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An intelligent activity-based client-centred training system: a pilot study on motivation, usability and credibility in persons with central nervous system diseases.

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Introduction: Clinicians and rehabilitation centres are searching for affordable technology-supported systems that incorporate a client-centred task-oriented approach which increase client's motivation and adherence without extra costs and extra individual therapy time. In order to meet these requirements, the intelligent Activity-based Client-centred Task-oriented Training (i-ACT) was developed via user-centred design.

Objective: To evaluate the motivation, usability, credibility and treatment expectancy of i-ACT and treatment effect on upper limb functional ability.

Method: In four rehabilitation centres, a mixed method longitudinal study was performed. Training with i-ACT was provided for 6 weeks, 3x/week, 45 min/day, additional to treatment as usual. Data collection was performed at baseline, after 2 weeks, 4 weeks and 6 weeks of training and 8-10 weeks after training completion. Semi-structured interviews were conducted with therapists and clients after 6 weeks of training.

Results: Seventeen persons with central nervous system diseases participated. Motivation scores on the Intrinsic Motivation Inventory remained high on all subscales ($\geq 5.2/7.0$), except pressure ($\leq 2.0/7.0$). Similarly, high scores were seen throughout on the System Usability Scale ($\geq 73.8/100$) and Credibility/Expectancy Questionnaire ($\geq 22.0/27.0$, $\geq 15.8/27.0$ respectively). Results on upper limb functioning showed a significant progress over time ($p<.05$). Significant improvement over time was also found on self-perception with the Canadian Occupational Performance Measure ($p<.05$). Results from the interviews corroborate the findings of the quantitative results. Furthermore, therapists and clients also considered i-ACT user-friendly and affordable.

Conclusion: i-ACT is a client-centred task-oriented system with great potential in neurorehabilitation to increase motivation and assist improvement on functional level.