

Pengaruh latihan aerobik terhadap fibrinolisis, viskositas darah dan viskositas plasma serta profil lipid pada peserta Klub Jantung Sehat

Bororing, Sheella R., author

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Abstrak

LATAR BELAKANG: Olahraga memainkan peran penting pada pencegahan penyakit jantung koroner (PJK). Latihan aerobik senam jantung sehat (SJS) adalah senam yang khusus dibuat oleh Yayasan Jantung Indonesia, ditujukan untuk peserta sehat maupun penderita jantung. Tujuan penelitian ini untuk menganalisa pengaruh latihan SJS terhadap parameter fibrinolisis (t-PA dan PAI-1), viskositas (viskositas darah dan plasma) dan profil lipid (kolesterol total, trigliserida, kolesterol HDL, koletserol LDL)

BAHAN DAN METODE: 30 subyek terdiri dan 28 wanita dan 2 pria yang berusia 40-80 tahun. Subyek penelitian mengikuti latihan SJS dengan frekuensi 3 kali seminggu, intensitas sedang dan durasi 40-45 menit, selama 9-12 minggu. Pengambilan darah sebanyak 13,5 mL dilakukan sebelum program dimulai dan setelah program selesai. Darah dimasukkan ke dalam tabung berisi sitrat, K3EDTA dan tanpa antikoagulan. Plasma sitrat untuk pemeriksaan kadar t-PA dan PAI-1, darah K3EDTA untuk viskositas darah dan plasma, serta serum untuk pemeriksaan profil lipid. Penetapan kadar t-PA dan PAI-1 berdasarkan prinsip double antibody sandwich enzyme linked immuno assay (ELISA), pemeriksaan viskositas menggunakan alat viskometer Brookfield LVDV-III dengan prinsip metode rotasional, kolesterol total dan trigliserida memakai prinsip enzimatik, serta kolesterol HDL dan kolesterol LDL diukur secara langsung dengan prinsip enzimatik homogen.

HASIL: Peneltian ini memberikan hasil peningkatan bernakna t-PA (18,25%, $p=0,040$) dan penurunan bermakna PAI-1 (29,14%, $p=0,03$). Didapatkan penurunan bermakna viskositas darah (2,94%, $p=0,030$). Didapatkan penurunan yang tidak bermakna viskositas plasma, kolesterol total, trigliserida, dan kolesterol LDL, dan didapatkan peningkatan yang tidak bermakna kolesterol HDL.

KESIMPULAN: Berdasarkan hasil penelitian ini dibuktikan bahwa latihan aerobik SJS dapat menyebabkan peningkatan fibrinolisis dan penurunan viskositas darah.

SARAN : Dilakukan penelitian lebih lanjut mengenai pengaruh latihan SJS terhadap fibrinolisis, viskositas dan profil lipid dengan frekuensi latihan ditingkatkan menjadi 4-5 kali. Penelitian lanjutan juga dapat dilakukan untuk mengetahui pengaruh latihan aerobik terhadap faktor risiko PJK yang lain, seperti obesitas, fibrinogen dan Lp (a).

BACKGROUND: Exercise plays an important role in the prevention of coronary heart disease. Senam Jantung Sehat (SJS) programmed is an aerobic training originally created by Yayasan Jantung Indonesia, the Indonesia heart foundation. This training is suitable for healthy people and heart patients. The purpose of this study is to analyze the influence of SJS training on fibrinolysis (t-PA and PAI-1), blood viscosity and plasma viscosity, and also lipid profile (total cholesterol, triglyceride, HDL cholesterol, LDL

cholesterol) in the member of Kiub Jantung Sehat (KJS).

MATERIAL AND METHODS: 30 subjects consisted of 28 women and 2 men aged 40-60 years. Subjects had performed a regular SJS training 3 times weekly, with moderate intensity, 40-45 minutes a day for 9-12 weeks. A fasting 13.5 mL arm vein blood sample was taken twice, before and after training. Blood sample was divided into citrate, K3EDTA, and without anticoagulant. Plasma citrate is for t-PA and PAI-1, blood and plasma in K3EDTA is for viscosity, and serum for lipid profile. t-PA and PAI-1 was measured using the enzyme linked immuno assay (ELISA) double antibody sandwich. Blood viscosity and plasma viscosity were measured using a rotational method of Brookfield viscometer LVDV-III, lipid profile were measured using the enzymatic method (total cholesterol and triglyceride) and direct enzymatic homogenous method (HDL cholesterol and LDL cholesterol).

RESULTS: There were significant increase in t-PA (18.25%, $p=0.040$) and significant decrease in PAI-1 (29.14%, $p=0.003$). The blood viscosity was decreased significantly (2.94%, $p=0.030$). The plasma viscosity, total cholesterol, triglyceride, and LDL cholesterol were decreased but not significantly. The HDL cholesterol was increased not significantly.

CONCLUSIONS: These findings demonstrated that SJS training increased fibrinolysis, and decreased the blood viscosity.

SUGGESTIONS: Further study is needed to know the influence of SJS on fibrinolysis, viscosity, and lipid profile if the training performs 4 or 5 times weekly. The further investigations is also suggested to know the influence of SJS on the other risk factors like obesity, fibrinogen, or Lp(a).