Supplementation of docosahexaenoic acid (DHA), vitamin D3 and uridine in combination with six weeks of cognitive and motor training in prepubescent children: a pilot study

Background Learning and memory have been shown to be influenced by combination of dietary supplements and exercise in animal models, but there is little available evidence from human subjects. The aim of this pilot study was to investigate the effect of combining a motor- and cognitive exercise program with dietary supplementation consisting of 500 mg docosahexaenoic acid (DHA), 10 μg vitamin D3 and 1000 mg uridine (DDU-supplement) in 16 prepubescent children (age 8–11 years). Methods We designed a randomized, placebo-controlled, double-blinded study lasting 6 weeks in which DDU-supplement or placebo was ingested daily. During the intervention period, all children trained approximately 30 min 3 days/week using an internet-based cognitive and motor training program (Mitii). Prior to and post the intervention period dietary record, blood sampling, physical exercise tests and motor and cognitive tests were performed. Results Fourteen of the 16 children completed the intervention and ingested the supplement as required. 6 weeks DDU-supplementation resulted in a significant increase in the blood concentration of vitamin D2+3 and DHA (p = 0.023 and p < 0.001, respectively). Power calculation based on one of the cognitive tasks revealed a proper sample size of 26 children. Conclusion All children showed improved performance in the trained motor- and cognitive tasks, but it was not possible to demonstrate any significant effects on the cognitive tests from the dietary supplementation. However, DDU-supplementation did result in increased blood concentration of DHA and vitamin D2+3. Trial registration Clinical registration ID: NCT02426554 (clinical Trial.gov). January 2015 retrospectively registered.