

# Efek latihan resistensi terhadap kadar pro protein convertase subtilisin kexin-9 pada pasien pasca bedah pintas arteri koroner yang menjalani program rehabilitasi fase ii = the effect of resistance training on pro protein convertase subtilisin kexin 9 level in post coronary artery bypass graft surgery patients who undergo phase ii cardiac rehabilitation

Bambang Dwiputra, author

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## Abstrak

Latar Belakang: Proprotein convertase subtilisin kexin-9 PCSK-9 merupakan protein yang menghancurkan reseptor low density lipoprotein LDL sehingga penurunan kadarnya dapat menurunkan kadar LDL. Sebagai bagian dari pencegahan sekunder, latihan resistensi direkomendasikan pada pasien pasca bedah pintas arteri koroner BPAK.

Tujuan: Mengetahui efek tambahan latihan resistensi terhadap kadar PCSK-9 pada pasien pasca bedah pintas arteri koroner yang menjalani rehabilitasi fase II.

Metode: Studi eksperimental randomisasi acak tersamar tunggal membagi 87 pasien pasca BPAK menjadi dua kelompok. Kelompok kontrol n=43 adalah pasien yang menjalani rehabilitasi fase II standar sementara kelompok intervensi n=44 adalah pasien yang menjalani rehabilitasi fase II ditambah dengan latihan resistensi tersupervisi. Kadar PCSK-9 diperiksa sebelum dan sesudah rehabilitasi fase II pada kedua kelompok.

Hasil: Setelah menyelesaikan rehabilitasi fase II, didapatkan perbedaan kadar PCSK-9 yang bermakna antara kelompok kontrol dan intervensi 377,1 SD 125 vs 316,6 111,1 ng/ml,  $\Delta$  = -60,5 ng/ml, 95 CI -7,5 - 113,4, p=0.026. Tidak didapatkan perbedaan bermakna pada kadar LDL p=0,07, kolesterol total p=0,99, high density lipoprotein HDL p=0,44, dan trigliserid p=0,56 antara kedua kelompok pada akhir rehabilitasi fase II.

Kesimpulan: Tambahan latihan resistensi dapat menurunkan kadar PCSK-9 secara bermakna pada pasien pasca bedah pintas arteri koroner yang menjalani rehabilitasi fase II.

.....Background: Pro protein Convertase Subtilisin Kexin 9 PCSK 9 is a protein degrading low density lipoprotein LDL receptor that lower LDL. As secondary prevention, resistance training is recommended after coronary artery bypass surgery CABG as a complement to aerobic exercise.

Objective: To determine the effects of additional resistance training on PCSK 9 levels and lipid profile in post CABG patients who undergo phase II cardiac rehabilitation.

Methods: A single blinded randomized clinical trial of 87 post CABG patients was divided into two groups. The control group n 43 consisted of patients who received standard phase II cardiac rehabilitation while intervention group n 44 received standard program and supervised resistance training. PCSK 9 level and lipid profile examination were performed pre and post training.

Results: After completion of phase II cardiac rehabilitation, mean PCSK9 levels in intervention group decrease significantly compared to control group control vs intervention, 377,1 SD 125 vs 316,6 111,1 ng ml, 60,5 ng ml, 95 CI 7,5 113,4 , p 0.026 . Nonetheless, there are still no significant changes in terms of LDL level p 0,07 , total cholesterol p 0,99 , high density lipoprotein p 0,44 and triglyseride levels p 0,56 pre and post intervention between two groups.

Conclusion: The additional resistance training can reduce significantly PCSK 9 levels in patients after CABG surgery who underwent phase II cardiac rehabilitation.