Letter to the Editor

To the Editor:

I read the article reporting the randomized crossover trial by Lee et al. (2021) in the January/February 2021 issue of the *American Journal of Occupational Therapy* with great interest. I appreciate the authors' efforts to assess the effects of robot-assisted rehabilitation on the hand function of people with stroke. However, I would like to point out two concerns regarding the trial.

First, the authors indicated that the robot-assisted therapy produced significant improvements in upper extremity motor control and activities of daily living ability, although the difference between the robot-assisted therapy group and conventional therapy group was not significant. Such comparisons against a baseline within randomized groups can be misleading (Bland & Altman, 2011). This point seems to contradict the purpose of the randomized crossover trial.

Second, the authors reported that the robot-assisted therapy–first group was compared with the conventional therapy–first group in the Results section, but this is inconsistent with the description in Table 2.

Yoshitaka Wada, MD
Department of Rehabilitation Medicine
Showa University Fujigaoka Rehabilitation Hospital
Kanagawa, Japan
yoshi1201.wada@gmail.com

Reference

Lee, H.-C., Kuo, F.-L., Lin, Y.-N., Liou, T.-H., Lin, J.-C., & Huang, S.-W. (2021). Effects of robot-assisted rehabilitation on hand function of people with stroke: A randomized, crossover-controlled, assessor-blinded study. *American Journal of Occupational Therapy, 75,* 7501205020. https://doi.org/10.5014/ajot.2021.038232

Response

To the Editor:

We appreciate Dr. Wada's knowledgeable comments on our study and the opportunity to respond.

One concern was that comparisons against a baseline within randomized groups can be misleading (Bland et al., 2011) and contradict the purpose of the randomized crossover trial by Lee et al. (2021). As our article suggests, high power within the group, large differences from baseline, or large sample sizes could explain significance. The power was small due to the small sample size of our study, so we calculated the change differences from baseline on the Fugl-Meyer Assessment–Upper Extremity (Proximal, Distal, and Total scores) for robot-assisted therapy (RT) versus conventional therapy (CT). Although the differences between groups were not significant, we still found the positive change in the RT group superior to the change in the CT group. Larger sample size and larger change value differences after longer treatment doses for severe patients may explain higher power. The purpose of our study was to investigate the effect of RT on the sensorimotor and hand function and ADL ability of patients with subacute to chronic stroke. In summary, our results, according to change differences, support the hypothesis that RT leads to improvements in sensorimotor, hand function, and ADL independency in patients with subacute to chronic stroke after 12 intervention sessions. We believe the approach can lead to beneficial effects on arm motor function and ability to perform ADLs.

The second concern was that the Results section was inconsistent with the description in Table 2. The Results section had some mistakes during English editing, and these mistakes should have been caught during our review of the manuscript and page proofs. The original mean was for people who participated in the RT treatment condition compared with the CT treatment condition, not the RT-first group compared with the CT-first group. In the Upper Extremity Sensorimotor Effectiveness and Activities of Daily Living Effectiveness subsections of the Results and in the Discussion, references to the RT-first group or the CT-first group should be revised to RT or CT.

Jui-Chi Lin, MS
08175@s.tmu.edu.tw
for
Hsin-Chieh Lee, MS
Fen-Ling Kuo, MS
Yen-Nung Lin, MD, MS
Tsan-Hon Liou, MD, PhD
Shih-Wei Huang, MD
Department of Physical Medicine and Rehabilitation
Shuang Ho Hospital
Taipei Medical University
Taipei, Taiwan

References

Bland, J. M., & Altman, D. G. (2011). Comparisons against baseline within randomised groups are often used and can be highly misleading. *Trials, 12,* 264. https://doi.org/10.1186/1745-6215-12-264

Lee, H.-C., Kuo, F.-L., Lin, Y.-N., Liou, T.-H., Lin, J.-C., & Huang, S.-W. (2021). Effects of robot-assisted rehabilitation on hand function of people with stroke: A randomized, crossover-controlled, assessor-blinded study. *American Journal of Occupational Therapy, 75,* 7501205020. https://doi.org/10.5014/ajot.2021.038232