



## RESEARCH UPDATES NOVEMBER 2014

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### FOR THE LATEST IN WORLDWIDE INTEGRATIVE CANCER CARE

**IN THIS ISSUE:** Carlson and colleagues find psychosocial interventions for stress reductions and emotional support maintains telomere length. Research on acupuncture treatment methods and their application in cancer symptom management is summarized in a review by Garcia et al. A review of literature on weight training for lymphedema by Paramanandam and Roberts find it to be safe and beneficial in improving limb strength and physical components of quality of life in women with or at risk of lymphedema. Cerezo and associates find positive psychology with breast cancer patients improved self-esteem, well-being, and happiness. Mustian et al found that 75 minutes of yoga, twice weekly for four weeks, improved sleep quality in cancer survivors. Into the Vault is a randomized control trial by Oldervoll et al, which finds physical exercise can be beneficial for patients from a palliative care setting with advanced cancer.

## MINDFULNESS AND SUPPORTIVE-EXPRESSIVE CANCER THERAPY

LE Carlson, Beattie, TL, et al.

### Mindfulness-based cancer recovery and supportive-expressive therapy maintain telomere length relative to controls in distressed breast cancer survivors.

*Cancer*. 2014 Nov 3.

**BACKGROUND:** Group psychosocial interventions including mindfulness-based cancer recovery (MBCR) and supportive-expressive group therapy (SET) can help breast cancer survivors decrease distress and influence cortisol levels. Although telomere length (TL) has been associated with breast cancer prognosis, the impact of these two interventions on TL has not been studied to date. **METHODS:** The objective of the current study was to compare the effects of MBCR and SET with a minimal intervention control condition (a 1-day stress management seminar) on TL in distressed breast cancer survivors in a randomized controlled trial. MBCR focused on training in mindfulness meditation and gentle Hatha yoga whereas SET focused on emotional expression and group support. The primary outcome measure was relative TL, the telomere/single-copy gene ratio, assessed before and after each intervention. Secondary outcomes were self-reported mood and stress symptoms. **RESULTS:** Eighty-eight distressed breast cancer survivors with a diagnosis of stage I to III cancer (using the American Joint Committee on Cancer (AJCC) TNM staging system) who had completed treatment at least 3 months prior participated. Using analyses of covariance on a per-protocol sample, there were no differences noted between the MBCR and SET groups with regard to the telomere/single-copy gene ratio, but a trend effect was observed between the combined intervention group and controls (F [1,84], 3.82; P = .054;  $\eta^2 = .043$ ); TL in the intervention group was maintained whereas it was found to decrease for control participants. There were no associations noted between changes in TL and changes in mood or stress scores over time. **CONCLUSIONS:** Psychosocial interventions providing stress reduction and emotional support resulted in trends toward TL maintenance in distressed breast cancer survivors, compared with decreases in usual care.

**INSPIREHEALTH'S INTERPRETATION:** In this newly published Canadian study, researchers from Calgary and Vancouver recruited women with stages I-III breast cancer who were experiencing significant emotional distress to study the effects of two psychosocial interventions on cellular mechanisms thought to be important in cancer development and progression. Eighty-eight women, average age 55 years old, who had completed breast cancer treatment (except for ongoing hormonal intervention) for a minimum of three months (average two years since treatment) were randomly assigned to either a mindfulness-

based cancer recovery (MBCR) intervention or a supportive-expressive group therapy (SET) intervention. A third control group participated in one 6-hour stress management seminar. Participants in the MBCR group attended 8 weekly 90 minute sessions that provided instruction on mindfulness, awareness of the present moment in a non-judgmental way, and gentle Hatha yoga. They were also given CDs for home meditation and participated in a 6-hour retreat between weeks 6 and 7. Women in the SET group met for 90 minutes weekly for 12 weeks in a program designed to encourage openness and emotional expression to facilitate healthier coping skills and communication. Blood was analyzed for telomere length before and after the interventions. Telomeres are protein-based molecules that protect the ends of chromosomes and provide stability to genes. Though not completely understood, telomere function is thought to be related to telomere length and shortened telomeres have been associated with several illness. Shorter telomere length (TL) has also been found to predict earlier mortality in breast cancer and some types of leukemia. TL may be susceptible to stress and so researchers wanted to study if changes in telomere length occurred following psychosocial interventions.

