## Pilot Crossover Trial of Reiki Versus Rest for Treating Cancer-Related Fatigue


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*Integr Cancer Ther* 2007; 6; 25
DOI: 10.1177/1534735406298986

# Pilot Crossover Trial of Reiki Versus Rest for Treating Cancer-Related Fatigue

Kathy L. Tsang, BA, Linda E. Carlson, PhD, CPsych, and Karin Olson, RN, PhD

**Fatigue is an extremely common side effect experienced during cancer treatment and recovery. Limited research has investigated strategies stemming from complementary and alternative medicine to reduce cancer-related fatigue. This research examined the effects of Reiki, a type of energy touch therapy, on fatigue, pain, anxiety, and overall quality of life. This study was a counterbalanced crossover trial of 2 conditions: (1) in the Reiki condition, participants received Reiki for 5 consecutive daily sessions, followed by a 1-week washout monitoring period of no treatments, then 2 additional Reiki sessions, and finally 2 weeks of no treatments, and (2) in the rest condition, participants rested for approximately 1 hour each day for 5 consecutive days, followed by a 1-week washout monitoring period of no scheduled resting and an additional week of no treatments. In both conditions, participants completed questionnaires investigating cancer-related fatigue (Functional Assessment of Cancer Therapy Fatigue subscale [FACT-F]) and overall quality of life (Functional Assessment of Cancer Therapy, General Version [FACT-G]) before and after all Reiki or resting sessions. They also completed a visual analog scale (Edmonton Symptom Assessment System [ESAS]) assessing daily tiredness, pain, and anxiety before and after each session of Reiki or rest. Sixteen patients (13 women) participated in the trial: 8 were randomized to each order of conditions (Reiki then rest; rest then Reiki). They were screened for fatigue on the ESAS tiredness item, and those scoring greater than 3 on the 0 to 10 scale were eligible for the study. They were diagnosed with a variety of cancers, most commonly colorectal (62.5%) cancer, and had a median age of 59 years. Fatigue on the FACT-F decreased within the Reiki condition ($P = .05$) over the course of all 7 treatments. In addition, participants in the Reiki condition experienced significant improvements in quality of life (FACT-G) compared to those in the resting condition ($P < .05$). On daily assessments (ESAS) in the Reiki condition, presession 1 versus postsession 5 scores indicated significant decreases in tiredness ($P < .001$), pain ($P < .005$), and anxiety ($P < .01$), which were not seen in the resting condition. Future research should further investigate the impact of Reiki using more highly controlled designs that include a sham Reiki condition and larger sample sizes.**

DOI: 10.1177/1534735406298986

*Keywords:* *complementary therapy; CAM; Reiki; energy therapy; cancer-related fatigue; pain; anxiety; colorectal cancer*

Cancer has increasingly been recognized as a chronic illness involving a series of changing threats and difficulties,[1] and it affects patients on physiological, social, and psychological levels. Patients often report fatigue, pain, and nausea while receiving treatment, with cancer-related fatigue (CRF) being commonly reported regardless of treatment type.[2] Fatigue is defined as a subjective state of overwhelming, sustained exhaustion and decreased capacity for physical and mental work that is not relieved by rest.[3] Most people who undergo radiation or chemotherapy experience severe and long-lasting fatigue that often gets worse after the treatment ends.[2,3] Many studies have found that the prevalence rates of fatigue in cancer patients exceed 60%.[4] In addition, 45% of patients believe that nothing can be done to relieve or reduce fatigue.[5] In a study by Carlson et al,[6] fatigue was the most common problem reported among a group of almost 3000 patients (48.5%); much higher than pain (26.4%), emotions/stress (24.8%), depression (24.0%), or anxiety (24.0%).

Despite the frequent reporting of fatigue during the course of the cancer and its treatment,[4] it remains undertreated and underrecognized.[7] Exercise is the most extensively studied nonpharmacological treatment of CRF[4] because CRF may be partially related to alterations in the muscular energetic systems caused by cancer and/or chemotherapy.[8] Other types of nonpharmacological treatments for CRF management

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include sleep therapy and stress reduction.[9] Complementary therapies are also commonly blended and used in a patient's cancer treatment plan, but these approaches have not yet been systematically evaluated in patients with CRF.[4]

Reiki (pronounced *ray*-kee) is a form of energy healing that originated in Japan during the early 1900s and has since become an increasingly popular and accessible alternative healing technique throughout the West.[10] The word *Reiki* comes from a combination of the Japanese words *Rei* (meaning "free passage") and *Ki* (meaning "universal life energy")[11]; hence, Reiki aims to facilitate the free passage of life energy. Reiki is based on the balancing of biofields, or energy fields, that surround the body. It is believed that imbalances surrounding the body indicate that there are energy deficiencies within the body and that these may eventually lead to illness. There is no agreed-upon theory for how Reiki might work, and its mechanism of action is still unknown.[12]

Reiki can be used for many aspects of well-being, including stress reduction and relaxation. Proponents hypothesize that Reiki reestablishes the energy balance in areas of the body that are experiencing pain and discomfort, thus promoting healing, reducing pain, and increasing quality of life.[13] During a treatment, the Reiki vibration is understood to be drawn through the practitioner to the recipient, according to the recipient's need.[14] Reiki treatments can take the form of hands-on healing (also known as touch therapy), distant healing, and self-treatments. In hands-on healing, participants are fully clothed, seated in a chair or on a treatment table, and may be covered with a blanket. The hands of a Reiki therapist are placed on 12 specific areas of the body, typically starting at the head and ending at the feet. Each position is held for approximately 5 minutes, and 1 treatment typically lasts about 45 to 75 minutes but can be as short or as long as needed.[12] Reiki is a flexible treatment as it does not require any special equipment or location and can be combined with other types of treatment for relaxation, fatigue reduction, and pain management.

