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Preliminary Findings from an eHealth Intervention to Increase Physical Activity Among Young Adult Cancer Survivors.

Leah Meuter[1], Ashlen Kuntz[1], Cami Christopher[1], Suzanne Phelan[1], Siobhan Phillips[2], Sarah Keadle[1]. *[1]California Polytechnic State University, San Luis Obispo, CA. [2]Northwestern Medical School, Chicago, IL.* (Sponsor: Dr. Todd Hagobian, FACSM)

(No relevant relationships reported)

PURPOSE: This pilot study aims to determine the feasibility and acceptability of a remotely-delivered eHealth intervention that links physical activity and charity-based incentives to motivate young adult cancer survivors to initiate and maintain physical activity (PA). **METHODS**: Inactive cancer survivors (diagnosed between age 18-39y) were recruited through hospital support groups and online forums across the western United States. Screening and informed consent were done online; activity was measured via activPAL for 7-days at baseline and again at 12-weeks. Participants were randomized into either a PA only or Physical Activity+Charity Incentive group. Participants in the PA only group received a Fitbit One, personalized step goals, and weekly behavioral change content via email. PA+Incentive participants received the PA intervention plus donations to a cancer charity of their choice if daily step goals were attained. The primary aim was to evaluate feasibility and acceptability and the primary outcome was 12-week between-group changes in steps per day as measured by the activPAL. **RESULTS**: Seventy-six participants were screened; of those, 54 (71%) were eligible and provided informed consent and 51 (94%) completed the baseline assessments and were randomized. Those randomized were 88% female, 54% with prior breast cancer, 56.9% Non-Hispanic White; and had a mean age of 36.8 years. Of those eligible to date to complete the 12-wk measure (N= 47), retention was high for the PA only (22/25) and PA +Charity (23/26) groups. The majority of participants reported they were "satisfied or very satisfied" with the overall intervention experience. There was some evidence that the PA + Incentive group was more satisfied with the overall experience as a study subject compared to the PA only group (45% vs 30% reporting "very satisfied"). This also holds true for the level of contact with staff (27% vs 15%) and content of emails (23% vs 10%). Some participants (23%) wanted more contact with study staff or other participants. **CONCLUSIONS**: These preliminary findings show that a mail-based intervention among young adult cancer survivors is feasible and acceptable to participants. The next step will be to evaluate if there was a significant change in daily steps as a result of the intervention. Support by Frost Fund and Cal Poly RSCA.

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Higher Perceived Breast Cancer Risk is Associated with Less Aerobic Physical Activity in Women

Shreya Desai, Keana Asadifar, Umaima Memon, Daphne C. Hernandez, Lorraine R. Reitzel, Rosenda Murillo. *The University of Houston, Houston, TX.*
Email: sdesai11@uh.edu

(No relevant relationships reported)

PURPOSE: To examine the association between perceived breast cancer risk and aerobic physical activity among women.
METHODS: We used cross-sectional data on women aged ≥18 years who participated in the 2015 National Health Interview Survey (n=17,967). Participants were asked to self-report whether they perceived themselves at less than average risk (ref), average risk, or higher than average risk for breast cancer. Aerobic physical activity was measured based on self-reported minutes of moderate-to-vigorous aerobic physical activity engaged in per week, then categorized into none (ref), some activity, and meeting the aerobic activity recommendation. Multinomial logistic regression models were fit, accounting for the complex survey design, to estimate associations between perceived risk of breast cancer with aerobic physical activity. Models were adjusted for age, education, race/ethnicity, and insurance.
RESULTS: In adjusted models, compared with women who perceived themselves at low risk for breast cancer, those perceiving themselves at higher than average risk had 14% lower odds to meet the aerobic activity guideline, relative to no activity (Odds Ratio [OR]: 0.86; 95% Confidence Interval [CI]: 0.76-0.97). Similarly, compared with women who perceived themselves at low risk for breast cancer, those perceiving themselves at average risk for breast cancer had 23% lower odds to meet the aerobic activity guideline (OR 0.77, 95% CI 0.65-0.91).
CONCLUSIONS:Among women, higher perceived breast cancer risk was associated with a lower likelihood of engaging in aerobic physical activity. Since greater physical activity can reduce the risk of breast cancer, future studies should also use longitudinal designs to determine if increasing physical activity decreases perceived breast cancer risk. Results suggest a possible role for health promotion interventions linking perceived breast cancer risk with physical activity. Supported by NIH P20CA221697-02, P20CA221696-02, and P20CA221697-01S1.