Results showed that both MCBR and SET maintained TL over the 3-month intervention period, while women in the control group showed a non-statistically significant trend toward shortened TL. Interestingly, both MCBR and SET groups showed similar findings with respect to TL despite the fact that MCBR participation resulted in the most benefit for stress and mood. In fact, changes in TL were not associated with changes in stress or mood scores perhaps suggesting that simply practicing mindfulness or emotional expression may provide physiological benefit even in the absence of subjective improvement.

The authors caution that their small study provides preliminary information only and further research needs to be done to ascertain whether these cellular changes are sustained over time and/or if they translate into meaningful clinical benefit. In the meantime, this provocative research suggests that psychosocial interventions may influence telomere length in breast cancer survivors, providing a mechanism for a mind-body connection.

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## ACUPUNCTURE

MK, Garcia, McQuade, et al.

### Acupuncture for symptom management in cancer care: An update.

*Oncology Current Reports*. 2014; 16 (418).

In a previous systematic review of the worldwide literature of randomized controlled trials (RCTs) involving needle insertion into acupuncture points for symptom management in cancer patients, we identified only one high-quality RCT that was deemed to have a low risk of bias. Medline, Embase, CINAHL, Cochrane (all databases), Scopus, and PubMed were searched from inception through December 2011 with no language limits applied. A total of 41 RCTs met all inclusion criteria and were rated. In the current review, we examined 18 trials published since our last report. The purpose of this update was to emphasize important recent findings and discuss how concerns such as blinding, separating non-specific placebo effects from specific needling effects, determining biologic mechanisms and dosing parameters, evaluating determinants of response such as expectation, controlling for sources of bias, and the lack of standardization in treatment and study methods may affect the interpretation of study results.

**INSPIREHEALTH'S INTERPRETATION:** Over the past five years, there has been a huge growth of research examining the effectiveness of acupuncture for treatment of cancer-related symptoms. This study reviewed the emerging research in the area, since the authors' previous review published in 2011. This review examined 18 trials and looked at the effects of acupuncture on seven symptoms. Studies in all of these areas showed effectiveness for acupuncture over sham acupuncture (where the needle retracts and doesn't actually insert through the skin), usual care, and waitlist control groups. Patients with joint pain reported a significant decrease in the severity of pain, with 58% of patients reporting that their pain was "much improved" or "very much improved" by the end of the trial.

Participants with peripheral neuropathy had a reduction in pain, numbness, and tingling within the first month of the trial when treated with acupuncture. One trial looking at cancer-related fatigue found significant reductions in overall fatigue, as well as physical and mental fatigue for those receiving acupuncture in comparison to a control group. Studies examining hot flashes showed a 46% decrease in hot flash symptoms with acupuncture treatments. Another trial showed a 52% reduction in hot flashes among those receiving acupuncture compared to only a 24% reduction in those receiving sham acupuncture. Lymphedema studies revealed nearly a 1cm reduction in arm circumference in women diagnosed with breast cancer related lymphedema. Radiation-induced xerostomia can affect those undergoing treatment for head and neck cancers. Multiple studies showed a decrease in the severity of radiation-induced xerostomia symptoms in comparison to sham acupuncture and oral care education. Patients receiving acupuncture versus sham acupuncture or usual care had less post-operative ileus (less time to defecate following surgery).

This paper does an excellent job at summarizing the current research related to acupuncture and cancer-related symptoms. While all of these results are encouraging, further trials with stronger research designs are needed to help to validate the findings. It is also interesting that some trials showed significant differences between acupuncture and sham acupuncture, whereas others did not. This could help to validate the use of acupressure on the same points for a smaller but similar effect than acupuncture. InspireHealth offers weekly group acupuncture sessions for those members currently undergoing chemotherapy or radiation treatments.

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## WEIGHT TRAINING AND LYMPHEDEMA

Paramanandam VS, D. Roberts.

### Weight training not harmful for women with breast cancer-related lymphedema: A systematic review.

*J Physiother.* 2014;60(3):136-43.

