8 Supplementary Figures

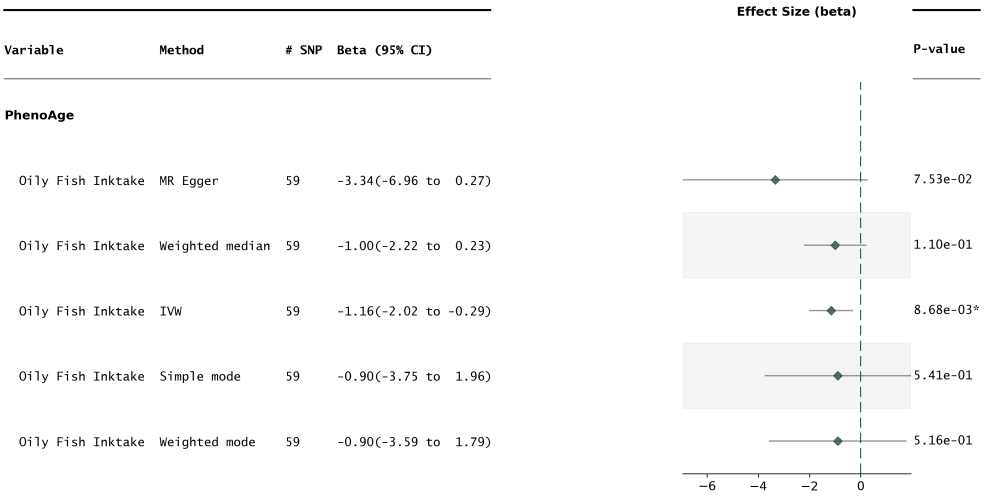

Fig. 1S All 5 MR Methods for Oily Fish Intake vs PhenoAge Forest plot showing additional MR methods of simple mode, weighted mode, and weighted median for this statistically significant exposure outcome pair.

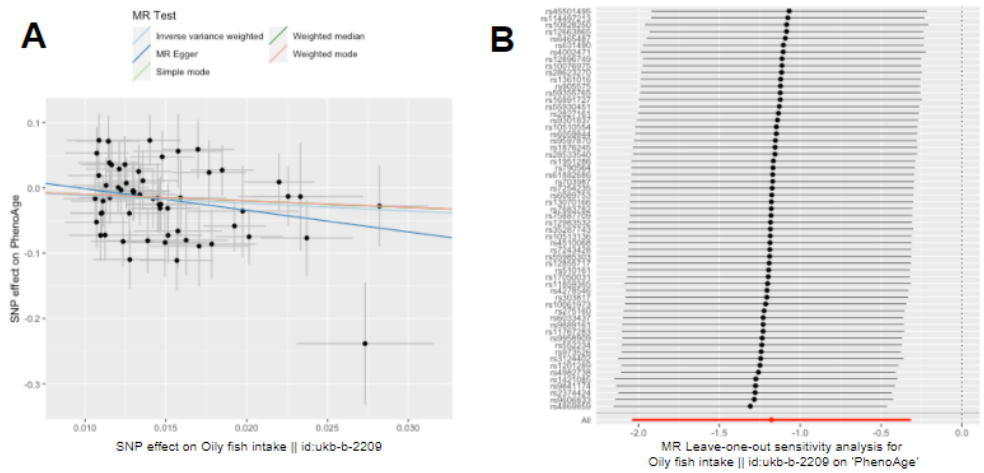

Fig. 2S Sensitivity Analysis of Oily Fish Intake on PhenoAge. Scatter plot of IV effects on 5 MR methods (A) and LOO analysis (B) used to assess the robustness of the causal estimate of oily fish intake on PhenoAge.

