PharmTech

Bilateral Arm Training Improve Reaching Kinematics in Hemiparetic Patients

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Abstract : Background and Purpose:Motor recovery after stroke is depending on the balance between neural network activity of both affected and non affected motor cortices. Bilateral arm training induce the rebalanced of inter hemispheric activation and inhibition. The aim of the study was to determine the improvement in reaching kinematics after bilateral arm training in hemiparetic patients. **Patients and Methods:** Twenty male patients with ischemic stroke included in this study and their age ranged between 40-55 years. Patients were divided randomly into two equal groups. The first group received bilateral arm training plus a selected physical therapy program. The second group received the selected physical therapy program only. Assessing kinematics of reaching movement of the affected upper limb was done before and after treatment using three-dimensional analysis. **Results:** Within the first group (before and after treatment) the results revealed that a statistically significant decrease in compensatory trunk displacement and decrease time of reach to grasp after treatment (P=<0.0002and P= 0.0001 respectively). Within the second group (before and after treatment) the results revealed that a statistically significant increase in compensatory trunk displacement(P=0.004) while there was no significance difference in time of reach to grasp after treatment (P=0.40). Between both groups, there was significant difference of trunk displacement and time of reach to grasp post treatment(P=0.0001 and p=0.0004 respectively) favouring first group. **Conclusion:** Bilateral arm training improves movement control and kinematics of reaching movement in affected upper limb in hemiparesis.
Key words: Stroke, neural network, bilateral arm training, time of reach, Trunk displacement and reaching kinematics.

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