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Virtual Reality and Active Video Game Integration within an Intensive Bimanual Therapy Program for Children with Hemiplegia

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Abstract
Aims: To describe the nature of custom and non-custom virtual reality and active video game (VR/AVG) implementation within a Hand-Arm Bimanual Intensive Therapy Including Lower Extremities (HABIT-ILE) intervention program for children with hemiplegia. Methods: Six children aged 8-11 years participated in a 10-day HABIT-ILE intervention (65 h; 6.5 planned VR/AVG hours). VR/AVG implementation details were recorded daily and summarized with descriptive statistics; active motor engagement was quantified as minutes of active game participation. Post-intervention interviews with interventionists were analyzed with qualitative content analysis. Results: On average, participants received 79% of the planned VR/AVG dosage (314/400 planned minutes, range 214–400 min), of which the per-session active motor engagement average was 68% (27 min, SD 12 min). Participation involved equivalent amounts of custom (49%) and non-custom (51%) VR/AVG system use. Material and verbal adaptations facilitated alignment with HABIT-ILE principles. Interventionists identified type of task (gross versus fine motor), children's perceived motivation, and VR/AVG attributes as factors influencing active motor engagement and alignment with HABIT-ILE principles. Conclusions: Describing individual and technological challenges of VR/AVG integration within HABIT-ILE can advance knowledge about VR/AVG use in intensive interventions and identify directions for subsequent research. © 2023 Taylor & Francis Group, LLC.

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Active video game; bimanual therapy; cerebral palsy; hemiplegia; virtual reality

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