

Effect of Reiki Treatments on Functional Recovery in Patients in Poststroke Rehabilitation: A Pilot Study

SAMUEL C. SHIFLETT, Ph.D.,¹ SANGEETHA NAYAK, Ph.D.,² CHAMPA BID, M.D.,³
PAMELA MILES, B.A.,⁴ and SANDRA AGOSTINELLI, M.A.²

ABSTRACT

Objectives: The three objectives of this study were: (1) to evaluate the effectiveness of Reiki as an adjunctive treatment for patients with subacute stroke who were receiving standard rehabilitation as inpatients, (2) to evaluate a double-blinded procedure for training Reiki practitioners, and (3) to determine whether or not double-blinded Reiki and sham practitioners could determine which category they were in.

Design: A modified double-blinded, placebo-controlled clinical trial with an additional historic control condition.

Setting: The stroke unit of a major rehabilitation hospital.

Subjects: Fifty (50) inpatients with subacute ischemic stroke, 31 male and 19 female.

Interventions: There were four conditions: Reiki master, Reiki practitioner, sham Reiki, and no treatment (historic control). Subjects received up to 10 treatments over a 2½-week period in addition to standard rehabilitation.

Outcome measures: Functional independence measure (FIM), and Center for Epidemiologic Studies—Depression (CES-D) measure.

Results: No effects of Reiki were found on the FIM or CES-D, although typical effects as a result of age, gender, and time in rehabilitation were detected. Blinded practitioners (sham or *reiki*) were unable to determine which category they were in. Sham Reiki practitioners reported greater frequency of feeling heat in the hands compared to Reiki practitioners. There was no reported difference between the sham and the real Reiki practitioners in their ability to feel energy flowing through their hands. *Post hoc* analyses suggested that Reiki may have had limited effects on mood and energy levels.

Conclusion: Reiki did not have any clinically useful effect on stroke recovery in subacute hospitalized patients receiving standard-of-care rehabilitation therapy. Selective positive effects on mood and energy were not the result of attentional or placebo effects.

INTRODUCTION

Healing touch or laying on of hands has been used for thousands of years for heal-

ing by manipulating nonphysical energy that supposedly permeates the physical body. Reiki (pronounced *ray-kee*), a form of energy healing that originated in Japan in the early 1900s, has

¹ Continuum Center for Health and Healing, Beth Israel Medical Center, New York, NY.

² New Jersey Medical School, University of Medicine and Dentistry of New Jersey, Newark, NJ.

³ Kessler Institute for Rehabilitation, West Orange, NJ.

⁴ Marymount Manhattan College, New York, NY.

become an increasingly popular and accessible alternative healing technique throughout the West. This therapy usually involves a practitioner laying his or her hands lightly on specific locations on the head and torso of the person being treated (Borang, 1997; Rand, 1991). Despite anecdotal reports of the effectiveness of Reiki for various health problems, research on this technique is very limited. Conditions studied include hemoglobin and hemocrit values (Wetzel, 1989; Wirth et al., 1996) and dental surgery pain (Wirth et al., 1993). Other research suggests that Reiki, as with other touch therapies, has its primary effect on relaxation and stress reduction, sometimes accompanied with changes in immune indicators (Wardell and Engebretson, 2001). While no formal research has been identified that involves treatment of stroke, several informal claims by Reiki practitioners of improvement after stroke and brain injury were encouraging enough to consider further investigation of the technique in a controlled research design.

This exploratory study had three goals. The primary purpose was to determine whether the use of Reiki would aid in the recovery and rehabilitation of patients with subacute stroke undergoing a standard rehabilitation protocol as inpatients.

The second purpose of this study was to evaluate a procedure whereby both Reiki practitioners and sham Reiki practitioners are blinded as to their status. A major problem with research on alternative therapies is the inability to blind the practitioner to the treatment condition: real or sham. Thus, differences in attitudes, beliefs, and intentionality make it difficult to create a truly comparable sham treatment. Even extensive training of sham therapists in identical behaviors (Mansour et al., 1999) cannot eliminate the possibility of unconscious intentionality when the practitioner is not blinded. Reiki differs from most other energy healing techniques that involve the willful transmission of the energy to the client. In Reiki, the practitioner is totally passive and the body simply becomes a channel for the healing energy to flow through and into the client's body. As explained in the Methods section, this nonintentionality allows the development of a treatment protocol in which practitioners are

unaware of whether they are administering a real or a sham treatment.