**QUESTION:** Is weight-training exercise intervention harmful to women with or at risk of breast cancer-related lymphedema? **DESIGN:** Systematic review with meta-analysis of randomised trials. **PARTICIPANTS:** Women with or at risk of breast cancer-related lymphedema. **INTERVENTION:** Progressive weight-training exercise. **OUTCOME MEASURES:** The primary outcomes were severity (volume difference) and incidence of arm lymphedema. Secondary outcomes included muscle strength of the upper and lower limbs, quality of life and body mass index. **RESULTS:** Eleven studies from eight trials involving 1091 women were included. Weight-training exercise of low to moderate intensity with relatively slow progression significantly improved the upper limb strength (SMD 0.93, 95% CI 0.73 to 1.12) and lower limb strength (SMD 0.75, 95% CI 0.47 to 1.04) without increasing the arm volume (SMD -0.09, 95% CI -0.23 to 0.05) or incidence of breast cancer-related lymphedema (RR 0.77, 95% CI 0.52 to 1.15). No significant effects were noted for body mass index (SMD -0.10, 95% -0.31 to 0.11). Some aspects of quality of life may improve with weight training. Participants in all trials used pressure garments and received supervision; no trials used high-intensity weight training. **CONCLUSIONS:** Weight training appears to be safe and beneficial in improving limb strength and physical components of quality of life in women with or at risk of lymphedema. Pressure garments, supervision and limiting the intensity of the weight training may each be important, but this could not be confirmed with this review.

**INSPIREHEALTH'S INTERPRETATION:** Breast cancer is one of the most prevalent cancers in women. Side effects from this cancer and its treatment can include lymphedema, a condition which can cause disruption of lymphatic flow and result in pain, increased risk of infection and swelling of the affected area amongst others. Some misconceptions of those suffering from lymphedema have included prevention of movement of the affected limb in order to reduce the risk of cancer spread. Exercise and physical activity have been associated with positive outcomes in women with breast cancer-related lymphedema within the scientific literature. More recently resistance training has been evaluated for its effectiveness in prevention and treatment of lymphedema. This review by Paramanandam investigated randomised control trials (RCTs) which evaluated the effectiveness of resistance training in women suffering from breast cancer related lymphedema. 11 RCTs were analyzed in which 1091 patients aged 49-57 participated in various resistance training routines, low to moderate intensity, over a varied time frame of at least 8 weeks.

Outcome measures of the intervention effect included comparison of operated on and contralateral limb volume differences as well as circumference variations (determined via scanning or a series of tape measurements). Secondary outcomes which were assessed (when included) were muscle strength of upper and lower body limbs, quality of life and body mass index. Results for weight training in reduction of breast cancer-related lymphedema indicated that although favorable when compared to control groups, weight training was not statistically significant in reducing the severity of lymphedema or the incidence of lymphedema. Other outcome measures showed statistically significant improvements in upper and lower body limb strength, body mass index, and quality of life when compared to control groups.

This review refutes the fallacy that resistance exercise may be harmful or exacerbate breast cancer-related lymphedema. Resistance exercise has been indicated to improve health related outcomes such as strength, body mass index and quality of life. Although not significant, results relating resistance exercise and lymphedema arm volume are favourable. As it has been established that resistance exercise is perfectly safe and somewhat effective for breast cancer patients, perhaps further study on moderate to vigorous supervised resistance training, with greater frequency over a longer period of time could possibly elicit greater and more significant outcomes on both lymphedema severity and incidence in breast cancer patients. InspireHealth offers supervised progressive resistance training within weekly exercise classes.

## PSYCHOLOGICAL INTERVENTION

V, Cerezo, Ortiz-Tallo, M, Cardenal, V, et al.

### Positive psychology group intervention for breast cancer patients: A randomised trial.

*Psychological Reports*. Aug 2014; 115(1): 44-64.

This study assessed the effects of a psychological group intervention based on positive psychology in women with breast cancer. 175 women were randomly assigned either to an experimental group, receiving the 14-session intervention (n = 87), or to a waitlist group (n = 88) that did not receive any type of intervention. For treatment, a group intervention was applied, based on improving psychological strengths and enhancing positive psychology-based styles of coping. Strength-related outcomes, self-esteem, well-being, and happiness were assessed before and after the intervention. The experimental group showed higher scores on all of the study variables after the intervention. Participants reported improved self-esteem, emotional intelligence-related abilities, resilience, and optimism, as well as positive affectivity, well-being, and happiness. The results show a beneficial effect of this psychological intervention based on positive psychology on female breast cancer patients' psychological health.

