

Effects of a ludic-motor program on motor development and early literacy skills in preschool children

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There is insufficient evidence in the literature about many correlations between motor and cognitive skills in 3-5 year old children [1]. The aim of this study was to explore the relationship between the development of the gross motor skills and the prerequisites of reading/writing following a ludic-motor program (LMP) in preschool children. This study has involved 189 children (age: 4.62 ± 0.97 years; height: 107.83 ± 7.82 cm, body weight: 19.84 ± 4.95 kg) attending 8 kindergartens in Palermo. The children were randomly divided in a control group (C, $n= 29$), a 1-intervention group (I-1, $n= 120$) and a 2-intervention group (I-2, $n= 40$). I-1 and I-2 respectively performed 4 and 10 hours/week of a 16-week LMP carried out by outside experts; while C children do not perform any LMP. This program was planned in 21 learning modules aimed to develop bodily schemes, basic motor skills, fine motor control and coordination abilities. Before and after the LMP, locomotor and object control skills were evaluated with the Test of Gross Motor Development, while early reading/writing skills with the PRCR-2 test. Analyses of covariance were performed to compare outcomes for I1, I2 and C groups at post-test and the covariate was the participants' measure of cognitive skills at pre-test. Statistical significance was defined at $p<0.05$. I-1 and I-2 groups showed a significant increase in both motor skills compared with C group after the LMP. A significant decrease in the number of errors concerning the serial work skills from left to right, the visual analysis and memory was found in I-1 and I-2 groups compared with C group following the LMP. Moreover, in I-2 group we observed a positive correlation between the pre-requisites of writing/reading and the Quotient of Gross-Motor Ability. The level of motor skills of children of 3-5 years is dependent on the amount of structured physical activity executed. More the level of motor skills reached is high more is correlates with a greater learning of cognitive skills. Therefore, this activity may be a tool to encourage academic achievement of all children and, even more, of those with specific learning disorders.

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References

- [1] Van der Fels et al. (2015) The relationship between motor skills and cognitive skills in 4-16 year old typically developing children: A systematic review. *J Sci Med Sport* 18: 697-703.

Keywords

Children; motor skills; cognition; motor program.