Reiki is being increasingly used as an adjunct to conventional medical care, both in and out of hospital settings.[12] Since Reiki is a cost-efficient and low-risk therapy, it has been applied to a variety of medical settings, including emergency departments, operating rooms, nursing homes, rehabilitation centers, and family practice centers.[12] Patients often report reduced anxiety, lowered use of pain medication, increased patient satisfaction, and decreased loneliness and insomnia,[12] although to date, the research is limited and study designs generally involve case studies or small samples without adequate control groups. Nonetheless, preliminary studies suggest that Reiki can be effective in enhancing pain reduction and pain control, as well as relaxation. Wardell and Engebretson[15] investigated the biological outcomes of Reiki. After the Reiki therapy, there was a statistically significant reduction in anxiety and systolic blood pressure. Salivary immunoglobulin A levels and skin temperature were found to rise but not at statistically significant levels.

In another study, Mansour et al[16] examined the Reiki experience of 5 middle-aged women. In a qualitative analysis, in addition to the various outcomes each woman individually experienced (such as decreased stomach pains and resolved constipation), all participants reported improvements in their physical, psychospiritual, and social health.[16] Although previous research has supported the use of Reiki in medical settings, studies are limited by small sample sizes, lack of comparison groups, and lack of randomization. It is difficult to gain and apply accurate knowledge of Reiki in health care settings with limited participants[16] and case studies.[17]

Reiki has also been applied to cancer patients, as many people seek out complementary cancer therapies in additional to conventional therapy when faced with the diagnosis.[18] Olson et al[19] investigated the benefits of Reiki on 24 advanced cancer patients with reported pain. Compared to participants with opioid treatment and rest, it was found that those participants who received Reiki and standard opioid treatment experienced increased pain control and quality of life on the days following Reiki treatment. Despite many anecdotal reports on the effectiveness of Reiki for various health problems, research on this technique is very limited.[10]

Current problems in the research literature include the challenge of identifying Reiki practitioners with the clinical experience, training, and professionalism required to be part of the health care team.[12] Placebo Reiki interventions are an additional challenge to present research. Mansour et al[16] were successful in developing a placebo Reiki intervention that was indistinguishable from real Reiki from a recipient point of view. However, in this study, the subsequent outcomes of the treatments were not reported.

Reiki treatments may help reduce CRF by increasing patient energy levels. Energy levels have been identified as one of the various factors contributing to fatigue.[20,21] In addition to increasing energy levels within the patient, Reiki treatments may also help reduce fatigue by targeting the psychological aspects thought to contribute to CRF,[22] for example, by sustaining a sense of meaningfulness or stress reduction, 2 fatigue-management strategies identified by the National Comprehensive Cancer Network.[3] The proposed study, which will serve as a pilot for a larger crossover trial, will further efforts to investigate the

