INTRODUCTION AND AIMS: Marine n-3 polyunsaturated fatty acids (PUFA) have cardiovascular benefits and have been associated with a reduction in cardiovascular mortality and sudden cardiac death across different patient populations including patients with end-stage renal disease (ESRD). It has been suggested that a part of the cardio-protective effect of marine n-3 PUFA is a lowering of heart rate since a lower resting heart rate is associated with a lower mortality and risk of sudden cardiac death. A negative chronotropic effect of n-3 PUFA has been seen in several studies in the general population, but has not been investigated in patients with ESRD who have a high risk of sudden cardiac death. Hence, the aim of this study was to investigate the effects of a supplement with marine n-3 PUFA on mean RR-interval and heart rate in patients with ESRD.

METHODS: In a randomized, double-blinded, placebo-controlled trial 112 patients on chronic dialysis were evenly allocated to a daily supplements of 2 g marine n-3 PUFA or control oil (olive oil) for 3 months. A 48-hour Holter monitoring was performed before and after supplementation. All non-sinus beats were excluded and the 24-hour mean RR-interval and mean heart rate were calculated in patients with complete recordings (>80% of each 24 hours).

RESULTS: A total of 85 patients were included in the final analysis. The mean age was 62.3 ± 14.3 years and median dialysis vintage was 1.7 years (interquartile range: 0.5, 6.4). At baseline the mean RR-interval and mean heart rate were 816.6 ± 116.3 ms and 75.1 ± 11.3 beats per minute (bpm) in the n-3 PUFA group (n=42) and 815.2 ± 121.0 ms and 76.0 ± 10.3 bpm in the control group (n=43), respectively. The supplement with marine n-3 PUFA increased the mean RR-interval significantly by 28.2 ms (95% CI: 3.4-53.0 ms, p=0.03) corresponding to a significant decrease in heart rate by 2.5 bpm (95% CI: 0.1-5.0 bpm, p=0.04).

CONCLUSIONS: Supplementation with 2 g marine n-3 PUFA increased the mean RR-interval significantly corresponding to a heart rate lowering effect of 2.5 bpm in patients with ESRD, which is at a comparable level as seen in studies in populations without ESRD.