

# Food2Learn: Effect of 1 year krill oil supplementation on mental well-being in typically developing Dutch adolescents

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# Effect of 1 year krill oil supplementation on mental well-being in typically developing Dutch adolescents.

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## Introduction

Adolescence is a period characterised by extensive physical, emotional, social, and cognitive change. Depressive feelings and/or low self-esteem are common in adolescents and have been associated with long-term negative health and social outcomes. Multiple studies have shown an association between long-chain polyunsaturated fatty acids and depression in adults. Research on whether this is also the case in adolescents from the general population is scarce. We studied the effect of 1 year krill oil supplementation on depression and self-esteem in typically developing adolescents. Data from Food2Learn, a double-blind, randomised, placebo controlled supplementation trial in typically developing adolescents, were used.

## Methods

**Design:** double-blind, randomised, placebo-controlled supplementation trial with repeated measurements.

**Population:** healthy adolescents age 13-15 yr. attending lower secondary general education (n= 266) with an Omega-3 Index <5% were randomised to either placebo or krill oil supplementation (520mg EPA, 280mg DHA per day) for 1 year.

**Independent variable:** intervention condition (krill oil or placebo) and Omega-3 Index measured in blood.

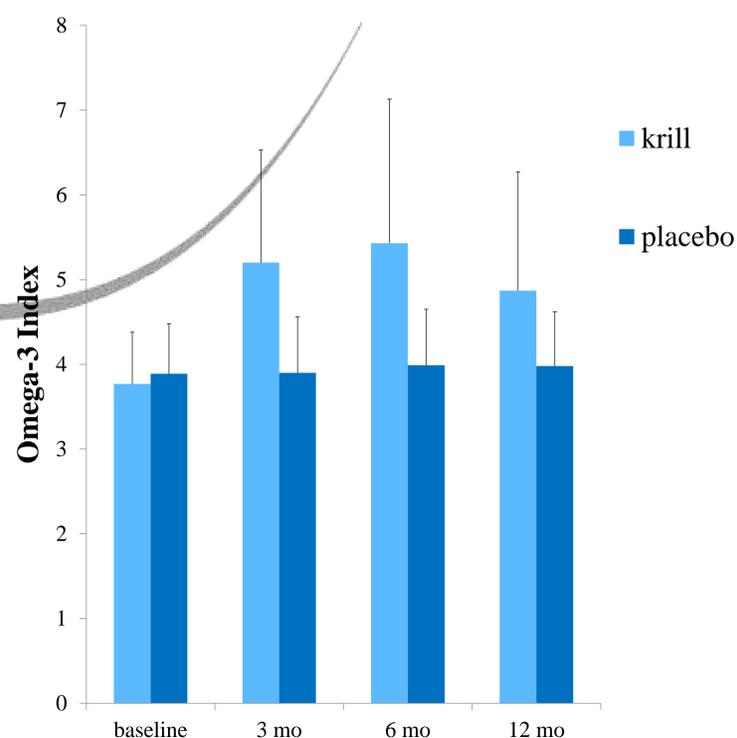
**Dependent variables:** the Dutch version of the Centre for Epidemiologic Studies Depression Scale (CESD-D) and the Rosenberg Self-Esteem Scale (RSE).

**Data analyses:** mixed models that accounted for correlations of follow-up measurements within participants and adjusted for the baseline measurements and covariates.

