

- **Summary of findings**

All groups showed reductions in body weight, BMI, FM, waist circumference and hip circumference. Fat-free mass was reduced in the control group without concurrent training (CT), while remained unchanged in Melatonin-CT and Placebo-CT. Low-density lipoprotein (LDL) decreased only in Melatonin-CT and Placebo-CT, while all groups reported an increase in levels of high-density lipoprotein (HDL) and a decrease in total cholesterol (TC):HDL and LDL:HDL. Levels of C-reactive protein, TC, triglycerides and fasting glucose decreased only in Melatonin-CT group. Regarding sleep quality, lower alterations were observed in Placebo-CT compared to Control without CT. Better sleep quality was observed in Melatonin-CT (i.e., lower global Pittsburgh Sleep Quality Index scores compared to PLA-CT ($p<0.01$) and Control without CT ($p<0.001$)).