The third purpose of this study was to determine whether blinded treatment practitioners could determine which category they were in (real or sham) based on physical sensations and perceptions occurring during treatments. A common phenomenon said to occur among energy healers is the presence of sensations such as heat and tingling in the hands during treatments. The importance of these sensations is formalized in some approaches such as Therapeutic Touch (Krieger, 1979), but not in Reiki, despite the fact that many Reiki practitioners report having these sensations. These experiences could impact on whether a sham Reiki condition can truly be blinded. If Reiki practitioners experience sensations in the hands while sham Reiki practitioners do not, then complete blinding may not be possible.

METHODS

The research design consisted of a randomized, placebo-controlled, double blinded procedure involving three treatment arms (Reiki master, Reiki practitioner, sham Reiki), and a no-treatment historic control arm. Outcome measures included the Functional Independence Measure (FIM) (Deutsch et al., 1996) and the Center for Epidemiologic Studies—Depression (CES-D) measure of depressed mood (Shinar et al., 1986). The FIM is a standard measure administered at most rehabilitation hospitals in the United States; a maximum score of 126, based on 18 scales ranging from 1 to 7, represents functional independence. The study was approved by the Kessler Institute for Rehabilitation Institutional Review Board.

Power analysis

A sample size of 50 was selected in order to achieve statistical power of 0.80, assuming a "moderate" effect size on the FIM, the primary outcome measure, in a repeated-measures analysis-of-variance design. The moderate effect size (a difference of between 8 and 10 FIM points) was assumed because other studies suggested that this was a likely outcome in energy healing situations such as acupuncture (Jo-

hansson et al., 1993), and because we were interested in determining whether there was a clinically meaningful effect attributable to Reiki.

Subjects

Thirty-eight (38) inpatients at Kessler Institute for Rehabilitation, admitted as a result of an ischemic stroke, were recruited for the treatment arms of the study. Patients whose medical records indicated an ischemic stroke with at least 2 weeks of expected inpatient rehabilitation time still available were invited to participate. This criterion provided for adequate time to give the entire course of treatment. Subjects were recruited, selected, and evaluated within 1 week of admission. Before participation, all subjects, and in most cases family members, signed an Institutional Review Board approved informed consent form, and were required to show adequate cognitive function and comprehension in order to participate. Four subjects were discharged before half their treatments were administered, usually for medical emergencies, and were dropped from the study. Two subjects withdrew from the study and two were lost because of logistical problems. An additional 20 historic control subjects were identified from hospital records, yielding a total $n = 50$ for analysis purposes: 30 in the treatment arms and 20 in the historic control arm. All subjects continued their normal schedule of rehabilitation therapy.

An initial average FIM score of less than 4 per subscale was required in order to ensure that a patient's condition was at least moderately severe, in order to reduce a possible ceiling effect on improvement in patients' condition. All inpatients meeting these criteria were eligible unless they were confused or agitated, which made assessments difficult or unreliable, or their attending physician or clinical director requested that they not participate.

Training and blinding of practitioners. The Reiki master was a fully trained and initiated Reiki practitioner in the Usui system (Reiki Alliance), and had been practicing Reiki for more than 10 years. She trained a total of 14 (2 males and 12 females) Kessler employees (nurses, physical and occupational therapists) who served as

treaters. Half received the full first-degree training (including initiation, which is required in order to be a true Reiki practitioner); the other half learned the same techniques, but without initiation, and served as practitioners in the sham Reiki control condition. Training occurred in three sessions, each separated by a week, and all practitioners, whether real or sham Reiki, were trained together. All trainees were fully informed of the two initiation procedures, and the purpose for this approach, and knew that they had a 50–50 chance of being in either the Reiki or the sham condition. All agreed to participate with this understanding. At the end of the study, practitioners were debriefed, told which category they were in, and sham practitioners were given the full Reiki initiation.

Because initiation was the only aspect of training that distinguished Reiki training from non-Reiki training, the trainees were blinded to the category they were in by using a special initiation procedure that did not involve the usual practice of the master touching them in a ritualistic manner. In the present case, all trainees sat together in a quiet, meditative state, while the Reiki master sat in the same room, and silently initiated the trainees using her thought, by means of a second degree "distant healing" technique. Only the Reiki master and the study administrator knew the identity of the initiated and noninitiated practitioners. On completion of the study, but before being informed of the category they were in, the touch practitioners were given a questionnaire asking them whether they believed they had been initiated, reported any sensations they experienced in their hands during treatment, and indicated their belief about whether their patients had benefited from the treatment. Then, the Reiki master initiated the practitioners who had not previously been initiated.