**INSPIREHEALTH'S INTERPRETATION:** Positive psychology studies the processes which are responsible for positive emotions and strength in humans. Previous research in this area has shown that positive mental states can improve longevity, quality of life and prognosis in chronic disease states, while also decreasing health care costs, as well as the number of handicaps a person has. For breast cancer patients, previous research has shown that structured groups (i.e. support and educational groups) can improve quality of life, adjustments to new situations, enhance coping strategies and self-efficacy and reduce emotional stress, which all lead to greater physical, psychological and social health. This study involved breast cancer patients aged 18 and older. Eligible participants were randomized to either the treatment or control group. Participants in the treatment group participated in two hour weekly sessions across 14 weeks. These were group sessions with a focus on positive psychology related coping strategies, the ability to better adjust to new contexts and situations, and enhance psychological strengths such as wellbeing, happiness, emotional intelligence, optimism, resilience, and self-esteem. Measures of these items were taken prior to the intervention (baseline) for both groups and following the 14 week intervention for the treatment group. Measures were also taken following 14 weeks for the control group, as they then participated in the same experimental intervention following data collection from the treatment group.

Results indicated that the treatment group was significantly higher on all variables measured following the 14 week intervention and in comparison to those in the control group. This study shows the influence that group support and educational sessions may have on outlook, emotions, and coping in breast cancer patients. A particular strength of the study is its use of the control group to replicate the results following the 14 week intervention with the treatment group. The control group who then participated in the study had the same results. InspireHealth offers support groups and clinical counselling to its members.

## YOGA AND SLEEP

KM, Mustian, Sprod LK, et al.

### Multicenter, randomized controlled trial of yoga for sleep quality among cancer survivors.

*J Clin Oncol*. 2013; 31(26):3233-41.

**PURPOSE:** 30% to 90% of cancer survivors report impaired sleep quality post-treatment, which can be severe enough to increase morbidity and mortality. Lifestyle interventions, such as exercise, are recommended in conjunction with drugs and cognitive behavioral therapy for the treatment of impaired sleep. Preliminary evidence indicates that yoga—a mind-body practice and form of exercise—may improve sleep among cancer survivors. The primary aim of this randomized, controlled clinical trial was to determine the efficacy of a standardized yoga intervention compared with standard care for improving global sleep quality (primary outcome) among post-treatment cancer survivors. **PATIENTS AND METHODS:** In all, 410 survivors suffering from moderate or greater sleep disruption between 2 and 24 months after surgery, chemotherapy, and/or radiation therapy were randomly assigned to standard care or standard care plus the 4-week yoga intervention. The yoga intervention used the Yoga for Cancer Survivors (YOCAS) program consisting of pranayama (breathing exercises), 16 gentle Hatha and restorative yoga asanas (postures), and meditation. Participants attended two 75-minute sessions per week. Sleep quality was assessed by using the Pittsburgh Sleep Quality Index and actigraphy pre- and post-intervention. **RESULTS:** In all, 410 survivors were accrued (96% female; mean age, 54 years; 75% had breast cancer). Yoga participants demonstrated greater improvements in global sleep quality and, secondarily, subjective sleep quality, daytime dysfunction, wake after sleep onset, sleep efficiency, and medication use at post-intervention (all  $P \leq .05$ ) compared with standard care participants. **CONCLUSION:** Yoga, specifically the YOCAS program, is a useful treatment for improving sleep quality and reducing sleep medication use among cancer survivors.

**INSPIREHEALTH'S INTERPRETATION:** This study investigated the effect of a 4-week gentle Hatha and restorative yoga program on sleep quality among cancer survivors. 410 participants with a confirmed diagnosis of cancer who completed treatment and were cleared of metastatic cancer were randomly assigned to either a standard care plus restorative Yoga for Cancer Survivors (YOCAS) program consisting of two 75-minute sessions per week or a standard care group (control). Outcome measures of sleep quality were assessed using the Pittsburgh Sleep Quality Index. Standard care was defined as follow-up care provided by the patients' oncologists. At the end of the intervention, the yoga group demonstrated improved global sleep quality and subjective sleep quality compared to the control group. Sleep medication was reduced with the yoga participants by 21% per week whereas the control group increased their sleep medication use by 5% per week.

Researchers found that patients who were awake for more than one hour in the middle of the night or who had very poor sleep efficiency had the greatest benefits from participating in the yoga program. Only the yoga participants showed improvements in daytime dysfunction, sleep duration, and sleep latency. Yoga improved sleep quality among 90% of cancer survivors and, interestingly, 100% would recommend yoga to other cancer survivors with sleep problems. InspireHealth offers 75 minute restorative yoga sessions to patients and support members twice per week.