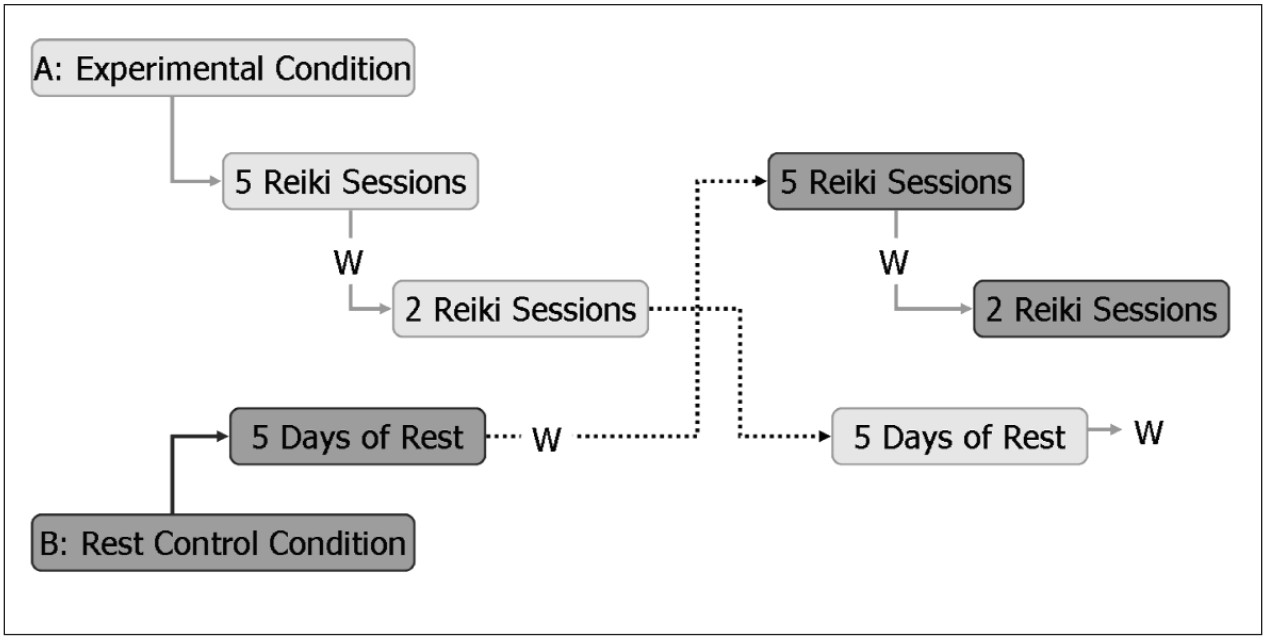


*Figure 1 Study design flow diagram: counterbalanced crossover trial. W = washout period; 7 days' monitoring or 2-point increase.*

effects of Reiki on fatigue in cancer patients, adding to current research on alternative nonpharmaceutical methods for reducing CRF.

### *Objectives*

The objectives of this study were

1. to investigate the feasibility of conducting a randomized study of Reiki in fatigued cancer patients, including accrual rates, compliance, dropouts, and missing data;
2. to estimate the variability of fatigue scores and quality of life before and after Reiki versus rest and to determine any effects on outcomes; and
3. to determine the washout period of Reiki effects on fatigue, pain, and anxiety by investigating the length of time it takes for symptom levels to increase following treatment.

## Methods

### *Study Design*

The study was designed as a counterbalanced crossover pilot trial, as depicted in Figure 1. Hence, each individual participated in both conditions (Reiki and resting control) but in a random order. Once recruited, individuals were randomly assigned 1 of the 2 conditions, Reiki or resting control.

*Reiki condition.* The format of the Reiki condition was chosen in consulation with the Reiki master who administered the study treatments and based on the team's past experience with Reiki and the literature. The choice of study Reiki practitioner was based on her having training in the most common form of Reiki, known as the Usui method, at the highest or master level, with more than 10 years of general experience and specific experience and interest in treating cancer patients, as well as comfort with the research component and willingness to follow protocols as determined by the research team. It was felt that daily Reiki for 5 consecutive days would be a sufficient dose to initially decrease fatigue levels in moderately fatigued cancer patients. This was to be followed by a no-treatment period to assess the longevity of any effects (washout period, up to 1 week) and finally 2 more sessions to give another boost to energy levels.

Individuals assigned to the Reiki condition began their Reiki treatments as soon as it was convenient for each participant. After being administered the Functional Assessment of Cancer Therapy Fatigue subscale (FACT-F) and Functional Assessment of Cancer Therapy, General Version (FACT-G) questionnaires (see below for descriptions), a loading dose of 5 consecutive Reiki treatments was given daily for 5 days. Each participant received Reiki from the same Reiki master in all treatments, and any participant who did not want to continue with the sessions could discontinue at any point throughout the duration of the study. The amount of time varied for each Reiki session, as determined to be appropriate by the Reiki master, but on average, sessions were approximately

45 minutes. Participants received 5 consecutive days of Reiki treatment, during which they monitored daily tiredness, pain, and anxiety using the Edmonton Symptom Assessment System (ESAS) questionnaire before and after each treatment session. After the 5 loading doses, washout was monitored for a maximum of 7 days with no treatment as described in the washout section, followed by the final 2 Reiki sessions, which were administered to see if fatigue would once again improve. After completion of the seventh and final session, each participant for the second time completed the FACT questionnaires. Participants then mailed their complete questionnaire booklets in prepaid envelopes to the Psychosocial Resources Department of the Tom Baker Cancer Centre (TBCC). One to 2 weeks later, they were then crossed over to the resting condition.

*Resting control condition.* The FACT-F and FACT-G questionnaires were first administered to the participants to obtain overall fatigue levels and general quality-of-life levels. While the experimental condition received Reiki treatments, those in the control condition were asked to rest for approximately 45 minutes each day for 5 days. Participants were asked to complete the ESAS questionnaire before and after each rest period, similar to the Reiki condition. Individuals were asked to rest to control for the effects of resting quietly on fatigue levels since Reiki also involves a resting component. Following the 5-day rest period, participants monitored their fatigue by completing the ESAS questionnaire for 7 days, but without specific rest periods, to duplicate the washout period in the Reiki condition. They did not rest for an additional 2 days to parallel the Reiki sixth and seventh treatments, however. On the final day of monitoring washout, the FACT-F and FACT-G questionnaires were again completed. Participants were given a prepaid envelope to send their questionnaires back to the Psychosocial Resources Department of the TBCC. Two weeks later, they were then crossed over to the Reiki condition, as described above.

### Participants and Recruitment

*Participants.* Participants diagnosed with cancer in stages I to IV who had recently completed chemotherapy treatment, understood English, and were currently living at home were eligible to participate. Charts were surveyed for eligibility prior to each participating clinic and then during outpatient clinics; participants who were identified as likely meeting the eligibility criteria were approached. At this time, they were screened for fatigue, and those with a score of 3 or higher on the ESAS tiredness questionnaire item were invited to participate. This was done to select for a fatigued sample. The study was approved by the Conjoint Health Research Ethics Board of the University of Calgary/TBCC.