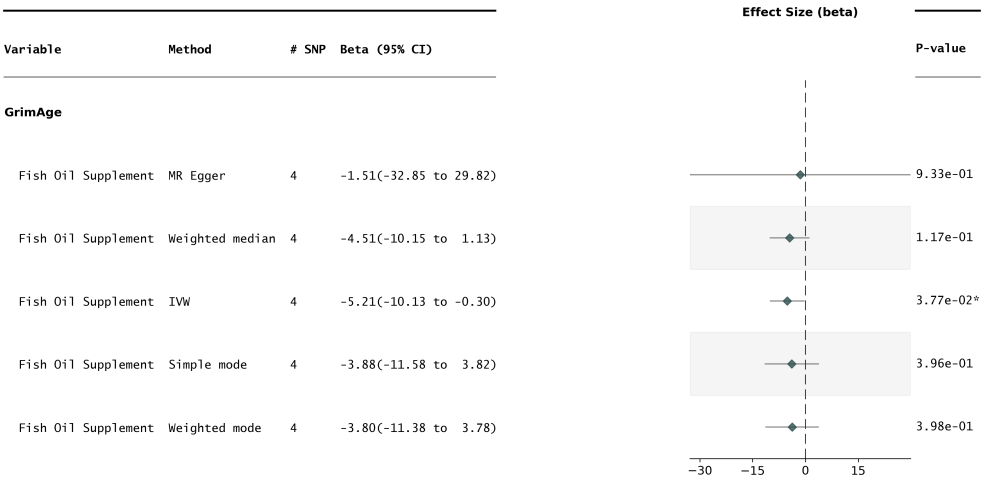

Fig. 3S All 5 MR Methods for Fish Oil vs GrimAge Forest plot showing additional MR methods of simple mode, weighted mode, and weighted median for this statistically significant exposure outcome pair.

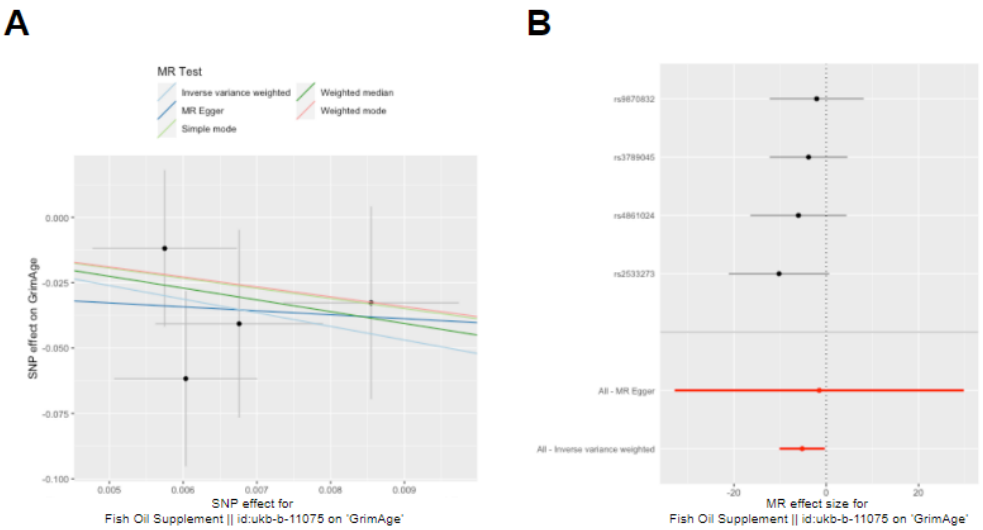

Fig. 4S Sensitivity Analysis of Fish Oil Intake on GrimAge. Scatter plot of IV effects on 5 MR methods (A) and LOO analysis (B) used to evaluate the robustness of the causal estimate of fish oil intake on GrimAge

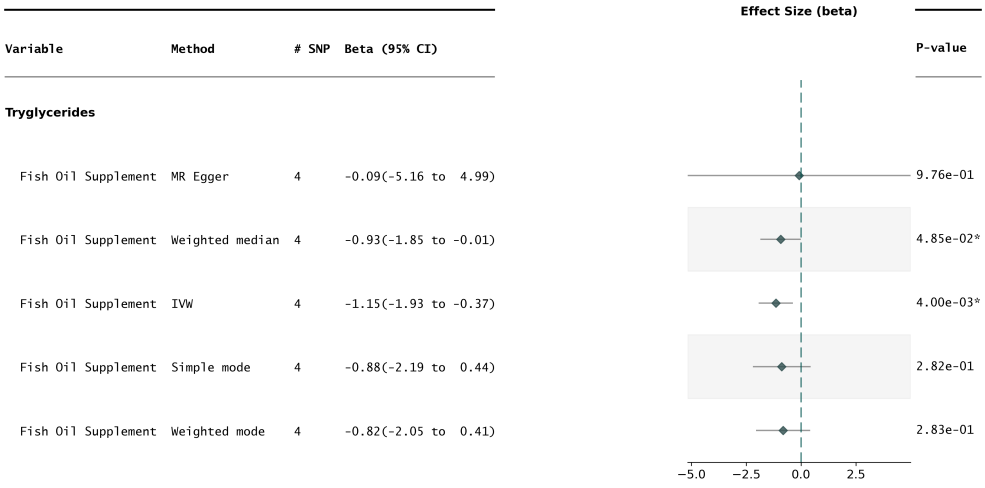

Fig. 5S All 5 MR Methods for Fish Oil vs Triglycerides Forest plot showing additional MR methods of simple mode, weighted mode, and weighted median for this statistically significant exposure outcome pair.

