A Game-Based Methodology to Discriminate Executive Function – a Pilot Study With Institutionalized Elderly People

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Abstract : There are few studies that explore the potential of board games as a performance measure, despite it can be an interesting strategy in the context of frailty populations. In fact, board games are immersive strategies than can inhibit the pressure of being evaluated. This study aimed to test the ability of gamed-base strategies to assess executive function in elderly population. Sixteen old participants were included: 10 with affected executive functions (G1 – 85.30±6.00 yrs old; 10 male); 6 with executive functions with non-clinical important modifications (G2 - 76.30±5.19 yrs old; 6 male). Executive tests were assessed using the Frontal Assessment Battery (FAB), which is a quick-applicable cognitive screening test (score<12 means impairment). The board game used in this study was the TATI Hand Game, specifically for training rhythmic coordination of the upper limbs with multiple cognitive stimuli. This game features 1 table grid, 1 set of Single Game cards (to play with one hand); Double Game cards (to play simultaneously with two hands); 1 dice to plan Single Game mode; cards to plan the Double Game mode; 1 bell; 2 cups. Each participant played 3 single game cards, and the following data were collected: (i) variability in time during board game challenges (SD); (ii) number of errors; (iii) execution speed (sec). G1 demonstrated: high variability in execution time during board game challenges (G1 – 13.0s vs G2- 0.5s); a higher number of errors (1.40 vs 0.67); higher execution velocity (607.80s vs 281.83s). These results demonstrated the potential of implementing board games as a functional assessment strategy in geriatric care. Future studies might include larger samples and statistical methodologies to find cut-off values for impairment in executive functions during performance in TATI game.

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