OP19-2
Executive function and soccer in preschool children: a pilot study

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Introduction: Executive Functions (EFs) are top-down mental processes needed when we have to pay attention or to be concentrated in a particular situation or when relying on instinct or intuition would be reckless, insufficient or impossible. EFs can be improved at any age, during the whole lifetime. Bilingualism appears to accelerate EFs development during childhood and preserve EFs longer during aging; its major advantage seems to be the improvement of speed of processing. Also structured motor activity needing thought, precise attention and fast response to unexpected events, as required in playing soccer, could help to improve EFs. The aim of this study was to evaluate EFs and motor coordination (MC) in a group of children, aged 4 and 5 years old, in a pilot study based on game centred soccer school, where playing and bilingualism were the main factors of the project.
Method: 37 children of 4-5 years were involved in the study. Executive function it was evaluated with the TRAIL-P test (4 tasks: control, flexibility, inhibition, and flexibility + inhibition), the test it was assessing the execution time (ET) and the number of error (ER). Furthermore, motor coordination was evaluated with the KTK test. All children repeated the test three time (t1; t2; t3). Between t1−t2 the children played soccer, instead, between t2−t3 they experienced soccer and English at school.
Results: The results of TRAIL-P suggested a significant difference only in ET. Post-hoc revealed a significant difference between t2−t3, but not between t1−t2. Furthermore, significant differences were found in motor coordination among ages and gender: 4y female t1 72 ± 14; t2 97 ± 13; t3 105, 87 ± 18,8; male t1 = 67 ± 24; t2 82 ± 16; t3 93, 5 ± 21 $p < 0.01$; 5 years female t1 91 ± 7, t2 120 ± 23 t3 124 ± 37; male t1 89 ± 7; t2 131 ± 16; t3 138 ± 18, $P < 0.01$.
Conclusion: Results shown that children can improve the time of execution of the trials of cognitive tests. The decrease of the time of execution indicates an improvement of the EFs examined, which can be related to the typical requests of soccer (reaction speed) and of teaching of English (improvement of the ability of processing). This suggests that combining a second language and playing soccer could be useful to ameliorate some EFs. Indeed the improvements of MC has to be considered in the light of the natural changes of coordination during the whole evolution age.

OP19-3
Children's attention performance in running (closed) and racket (open) sports

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Purpose: First, to investigate the influence of different sport training experiences (open skill sport – racket and closed skill sport – running) on attentional performance of preadolescent children (8–13 years of age). Second, to investigate the acute effects of an open or a closed skill training session on children's immediate and delayed attention.
Methods: Thirty-six children divided in two groups of training session (open skill sport session – racket and closed skill sport session – running) were involved. Children's attentional capacity before, immediately after and 50 minutes after each own specific training session were measured, using the d2-R test of attention.
Results: Children's attention scores were higher when engaged in open skill sport training than in closed skill sport training. Children of open skill sport significantly improved their concentration performance (CP) (143.64 ± 5.89 *vs* 172.23 ± 8.90 *vs* 178.71 ± 8.31; $p \leq 0.01$) and decreased the percentage of errors (E%) (7.70 ± 1.04 *vs* 3.65 ± 1.40 *vs* 3.84 ± 1.29; $p \leq 0.01$) across the time, while children of closed skill sport significantly worsened their CP (88.47 ± 5.85 *vs* 98.35 ± 8.83 *vs* 64.70 ± 8.25; $p \leq 0.001$ *vs* 50' post) and E% (14.47 ± 1.03 *vs* 14.31 ± 1.39 *vs* 23.67 ± 1.28; $p \leq 0.001$ *vs* 50' post) across the time. Finally, only boys of open skill sport significantly improved their E% across the time.
Conclusions: Open skill sport experience positively affects children's attentional performance. Specifically, attentional performance significantly improved only in children involved open skill training session, when compared to closed skill training session.

References

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