ABSTRACT

The concept of Manual Resistance Training (MRT) is not new, as some strength and conditioning professionals utilized MRT in their programs for decades. However, there is little scientific evidence regarding the effectiveness of MRT when compared to conventional weight training (WT). This study examined the effects of a 14-week MRT program on muscular strength and muscular endurance, comparing the results to the outcome of a similarly structured WT program. The participants were physically active college males (n=46) and females (n=38), who were randomly assigned to either the MRT or the WT group. Both groups completed three training sessions per week for 14 weeks. The MRT and WT programs were identical in the number of exercises, sets, reps, and rest intervals. A single training session was comprised of six to nine exercises with 2-4 sets of eight to ten repetitions. MRT strength was tested by the repetition maximum test (RM), using the bench press and back squat exercises. All exercises were performed with 2-4 sets of eight to ten repetitions. The resistance for any given exercise is provided by the spotter – either the spotter (bars, plates, dumbbells, machines, etc.) or the subject performing the exercise (weight vests, bands, chains, etc.).

INTRODUCTION

• The concept of Manual Resistance Training (MRT) is not new
• Trainees work in pairs, one assuming the role of lifter and the other being the spotter
• The resistance for any given exercise is provided by the spotter
• Most traditional resistance training exercises may be simulated by MRT without using traditional weight training equipment (bars, plates, dumbbells, machines, etc.)
• Limited equipment may be needed to establish the best training position or excludes setup (straps, etc.)
• No scientific research has been conducted to explore the effectiveness of MRT

METHODS

• Longitudinal training intervention with pre- vs. post-test design
• Physically active college males (n=46) and females (n=38) were randomly assigned to either the MRT or the WT group
• Both groups completed a periodized training program with three training sessions per week for 14 weeks
• MRT and WT group participants performed identical exercises
• Each training session was comprised of six to nine exercises
• MRT and WT training sessions included the same order of exercises, number of sets, reps, and rest intervals
• All exercises were performed with 2-4 sets of 8-12 repetitions
• All participants were tested for muscular strength and muscular endurance pre- and post- 14 weeks of training:
  – Strength was tested by the 1RM test on bench press and back squat
  – Muscular endurance was tested by the maximum number of repetitions on bench press and back squat with 70% of the 1RM weight

RESULTS

• Pre- and post-test data were analyzed using an ANOVA with repeated measures
• At baseline, there was no significant difference between the MRT and WT groups (p=0.30)
• A significant effect of gender (p<0.001) was observed for pre- and post-tests values
• A significant improvement (p<0.003) was observed in the 1RM bench press and back squat for males and females in both the MRT and the WT groups
• Improvements in muscular endurance were also significant (p=0.002) for both males and females in the MRT and WT groups for both the bench press and back squat exercises
• However, no significant differences in either muscular strength or muscular endurance were observed between groups (p>0.30).

PRACTICAL APPLICATION

MRT is effective for improving muscular strength and endurance and provides a cost-effective alternative training method for poorly equipped facilities or supplemental training method to conventional weight-based resistance training.

ACKNOWLEDGEMENTS

This study was supported by The University of Texas at El Paso University Research Initiative.