Procedure

Subjects in the treatment arms were randomized to one of three conditions: treatment by a Reiki master, treatment by a first-degree Reiki practitioner, or sham Reiki treatment. The two Reiki categories represent the distinction between a Reiki master and a lower degree Reiki practitioner, and are included to deter-

mine whether there is a distinguishably different effect between treatments by a master and by newly initiated practitioners. Treatments were given during nonrehabilitation hours, generally in the evenings and on weekends.

Treatment conditions. There were three treatment categories: Reiki master, Reiki practitioner, and sham Reiki. The treatment protocol was the same in all conditions, and involved lightly placing the hands on 12 locations on the patient's head and torso over a period of 30 minutes per treatment. Each patient received up to 10 treatments over a 2¹/₂-week period. In some cases, patients were discharged from the hospital early, usually because they had met rehabilitation goals, and thus received fewer than 10 treatments. The minimum number of treatments for inclusion in the analyses was 6.

No-treatment historic control condition. This condition consisted of 20 patients randomly selected from among patients admitted to the hospital from 6 months prior to commencement of the study to 6 months after subject accrual ceased, and who had not been approached to participate in the study but who met all other inclusion criteria. These patients were evaluated in routine hospital clinical assessments at admission and discharge, an interval of approximately 3 weeks. They did not receive any of the experimental treatments but did receive standard rehabilitation treatment.

Outcome measures. The primary outcome assessment was the FIM (Deutsch et al., 1996), routinely administered to rehabilitation patients at hospital admission and discharge. This assessment was conducted by hospital staff trained and certified in administering the FIM. Both physical and cognitive functions are assessed by this measure. The physical functioning portion of this measure was available for all subjects, because it is routinely entered into the patient's computerized chart. However, the cognitive portion of the measure was not always entered into the patient records, and a large amount of missing data resulted. Consequently, only the physical portion of the FIM was used in this study.

A secondary outcome measure was the CES-D scale (Shinar et al., 1986), a 20-item scale asking about depression-related behaviors (e.g., "crying spells") and feelings (e.g., "enjoyed life"). This well-known depression measure was administered before and after treatment to all subjects in the treatment conditions only.

RESULTS

Demographics and initial status of the sample are presented in Table 1. Despite randomization, there are some statistically significant initial differences between the groups on age and severity of initial impairment based on the FIM. Gender was not related to initial severity, or initial depression score, but age was slightly related to initial severity of impairment ($r = 0.31, p < 0.05$). Age also varied by condition ($F = 2.84, p < 0.05$). When comparing across the primary treatment conditions, age differences ranged from 72.5 to 73.8. The historic control group appeared to be somewhat younger, with a mean age of 67.2. When age is broken into small cells defined by condition and gender, the mean differences appear to be larger (range, 66.3–80.1), but are not statistically significant. We attribute this variability to the small numbers in these cells ($n = 3-7$ in the treatment conditions). To control for these variations statistically, age and severity were used as covariates in the primary analyses, a procedure that increases the ability to detect treatment effects if they exist. Beyond these linear corrections, it is possible that these differences could affect the results in unknown ways, especially if they involve the treatment by gender interaction.

Four subjects were discharged from the hospital earlier than expected, and thus did not complete all treatments but were retained in the study. The primary reason for early discharge was the patients having achieved the rehabilitation goals set at admission to the hospital. Number of treatments was not related to group assignment, initial or final functional status or mood, nor was it related to change in FIM score.

TABLE 1. CHARACTERISTICS OF THE SAMPLE (MEANS AND STANDARD ERRORS)

