

# Effect of Fish Oil Supplementation on Secondary Prevention of Myocardial Infarction and Major Adverse Cardiovascular Events: A Meta-Analysis

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## BACKGROUND

- Consumption of fish, comprised of omega-3 fatty acids, is associated with decreased risk of adverse cardiovascular events.

- The cardiovascular effect of Fish Oil (FO) has been studied in animal and human models and has been associated with decreased arrhythmias leading to fewer sudden deaths. FO has also been theorized to induce stabilization of atherosclerotic plaques by reducing inflammation and platelet aggregation. Additionally, FO has been associated with decreased blood pressure, decreased triglycerides, and increased High Density Lipoprotein (HDL).

## STUDY AIMS

- To determine whether FO supplementation in patients with known coronary artery disease (CAD) is associated with lower myocardial infarction (MI) and major adverse cardiovascular events (MACE) in the form of a meta-analysis.

## METHODS

- A search of the BIOSIS+/RRM, MEDLINE, The Cochrane Library Database, and proceedings from several professional societies from January 1976 to March 2007 was performed.

- Randomized, controlled, peer-reviewed trials investigating the use of FO on the prevention of MI or MACE (death, nonfatal MI, stroke) were identified in patients with CAD with one year FO use. MI was defined by appearance of new Q waves, the elevation of troponin I/CK-MB, or myoglobin above normal limits.

## STATISTICAL ANALYSIS

- An odds ratio (OR) with a 95% confidence interval was used to assess the comparative effect of fish oil versus placebo in patients with known coronary artery disease. A fixed-effect model with the Mantel-Haenszel method was used to pool these ORs. The extent of heterogeneity across studies was examined by using the  $\chi^2$  test. A two-tailed p value  $<0.05$  was considered significant

## RESULTS

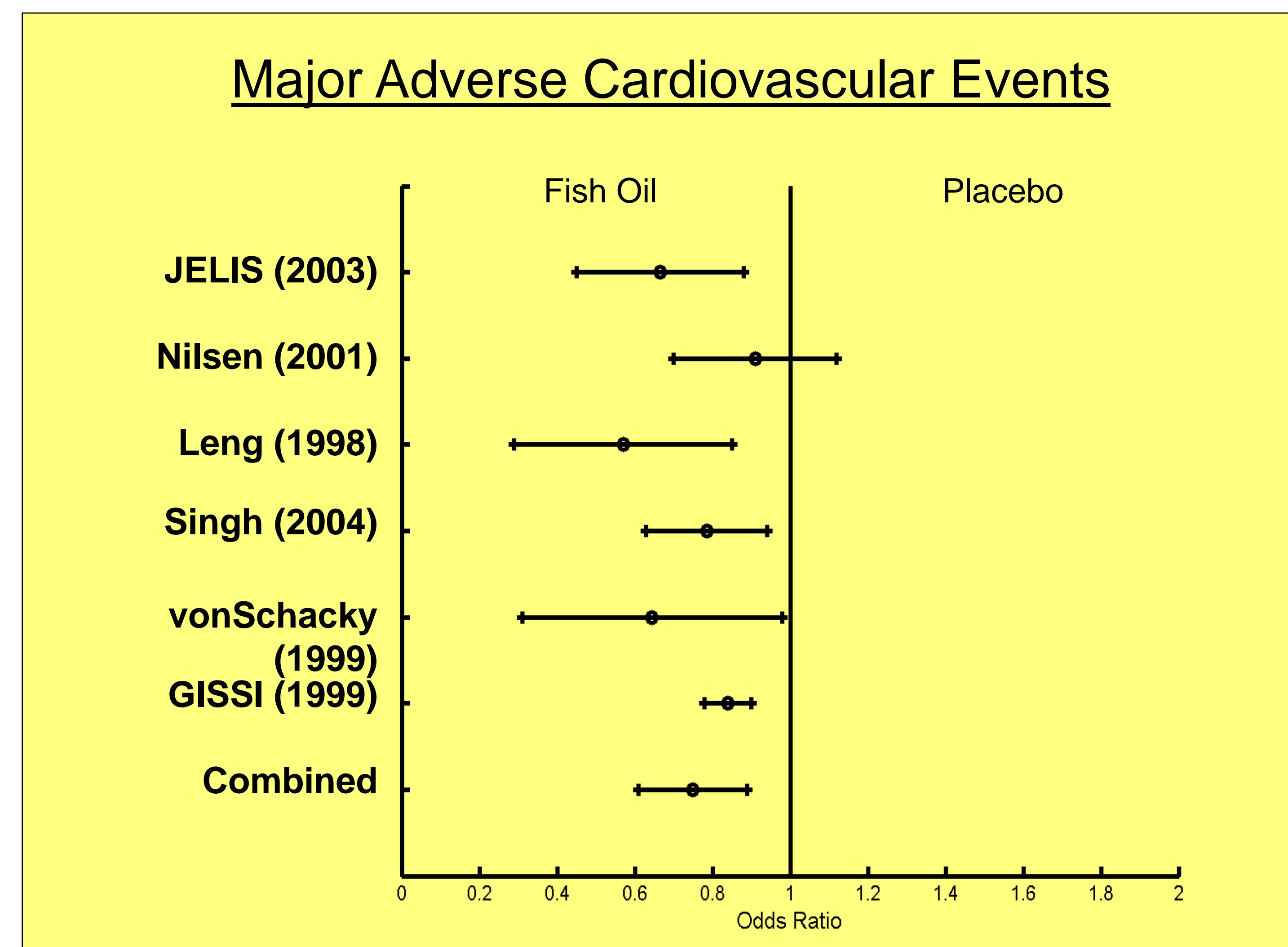


Figure 1. Odds ratio: Effect of fish oil on major adverse cardiovascular events.

