

Postoperative rehabilitation

Effect of erythropoietin and caffeine

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ABSTRACT

This study was carried out at the Regional Hospitals of Herning, Middelfart, and Svendborg together with the University Hospitals of Aarhus and Odense. The aim of the study was to investigate the effect of Darbepoetin Alfa (DA) on rehabilitation after colorectal cancer surgery, and the effect of Caffeine on physical performance in healthy elderly people.

The Darbepoetin Alfa Study was double-blinded, randomized, and placebo-controlled. We included 151 patients scheduled for planned colonic or rectal surgery, and randomized to DA or placebo (PLA) according to haemoglobin concentration. Intervention was once weekly from day 10 preoperatively to day 25 postoperatively. Blood samples, weight, height, body composition, postural sway, muscle strength, fatigue, quality of life (QoL), and work capacity were examined at day 10 preoperatively, day 7, and day 30 postoperatively where follow-up ended.

The postoperative work capacity improved and postoperative haemoglobin concentration increased in the DA-treated patients. Postoperative QoL, muscle strength, and body weight were reduced whereas fatigue and postural sway increased, but there was no effect of DA treatment on these parameters. The number of blood transfusions and the amounts of blood given were small but even though DA did increase the haemoglobin concentration postoperatively this effect may rather be a result of changes in clinical procedures than of DA treatment. DA treatment was well tolerated, safe, and effective in rapidly returning haemoglobin concentration to preoperative level.

The Caffeine Study was a double-blinded, randomized, placebo-controlled, cross-over study in 30 healthy participants aged 70 years or above. Participants withdrew from caffeinated drinks and food 48 hours before test-session and prior to each session participants were given caffeine (CAF) (6 mg/kg) or placebo (PLA) and examined as follows: Weight, height, blood samples, reaction and movement times, postural sway, walking speed, endurance, rate of perceived effort, muscle strength, and isometric muscle endurance. The examination programme was repeated one week later and follow-up ended after completion of the last test day.

Muscular endurance was increased and the perceived effort was reduced during the CAF trial. No effect of CAF was found on muscle strength, walking speed, reaction time, reaction movement, and postural sway. CAF significantly increased p-epinephrine, s-free fatty acids, p-lactate, and insulin resistance during rest and exercise. Conclusively, CAF ingestion showed the same effect on physical performance and metabolic response to exercise in healthy elderly participants as found in younger individuals.