### Instrumentation

*FACT-F.* Initial fatigue prior to the interventions was assessed using the FACT-F.[23] The FACT-F questionnaire is a fatigue assessment instrument with 13 items scored on a 4-point Likert-type response scale.[24] Participants rated the items on a scale from 1 to 4, ranging from *not at all* to *very much*. It has demonstrated strong internal consistency (coefficient $\alpha$ range = .93-.95) as well as acceptable test-retest reliability ($r = 0.87$).[23] Hwang et al[24] found that the FACT-F had a high correlation with quality of life. The instrument is scored such that higher scores indicate less fatigue.

*FACT-G.* Overall quality of life was measured using the Functional Assessment of Cancer Therapy, General Version (FACT-G)[25] questionnaire. The FACT-G is a validated 28-item general patient-rated measure of quality of life for cancer patients with any tumor type.[24] Each item on the questionnaire is scored on a scale of 0 to 4, ranging from *not at all* to *very much*. Only the global well-being score is reported in this paper. Test-retest reliability was also acceptable, with a coefficient of .92 for the total score.[25] The FACT-G has been used widely in clinical trials and has demonstrated sensitivity according to performance status and extent of disease.[26] Higher scores indicate better quality of life.

*ESAS.* The ESAS[27] is a 9-item patient-rated symptom visual analog scale developed for use in assessing symptoms of patients receiving palliative care.[26] In the questionnaire, patients rate their severity on 9 symptoms on a 10-cm line: pain, tiredness, nausea, depression, anxiety, drowsiness, lack of appetite, well-being, and shortness of breath.[26] In a study by Chang et al,[26] the ESAS individual item and summary scores showed good internal consistency and it was considered to be a valid instrument.

### Data Collection

Participants completed the FACT-F and FACT-G prior to their first Reiki treatment and after their seventh Reiki treatment, and prior to the first rest session and after the resting washout period. They completed the ESAS tiredness, pain, and anxiety items before and after each Reiki (or rest) treatment. Both Reiki and rest conditions were implemented at approximately the same time of the day to maintain

consistency during the treatments. After the fifth loading session of Reiki, participants monitored their fatigue levels daily on the ESAS tiredness item while not receiving any treatment. When there was an increase of at least 2 points (1 standard deviation) on this item during the washout monitoring period, an additional 2 Reiki treatments were provided. If fatigue scores did not change by 2 points within 7 days after the fifth Reiki treatment, participants were given the additional 2 treatments beginning on day 8. Hence, everyone had the sixth and seventh Reiki treatments either after 1 week of washout or sooner, depending on their fatigue levels. By monitoring fatigue levels after withdrawing treatment, we were hoping to estimate how long the therapeutic effect of Reiki on fatigue lasted after the initial 5 loading doses. Although pain and anxiety levels were not used to determine when the sixth and seventh Reiki treatments were given, washout for these symptoms was also analyzed to determine how long the effects of Reiki would last in each participant.

### Data Analysis

*Objective 1.* Descriptive statistics of demographic data were analyzed using means, ranges, and standard deviations. The accrual rate was calculated as the proportion of patients providing informed consent over the number approached. Explanations for not participating in the trial were also recorded, including but not limited to not eligible (reason), not interested, not willing to be randomized, too much time required, too tired, and so forth. Compliance rates with Reiki treatment were assessed by the number of prescribed treatments that were delivered as well as through the ESAS questionnaires, completed twice daily. The proportion of completed data collections was determined for each condition. The dropout rate, defined as the failure to complete 50% of treatments or 50% of data collections, was also determined in each condition.

*Objective 2.* The effect size (and exploratory statistical significance) of Reiki on fatigue in all participants was measured by assessing changes from before to after scores on the FACT-F total score using paired-samples *t* tests. Change in fatigue in the control condition during the resting period was measured in the same way. The 2 conditions were directly compared by calculating fatigue change scores within the Reiki condition and the resting condition (by subtracting time 1 from time 2 total scores) and using a paired-sample *t* test. Effect sizes for change scores on the FACT-G for the Reiki condition and control conditions were also examined to determine effects on quality of life in each condition in the same way as described above. In addition, effects of Reiki and rest on fatigue, pain, and anxiety measured on a daily basis (ESAS) were assessed with paired *t* tests within each group, comparing the final score following the fifth session of rest or Reiki and the initial score before the first session. The 2 conditions were then directly compared on these change scores with paired-samples *t* tests between conditions (Reiki *vs* rest).

*Objective 3.* The washout period was examined by calculating the mean number of days for scores on the ESAS tiredness item to increase 2 points (1 standard deviation) following the completion of 5 loading doses of Reiki or rest. The washout period for pain and anxiety levels was determined in the same manner.

## Results

### Objective 1

*Participants.* Refer to Table 1 for detailed demographic information. In total, 16 cancer patients participated in this study (13 women and 3 men). Of the subjects, 12 identified their ethnicity as Caucasian, 2 as Asian, and 2 as other. The most common type of cancer identified was colorectal (62.5%), followed by breast (12.5%), gastric (12.5%), and lung (12.5%). The participants had first been diagnosed with cancer from a range of 3 days to 3.79 years previously (median = 0.76 years). Participant ages ranged from 33 to 84 years old (median age = 58.5 years). Martial status consisted of 68.8% reporting married or common law, 25.0% divorced, and 6.3% widowed. Education levels were relatively high, as 43.8% of participants indicated more than 16 years of formal education. All 16 participants were nonsmokers. Furthermore, 50% of participants reported that they exercised 2 to 3 days per week. Eight participants were randomized to complete the Reiki condition first, while 8 completed the resting condition before crossing over to Reiki.