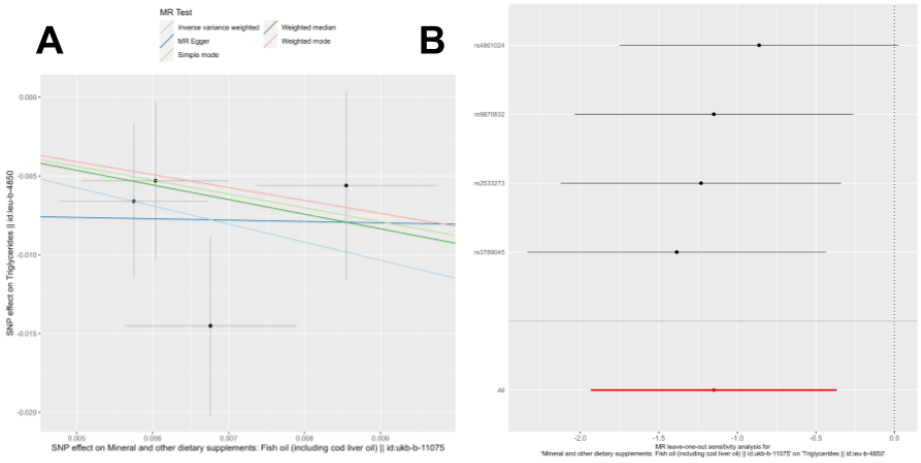

Fig. 6S Fish Oil Triglycerides Sensitivity Scatter plot of IV effects on 5 MR methods (A) and LOO analysis (B) used to assess the robustness of the causal estimate of fish oil supplementation on triglycerides.

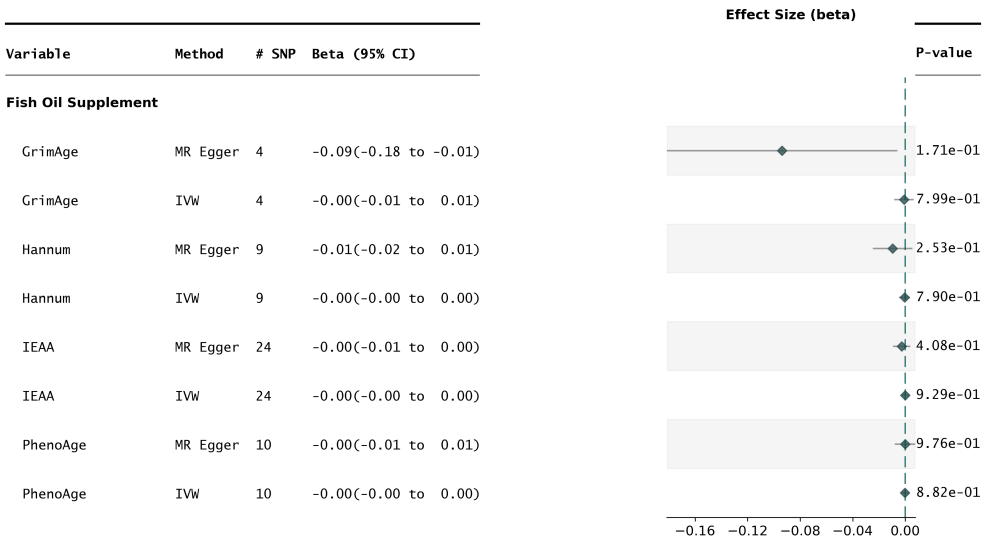

Fig. 7S Reverse MR of Epigenetic Age Measures vs Fish Oil Intake. Beta coefficients and p-values used to represent the potential impact of four epigenetic age measures on fish oil intake. No significant associations were observed.

