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Effects of Omega-3 Fatty Acids on Resting Heart Rate, Heart Rate Recovery After Exercise, and Heart Rate Variability in Men With Healed Myocardial Infarctions and Depressed Ejection Fractions

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We explored possible mechanisms by which recommended intakes of ω -3 fatty acids may decrease the risk for sudden cardiac death in patients with documented coronary heart disease. The cardioprotective effects of ω -3 fatty acids have been documented in epidemiologic and randomized controlled trials. These fatty acids are presumed to decrease susceptibility to fatal arrhythmias, but whether this is mediated by classic risk factors or direct cardiac mechanisms is not known. Eighteen white men with a history of myocardial infarction and ejection fractions <40% were randomized to placebo or ω -3 fatty acids (585 mg of docosahexaenoic acid and 225 mg of eicosapentaenoic acid) for two 4-month periods in a crossover design. At the end of each period, heart rate (HR), HR variability, and rate of HR recovery after exercise were determined, as were effects on arterial compliance, blood pressure, cardiac function, and fasting serum levels of lipids and inflammatory markers. Omega-3 fatty acids decreased HR at rest from 73 ± 13 to 68 ± 13 beats/min ($p < 0.0001$) and improved 1-minute HR recovery after exercise (-27 ± 10 to -32 ± 12 beats/min, $p < 0.01$). HR variability in the high-frequency band increased ($p < 0.02$), but no change was noted in overall HR variability. There were no significant effects on blood pressure, arterial compliance, lipids, or inflammatory markers. These changes are consistent with an increase in vagal activity and may in part explain the observed decrease in risk for sudden cardiac death seen with ω -3 fatty acid supplementation.

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