*Accrual and compliance.* Accrual rates are as follows: of the 40 patients who were eligible for the study, 20 expressed verbal interest in participating, and 16 provided informed consent for the study. Of those individuals who were approached and expressed no interest in the study, the primary reasons included not knowing what Reiki was or not enough time to participate. Patients who originally gave verbal consent or interest for the study in the clinic but did not follow through with the study gave reasons such as being too busy, living too far away (ie, out of Calgary), or extreme fatigue and discomfort. Compliance rates

**Table 1. Demographic Characteristics and Cancer History (N = 16)**

| | *n* | % | |
|---|---|---|---|
| Gender | | | |
| Male | 3 | 18.80 | |
| Female | 13 | 81.30 | |
| Racial/ethnic background | | | |
| Caucasian/white | 12 | 75.00 | |
| Asian/Pacific Islander | 2 | 12.50 | |
| Other | 2 | 12.50 | |
| Type of cancer | | | |
| Colorectal | 10 | 62.50 | |
| Breast | 2 | 12.50 | |
| Gastric | 2 | 12.50 | |
| Lung | 2 | 12.50 | |
| | *Mean* | *SD* | *Range* |
| Age, y | 59 | 15.23 | 33-84 |
| Education, y | 14.13 | 3.68 | 4-19 |
| Duration of illness, y | 1.67 | 0.90 | 3 d-3.79 y |

to prescribed Reiki treatments were high, as 87.5% of participants completed all 7 treatments. Two individuals dropped out partially through the Reiki sessions because of leaving town and surgery complications. Of these, 1 completed 71.4% of the treatments and the other completed 85.7% of the prescribed treatment, respectively. In terms of data completion, 1 individual did not complete the control condition questionnaires but took part in all prescribed Reiki sessions.

### *Objective 2*

*Fatigue, pain, and anxiety.* Scores on fatigue (FACT-F) preintervention and postintervention for each condition, with change scores and effect sizes, are presented in Table 2. Within the Reiki condition, changes in the total mean FACT-F scores pretreatment to posttreatment were very close to significant at the $P < .05$ level, $t(13) = -2.15$, $P = .051$, with a corresponding effect size of 0.56. There was no significant change in the resting control condition on the FACT-F, $t(14) = 0.189$, $P = .853$ (Table 2, Figure 2). There was no significant difference between the total mean change scores of the Reiki and control conditions, $t(12) = 1.25$, $P = .236$ (Table 2).

The incremental day-by-day effects of the Reiki and rest control conditions on fatigue, pain, and anxiety are presented in Table 3, and fatigue values are graphically depicted in Figures 3 and 4, which display the tiredness scores before and after each Reiki or rest session, respectively. There was a statistically significant change between the pre–first treatment and post–seventh treatment scores in the Reiki condition on fatigue, $t(16) = 7.19$, $P < .001$; pain, $t(15) = 2.90$, $P < .05$; and anxiety, $t(16) = 3.38$, $P < .005$, such that the final post-Reiki score was significantly lower than the pre-Reiki score in each case. In comparison, for the rest condition, there were no significant changes in fatigue, pain, or anxiety from the first to fifth consecutive rest session. When change scores from the first to fifth sessions (because there were only 5 resting sessions) were computed and compared between the Reiki and rest conditions with paired-samples *t* tests, only the fatigue item changed significantly more in the Reiki condition over and above the effects of rest, $t(14) = 2.95$, $P < .01$. Although the change scores in pain and anxiety appeared larger in the Reiki condition than for rest, they were not statistically so.

*Quality of life.* Participants in the Reiki condition reported a significant improvement in the FACT-G preintervention to postintervention, $t(13) = -3.73$, $P < .01$ (see Table 2, Figure 2). The difference between prerest and postrest total change scores on the FACT-G in the control condition was not statistically significant, $t(14) = -1.05$, $P = .31$ (Table 2, Figure 2). In addition, there was a significant difference between change scores of the Reiki and control conditions on the FACT-G, $t(12) = 2.25$, $P < .05$ (see Table 2), indicating that the Reiki condition resulted in improved overall quality of life over and above that associated with resting alone.

### *Objective 3*

*Washout.* Based on clinical experience, we expected the washout period to be about 3 days. Despite careful monitoring, we were surprised to find that even 7 days after the 5 loading doses of Reiki, the fatigue score still had not increased by 1 standard deviation. The average fatigue score following the 5 Reiki sessions was 1.56. It increased over the 7 days of monitoring to 2.00, a mean score change of 0.44. This demonstrates that the beneficial effects of Reiki on fatigue resulted in decreased levels of tiredness that were maintained for at least 1 week following 5 loading doses. The washout effect of rest on fatigue as a control was also measured for a comparison of Reiki. After 5 days of resting followed by a week of monitoring, fatigue decreased from 3.67 at the end of the fifth treatment to 3.13 after the week of washout, a total mean change of 0.54. There was also no significant difference between the Reiki and control group on tiredness washout levels, $t(13) = -1.31$, $P = .215$.