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Effects Of Resistance Training On Muscle Strength Of Breast Cancer Survivors

Wanderson Santos[1], Gabriel Siqueira[1], Paulo Gentil[1], Claudio Lira[1], Mário Campos[1], João Mota[1], Raquel Schincaglia[1], Claudio Battaglini, FACSM[2], Carlos Vieira[1]. *[1]Federal University of Goias, Goiânia, Brazil. [2]University of North Carolina at Chapel Hill, Chapel Hill, NC.*
Email: wanderson.nilo@gmail.com

(No relevant relationships reported)

PURPOSE: Examine the effects of highly supervised resistance training (RT) with low weekly frequency on muscle performance in women breast cancer survivors (BCS). **METHODS:** Seven BCS (55.85 ± 3.62 years old, 68.48 ± 11.21 kg) undergoing hormonal therapy (HT) (tamoxifen® or anastrozole), with no RT experience participated in the study. The BCS performed a full body RT protocol once a week for 8 weeks, followed by a resting period of 4 weeks and another 8 weeks of RT, totaling twenty weeks of the training protocol. The RT volume consisted of 3 sets of 8 to 12 repetitions until concentric volitional failure, performed on free weight and machines at 2 seconds of eccentric movement and 1 second of concentric movement, with 2 min of rest between sets on the following exercises: leg press (LP), stiff-legged deadlift, bench press (BP), supine lat pull down or seated cable row, and sit-up. Each BCS was individually supervised by trained physical education teachers. Muscle strength (MS) was assessed by the 10RM-test for the BP and LP. The assessments occurred pre-training (pre), post-training initial 8 weeks of training (post8), after 4 weeks of rest on week 12 (post12), and post-training second 8 weeks of training on week 20 (post20). Descriptive analyses are presented as mean and standard deviation. A repeated measurement ANOVA with the Bonferroni post hoc tests was used to examine differences between MS changes. **RESULTS**: MS was improved on the BP from pre to post8 (16.57 ± 2.22 kg, 21.71 ± 2.13 kg, $p < 0.01$), pre to post12 (16.57 ± 2.22 kg, 20.14 ± 1.67 kg, $p = 0.01$), and from pre to post20 (23.71 ± 2.13 kg, $p < 0.0001$) and on the LP from pre to post8 (79.28 ± 27.45 kg, 116.42 ± 33.87 kg, $p < 0.01$), pre to post12 (79.28 ± 27.45 kg, 108.57 ± 34.24 kg, $p = 0.04$), and from pre to post20 (79.28 ± 27.45 kg, 135.00 ± 37.19 kg, $p < 0.01$). In addition, there was no significant difference during the rest period for upper and lower body strength ($p=0.25$ and $p=0.99$, respectively). **CONCLUSION**: It appears that weekly session of RT with individual supervision promotes gains in MS in women BCS undergoing HT. Furthermore, even with a rest period of 4 weeks from RT, MS in these women was maintained. Therefore, future studies examining the effects of RT on MS in women BCS should explore one day a week of RT protocols to confirm or refute the results of this promising new approach.

