

# Enhancing Neurocognitive Functions in School-aged Children by using Music and Sports?

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- **C**ross-disciplinary
- **I**nitiative for
- **C**ollaborative
- **E**fforts of
- **R**esearch
- **O**n Learning

***Topics:*** Learning, Brain, and Technology



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## **Close transfer between different skills**

- Musical skills enhance brain functions which determine auditory, motoric, and crossmodal functions
- Physical activities also enhance brain functions which determine sensory and motor functions

## Far transfer

- Both music and sports are often linked to better achievements in academic skills
  - Music and higher-order cognition
  - Sports?
  - Causality?

## **Far transfer of sports? Critical review paper writes**

- "Limited evidence was available concerning the effects of physical activity on learning, with only one cross-sectional study meeting the inclusion criteria."
- "Although favorable results have been obtained from cross-sectional and longitudinal studies related to academic achievement, the results obtained from controlled experiments evaluating the benefits of physical activities on academic performance are mixed, and additional, well-designed studies are needed"

Donnelly et al. 2016 Medicine & Science in Sports & Exercise



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# Project plan



Pre-intervention tests

Extra-curricular lessons in music or in sports

Control class without extra lessons

Post-intervention tests



## Research methods in pre- and post-tests

- Behavioral methods/Group tests
- Behavioral methods/Individual tests
- Brain measures/EEG
- In the post-tests, the students and teachers will be also asked for their feedback regarding the intervention programs.



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# Edutower for joint learning by four students