In regard to washout for pain and anxiety, washout levels also did not increase 1 standard deviation across 7 monitoring days in the Reiki condition. The

**Table 2. Outcome Measure Total Scores Within and Between Reiki and Rest Conditions**

| Test | Pre | Post | Mean Change ($d$ = Pre – Post) | $t$ (Within Condition) | $P$ | Effect Size ($d$/Pooled $SD$) |
|---|---|---|---|---|---|---|
| FACT-F | | | | | | |
| Reiki | | | | | | |
| $\bar{x}$ | 29.71 | 35.65 | –5.94 | –2.15 | .05* | 0.56 |
| SD | 11.51 | 9.55 | | | | |
| Rest | | | | | | |
| $\bar{x}$ | 31.53 | 31.13 | 0.40 | 0.19 | .85 | 0.02 |
| SD | 10.91 | 10.33 | | | | |
| FACT-G | | | | | | |
| Reiki | | | | | | |
| $\bar{x}$ | 75.02 | 83.12 | –8.10 | –3.73 | .00** | 0.27 |
| SD | 17.57 | 12.52 | | | | |
| Rest | | | | | | |
| $\bar{x}$ | 78.64 | 80.53 | –1.89 | –1.05 | .31 | 0.08 |
| SD | 11.87 | 11.96 | | | | |

| | Reiki Change | Rest Change | Change Difference ($d$ = Reiki – Rest) | $t$ (Between Conditions) | $P$ | Effect Size ($d$/Pooled $SD$) |
|---|---|---|---|---|---|---|
| FACT-F | | | | | | |
| $\bar{x}$ | 6.00 | –0.08 | 6.08 | 1.25 | .24 | 0.62 |
| SD | 10.97 | 8.77 | | | | |
| FACT-G | | | | | | |
| $\bar{x}$ | 8.49 | 1.58 | 6.92 | 2.25 | .04* | 0.88 |
| SD | 8.32 | 7.37 | | | | |

FACT-F = Functional Assessment of Cancer Therapy Fatigue subscale; FACT-G = Functional Assessment of Cancer Therapy, General Version.
*$p < .05$
**$p < .01$

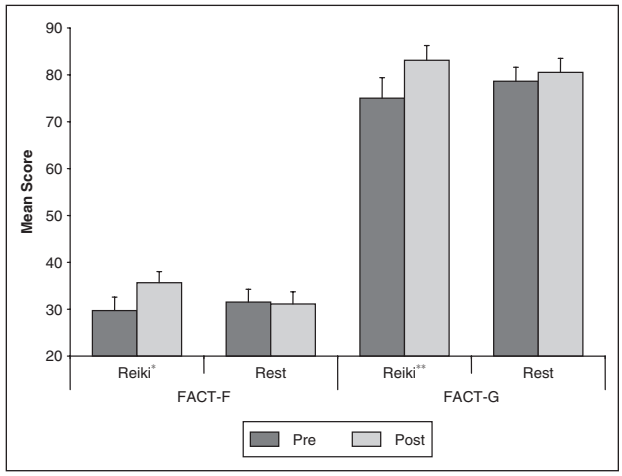


*Figure 2 Before and after total mean scores on the Functional Assessment of Cancer Therapy Fatigue subscale (FACT-F) and Functional Assessment of Cancer Therapy, General Version (FACT-G; ± standard error). *Improvement in fatigue, P < .05. **Improvement in quality of life, P < .01.*

mean scores for pain and anxiety were 0.88 and 1.13 after the fifth Reiki session and increased to 1.33 and 1.78 after 7 days—a total mean change of 0.45 and 0.65, respectively.

## Discussion

This is the first assessment of the applicability of Reiki for CRF; as such, the findings are quite striking. With an effect size of 0.56 on overall fatigue and significant decreases in daily fatigue beyond those provided by rest alone, these results suggest that Reiki was effective in decreasing fatigue levels of cancer patients. Furthermore, in the Reiki group, scores on daily ratings of pain and anxiety decreased cumulatively over the course of 5 Reiki sessions but not after rest. In addition, overall general quality of life was improved during Reiki in comparison to the resting condition, a finding demonstrating the general applicability of Reiki beyond symptom reduction. These results suggest that Reiki treatments are moderately effective at reducing CRF and may have more broad-ranging effects on overall quality of life. In the context of Olson's work on tiredness, fatigue, and exhaustion in cancer (unpublished), the passive nature of Reiki makes it an ideal intervention for patients with limited energy who are having difficulty adapting to the stressors associated with cancer and its treatment.