Condition	Gender	n	Age	Severity (Baseline FIM)	Depression (Baseline CE-D)
Reiki master	M	5	76.6 (3.9)	52.0 (3.6)	15.4 (3.4)
	F	5	70.6 (3.9)	52.2 (3.6)	18.4 (3.4)
	Total	10	73.6 (2.8)	52.1 (2.51)	16.9 (2.4)
Reiki practitioner	M	7	70.4 (3.3)	42.9 (3.0)	15.9 (2.9)
	F	3	81.0 (5.1)	50.0 (4.6)	26.7 (4.4)
	Total	10	75.7 (3.0)	46.4 (2.7)	21.3 (2.6)
Sham Reiki	M	7	69.3 (3.3)	45.7 (3.0)	19.3 (2.9)
	F	3	80.0 (5.1)	42.0 (4.6)	22.7 (4.4)
	Total	10	74.5 (3.0)	43.9 (2.7)	21.0 (2.4)
Historic controls (No treatment)	M	10	66.3 (2.8)	34.0 (2.5)	—
	F	10	68.0 (2.8)	40.7 (2.5)	—
	Total	20	67.2 (2.0)	37.4 (1.8)	—
Total		50	72.8 (1.4)	44.9 (1.2)	19.7 (1.5)

FIM, Functional Independence Measure; CES-D, Center for Epidemiologic Studies—Depression.

Functional independence

The primary outcome measure (FIM score at discharge) was analyzed using analysis of covariance (ANCOVA)*. In addition to the main factor of treatment group, patient gender was included as a factor when preliminary analyses indicated that this was a potential moderator of functional independence. Results are presented in Table 2. Covariates included age and pretreatment FIM score. Both covariates were directly related to discharge FIM scores. Initial FIM score ($F = 3.25, p < 0.10$) indicated that less severe impairment was associated with greater improvement. Age was related to FIM score ($F = 5.53; p < 0.03$), indicating that younger stroke patients have somewhat better recovery than older stroke patients.

The main effect for treatment group, which is the primary test of our hypothesis, was not significant ($p > 0.50$) and thus did not confirm

the hypothesis that *reiki* would help in functional recovery during subacute stroke rehabilitation. However, the gender main effect was significant ($F = 4.24; p < 0.05$), and indicated that, regardless of treatment condition, males had a better recovery FIM than females.

Depressed mood

CES-D post-treatment scores were analyzed using ANCOVA with age; initial FIM score (as a correction for severity of impairment) and initial CES-D score entered as covariates. As expected, post-treatment depression was associated with pretreatment depression ($F = 26.87, p < 0.001$). There was a slight tendency for age

*As a check to confirm the primary analysis, change in FIM scores (discharge FIM – baseline FIM) were subjected to ANCOVA, yielding essentially identical results to those presented here for discharge scores.

TABLE 2. MEANS AND STANDARD ERRORS OF POST-TREATMENT FIM SCORES ADJUSTED FOR AGE AND INITIAL FUNCTIONAL IMPAIRMENT BY TREATMENT CONDITION AND GENDER

	Males	Females	All subjects
Reiki master ($n = 10$)	68.64 (3.78)	60.00 (3.75)	64.32 (2.81)
Reiki practitioner ($n = 10$)	66.23 (2.95)	56.60 (4.79)	61.42 (2.80)
Sham Reiki ($n = 10$)	63.74 (2.98)	59.94 (4.70)	61.84 (2.74)
Historic control ($n = 20$)	62.55 (2.87)	63.89 (2.51)	63.22 (2.00)
All subjects ($n = 50$)	65.29 (1.49)	60.10 (2.03)	62.70 (1.26)

Group: $F = 0.26$, NS; gender: $F = 4.24, p < 0.05$; Gender \times Group: $F = 1.42$, NS.
FIM, Functional Independence Measure.

to be related to depression at discharge from hospital, indicating that younger patients were more depressed than older patients ($F = 3.89$; $p < 0.08$). There were no other effects that even approached significance. The main effect for treatment group did not reach statistical significance, thus the hypothesis that Reiki would help with mood was not supported.

Post hoc analyses of FIM and CES-D scores

Both the FIM and the CES-D are composed of individual items assessing different aspects of the overall construct they are designed to measure (e.g., ambulation, transfers, dressing, etc., on the FIM, and mood, energy, anger, etc., on the CES-D). In order to determine whether there might have been noticeable effects on subcomponents of the overall constructs, exploratory analyses of variance were performed on each item in the FIM and the CES-D. No statistically meaningful results emerged from analysis of the FIM components. Using a modified Bonferroni procedure to correct for multiple tests (Hochbert and Benjamini, 1990), the analyses of the CES-D yielded a significant result on one item, "I can't get going," with the same pattern also present in several other items, but not at the statistically significant level. The pattern of means on this one statistically significant item was so strikingly supportive of the hypothesis that reiki would have an energizing effect on mood, it is presented here as a contrast to the lack of results in our

primary analyses. As can be seen in Figure 1, subjects in both the Reiki master and the Reiki practitioner conditions show a substantial increase in ability to "get going," while the sham-practitioner subjects actually report being less able to "get going."

