

# Resistance training volume protocol vs. HRV

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## Abstract

This is a controlled, randomized, and cross-over investigation with 40-week duration. The participants were male young adults with previous experience with RT for testing the effect of long-term RT with different volumes on HRV. This study was conducted in healthy participants in order to investigate the effects of resistance training on HRV without pathological influences. They underwent to a 40-week intervention divided in three RT segments (8 weeks each) and two washouts (8 weeks each) according Figure 1. The intervention order was randomized and counterbalanced. Thus, participants performed 1, 3 or 5 sets of the same exercises with equalized intensity (loading zones) and rest (Table 1) for 8 weeks following 8 weeks of washout between each experimental condition (1 vs. 3 vs. 5 sets).

10 repetition maximum (10-RM) test was performed for defining training intensity that was adjusted weekly (increase/decrease of 2-5% and 5-10% for upper and lower limbs, respectively) as recommended by Ribeiro et al. (2016). In case the participant performed more than 10 repetitions in two sessions, load (kg) was increased in the next week, whereas whether the participant was not able to perform 10-RM the load was decreased in the next week.

HRV was assessed by cardiac monitoring 72h before (pre) and after (post) each experimental RT condition (1 vs. 3 vs. 5 sets). Moreover, the participants were instructed to not performing any physical exercise 48h previously HRV baseline evaluation.

**Citation:** Leonardo Fortes Resistance training volume protocol vs. HRV. **protocols.io**

[dx.doi.org/10.17504/protocols.io.skdecs6](https://dx.doi.org/10.17504/protocols.io.skdecs6)

**Published:** 13 Aug 2018

## Guidelines

American College of Sports Medicine

## Protocol

## Warnings

For the training program, we follow previous recommendation for RT in healthy adults (ACSM, 2009). The program was composed by four exercises (bench press, leg press 45°, seated row, leg curl)

performed three times per week (Monday, Wednesday, and Friday) during 8 weeks for each experimental approach (1 vs. 3 vs. 5 sets). All sessions were performed during the afternoon period (4 p.m.) to avoid circadian rhythm effect. All sessions were supervised by experienced researchers in RT area.

Table 1 shows RT procedure in each condition (1 vs. 3 vs. 5 sets). Warm-up (1 x 20-25 reps with 50% of predicted 10RM and 1 x 10-15 reps with 80% of predicted 10RM, between sets was given 3 min interval) was performed for the first two exercises (bench press and leg press 45°) before each resistance training session. Moreover, it is noteworthy to point out that during the washout period the participants did not perform RT.