The results of this study are consistent with those of several other studies. Previous research has shown

**Table 3. ESAS Item Scores Before and After Reiki and Rest Sessions**

| | *Reiki* | | *Rest* | |
|---|---|---|---|---|
| | *Pre* | *Post* | *Pre* | *Post* |
| Tiredness | | | | |
| Day 1 | | | | |
| $\bar{x}$ | 5.06 | 3.00 | 3.87 | 2.40 |
| SD | 1.81 | 1.10 | 2.20 | 1.88 |
| Day 5 | | | | |
| $\bar{x}$ | 2.38 | 1.56* | 4.53 | 3.67 |
| SD | 1.86 | 1.55 | 2.39 | 1.95 |
| Change score day 1 pre to day 5 post | | | | |
| $\bar{x}$ | 3.33** | | 0.20 | |
| SD | 2.53 | | 2.51 | |
| Pain | | | | |
| Day 1 | | | | |
| $\bar{x}$ | 2.44 | 1.31 | 2.20 | 1.67 |
| SD | 2.45 | 1.35 | 2.60 | 2.35 |
| Day 5 | | | | |
| $\bar{x}$ | 1.44 | 0.88* | 1.73 | 1.67 |
| SD | 1.83 | 1.50 | 1.87 | 2.29 |
| Change score day 1 pre to day 5 post | | | | |
| $\bar{x}$ | 1.33 | | 0.53 | |
| SD | 1.54 | | 3.14 | |
| Anxiousness | | | | |
| Day 1 | | | | |
| $\bar{x}$ | 3.00 | 1.63 | 2.71 | 2.13 |
| SD | 2.81 | 1.71 | 2.47 | 2.03 |
| Day 5 | | | | |
| $\bar{x}$ | 1.56 | 1.13* | 2.00 | 2.29 |
| SD | 1.93 | 1.50 | 2.36 | 1.94 |
| Change score day 1 pre to day 5 post | | | | |
| $\bar{x}$ | 1.86 | | 0.43 | |
| SD | 2.68 | | 1.65 | |

*Day 5 postscores significantly lower than day 1 prescores, $P < .01$.
**Change score in Reiki condition greater than change score in rest condition, $P < .01$.

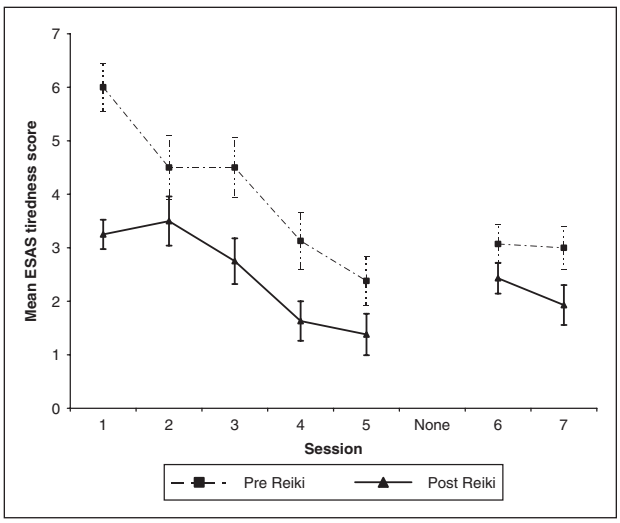


*Figure 3 Tiredness scores pre-Reiki and post-Reiki for sessions 1 to 7 (± standard error). *Post–session 7 score significantly lower than pre–session 1 score, P < .001. ESAS = Edmonton Symptom Assessment Scale.*

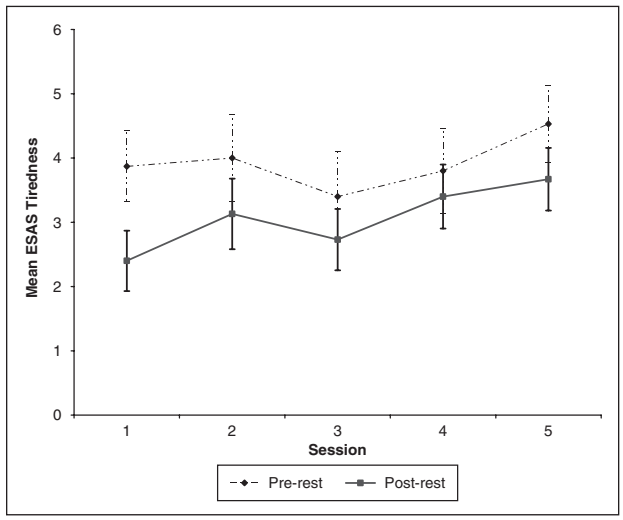


*Figure 4 Tiredness scores preresting and postresting for sessions 1 to 5 (± standard error). ESAS = Edmonton Symptom Assessment Scale.*

that Reiki has been linked to increasing energy levels, relaxation, pleasantness, and increased comfort,[12] and authors have commented on the advantages of using Reiki in addition to other methods to improve quality of life in cancer patients.[19] Reiki has also been found to reduce anxiety and blood pressure[15] as well as increase relaxation and improve mood levels[17]—aspects that are important in contributing to overall quality of life.

In regard to fatigue within the control condition, rest did not significantly reduce tiredness levels. In fact, the mean change scores were approximately the same before and after rest. Lack of change in the control condition may contradict previous research that resting is moderately effective at reducing CRF,[9] but a larger body of research supports the contention that energy restoration through appropriate rest, balanced by energy-consuming activities such as exercise, can help to regulate energy balance.[3] Our findings may indicate that rest is somewhat helpful at reducing CRF but not as effective as Reiki, which has been found to affect individuals in terms of physical health but also on psychospiritual and social aspects as well.[16]

In terms of the washout effects of Reiki, the beneficial effects on fatigue, pain, and anxiety lasted longer than the 7-day period over which we monitored washout. This suggests that a period of longer than 1 week would be required in future studies wishing to employ a crossover design and speaks to the longevity of the treatment effect. Future studies would do well to monitor washout for a longer period of time until true increases in fatigue were observed to get a better estimate of the life span of the Reiki effect.