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Effect of Exercise Therapy During Treatment for Gynecological Cancer: A Systematic Review and Meta-Analysis

Alice Iannaccone[1], Cristina Cortis[1], Elisabeth Edvardsen[2], Giovanni Capelli[1]. *[1]University of Cassino and Lazio Meridionale, Cassino, Italy. [2]Norwegian School of Sport Sciences, Oslo, Norway.* (Sponsor: Carl Foster, FACSM)
Email: alice.iannaccone@unicas.it

(No relevant relationships reported)

Side effects of gynecological cancer treatments (GCT), such as cancer related fatigue, physical pain, lower limb lymphedema, induced menopause and sexual dysfunction, negatively affect the patients' Quality of Life (QoL). **PURPOSE:** To evaluate the effect of exercise therapy in randomized controlled trials (RCTs) on QoL in women during GCT. Secondary outcomes were the effects on body composition (BC), training modality, safety and physical activity (PA) behavior. **METHODS:** A systematic search in PubMed, Cochrane, EMBASE and SPORTDiscus was carried out to identify exercise training RCTs during GCT. Primary endpoint was the change in QoL from baseline (PRE) to after (POST) exercise intervention. Exclusion criteria was investigations with participants' mean age <18years, not written in English and not published in peer-review journals. Meta-analysis of Standardized Mean Differences (SMD) and 95% Confidence Interval (95%CI) were performed. **RESULTS:** Seven RCTs were selected, including a total of 112 and 105 participants in the exercise therapy and the control group, respectively. Four studies underwent unsupervised, home-based (HB) exercise; one study received instructions for unsupervised HB training (walking and strength exercises); one study received a comprehensive care program (group education and self-help group support, relaxation and HB aerobic and strength exercises); one study underwent pelvic floor rehabilitation training supervised by a physiotherapist and instructions for HB exercise. After the exercise therapy an increase in PA has been reported for all included studies (SMD=0.56, 95%CI: 0.38, 0.74). Exercise therapy did not show any significant differences in waist circumference (PRE:65.5±33.1cm; POST:64.9±33.6cm; SMD=-0.10, 95%CI: -0.78, 0.59), body mass (PRE: 105.6±7.4kg; POST:102±7.8kg; SMD=-0.09, 95%CI: -0.67, 0.50) or BMI (PRE:29.5±8.3kg/m^{-2}; POST:30±8.2 kg/m^{-2}; SMD=0.01, 95%CI: -0.67, 0.70),

compared to the control groups. No adverse events were reported during the exercise intervention. **CONCLUSION:** Exercise therapy during GCT showed improvements in PA and QoL. However, exercise therapy seems safe during GCT. Further research is needed to evaluate effect of supervised exercise interventions on cardiorespiratory fitness, type, frequency and training intensity.

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Factors Affecting the Change in Quality of Life in Participants of a Cancer Exercise Program

Emanuel Schembri[1], Friederike Rosenberger[2], Karen Steindorf[3], Joachim Wiskemann, FACSM[2]. *[1]University Hospital Heidelberg, National Center for Tumor Diseases (NCT) Heidelberg and Heidelberg University, Institute of Sports and Sports Sciences, Heidelberg, Germany. [2]University Hospital Heidelberg and National Center for Tumor Diseases (NCT) Heidelberg, Heidelberg, Germany. [3]German Cancer Research Center (DKFZ) and National Center for Tumor Diseases (NCT) Heidelberg, Heidelberg, Germany.* (Sponsor: Joachim Wiskemann, FACSM)
Email: schembri.emanuel@gmail.com
(No relevant relationships reported)

