

HATHA YOGA AND MEDITATION IN PATIENTS WITH POST-POLIO SYNDROME

William DeMayo, MD, Betsy Singh, PhD, Barbara Duryea, David Riley, MD

William DeMayo, MD, is medical director/PI for the Conemaugh Post-Polio Center. **Betsy Singh, PhD**, is a professor and dean of research at Southern California University of the Health Sciences. **Barbara Duryea**, is the project coordinator of research and development for the Conemaugh Health System's Regional Neuroscience Center. **David Riley, MD**, is a clinical associate professor at the University of New Mexico Medical School, Albuquerque, NM, and the editor-in-chief of *Alternative Therapies in Health and Medicine*.

This publication was made possible by sub award 0000076643 from the Uniformed Services University (USU) of the Health Sciences. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of USU, the US Department of Defense, or the Henry M. Foundation.

Conemaugh Health System has completed a preliminary outcome study evaluating the benefits of Hatha yoga and meditation in patients with post-polio syndrome (PPS). This research integrates clinical trials investigating the application of Hatha yoga with ongoing patient care and education. The results of this clinical trial will be used to develop a longitudinal data collection

effort integrating research and clinical trials investigating the applications of Hatha yoga in with ongoing patient care and education.

PPS refers to the new neuromuscular symptoms that occur after at least 15 years of stability in patients with prior acute paralytic poliomyelitis.¹ It is estimated that approximately 300,000 of the estimated 1.6 million polio survivors in the United States have, or will experience, PPS. The cardinal feature of PPS is new onset of weakness not otherwise explicable. Most patients also suffer from significant fatigue. Randomized clinical trials investigating drug treatments (eg, prednisone,² amantadine,³ pyridostegmine,⁴ and anticholinesterases⁵) for PPS patients have to date proved disappointing and there have also been reports that strenuous exercise in PPS patients may actually result in a decrease in muscular strength.⁶ However, it has been shown that milder, less extreme forms of exercise may improve muscular strength and fatigue^{7,8} leading some experts to suggest that the most viable treatment presently available involves reassurance and non-fatiguing exercise.⁹

This study enrolled 23 patients. All patients participated in a 5 day retreat in Johnstown, PA followed by 12 weeks of home practice with a video specifically developed for this clinical trial. The data was analyzed via one-way repeated measures analysis of variance in order to estimate an effect size to

TABLE 1 Pair wise comparison between baseline (first day of retreat) and last day of retreat. (Paired Samples Statistics)

	Baseline (1st day prior to Intervention)				End of Intervention				P-value
	N	Mean	SD	SEM	N	Mean	SD	SEM	
VAS Pain	23	5.7109	2.7637	.5763	23	4.3391	2.7197	.5671	0.009
Yoga Self-Efficacy	23	49.2391	18.7204	3.9035	23	61.7391	16.5645	3.4539	0.001
Fatigue Severity Scale	23	5.3652	1.2335	.2572	23	4.7391	1.2748	.2658	0.004
Fatigue Impact Scale	23	73.3913	30.3730	6.3332	23	51.1739	27.8497	5.8071	0.001
VAS fatigue	23	6.2522	2.0113	.4194	23	5.2261	2.3113	.4819	0.081
VAS weakness	23	6.0761	1.9060	.3974	23	4.1174	2.3137	.4824	0.0001

Reprint requests: InnoVision Communications, 169 Saxony Road, Suite 104, Encinitas, CA 92024; phone, (866) 828-2962 or (760) 633-3910; e-mail, alternative.therapies@innerdoorway.com.

TABLE 2 Pair wise comparison between baseline (first day of retreat) and 12 weeks post study. (Paired Samples Statistics)

	Baseline (1st day prior to Intervention)				12 Weeks Post Intervention				
	N	Mean	SD	SE M	N	Mean	SD	SEM	P-value
VAS Pain	21	5.8976	2.5641	.5595	21	4.4095	2.0132	.4393	0.019
Yoga Self-Efficacy	20	49.9750	18.4594	4.1276	20	66.8000	11.3907	2.5470	0.001
Fatigue Severity Scale	21	5.4571	.9463	.2065	21	4.5143	1.4931	.3258	0.002
Fatigue Impact Scale	21	74.2381	27.7649	6.0588	21	54.2381	32.8282	7.1637	0.013
VAS fatigue	21	6.5238	1.5501	.3383	21	4.9476	2.2540	.4919	0.005
VAS weakness	21	6.2976	1.4133	.3084	21	4.7857	2.4862	.5425	0.008

guide a sample size/power analysis for subsequent clinical trials. Seven outcome measures were used to assess patient response to the interventions and compare reliability among the scales used. Patients were assessed at 3 time periods: baseline (first day of retreat), last day of retreat and 12 weeks after the retreat. For all outcomes, except visual analogue scale (VAS) fatigue, significant differences were found between baseline and last day of retreat (see Table 1). As for the baseline and 12 week comparison, significant differences were found for VAS measures as well as Yoga Self Efficacy and Fatigue scales (see Table 2).

These results showed significant improvements in a patient population where a lack of deterioration is often viewed as success. These patients improved and at the end of 12 weeks they were actively involved in self-care. Subsequent studies will be designed so that multiple centers can be

involved and data can be pooled to produce a hardy set for subsequent analyses.

References

1. Dalakas M. Post-Polio Syndrome. *Curr Opin Rheumatol*. 2001;2:901-907.
2. Dinsmore S, Dambrosia J, Dalakas MC. A double-blind, placebo-controlled trial of high-dose Prednisone for the treatment of Post-Poliomyelitis Syndrome. *Ann N Y Acad Sci*. 1995;753:303-13.
3. Stein DP, Dambrosia JM, Dalakas MC. A double-blind, placebo-controlled trial of Amantadine for the treatment of fatigue in patients with the post-polio Syndrome. *Ann N Y Acad Sci*. 1995;753:296-302.
4. Trojan DA, Collet JP, Shapiro S et al. A multicenter, randomized, double-blind trial of pyridostegmine in post-polio syndrome. *Neurology*. 1999;53: 1925-1933.
5. Trojan Da, Cashman NR. Anticholinesterases in post-polio syndrome. *Ann N Y Acad Sci*. 1995;753:296-302.
6. Lehman JAR. A clinical and experimental study of the effects of exercise on motor weakness in neurological disease. *J Neurol Neurosurg Psychiatry*. 1959;22:182-194.
7. Einarsson G. Muscle conditioning in late poliomyelitis. *Arch Phys Med Rehabil*. 1991;72: 11-14.
8. Spector SA, Gordon PL, Yildiz E, et al. Effect of strength training in patients with post-polio syndrome. A preliminary report. *Ann N Y Acad Sci*. 1995;753:402-4.
9. Dalakas MC. Why drugs fail in postpolio syndrome: lessons from another clinical trial. *Neurology*. 1999;53: 1166-1167.