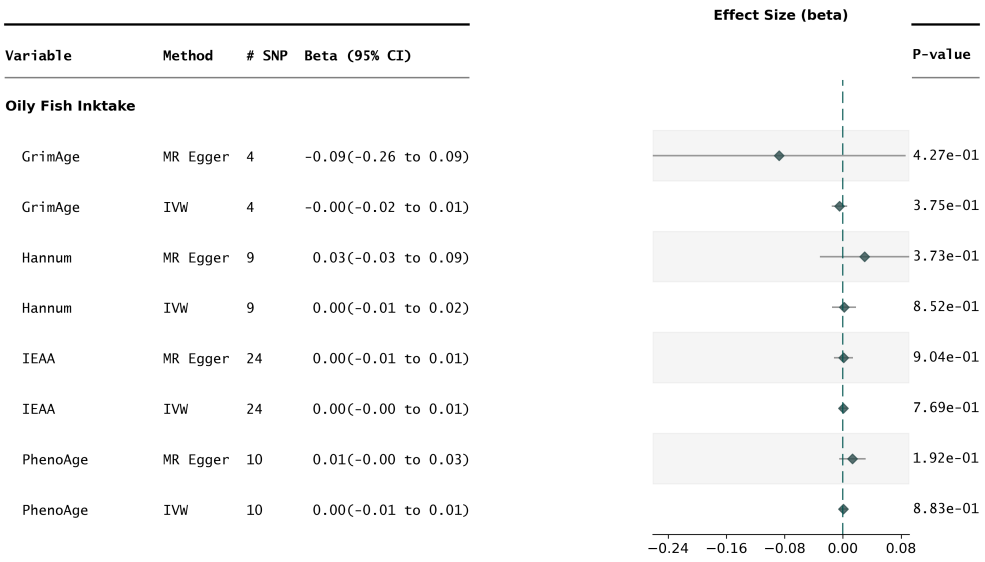

Fig. 8S Reverse MR of Epigenetic Age Measures vs Oily Fish Intake. Beta coefficients and p-values used to depict the potential influence of four epigenetic age measures on oily fish intake. No significant associations were observed.

Variable	Method	# SNP	Beta (95% CI)	P-value
Fish Oil Supplement				
C-Reactive Protein Level	MR Egger	53	0.00(-0.00 to 0.01)	2.86e-01
C-Reactive Protein Level	IVW	53	0.00(-0.00 to 0.01)	1.49e-01
C-Reactive Protein Level	MR Egger	28	0.01(-0.01 to 0.03)	2.77e-01
C-Reactive Protein Level	IVW	28	0.00(-0.01 to 0.01)	8.54e-01
HDL Cholesterol	MR Egger	32	-0.00(-0.01 to 0.01)	8.38e-01
HDL Cholesterol	IVW	32	0.00(-0.01 to 0.01)	7.51e-01
LDL Cholesterol	MR Egger	41	0.01(-0.00 to 0.01)	9.62e-02
LDL Cholesterol	IVW	41	0.00(-0.00 to 0.01)	1.27e-01
Tryglycerides	MR Egger	37	0.00(-0.02 to 0.02)	7.19e-01
Tryglycerides	IVW	37	0.01(-0.00 to 0.02)	2.87e-01

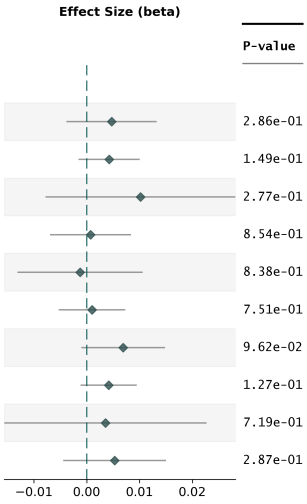

Fig. 9S Reverse MR of Blood Biomarkers vs Fish Oil Supplement. Beta coefficients and p-values illustrating the influence of blood biomarkers on fish oil supplementation. No significant associations found.

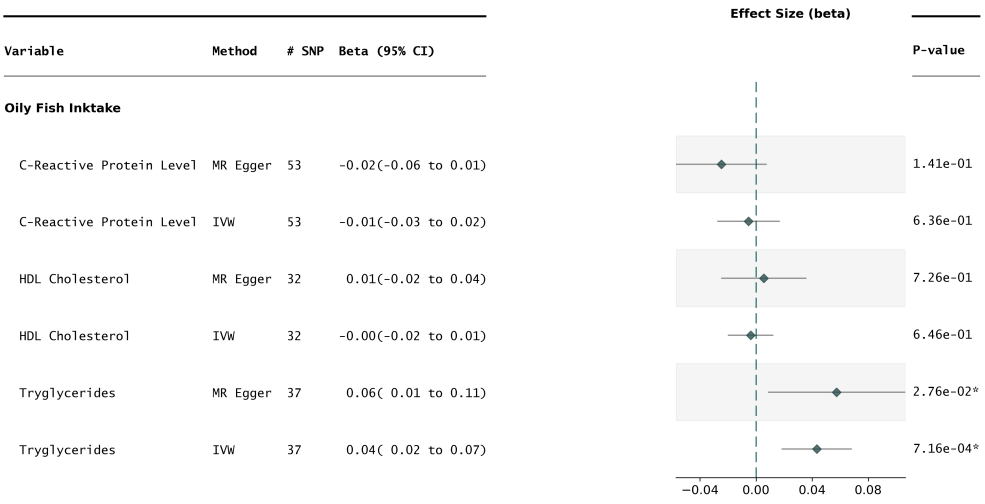

Fig. 10S Reverse MR of Blood Biomarkers vs Oily Fish Intake. Beta coefficients and p-values demonstrating the influence of blood biomarkers on oily fish intake. Significant reverse MR associations ($p < 0.05$) were found for LDL cholesterol and triglycerides on oily fish intake.