Purpose: Anti-cancer treatment causes numerous cancer related symptoms (CRS) which may influence quality of life (QOL). The purpose of this analysis was to determine the relationship between having CRS and the magnitude of the change in QOL in cancer patients participating three to four months in various exercise classes at a comprehensive cancer center.
Methods: Data of 779 patients who participated between 2012 and 2017 in exercise classes at the National Center for Tumor Diseases (NCT) Heidelberg, Germany, were examined. Baseline characteristics assessed were anthropometric data, cancer diagnosis, peak power output (PPO) and, maximum peak oxygen uptake (VO_{2peak}) in a cycle ergometer test as well as CRS by a self-developed anamnesis questionnaire. QOL was assessed at the start of the exercise program (t0) and after three to four months (t1) using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-30, subscale global health status/QOL). CRS included fatigue, lymphedema, peripheral neuropathy, weight loss, pain, restricted mobility, and negative emotions (distress, anxiety, and depression). A multiple regression analysis was performed to determine the relationship between CRS and the change of QOL (ΔQOL) from t0 to t1.
Results: Participants' (71% female, 29% male, n=779) mean age was 56±12 years (16-88 years, n=772), and body-mass-index was 25±5 kg/m² (15-57 kg/m², n=755). Most frequent diagnoses were breast cancer (44%), colorectal cancer (7%), and gynaecologic tumor diseases (6%) (n=779). PPO averaged 1,7±0,6 W/kg (0,3-3,5 W/kg, n=273) and VO_{2peak} averaged 25±5 ml/min/kg (6-47 ml/min/kg, n=273). ΔQOL was 1.75±16.02 (-50.0-50.0, n=105). Multiple regression analysis revealed that CRS explained 16% of the variance in ΔQOL (R^2=.158, F(7,97)=2.606, p<.05) (p=.272, n=105). Restricted mobility (β=.233, p<.05) and weight loss (β=.216, p<.05) significantly affected ΔQOL.
Conclusion: Overall, QOL increased through exercise participation. Results indicated that participants who reported to have restricted mobility and weight loss at baseline tended to benefit more from exercise in terms of QOL. The results of this study can be used to understand how to modify the daily exercise sessions and focus on specific CRS to further improve QOL in cancer patients.

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Home Exercise Program with Weekly Phone Calls Impacts Quality of Life in Cancer Survivors

Jill E. Mayer, Kayleigh Plumeau. *Ithaca College, Ithaca, NY.*
Email: jmayer@ithaca.edu
(No relevant relationships reported)

Studies have proven exercise as an effective intervention for cancer survivors to improve quality of life (QOL). Less research has focused on the impact in a home setting, specifically for those in early phases of recovery. Limited evidence exists on techniques that can improve compliance to carry out home exercise programs (HEP). **PURPOSE**: To determine the impact of weekly phone calls on QOL and adherence to an individualized HEP while simultaneously identifying motivators and barriers to completion. **METHODS**: This study was a case control of a heterogeneous sample of 16 participants with various cancer types in active treatment or less than 90 days since treatment. At physical therapy (PT) initial evaluation and following an 8 week program, participants completed the European Organization of Research and Treatment of Cancer QoL Questionnaire-Cancer 30 (EORTC). Participants were allocated based on blocked randomization and provided with an individualized HEP including strength and aerobic exercise. They were instructed to perform at a frequency consistent with the American College of Sports Medicine (ACSM) guidelines and maintain activity logs. The intervention group received weekly phone calls by a student PT. The control group did not receive communication. Wilcoxon signed-rank, Mann-Whitney U, and thematic analysis were used to analyze data. **RESULTS**: There was no difference between groups for HEP completion and 20% of participants across groups achieved ACSM guidelines. No difference was found between groups for the EORTC QoL (p=.199). The intervention group demonstrated significant improvements in the EORTC QoL (p=.046) and physical function (p=0.017). Motivators found in the treatment group included phone calls, decreased fatigue, feeling better with exercise, self-motivation, caregiver support and confidence. Barriers included fatigue, medical complications, weather, lack of time, pain, social engagements, nausea and psychological well-being. Only one barrier was determined and seen in the control group; pain/injury. **CONCLUSIONS**: Although phone calls did not impact compliance in this small study, they may be an effective strategy to help cancer survivors identify weekly motivators and barriers to completing a HEP and create adequate support to improve QOL.

