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Influence of physical activity and motor skills on the attentional capacities and academic achievement of primary school children in a disadvantaged neighbourhood: a longitudinal approach

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Introduction

From birth to 2 years old: sensorimotor stage



During childhood, physical activity and motor skills are still

essential (Diamond, 2012)



Physical Activity

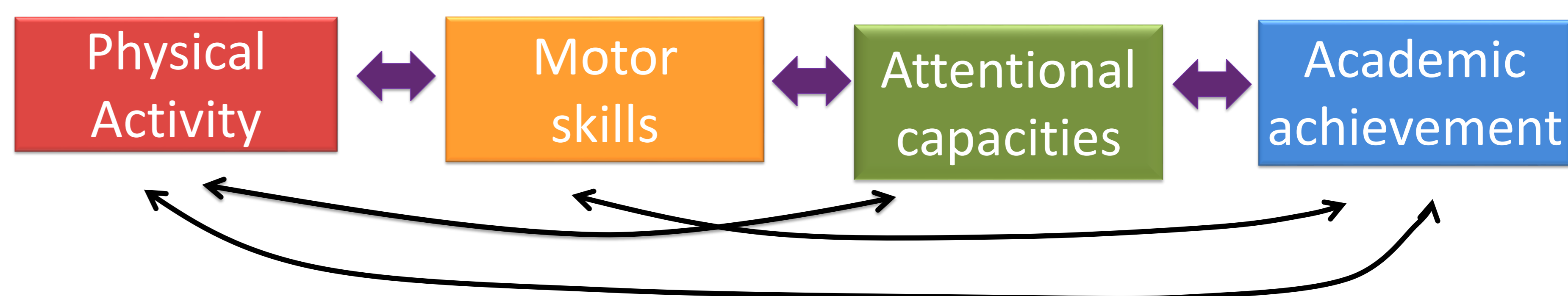
60 min MVPA/day
(WHO, 2010)



Effects of physical activity and motor skills on the childhood period:
under exploration

6-10 years old

(Fisher et al., 2005; Van der Niet, 2014; Cameron et al., 2016; Smith et al., 2017)



Limited data :

(Donnelly et al., 2016)

- for 6-10 years old children
- with disadvantaged children

- with longitudinal approach
- about relationships between motor skills and attentional capacities

Methodology

2 primary schools in a disadvantaged neighbourhood (Tarbes, France)

Longitudinal follow-up children 7-10 years old

	2016-2017			2017-2018		2018-2019	
School 1	T1		T2	T3	School-based intervention	T4	T5
School 2	T1		T2	T3		T4	School-based intervention

Accelerometry n for T[...] ≈ 110 Global day

Physical Activity

- Epochs: 1 second
- Cut-points: Evenson et al. (2008)
- Validation if 10 heures of wear-time/day



Motor skills

(Adam et al., 1988; Cadenas-Sanchez, 2014)

n for T[...] ≈ 300

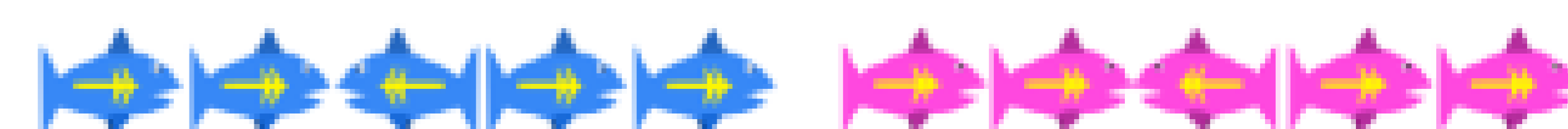
- 6x5m shuttle run
- 20 m SRT VO2max test
- Standing Broad Jump (SBJ)
- Tapping Test (TT)

Attentional capacities

(Have et al., 2016)