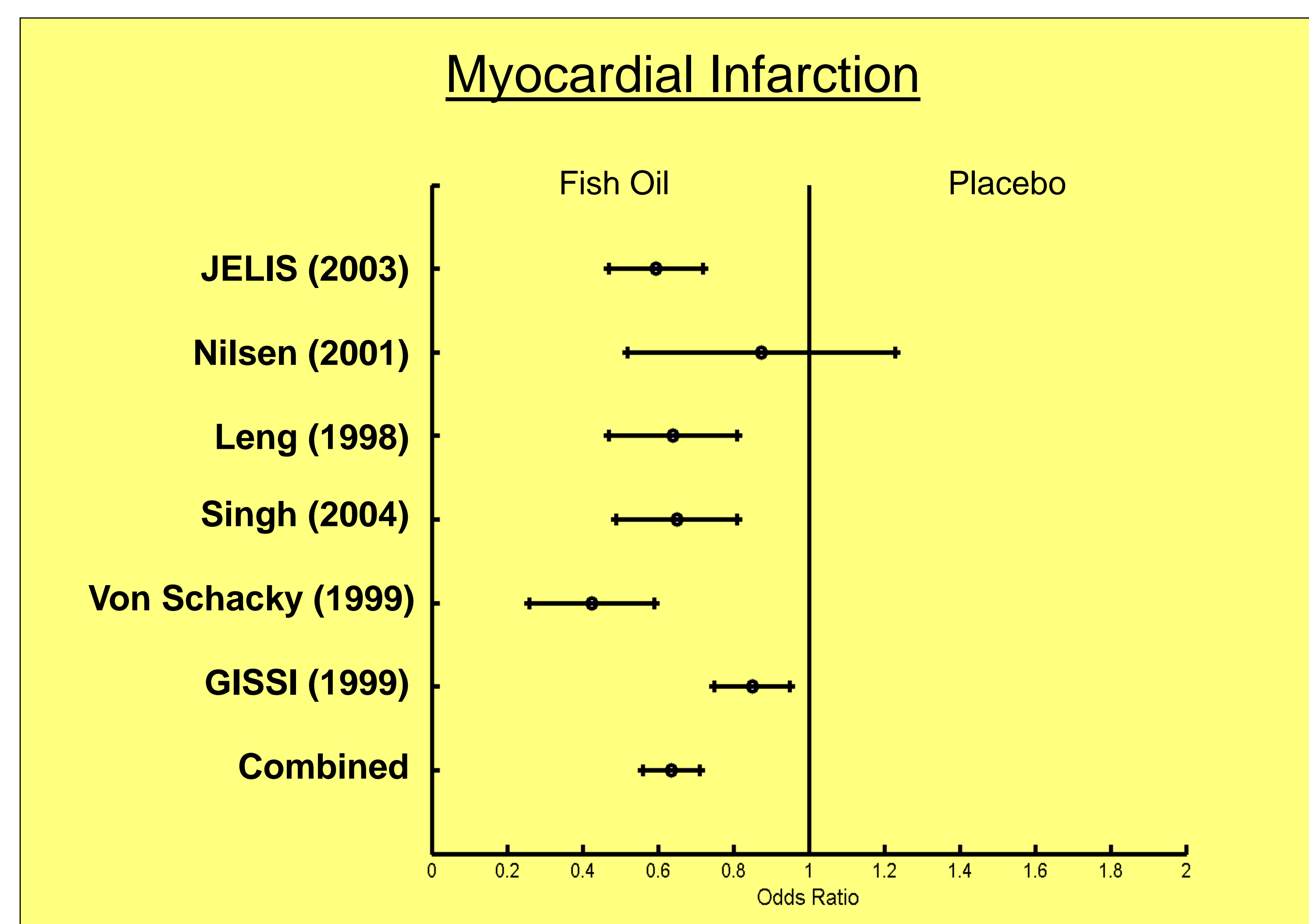


Figure 2. Odds ratio: Effect of fish oil on myocardial infarction.

## RESULTS - MI

- Six trials were identified involving 10192 patients without evidence of heterogeneity identified among the trials ( $p=0.66$ )

- The summary effect of FO on reducing MI was significant ( $p<0.001$ ). Treatment with FO resulted in a relative odds reduction of 8% (7.5% vs. 6.9%; OR 0.79, 95% CI 0.53-0.92,  $p<0.001$ ).

## RESULTS - MACE

- There was no evidence of heterogeneity among trials ( $p=0.43$ ).

- The summary effect of FO on reducing MACE was significant ( $p<0.03$ ). Treatment with FO resulted in a relative odds reduction of 11% (21.2% vs. 18.9%; OR 0.52, 95% CI 0.31-0.81,  $p<0.03$ ).

## CONCLUSIONS

- Fish oil supplementation in patients with CAD is associated with significant reduction in MI and MACE at one year. This may be due to FO effect on plaque stabilization, improved lipid profile or lowered blood pressure.

- Further randomized prospective trials are warranted to validate these findings, to address possible mechanisms of action, and to find an optimal dose of FO.

## REFERENCES

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