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Personal Training vs. Group-based Exercise Prescription Compliance In Breast Cancer Survivors

Mary C. Hidde[1], Kelli A. LeBreton[1], Kelley R. Covington[1], Catherine M. Jankowski, FACSM[2], Heather J. Leach[1]. *[1]Colorado State University, Fort Collins, CO. [2]University of Colorado, Aurora, CO.* (Sponsor: Catherine Jankowski, FACSM)
(No relevant relationships reported)

PURPOSE*:* Exercise interventions can improve fitness and quality of life among breast cancer survivors. The magnitude of these effects may be dependent on compliance to the intended exercise prescription (ExRx), but few studies in cancer survivors have reported this information. This study examined breast cancer survivors' ExRx compliance during a personal training (PT) or group-based exercise (GBE) intervention.
METHODS*:* Women (*N*=26) with stage I-II breast cancer who had completed chemotherapy and/or radiation treatment within the previous year were randomly assigned to PT or GBE for 8 weeks. All participants received supervised exercise twice per week for 60 minutes a session. Participants were compliant to aerobic ExRx if they completed 20-30 minutes at 50-80% of heart rate reserve. Participants were compliant to upper and lower body resistance ExRx if they completed 2-3 sets of 8 repetitions within 50-80% of 1RM for chest and leg press. Compliance to aerobic, upper, and lower resistance ExRx was coded dichotomously (yes/no) for each session, then summed and divided by the number of sessions attended to calculate percent compliance. Independent t-tests examined differences in ExRx compliance between PT and GBE. Results are reported as mean±SD.
RESULTS: Participants were aged 52±8.5 years, and 13.4±5.1 months post diagnosis. Of the *N*=24 who completed the intervention, exercise session attendance was 15.8±0.5 (99%) in PT, and 13.4±1.0 (82%) in GBE out of 16 possible sessions (*p*=.000). Compliance for aerobic ExRx was 77.2±0.17% in PT, and 70.1±0.17% in GBE (*p*=.41). Compliance for upper body resistance ExRx was 76.0±0.37% in PT and 82.4±0.20% in GBE (*p*=.597). Compliance for lower body resistance exercise was 80.2±0.23% in PT and 87.9±0.21% in GBE (*p*=.40).
CONCLUSION: Exercise session attendance was higher in PT. Overall ExRx compliance was >70% for aerobic, >80% for resistance, and similar in PT and GBE. With growing support for establishing exercise programs for cancer survivors, it is important to determine sustainable and scalable delivery modalities. GBE may be more resource conscientious than PT, and this study suggests GBE can achieve comparable ExRx compliance to PT. Future exercise intervention studies in breast cancer survivors should examine how ExRx compliance affects health and/or fitness outcomes.

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Higher Perceived Colorectal Cancer Risk is Associated with Greater Aerobic Physical Activity in Adults

Rosenda Murillo, Keana Asadifar, Umaima Memon, Shreya Desai, Daphne C. Hernandez, Lorraine R. Reitzel. *University of Houston, Houston, TX.*
(No relevant relationships reported)

PURPOSE: To examine the association between perceived colorectal cancer risk and aerobic physical activity among US adults.
METHODS: We used cross-sectional 2015 National Health Interview Survey (NHIS) data on participants 18 years of age and older (n=16,711). Perceived colorectal cancer risk was assessed based on measures to which participants responded whether they considered themselves at less than average risk, average risk, or higher than average risk. Aerobic physical activity was measured based on self-reported minutes of moderate-to-vigorous aerobic activity per week, which were categorized into none (0 min/week), some aerobic physical activity (>0 min/week of activity but less than recommendation), and meeting the aerobic activity guideline (≥150 min of moderate-vigorous physical activity or ≥75 min of vigorous physical activity or 150 min of moderate physical activity/week). Multinomial logistic regression models that accounted for NHIS' complex survey design were used to estimate associations