n for T[...] ≈ 100

Modified version of the Flanker Task



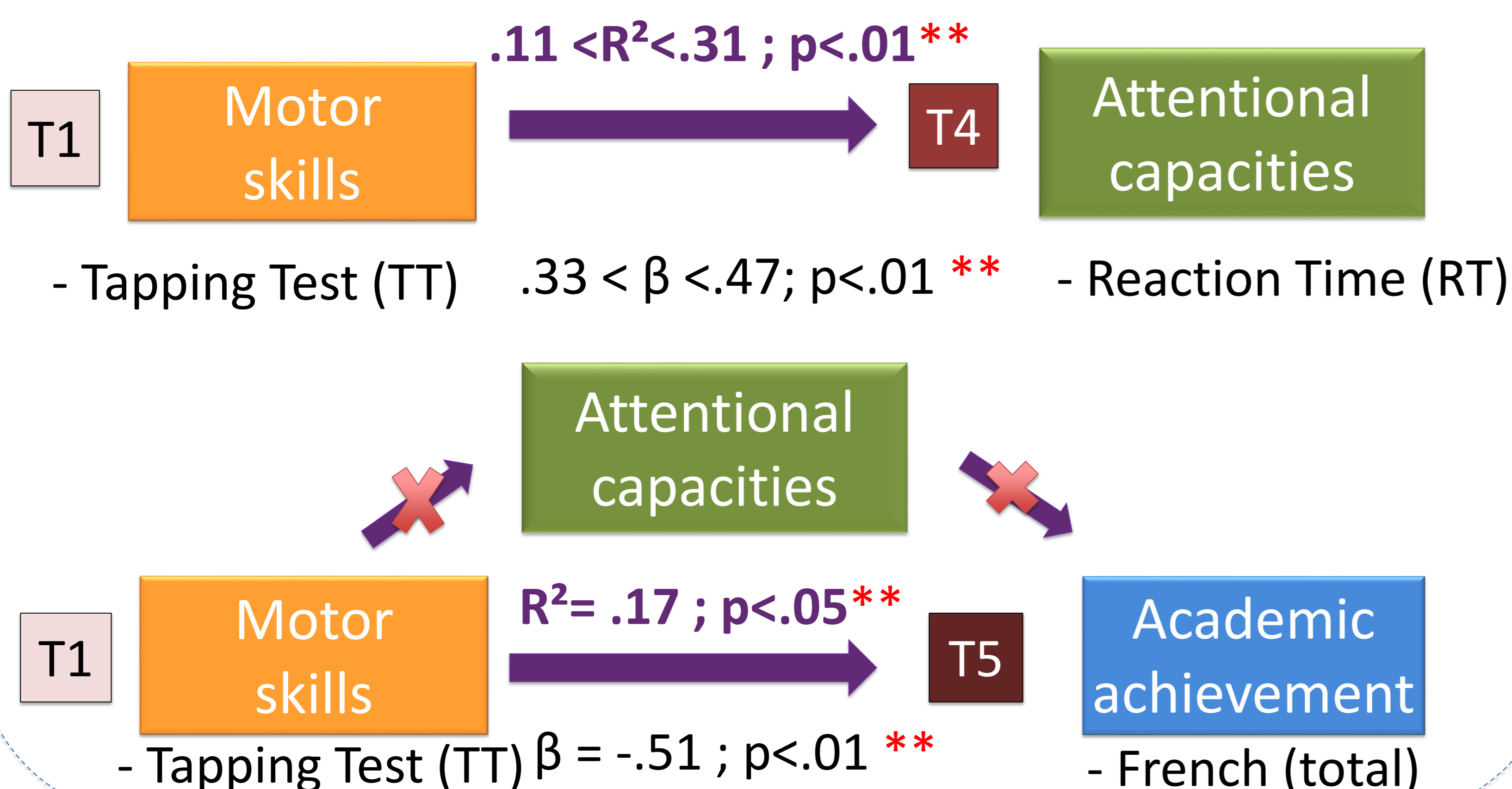
n for T[...] ≈ 100

- Reading
- Arithmetic
- Spelling
- Mathematics (total)
- French (total)
- Average (total)

Academic achievement

Results

Multiple regression analysis n=81 ; 7.98 years old at T1 ; 48% boys



Discussion



Score predicted 2 years later (Diamond, 2012)

Longitudinal approach Innovative effect ++
Joins recent new findings

Further statistical analysis planned

Bibliography

- Adam C, Klissouras V, Ravassolo M, Renson R, Tuxworth W, Kemper H, et al. Handbook for the EUROFIT test of Physical Fitness. Rome: Edigraf Editoriale Grafica;1988
- Diamond, A. (2012). Activities and programs that improve children's executive functions. *Current directions in psychological science*, 21(5), 335-341.
- Donnelly, J. E., Hillman, C. H., Castelli, D., Etnier, J. L., Lee, S., et al. (2016). Physical activity, fitness, cognitive function, and academic achievement in children: a systematic review. *Medicine and science in sports and exercise*, 48(6), 1197.
- Have M, Nielsen JH, Gejl AK, Thomsen Ernst M, Fredens K, St ckel JT, et al. (2016). Rationale and design of a randomized controlled trial examining the effect of classroom-based physical activity on math achievement. *BMC Public Health*. doi: 10.1186/s12889-016-2971-7
- Trost SG, McIver KL, Pate RR. (2005). Conducting accelerometer-based activity assessments in field-based research. *Med Sci Sports Exer.* 37(11): 531-543.