Cardiovascular diseases (CVD) are the leading cause of death worldwide, and compelling evidence indicates that exercise prevents and attenuates CVD. Resistance training (RT) exerts positive health effects; however, there is a lack of evidence regarding the RT intensities that could be prescribed to improve vascular endothelial function.

**PURPOSE:** To compare the effects of two RT intensities during eight weeks on vascular endothelial function in sedentary young males.

**METHODS:** Thirty-four sedentary men were recruited (age = 20.6 ± 1.8 yr., height = 171.3 ± 5.2 cm, weight = 65.2 ± 10.6 kg, DXA fat mass = 22.3 ± 7.4 %), and randomly assigned to a control group (CTRL, no exercise), RT at 50% of a maximum repetition [1-RM] and RT at 80% 1-RM. The RT program was performed twice a week for eight weeks, and except for the CTRL group, participants performed the same RT exercises at similar total workloads (1920 arbitrary units [AU] for the 80%RM and 1590 AU for the 50%RM). Vascular endothelial function was measured before (pre) and after (post) eight weeks by ultrasound and determined by the percentage of flow-mediated dilatation (%FMD). Mixed factorial ANOVA (3 groups x 2 measurements x 2 occlusions), effect size (ES) and 95% confidence interval (%FMD) were computed for % FMD.

**RESULTS:** A significant triple interaction was found on %FMD (p = 0.021). The eight-week post-intervention follow-up analyses showed a significant increase (p = 0.010) in %FMD in the 50%RM (Mean = 9.93 ± 3.73%, ES = 3.70, CI95% = 1.59 to 5.79) compared to the control group (Mean = 5.72 ± 1.71%, ES = 1.67, CI95% = -0.21 to 3.55), and no significant differences between 50%RM and 80%RM (Mean = 7.90 ± 2.51%, ES = 2.18, CI95% = 0.27 to 4.10), and between 80%RM and control groups.

**CONCLUSION:** A 50%RM intensity RT program elicited a positive vascular endothelial function adaptation following eight-weeks of training. It seems unnecessary to perform high-intensity RT to obtain arterial health benefits.