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## INTO THE VAULT

LM, Oldervoll, JH, Loge, S, Lydersen et al.

### Physical exercise for cancer patients with advanced disease: A randomized controlled trial.

*Oncologist*. 2011;16(11):1649-57.

**BACKGROUND:** Physical exercise can improve cancer patients' functioning and reduce their symptom levels. A randomized, controlled trial was launched to test the hypothesis that physical exercise reduces fatigue and improves physical performance in cancer patients with advanced and incurable disease. **METHODS:** Cancer patients (n = 231) with a life expectancy  $\leq 2$  years were randomized to a physical exercise group (PEG, n = 121) or a control usual care group (UCG, n = 110). The PEG exercised under supervision 60 minutes twice a week for 8 weeks. Assessments were performed before and after the intervention. The primary outcome was physical fatigue (PF) measured by the Fatigue Questionnaire. Physical performance was a secondary outcome measured by the Shuttle Walk Test (SWT) and hand grip strength (HGS) test. Analyses were performed after multiple imputations for missing data. **FINDINGS:** 36% percent of the PEG were lost to follow-up compared with 23% of the UCG, primarily as a result of disease progression. Seventy-eight PEG and 85 UCG patients completed the intervention. Analyses showed no significant between-group effects in PF. However, clinically and statistically significant between-group effects were found for the SWT and HGS test. **INTERPRETATION:** Fatigue was not reduced but physical performance (SWT and HGS test) was significantly improved after 8 weeks of physical exercise. Physical exercise might therefore be a suitable approach for maintaining physical capacity in cancer patients with incurable and advanced disease.

**INSPIREHEALTHS INTERPRETATION:** The benefits of exercise throughout cancer treatment have been well documented. As research continues to grow, more avenues into exercise and cancer research are explored in order to determine appropriate action in given circumstances. Advanced cancer has been associated with increased pain, frailty, weight loss and reduced physical function. This study looked at the use of exercise as treatment for patients with advanced, incurable metastatic cancer with the aim of reducing fatigue and improving physical performance.

231 patients within palliative care units were initially recruited. Patients were then randomly assigned to two groups consisting of a usual care group (UCG) and a physical exercise group (PEG). The intervention consisted of two physical exercise sessions per week for 8 weeks, including a 10-15 minute warm up, followed circuit training (for 30 minutes) with 6 station exercises, with each exercise being performed for 2 minutes, with 1 minute of rest between each exercise. The final part of the exercise session concluded with stretching of muscle groups used within the session and then 5 minutes of relaxation to calm music.

Patients were assessed pre- and post- 8 weeks of exercise for body mass, height and exercise adherence. Patients also reported via questionnaire, physical, mental and total fatigue. Results of physical performance tests (sit to stand; 30 second test, grip strength, step length; step as far as possible forward and then return to initial stand and a shuttle walk test to measure how far and how fast patient could walk) were also recorded pre and post 8 week intervention. The Karnofsky score (a scaling which quantifies cancer patients general well-being, ability to self-care and physically function) was also considered before and after the intervention in UCG and PEG. 78 patients from the PEG and 85 from the UCG remained for follow up after the 8 week study intervention. Drop outs were due to: death, disease progression of cancer, or other disease and with drawl right before intervention due to disease progression or other reasoning.

Results showed no significant difference between groups for physical, mental of total fatigue. Clinically and statistically significant

improvements in physical performance tests were observed in the PEG group for all tests. Significance in body mass was observed between PEG and UCG with PEG increasing body mass. Researchers also noted that within the PEG there was no occurrence of exercise related minor or major events.

Advanced cancer exercise interventions are a relatively new area of research in exercise and cancer. Although exercise therapy should ideally occur at the point of diagnosis, it is important to establish whether exercise is safe and effective for those with advanced cancer and short life expectancy. This study does demonstrate that exercise for advanced cancer patients is safe and effective in helping to improve functional capacity and also quality of life. Consideration must be given to the type, frequency and intensity of exercise as this is very dependent on the advancement of the cancer which can be assessed with Karnofsky scoring of individuals.

**InspireHealth** provides patients with the knowledge, tools, and services to support their overall health during and after cancer treatment. Our medical doctors value conventional cancer treatments such as chemotherapy, radiation, and surgery. At the same time, they recognize the importance of supporting health, immune function, body, mind, and spirit.

InspireHealth's programs are supported by current research and can be safely integrated with patient's conventional treatments.

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