Although research on Reiki is limited, this pilot study suggests that conducting such a study of alternative treatment for cancer patients is feasible, although recruitment may be slow. Based on participant accrual rates and reported reasons for not participating in the study, these results suggest that complementary and alternative medicine treatments may be becoming more readily accepted among a broad cohort of patients at our treatment center. To recruit 16 participants, 40 were approached, a 40% accrual rate. The original target population for this study was 20 patients, compared to the 16 participants actually recruited. Recruiting the full 20 participants in the 4-month time period allocated for accrual was difficult but provides good practical data for estimating recruitment rates in future studies. A rate of approximately 4 participants per month, using the strategies described herein, would be a reasonable estimate.

For individuals who did participate, however, compliance rates for both prescribed Reiki treatment sessions and completing questionnaires were high, reinforcing research suggesting that many individuals will enthusiastically seek out complementary cancer therapies in addition to conventional therapy, as noted by Verhoef et al.[18] Furthermore, most patients who did decide to take part in this study were encouraged by their oncologists to try the therapy, which boosted their confidence in the safety of the intervention. This may indicate a shift in increasing acceptance of combining alternative treatments into health care, congruent with Schiller's[28] suggestion that there is a rise in medical practitioners' interest in understanding these therapies and their concepts.

The major limitation of this study was the lack of an active control condition. Despite methodological improvements when compared with previous studies, with the control condition of rest only, this pilot study was not able to isolate effects due to the Reiki intervention itself from the effects attributable to receiving additional care/attention from the Reiki master or other nonspecific factors including expectancy effects. Future studies would benefit from comparison conditions that control for some of these factors. Research on Reiki in cancer patients could also extend into distinguishing differences between sham Reiki versus Reiki from a Reiki master. By conducting such a study, we may be able to distinguish differences between actual Reiki against the hand motions (from the sham practitioner) alone.[19]

Another limitation is the small sample size. Hence, the study was underpowered to definitively determine the efficacy of Reiki on fatigue scores compared to the resting control (power was $\beta = .57$ on the FACT-F total score with 16 participants; 26 participants would be needed to achieve a power of $\beta = .80$ given this effect size). However, variability in scores from the current study will be useful for determining sample size in a larger clinical trial; determining statistically significant efficacy was not a major objective of this pilot trial. We were able to calculate effect sizes for fatigue and quality of life, which suggest moderate-sized effects of Reiki overall. We plan to use these findings in a future clinical trial. A third limitation of this study is the apparent difference between the prescore means on the FACT-F and FACT-G questionnaires between the Reiki and resting control conditions: it appears that in the resting condition, quality-of-life scores were higher at the outset than in the Reiki condition. This might have been expected to happen if most participants completed the Reiki condition before crossing over to rest without sufficient washout, but there was an equal split of participants beginning the study in both conditions. It may

be the case that the longer-lasting effects of Reiki persisted until the Reiki-first group began the control condition but not the opposite (carryover effects of rest) because the effects of rest on fatigue were minimal. This is partly controlled in the analysis by comparing change scores between conditions, but future studies should be careful to match participants between conditions on starting levels of fatigue, in the case of a crossover design by allowing longer than 1 week for Reiki effects to wash out.

An additional limitation of this study is the possibility that uncontrollable variables could have potentially affected or changed the outcomes of participant scores on their questionnaires. Although participants were not on active treatment at the time of the study, there may have been medical events or life events occurring over the course of the study. In addition, rest periods were not observed or validated. As a result, patients' reports must be taken as to whether they actually rested as instructed.

Despite these limitations, this study provided valuable information to add to the body of research on CRF. Given that the relationship between Reiki and CRF has scarcely been investigated, this pilot study was needed to determine and establish preliminary parameters. Additional research is necessary to determine in more detail the overall effects of Reiki on CRF and overall well-being in patients. As this current study was a pilot project, future studies could address the existing limitations of this study and focus on Reiki and CRF in a larger population and in patients with specific types of cancer.

Furthering research on alternative nonpharmaceutical methods of relieving common side effects reported by individuals during their experience is valuable to cancer patients as well as their friends and families. Cancer affects all aspects of normal life, including social, emotional, and mental well-being. Exploration of new techniques or approaches that facilitate adaptation will provide cancer patients with increased resources to help deal with their symptoms and stresses, potentially promoting a happier and more satisfying life, as well as allowing for a more efficient and effective allocation of treatment resources.

## Acknowledgments

Dr Linda E. Carlson is supported by a New Investigator Award from the Canadian Institutes of Health Research. This study was funded by a research allowance awarded to Dr Carlson by the Canadian Institutes of Health Research and to Dr Olson from an Alberta Heritage Foundation for Medical Research establishment grant. The authors would like to thank Mrs Bonnie Switzer, Reiki master, for providing the Reiki sessions and for her continuous commitment to this study. Thanks also to Dr Gwyn Bebb and Dr Scot Dowden, medical oncologists, for referring patients; the TBCC clinic staff for supporting the study; and particularly to the patients who were eager to try Reiki and support this research.

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