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Relationship between long-chain polyunsaturated fatty acids at birth and motor function at 7 years of age.

Bakker EC, **Hornstra G**, **Blanco CE**, **Vles JS**.

Department of Psychology, Netherlands Open University, Heerlen, The Netherlands. esther.bakker@ou.nl

BACKGROUND/OBJECTIVES: Long-chain polyunsaturated fatty acids (LCPUFA) rapidly accumulate in the central nervous system (CNS) during the perinatal CNS growth spurt. This particularly concerns arachidonic acid (AA: 20:4n-6) and docosahexaenoic acid (DHA: 22:6n-3), which are thought to play important roles in CNS development and function. The aim of this study was to investigate the relation between motor function at 7 years of age and the levels of AA and DHA in umbilical venous plasma phospholipids, representing the prenatal availability of these fatty acids, and in plasma phospholipids sampled at age 7 years.

SUBJECTS/METHODS: Motor function was assessed both quantitatively (the ability to perform a movement) and qualitatively (how the movement is performed) with the Maastricht Motor Test (MMT) in 306 children, born at term, at 7 years of age as part of a follow-up study.

RESULTS: Backward stepwise multiple regression analyses revealed a significant, positive relation between umbilical plasma DHA concentrations (but not plasma DHA levels at 7 years) and the MMT total and quality score, corrected for the covariables gender, cognitive performance, gestational age and age at measurement (partial beta=0.13, P=0.01 and 0.14, P=0.01, respectively). The contributions of DHA and AA (both at birth and at 7 years of age) to quantitative movement scores were not significant.

CONCLUSIONS: Our results suggest that prenatal DHA availability, which can be influenced by maternal dietary DHA intake during pregnancy, can have an effect on quality of movement in later life.