

explored the impact of a single massage session on self-reported symptoms in an outpatient setting at a large academic cancer center.

**Methods:** Data were reviewed from massage sessions (30 or 60 minute duration) at our Integrative Medicine Center outpatient clinic from May 2011 through December 2013. Participants completed a pre- and post-massage symptom assessment instrument, the Edmonton Symptom Assessment Scale (ESAS; 10 symptoms, scale from 0–10, where 10 is most severe). ESAS subscales analyzed included Physical Distress (PHS; range 0–70), Psychological Distress (PSS; range 0–30), and Global Distress (GSD; range 0–100). Data were analyzed examining pre and post scores using paired t-tests.

**Results:** Our analysis included data collected from 1529 massage visits (mean 2.59 visits/person). The most frequently reported symptoms at initial massage (first visit) included: Sleep 82.7%, Well-Being 82.7%, Fatigue 79.6%, Pain 67.7%, and Anxiety 62.7%. Symptoms with the highest scores (score  $\geq 3$ ; means) at initial massage included: Sleep [3.8; n=480]; Fatigue [3.3; n=491]; and Well-Being [3.2; n=480]. An initial massage session resulted in a significant decrease in GSD [22.8 to 12.3], PHS [15.4 to 8.7], and PSS [7.3 to 3.7] (all p's <0.0001). A single massage (including first and follow up visits; n=1529) resulted in a statistically and clinically significant reduction (decrease in symptom score  $\geq 1$ ; means) in symptom expression for Fatigue [–1.20], Well Being [–1.14], and Pain [–1.08] (all p's <0.0001).

**Conclusion:** A single 30- or 60-minute massage session resulted in acute relief of self-reported symptoms in patients and caregivers. Further study is warranted to gain insight into the potential benefits of massage in relieving symptom distress in cancer patients and caregivers, the temporal nature of the effects, and the necessary frequency to maintain effective symptom control.

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## Oral Abstract Session 15: Integrative and Mind-Body Interventions

### OA15.01 Effects of Eight-Week Meditation Training on Hippocampal Volume: A Comparison of Mindful Attention Training and Cognitively-Based Compassion Training

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**Purpose:** The hippocampus is an important brain region that atrophies with chronic stress and aging. Previous studies indicate that hippocampus gray matter concentration is higher in experienced meditation practitioners and may increase after participation in Mindfulness-Based Stress Reduction (MBSR). Here we investigated changes in hippocampal volume in healthy subjects following two different meditation-based interventions: Mindful-Attention Training (MAT) and Cognitively-Based Compassion Training (CBCT) and evaluated whether changes were associated with amount of practice time.

**Methods:** As part of a larger randomized controlled trial, healthy adults without prior meditation experience were randomized into 3 arms: MAT, CBCT, or an active control intervention (health education course). Each group met for 2 hours per week for 8 weeks. MAT and CBCT participants kept a log of their meditation practice. We collected high-resolution anatomical brain scans before and after each intervention on a subsample of participants. Longitudinal changes in hippocampal volume were measured using the FreeSurfer longitudinal toolbox, a validated method for computational neuroanatomy with high test-retest reliability.

**Results:** There was no main effect of either intervention on hippocampal volume (paired t-test,  $p > 0.3$  in each group). However, in the MAT group, practice time was significantly correlated with increased hippocampal volume ( $r = 0.82$ ,  $p < 0.05$ ,  $N = 13$ ), even after removing one outlier subject with very high practice ( $r = 0.58$ ,  $p < 0.05$ ,  $N = 12$ ). The CBCT group showed no significant effect of practice ( $r = 0.01$ ,  $p > 0.9$ ,  $N = 14$ ).

**Conclusion:** Our study indicates that Mindful-Attention Training may promote neuroplasticity in the hippocampus in healthy subjects who engage in regular meditation practice over the course of 8 weeks. These findings confirm and extend similar findings with MBSR. Future research is needed to test these effects in clinical populations with hippocampal volume reduction, such as in major depression.

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### OA15.02 Mindfulness-Based Cancer Recovery (MBCR) and Supportive Expressive Therapy (SET) Maintain Telomere Length (TL) and Cortisol Slopes Relative to Control in Distressed Breast Cancer Survivors

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**Purpose:** Group psychosocial oncology interventions including Mindfulness-Based Cancer Recovery (MBCR) and Supportive-Expressive Group Therapy (SET) can help breast cancer survivors decrease distress and influence cortisol levels, but their impact on Telomere Length (TL) and cortisol together has not been studied. The objective was to compare the effects of MBSR and SET to a minimal intervention control condition on TL and cortisol profiles in distressed breast cancer survivors who were part of a larger randomized controlled trial.

**Methods:** MBCR focused on training in mindfulness meditation and gentle Hatha yoga while SET focused on emotional expression and group support. Both groups included 18 hours of contact time. The control condition was usual care plus a one-day 6-hr stress management seminar. Blood and saliva samples were collected pre- and post-intervention. The primary outcome measures were relative telomere length as measured by the T/S ratio and cortisol slopes across four daily measures averaged over three days. Secondary outcomes were self-reported mood and stress symptoms.

**Results:** Ninety-two distressed breast cancer survivors with a diagnosis of Stage I-III cancer who had completed treatment at least three months previously participated. Using analyses of