## Awareness among patients with cancer of the harms of continued smoking.

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**Background:** Smoking cessation is becoming an integral part of cancer survivorship. To help improve survivorship education, clinicians need an understanding of patient knowledge of the harms of continued smoking. **Methods:** Patients with various cancer subtypes were surveyed with respect to self-awareness of the harms of continued smoking on cancer outcomes. Multivariable logistic regression models assessed factors associated with the level of awareness. **Results:** Among 985 patients, 23% smoked at diagnosis; 34% quit $> 1$ year prior to diagnosis; 25% had lung, 30% had head and neck cancers; 77% received curative therapy. Many patients reported being unaware that smoking can negatively impact cancer surgery (65%), radiation (74%), chemo outcomes (64%), treatment efficacy (70%), cancer prognosis (54%) and second primary development (52%). Among all patients, those smoking at diagnosis were significantly more likely to be unaware of radiation (aOR = 1.73, 95% CI [1.16-2.57]) and chemo (aOR = 2.10 [1.17-3.79]) toxicities, cancer prognosis (aOR = 1.63 [1.16-2.29]) and second primary risk (aOR = 1.61 [1.14-2.26]). Those with poorer health status were more likely unaware of effects on prognosis (aOR = 1.56 [1.18-2.08]) and second primaries (aOR = 1.54 [1.14-2.08]). Patients with non-tobacco related cancers (non-TRCs) were more likely unaware smoking impacts cancer surgery (aOR = 1.45 [1.04-2.04]) and radiation (aOR = 1.37 [1.01-1.85]). Among smokers at diagnosis, those with non-TRCs (aOR = 4.00 [1.45-11.11]) were more likely unaware smoking can impact chemo outcomes. Awareness was not associated with stage, second-hand smoke exposure, cessation or interest in a smoking cessation program (SCP), but was associated with patients believing that a SCP would be beneficial to their health (aORs = 2.33-4.35, P $<$ 0.03). Among smokers at diagnosis, believing that a SCP is beneficial (51%) was associated with both interest in an in-patient (aOR = 4.65 [2.15-10.03]) and ambulatory (aOR = 4.08 [2.14-7.79]) SCP. **Conclusions:** Many cancer patients were unaware of the harms of continued smoking; mainly smokers at diagnosis and those with non-TRCs. Patient education should focus on emphasizing awareness, which may help improve patient interest in smoking cessation.