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# Serum phospholipid n-3 long-chain polyunsaturated fatty acids and physical and mental health in a population-based survey of New Zealand adolescents and adults<sup>1, 2, 3</sup>

Francesca L Crowe<sup>1</sup>, C Murray Skeaff<sup>1</sup>, Timothy J Green<sup>1</sup> and Andrew R Gray<sup>1</sup>

<sup>1</sup> From the Departments of Human Nutrition (FLC, CMS, and TJG) and Preventive and Social Medicine (ARG), University of Otago, Dunedin, New Zealand

**Background:** Evidence from observational studies suggests that there is an association between n-3 long-chain polyunsaturated fatty acids and depression; however, this association has yet to be examined in a population-based study.

**Objective:** The objective was to assess whether n-3 long-chain polyunsaturated fatty acids in serum phospholipids are associated with mental and physical well-being.

**Design:** The fatty acid composition of serum phospholipids was measured in 2416 New Zealanders aged ≥15 y who took part in the 1997 National Nutrition Survey. The mental and physical component scores were assessed by using the short-form 36 health questionnaire.

**Results:** After adjustment for a number of covariates, there was a significant positive trend in self-reported physical well-being across the quintiles of eicosapentaenoic acid (*P* for trend = 0.009) and the ratio of eicosapentaenoic to arachidonic acid (*P* for trend = 0.012). The differences in the physical component score between the first and fifth quintiles were 2.4 and 2.5 points, respectively. The results showed that neither the proportion of eicosapentaenoic acid nor that of docosahexaenoic acid was associated with the mental component score; however, there was a significant positive trend in mental well-being across the quintiles of the ratio of eicosapentaenoic to arachidonic acid (*P* for trend = 0.044).

**Conclusion:** The results from this population-based survey of New Zealanders suggest a strong and consistent association between eicosapentaenoic acid in serum phospholipids and self-reported physical well-being; the association with mental well-being is less compelling.

**Key Words:** Mental health • n-3 fatty acids • quality of life • nutrition surveys • New Zealanders

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