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Effect of increasing doses of long chain *n* − 3 PUFA on vascular function: MARINA – a randomised controlled trial

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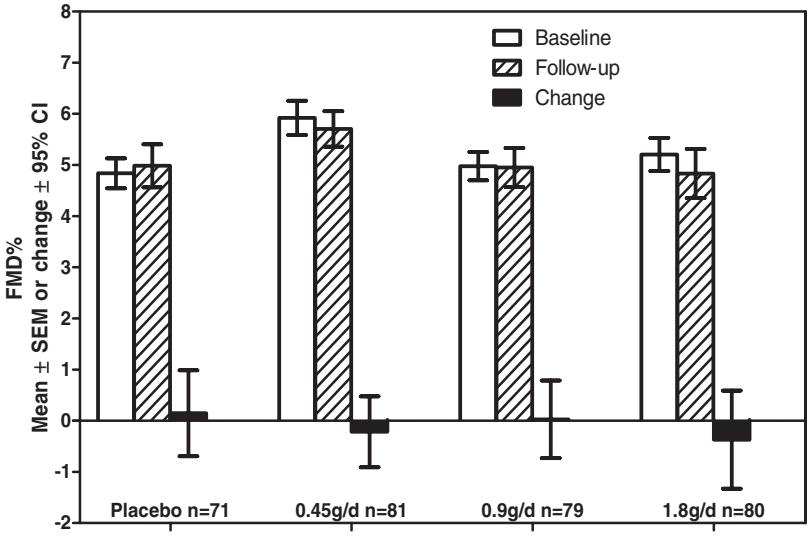
Dietary EPA and DHA intakes have been positively associated with improved endothelial function in young adults[1]. However, Egert *et al.*[2] reviewed thirty-three intervention trials investigating the effects of *n* − 3 PUFA on fasting and/or postprandial endothelial function and no clear conclusion could be drawn because of the small numbers in many trials and inconsistent methodology. The MARINA study (ISRCTN66664610) was a randomised controlled trial designed to test the hypothesis that increasing doses of EPA and DHA (0.45 g, 0.9 g and 1.8 g/d; equivalent to consuming 1, 2 or 4 portions of oily fish per week) taken for 1 year have favourable effects on endothelial function measured by flow-mediated dilatation (FMD) of the brachial artery. EPA + DHA and placebo (olive oil BP) were administered as supplements and the study was conducted double blind. A total of 367 non-smoking participants (142 men, 225 women aged 45–70 years, mean age 55 years) were randomised to treatment and a total of 312 subjects completed; data was available for analysis on 311 subjects for baseline and follow-up measurements of endothelial function. The mean (95 % CI) increase in erythrocyte EPA compared with placebo was 0.74 (0.56–0.91), 1.31 (1.13–1.48) and 2.51 (2.33–2.69) wt % on 0.45 g/d, 0.9 g/d and 1.8 g/d, respectively ($P<0.0001$). Significant reductions in plasma TAG concentrations ($P = 0.002$) were observed in women but not men: in comparison with placebo changes were −0.06 (−0.21 to 0.09), −0.12 (−0.27 to 0.03) and −0.29 (−0.44 to −0.14) mmol/l on doses of 0.45, 0.9 and 1.8 g/d, respectively. No significant treatment effects were noted for ambulatory blood pressure or arterial stiffness (pulse wave velocity). FMD was lower in men than in women ($P<0.0001$) and decreased with age ($\rho = 0.270$; $P<0.001$) but there were no statistically significant treatment effects ($P = 0.781$).



Our results are consistent with a cross-sectional survey in 3045 adults[3] that found no significant relationship between the *n* − 3 LCP intake with FMD but a trend for FMD to be 0.1 and 0.27 % lower on the highest compared with lowest intake in men and women, respectively. Our results indicate that intakes of *n* − 3 LCP up to 1.8 g/d do not influence endothelial function in healthy non-smoking adults at moderate risk of CVD.

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1. Leeson CP, Mann A & Kattenhorn M (2002) *Eur Heart J* **23**, 216–222.
2. Egert S & Stehle P (2011) *Curr Opin Clin Nutr Metab Care* **14**, 121–31.
3. Anderson JS, Nettleton JA, Herrington DM *et al.* (2010) *Am J Clin Nutr* **92**, 1204–1213.