

ORAL PRESENTATION OP3

Effects of Dual-Task Aquatic Treadmill Training in Subacute Stroke: A Pilot Single-Arm Study

Aina Sahira Ahmad Akhir¹, Haidzir Manaf²

¹ Pusat Rehabilitasi PERKESO Tun Abdul Razak, Lot PT7263, [H.S (D) 18923], Bandar Hijau, Hang Tuah Jaya, 75450, Melaka, Malaysia.

² Centre for Physiotherapy Studies, Faculty of Health Sciences, Universiti Teknologi MARA, Puncak Alam, 42300 Selangor, Malaysia.

ABSTRACT

Background and Objective: Stroke commonly impairs walking endurance, lower-limb strength, spasticity, and dual-task gait performance, limiting functional mobility. Although aquatic treadmill training benefits gait rehabilitation, evidence regarding the integration of dual-task training in an aquatic environment for individuals with subacute stroke is limited. This pilot study evaluated the feasibility and preliminary effects of dual-task aquatic treadmill training (DTATT) on walking endurance, lower-limb strength, spasticity, and gait performance. **Methods:** Ten individuals with subacute stroke (mean age: 46.6 ± 8.5 years; mean post-stroke duration: 4.2 ± 1.1 months) participated in this single-arm pilot study. Participants received 30-minute DTATT sessions three times weekly for four weeks alongside conventional rehabilitation. Outcomes included the 6-Minute Walk Test (6MWT), handheld dynamometry, the Modified Ashworth Scale (MAS), and single- and dual-task gait speed. Pre- and post-intervention outcomes were analysed using the Wilcoxon signed-rank test. **Results:** All participants completed the intervention without adverse events. Significant improvements were found in walking endurance (6MWT: 155.5 to 166.0 m, $p = 0.002$), single-task gait speed (0.52 to 0.65 m/s, $p = 0.002$), dual-task gait speed (0.45 to 0.59 m/s, $p = 0.002$), hip extensor strength (9.03 to 10.90 kg, $p = 0.002$), and knee extensor strength (10.36 to 12.07 kg, $p = 0.002$). Gastrocnemius spasticity decreased, but the change was not statistically significant ($p = 0.125$). **Conclusion:** DTATT appears to be a safe and feasible adjunct intervention that may improve walking endurance, gait performance, and lower-limb strength in individuals with subacute stroke. Larger controlled studies are needed to confirm these findings.

Keywords: aquatic treadmill training; dual-task training; gait performance; stroke rehabilitation; walking endurance

Corresponding Author:

Haidzir Manaf

Email: haidzir5894@gmail.com