ous system disorders. Additionally, we wish to reiterate that the results only suggest interventions to improve patient tolerance to electrical stimulation by tailoring a setting to a subject's coping style. Further testing, particularly of patients serving as subjects, is needed to corroborate this notion.

**Summary**

The results of this investigation suggest that NMES-associated discomfort is dependent on (1) a subject's preferred coping style, (2) the dimension of pain being described, and (3) whether the current level is high enough to cause a forceful muscle contraction. These results indicate that (1) behavioral styles will affect how a subject will characterize the discomfort associated with NMES and (2) involuntary muscle contractile forces contribute uniquely to the discomfort felt from NMES. Further, these results suggest that interventions tailored to a preferred coping style may increase a subject's tolerance level to NMES and thus provide a more beneficial treatment.

**References**


**Commentary**

Dr Delitto and colleagues have presented information that challenges users of neuromuscular electrical stimulation (NMES) to rethink their protocols and their interactions with patients. They also point the way for clinical research that will directly test their observations about NMES in a more clinically relevant context. My discussion, however, will not focus on the issues related to electrical stimulation, but rather on what I see as the more global implications of this study. At one level, Dr Delitto and coauthors have done little more than underscore what we already know—that people are different and that their individual differences need to be considered when we plan and implement treatments. The study elucidated a theory and, because of the lack of a patient group, does not yet indicate whether treatment would be affected by individual coping-style differences. The finding, however, that a person can tolerate a different dosage of a commonly used therapeutic modality if the intervention is tailored to his or her preferred coping style, has implications for almost all areas of physical therapy practice.

Many times within the pages of this journal and elsewhere we have seen discussions about what makes one clinician better than his or her peers.
The research presented by Delitto and colleagues suggests that technical competence alone may not be a determinant of successful outcomes, but that in addition we may all be required to show adaptive behaviors in our treatment styles.

Older practitioners can remember the process of tuning diathermics. Before the advent of self-tuning devices, it was our task to tune the machine to the patient. I have long believed that, in the interactive world of physical therapy practice, good therapists tune their behavior and treatments to the patient. Unfortunately, this seemed to be a capability almost mystically gained by superb clinicians and almost never attained by most of us. The current research moves us in the direction of improved care by offering a means—the Miller Behavioral Styles Scale (MBSS)—of formally and consistently finding the patient’s “wavelength” for absorbing information that will allow for maximal doses of NMES. This is a very humble beginning in understanding the behavioral interactions required for optimal patient care.

Two issues beg for further research: (1) Is the ability to adapt therapeutic strategies and therapist behaviors to patients a critical determinant of outcome? and (2) Do expert clinicians demonstrate a “tuning behavior” that can be mimicked? If the answer to either of these questions is in the affirmative, then we have a lot of work to do in several arenas. We must develop mechanisms for teaching and improving interactions, and, most importantly, we must develop a lexicon for a new area of practice skills. I have long disagreed with the notion that there is a singular personality type for therapists, but now I wonder whether I was in error. The personality type we may be looking for is one that can determine the needs of the therapeutic environment for each patient and then sublimate itself in response to the pragmatic needs of the patient-therapist interaction.

The research of Delitto and colleagues does not yet mean we need to engage in wholesale rethinking of our admission, training, and therapeutic approaches. The research does, however, challenge us to face issues that have been neglected for too long. Specifically, we need more primary research and more applied behavioral research. I welcome the thoughts of Dr Delitto and colleagues on this rather liberal extension of their results.

Jules M Rothstein, PhD, PT
Editor, Physical Therapy
Professor and Head
Department of Physical Therapy
College of Associated Health Professions
University of Illinois at Chicago
Chief of Physical Therapy Services
University of Illinois Hospital
1919 W Taylor St
Chicago, IL 60612

Author Response

As physical therapists, we encounter many entities that make up the treatment environment that for the most part are related to individual differences. Our study focused on individual differences among subjects and the potential impact of considering these differences during administration of a commonly used treatment strategy. Dr Rothstein’s comments are relevant to what we believe are individual differences among clinicians. For the sake of this discussion, we will further divide these differences into those related to impairments and those not related to impairments. Physical therapists are best trained in measuring and addressing areas of impairment. We would argue that the majority of physical therapists “tune in” best when the patient’s disability consists mostly of impairment. Treatment entities not related to impairment (eg, coping styles) are usually not stressed in the typical physical therapist’s training, so it is not surprising that when confronted with a case in which such issues dominate, the picture becomes less clear. When treatment strategies that “should” work suddenly become ineffective, clinicians commonly “lay the blame” on nonimpairment issues (ie, compliance, magnified illness behavior, motivation, and so on).

Dr Rothstein alludes to the “expert” clinician as being able to “tune in” to both impairment and nonimpairment entities while selecting a treatment strategy that adapts to the treatment environment. We would like to discuss what we believe are two key issues related to “tuning in”: (1) clinicians recognizing relevant nonimpairment entities and (2) the availability of alternative, adaptive treatment strategies as well as the clinician’s willingness to use them.

Along with Dr Rothstein, we wonder how much of the expert clinician’s skill revolves around his or her ability...