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Submission form - Poster

Title of communication: 3D human motion analyses to bring out fine motor skills as predictor of early mathematic skills development.

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Abstract (max: 200 words):

Children's ability to use their fingers in numerical contexts is assumed to contribute to the development of basic mathematic skills (Fayol & Seron, 2005). Some authors pointed out that finger gnosia is a predictor of arithmetic abilities (Noël, 2005) while others highlighted the relationship between manual dexterity and early numerical and arithmetic abilities (Asakawa & Sugimura, 2009). At present, the contribution of fine motor skills, especially the mobilization of the hand, to early number development has been less investigated.

The aim of this study is to examine how finger dissociation and finger coordination, two components of fine motor skills, contribute to early number and arithmetic processing using 3D human motion analyses. Thirty preschoolers aged between 3 and 5 years old were tested for finger dissociation and finger coordination tasks as well as numerical and arithmetic tasks.

The multiple regression analyses showed the predictive value of fine motor skills for cardinality and arithmetic skills while controlling for age differences. This result outlines the tight relationship between finger coordination and early mathematic abilities and suggests that this skill could have decisive influences on the use of finger-based strategies in support to the development of numerical concepts and early arithmetic in young children.

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