The hemorheological effects of cardiovascular rehabilitation training program in ischemic heart disease – an analysis of prospective studies

Andras Toth¹, Kinga Totsimon², Barbara Sandor², Zsolt Marton², Gabor Kesmarky², Eszter Szabados², Daniel Kehl³, Istvan Juricskay², Kalman Toth², Laszlo Czop²

¹1st Department of Medicine, Department of Radiology; Medical School, University of Pecs
²1st Department of Medicine, Medical School, University of Pecs
³Institute of Economics and Econometrics, Faculty of Business and Economics, University of Pecs

AIM: The effects of physical activity on hemorheological parameters (HPs) have mostly been investigated in healthy subjects, however only limited data is available of its long-term hemorheological effects in patients with coronary artery disease (CAD). We aimed to estimate the beneficial hemorheological effects of cardiovascular rehabilitation training program (CRP) compared to CAD patients, not participating in CRP and to healthy young subjects not achieving recommended level of physical activity.

METHODS: The data of 3 of our previous studies were analyzed: 71 CAD patients with CRP, 36 out of 159 CAD patients without CRP and 40 healthy sedentary subjects. From the original data, hematocrit (Hct), plasma viscosity (PV), whole blood viscosity (WBV) and red blood cell (RBC) aggregation records were analyzed.

RESULTS: After 6 months Hct, WBV, PV and RBC aggregation became significantly (p<0.05) lower in the CRP-participating population compared to those who did not participate. All HPs significantly (p<0.05) decreased in the CRP-participants compared to the healthy sedentary subjects after 6 months.

CONCLUSIONS: Our results indicate that CRP is able to reverse the deterioration of HPs in CAD after an acute cardiovascular event, and also to achieve better hemorheological status compared to healthy sedentary subjects. These effects may be part of the cardiovascular risk reduction of CRP.