

BAR-ILAN UNIVERSITY

Does fixed/variable motor practice improve literacy
achievements in second grade students?

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Summary

Background: Lately, some of research studies show that positive effects of longitudinal physical activity programs were consistent for executive functions, attention and academic performance. The results indicate that benefits are largest for continuous cognitively engaging physical activity (physical activity that is cognitively challenging) over several weeks.

Practice conditions during physical activity are known to critically affect the learning, and transfer of newly acquired motor skills. It is not clear if it affects transfer to a different domain.

Method: In the current study, the effect of 20 minutes variable/fixed physical activity of 5 weeks of training (2 days a week) on reading and writing achievements was studied using a Mytzav-like literacy exam in second-grade students. Participants included a sample of 60 second-grade students, aged 7-8 years. The first hypothesis was that Student participating in variable motor practice (VMP) will show better transfer to academic testing and show higher scores on the a Mytzav-like exam. The second hypothesis was that student participating in VMP will achieve higher scores than the group participating in fixed motor practice (FMP) on the motor task. We further hypothesized that executive functioning would, at least partially explain group differences in academic scores.

Results: The results suggest that the first hypothesis is partially confirmed, as the VMP group had higher improvement in some parts of the Mytsav test following the intervention. No support was found for the second hypothesis. The findings indicate that following an Executive function test(*HTKS-Head Toes Knees Shoulders*) may explain the improvement in academic scores.

Conclusion: Statistically powerful intervention studies, that include valid and reliable dependent measures and in which potential confounds are controlled, are needed in order to establish whether a causal relationship exists between exercise and literacy achievements. Specifically, more research is required test the association between different training schedules and academic achievements, to clarify the types and durations of physical activity that may benefit cognitive performance, and to target possible mechanisms underlying the observed relationship.