PRACTITIONER BELIEFS AND EXPERIENCES

At the completion of the study, and before being unblinded as to which category they were in (Reiki or sham Reiki), practitioners completed questionnaires assessing sensations in their hands, recollections of how they felt during the treatments, how they thought their patients felt during treatment, and whether they thought they were in the Reiki or the sham Reiki condition. The total number of items of this type was 41. Simple t tests were performed on these items, yielding 1 significant difference at the 0.05 level, and 5 differences at the 0.10 level. Thus, the number of results did not exceed that expected by chance. Furthermore, in several of these cases, the results did not occur in the expected direction. For example, sham Reiki practitioners reported greater frequency of feeling heat in the hands compared to Reiki practitioners ($t = 2.44$, $p < 0.03$). On the other hand, Reiki practitioners were somewhat more likely to report feeling cold hands ($t = -1.84$, $p < .10$). When asked whether they believed they had been initiated as a Reiki practitioner or not, the Reiki practitioners were less confident that they had been initiated than the nonreiki practitioners ($t = -2.12$, $p < .06$). The bulk of this evidence indicates that Reiki practitioners and sham Reiki practitioners did not differ in sensations and experiences that would lead them to believe that energy was flowing through their hands, or that they had been initiated.

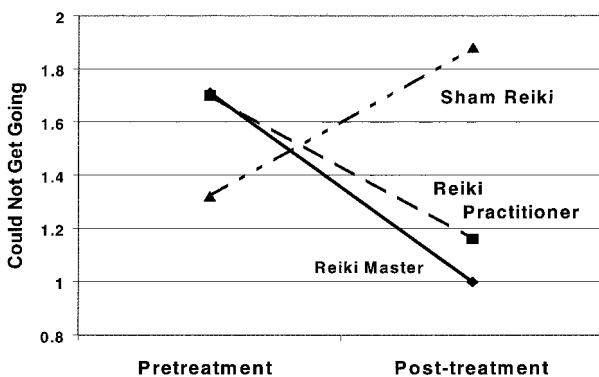


FIG. 1. Center for Epidemiologic Studies—Depression (CES-D) item "Could not get going" as a function of treatment condition.

DISCUSSION

Analysis of FIM physical functioning scores indicated that reiki had little or no effect on functional recovery. Similarly, no effects emerged with respect to depression, although there appeared to be an effect on several of the indi-

vidual items composing the CES-D scale, suggesting that Reiki might have a limited and selective effect on mood and energy levels.

Given the lack of support for the effects of Reiki in this study, it is important to consider factors that might have lead to a failure to detect a real difference if one actually existed. It might be argued that the FIM is not a good measure of recovery or that it is not sensitive enough to detect differences attributable to Reiki. While the limitations of the FIM are recognized by rehabilitation practitioners, the fact remains that it is the standard measure of functional independence used in nearly all rehabilitation hospitals in the United States, and in this study does demonstrate sensitivity to age, gender, and time in rehabilitation. In light of these concurrent results it would seem that, if effects of Reiki were present but not detected, then the short-term impact of Reiki is so minimal as not to be a clinically useful intervention for stroke rehabilitation, at least with regard to physical functioning and mood. Evidence for the longer term impact of Reiki is not available, and may represent a better test of Reiki's effect than short-term healing in a subacute setting.

The unexpected missing data on the cognitive portion of the FIM is unfortunate in this regard because Reiki is often asserted to have an effect on cognition, hence represents a limitation on a full test of the effectiveness of Reiki in stroke recovery. For example, it is possible that the lack of cognitive items might have resulted in our not detecting changes in certain forms of ischemic stroke where the infarct occurs in areas of the brain controlling cognitive functions. These would have been missed by our FIM score, which was constrained to muscular activities only. It seems unlikely that Reiki effects would be limited to localized areas of the brain, while being totally ineffective for the rest of the brain, nevertheless, the missing cognitive assessment is a limitation on the generalization that Reiki had little or no effect on functional recovery in stroke. The inclusion of more outcome measures, assessed over a substantially longer time frame might have given a broader and more positive picture of the impact of Reiki. Nevertheless, its failure to affect the primary functional outcomes argues against

the clinical value of this technique for subacute stroke rehabilitation.

