Letters to the Editor

Citation of Studies

To the Editor:

We would like to respond to the commentary by Rothstein, Riddle, and Finucane on Bohannon’s special communication entitled “Is the Measurement of Muscle Strength Appropriate in Patients with Brain Lesions?” (Physical Therapy, March 1989, pages 225–236). We commend the authors for their thorough critique of studies cited by Bohannon relating muscle performance to functional capacity in patients with central nervous system damage. We recognize, however, the failure of Rothstein et al to cite sufficient studies concluding that muscle performance measurements of patients with brain injury do not correlate with functional capabilities. Furthermore, we are concerned about the lack of scrutiny given to the references cited by Rothstein et al.

Two of the three articles cited by Rothstein et al do not even assess variables of a functional nature.1,2 The authors do mention one study of patients with CNS lesions in which half of the final strength measurements did not correlate with final transfer capacity, even though all initial strength measurements did correlate significantly with initial transfer capacity.3 As former colleagues of Bohannon, who was the investigator in that particular study, we know that during transfer training, those patients were instructed in the use of biomechanical advantages (eg, having knees flexed sufficiently before attempting to stand, leaning forward with the head and trunk when coming from sitting to standing, and so on) to help them become more independent in transfers. The patients were more dependent on their strength after they learned the appropriate techniques than they were at their final assessment. The lower number of significant relationships between final strength measurements and final transfer capacity, therefore, is not surprising.

Rothstein et al also cite the contention that hemiparetic patients move in stereotopic patterns.4 The appropriateness of such a citation within the context of their commentary is questionable, as Brunnström did not scientifically address the relationship between muscle performance and functional capacity. Moreover, the stereotopic patterns cited refer to several muscle groups functioning as synergists. In contrast, isokinetic, isotonic, and isometric measurements usually are taken with part of the limb stabilized in a specified position so that a given muscle group can be isolated. Research conducted thus far on hemiparetic subjects is not supportive of the notion that the position of a certain joint neurophysiologically influences muscle performance in another part of the limb.5,7

Although we agree that the issue is not completely settled as to whether muscle performance measurements relate to functional activities in patients with brain damage, we also realize that assessments of patients with neurological impairment must be conducted daily by physical therapists. At present, results from the 17 research articles cited by Bohannon correlate muscle performance with functional activities in this patient population, whereas only 1 research article contains results somewhat unsupportive of such a relationship. Unless evidence from unflawed studies begins to mount contradicting the findings of the 17 articles already published, we will continue to obtain muscle performance measurements from patients who have CNS injuries. We will use this information to document patient status and progress and to help us understand why these patients may be having difficulties with transfers, ambulation, and other functional activities. We also will continue to monitor the reliability of our measurements as we hope all physical therapists who use hand-held dynamometers or any other assessment tools will do.

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References


Erratum

Please note the following correction in Loewen and Anderson’s response to a Letter to the Editor that appeared in the September 1989 issue, page 780. The last line of paragraph 2, in the third column on the page, should read: “We were ‘not impressed’ with the scoring forms…” (emphasis ours). The text currently reads: “We were not impressed”…” The correction should clarify the respondents’ intent.

The Journal staff regrets the error.
Author Response:

Andrews and Horton begin their letter by questioning our “lack of scrutiny” in selecting the articles critiqued in our commentary. We did not choose most of the articles. We primarily discussed the literature cited by Bohannon in his communication. Our argument was that these articles did not support the use of isolated measurements of muscle performance in predicting function.

Andrews and Horton criticize our use of two citations because the articles did not deal with “variables of a functional nature.” We never contended that these articles examined the relationships between function and muscle performance measurements directly. One of the articles we cited was our own work.1 We discussed our paper because we believed that, although we provided evidence that some measurements of muscle performance in persons with brain damage were reliable, our results also led us to question the usefulness of the measurements. We believe that a reading of our original article and our commentary makes our position clear.

The second citation was used because that article provided evidence to show that, on a conceptual basis, there is reason to doubt the usefulness of muscle testing in patients with brain damage.2 We believe that Andrews and Horton provide an interesting postscript to our commentary. We questioned whether clinicians would be guilty of overly simplifying a complex problem by relating function simply to muscle performance measurements. Andrews and Horton provide further evidence for our argument by citing one of the studies by Bohannon.3 The study examined the relationship between initial force measurements and initial transfer abilities and the relationship between discharge force measurements and discharge transfer abilities. All initial muscle force measurements were weakly correlated with initial transfer abilities, whereas most discharge force measurements were not correlated with discharge transfer abilities.

Andrews and Horton explain this apparent contradiction by stating that during treatment the patients were given special instructions and training in appropriate transfer techniques. Andrews and Horton go on to state, “The patients were more dependent on their strength before they learned the appropriate techniques than they were at their final assessment.” We doubt that clinicians would disagree with this observation. In our experience we often assist our patients by teaching them to most effectively use their neuromuscular systems. Andrews and Horton provide an insight into the study published by Bohannon and lend further support to our argument that measurements of muscle force cannot be used in isolation to predict function in patients with brain damage.

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References

Placebo Effect in TENS Study?

To the Editor:

I read with interest the recently published report on the comparison of the effects of transcutaneous electrical nerve stimulation of auricular and somatic acupuncture points on experi-