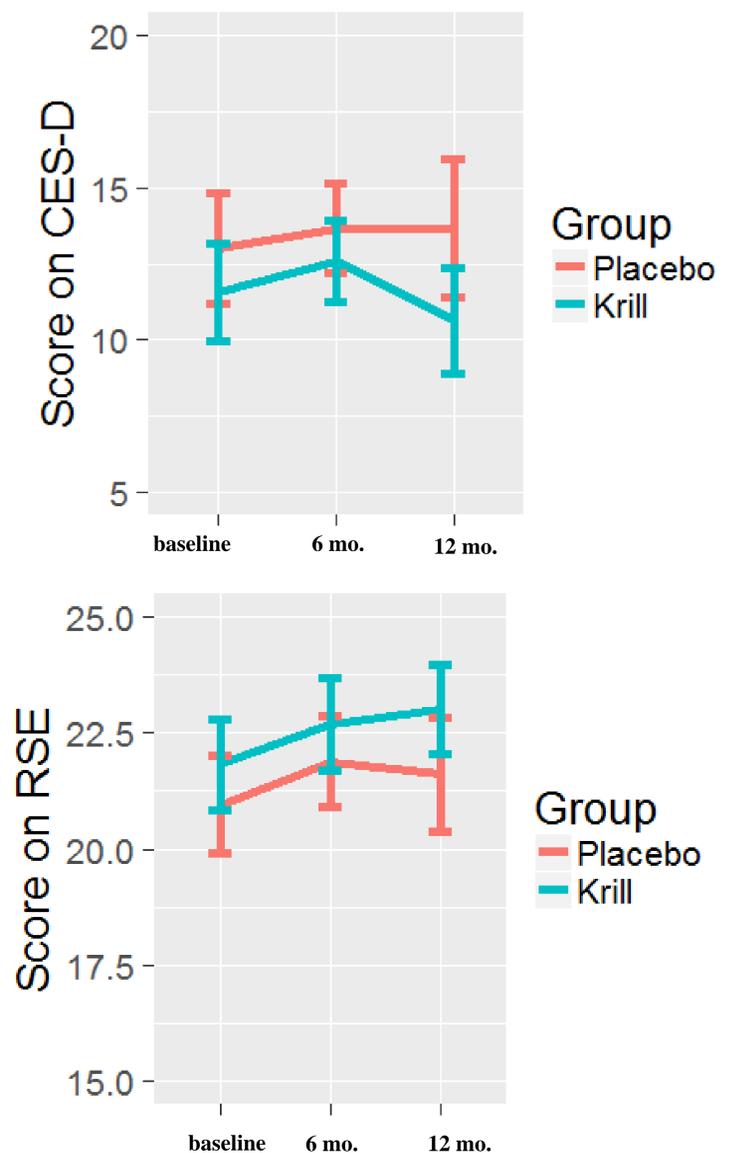
**Covariates:** smoking, alcohol consumption, age, sex, BMI, parental education level and cohort number.

## Results

**Figure 1:** Omega-3 Index of participants in blood measured at baseline, 3, 6 and 12 months (mean  $\pm$  sd).



**Figure 2:** Scores on the CES-D and RSE at baseline, 6 months and 12 months separated for placebo and krill group (mean and 95%CI).



Mixed models did not show a significant effect of krill oil supplementation on depression score ( $\beta = -1.37$ ,  $p = 0.235$ , 95% CI [-3.59 to 0.84]), nor a significant relationship between Omega-3 Index and depression score ( $\beta = 0.30$ ,  $p = 0.325$ , 95% CI [-0.30 to 0.90]). Furthermore, there was no significant effect of krill oil supplementation on self-esteem ( $\beta = 0.62$ ,  $p = 0.375$ , 95% CI [-0.72 to 1.96]), nor an significant relationship between Omega-3 Index and self-esteem score ( $\beta = -0.09$ ,  $p = 0.608$ , 95% CI [-0.42 to 0.24]).

## Conclusion

The study did not show a significant effect of one year of krill oil supplementation on either depression or self-esteem score. Moreover, no significant relationship between Omega-3 Index and either depression or self-esteem score was shown in this sample of typically developing students of the lower general secondary education in the Netherlands. Unfortunately, the majority of the students randomised to the krill oil condition did not achieve the target Omega-3 Index of 8-11%, possibly due to non-compliance. More research in this important age group is necessary.

## Declaration of Interests

C. von Schacky is owner of OmegaMatrix.

T. Bergeland was formerly employed by AkerBioMarine.

Both companies have partly funded this study.