We selected our sample size to achieve a statistical power of 0.80, assuming a moderate effect size. A moderate effect size (a difference of between 8 and 10 FIM points) was assumed because other studies suggested that this was a likely outcome in energy healing situations such as acupuncture (Johansson et al., 1993), and because we were interested in determining whether there was a clinically meaningful effect. In fact, we observed only a 0.5-point difference between the Reiki master's outcome and the sham Reiki outcomes. This effect size obviously does not reflect a clinically meaningful outcome for this condition, and was in fact too small to be detected at the 0.05 level. On the other hand, evidence that power was indeed adequate to detect a moderate effect can be seen in the fact that the gender main effect did achieve statistical significance ($F = 4.24$, $p < 0.05$), reflecting a mean difference of 6.8 FIM points. Nevertheless, it is possible that if Reiki has a smaller than assumed effect on stroke recovery, our sample size may not have been large enough to avoid the possibility of a Type II error.

As indicated earlier, Reiki differs from most other healing touch techniques with respect to the role of conscious intentionality. In Reiki, once the initial intention to begin treatment occurs, the process is passive. If intentionality is necessary to the energy transmission process, the failure of Reiki to show an effect does not necessarily generalize to other, intentionality driven techniques, which should be evaluated in their own right.

In most studies involving a sham healing condition, practitioners are aware of which category they are in, and this awareness could consciously or unconsciously influence the results. An important methodological innovation in this study was the blinding of the practitioners to the treatment category they were in. Thus, beliefs and unconscious intentionality were randomized across both conditions. By effectively blinding the practitioners as to whether they are in the true or sham condition, the effect of conscious or unconscious intentionality was controlled for and cannot be asserted as a factor in the results obtained here.

There was no difference between the sham and the real Reiki practitioners in their ability to feel energy flowing through their hands, as determined in a research design in which the practitioners were blinded as to the category they were in. These results run counter to the anecdotal reports of this phenomenon among some Reiki practitioners. However, sensitivity to the presumed energy flow through the hands, as evidenced by heat or tingling, is not a formal postulate of Reiki theory as it is in some other healing therapies (Krieger, 1993; Rosa et al, 1998), so these findings do not necessarily negate the validity of Reiki, given its nonintentional nature. Furthermore, there may be individuals who have natural healing ability who can sense subtle energy, whether trained in Reiki or not, and it is possible that they were present in both conditions, thus obscuring any difference in the groups.

While our results raise doubt as to the extent to which Reiki can help in functional recovery in patients with subacute stroke, we have evidence that there is a selective improvement in some of the subjective components of the CES-D scale. Of equal importance is the finding that these improvements are not caused by attentional or Hawthorne effects, placebo effects, or even of intentionally on the part of the practitioners. Also of importance is the fact that Reiki and sham practitioners could not determine which category they were in on the basis of sensations in their hands, even though they were having differential effects on subjects. Other energy healing techniques need to be studied in a similar manner, although double blinding will be difficult. We overcame this problem with Reiki by taking advantage of the fact that there is a required step in Reiki training to "initiate" or attune practitioners to the energy flow.

It should be pointed out that the lack of effects caused by Reiki for functional recovery in stroke does not necessarily negate Reiki's effectiveness for other conditions and outcomes. For example, there is limited research evidence that suggests that Reiki is helpful in pain relief, stress reduction, and relaxation, which may be accompanied by changes in immune indicators (Wardell and Engebretson, 2001). And our *post hoc* analysis of the CES-Depression measure suggests that reiki may have selective and limited effects on energy levels and mood. Other

energy healing techniques also seem to be at their best and most demonstrable when used to treat these symptoms, which are related to quality of life conditions. This study certainly needs replicating, perhaps on a medical condition more amenable to Reiki effects, such as pain, stress, and immune function.

Despite the caveats and secondary findings discussed above, it is clear that the primary outcome of this study is that Reiki did not demonstrate any clinically useful effect on the speed or level of functional recovery in hospitalized patients with subacute stroke. Selective effects on mood and energy were noted and were not caused by attentional or placebo effects.

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Address reprint requests to:
Samuel C. Shiflett, Ph.D.
Continuum Center for Health and Healing
Beth Israel Medical Center
245 Fifth Avenue
New York, NY 10016

E-mail: sshiflet@chpnet.org

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