



Motivational and Physical Effects of Online Fitness Training

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SUMMARY

Restricted fitness center operations during the COVID 19 pandemic caused difficulties for people to begin participating in resistance training. This study examined the effectiveness of an eight-week online group resistance training program designed for adult beginners. Exercises were carefully selected for training the entire body, while the test exercises for safe at-home self-testing. Four of the five test exercises resulted in significant improvements between pre- and post-tests. No injuries were reported, and the motivation level remained high among participants.

Key words: *beginner strength, muscular endurance, online training*

BACKGROUND/PURPOSE

Pandemic restrictions have placed an emphasis on the importance of quality fitness instructions via online delivery methods. While the CDC and the medical field encouraged people to exercise regularly, these recommendations focused mostly on cardiorespiratory training at light or moderate intensity. Due to the closures of fitness centers, many Americans exercised at home. However, for most novice clients, options for resistance training remained limited. Traditionally, beginner resistance training requires a strength training professional who designs and supervises the activities in a well-equipped fitness center. In what format can an online strength training program be delivered safely and effectively to beginner lifters? This study was designed to examine the improvement rates during a community-based online group resistance training program.

METHODS

An eight-week, three workout per week strength training program was administered over Zoom video/audio feed to twelve healthy adult volunteers, who classified as beginners in strength training (age: 55.33 ± 7.8 yrs., 8 females and 4 males). The program utilized various dumbbell-, resistance band-, and bodyweight exercises. Participants were supplied with one pair of lightweight dumbbells, one heavier dumbbell, and a set of resistance bands. Throughout the program, upgrades in weights were available. Particular attention was placed on exercise selection for safe and easy at-home-learning of proper techniques. Workout sessions addressed the entire body with both multi- and single-joint movements, such as lateral raises, bicep curls, goblet squats, etc. During the first weeks of the program, training sessions consisted of two sets of 8-10 repetitions of 8 exercises. Later in the program, three sets of 10-12 repetitions of 10 exercises provided progressive overload. Individual feedback was given by analyzing self-recorded videos of exercise techniques submitted to the instructors, and by instant feedback during the training sessions.

Pre- and post-test exercises that are safe for adult self-testing were administered at the beginning and at the end of the program: 30-second chair squat, curl-ups on cadence, maximum repetition push-ups (regular or modified by choice), and maximum repetition seated bicep curls (both left and right). Resistance for the bicep curls were selected by the participants. Paired-sample T-test was used to calculate differences between pre- and post-test scores.

SAMPLE WORKOUT SESSIONS

Plan A – week 3

1. Goblet/Bodyweight Squats - 1 warmup set; 3 x 10-12 reps
2. Lying Dumbbell Chest Fly - 1 warmup set; 2 x 10-12 reps
3. Bent-Over Dumbbell Single Arm Row - 1 warmup set; 3 x 10-12 reps each arm
4. Dumbbell Lateral Raise - 1 warmup set; 2 x 10-12 reps
5. Seated Dumbbell Biceps Curl - 1 warmup set; 3 x 10-12 reps each arm
6. Bent Over Dumbbell Triceps Kickback - 1 warmup set; 2 x 10-12 reps each
7. Bodyweight Bridges - 3 x 10-12 reps
8. Bodyweight Planks - 2 x 45 seconds or to failure

Plan B – week 3

1. Single Arm Dumbbell Shoulder Press – 1 warm-up set; 3 x 10-12 reps each
2. Dumbbell Hammer Biceps Curl – 1 warm-up set; 2 x 10-12 reps
3. Bent-Over Reverse Dumbbell Fly – 1 warm-up set; 2 x 10-12 reps
4. Push-Ups – 3 x 10-12 reps
5. Overhead Dumbbell Triceps Extension – 1 warm-up set ; 2 x 10-12 reps each
6. Lunges – 1 warm-up set; 3 x 8 reps each leg
7. Bodyweight Bridges – 3 x 10-12 reps
8. Curl-Ups – 3 x 10-12 reps

Note: Plan A and Plan B (with progression and slight modifications) were alternated workout session by workout session throughout the program.

RESULTS

TEST EXERCISE	PRE-TEST	POST-TEST
Chair squats (rep)	21.90 ± 6.05	25.50 ± 4.93 **
Push-ups (rep)	7.89 ± 7.78	17.11 ± 7.62 ***
Left biceps curls (rep)	19.09 ± 12.38	28.64 ± 15.56 ***
Right biceps curls (rep)	22.33 ± 11.71	31.75 ± 15.72 ***
Curl-ups (rep)	55.13 ± 27.09	62.88 ± 22.85 (NS)

*Table 1. Mean ± SD of pre- and post-test results. Significant improvements between pre- and post-test: ** p<0.01; *** p<0.001 Dumbbells used for the bicep curls ranged between 5 and 30 lbs., with an average weight of 12.48 lbs. Each participant used the same, individually selected weight for the right and the left arm, as well as for pre-and post-test.*

DISCUSSION

While online coaching is less effective compared to face-to-face coaching, many people had opted for at-home strength training without a trainer even before the pandemic.

In any beginner strength training program, the two most important general training principles are learning correct technical execution of the exercises and maintaining safety by selecting a light or moderate resistance. As a first step, we selected commonly used safe exercises that are either multi-joint “core exercises” with bodyweight or single-joint dumbbell “assistance exercises” that are relatively easy to learn. For the participants’ safety, we required them to have a cell phone ready for emergencies and provide us with a full-body video stream so we could provide instant feedback. During the first two weeks of the study, we paid particular attention to exercise techniques, especially for hip-hinge exercises, such as the bent-over reverse fly or the triceps kickback. We also required participants to use medium resistance for overhead exercises, such as the shoulder press or supine chest fly. These exercises would otherwise require a spotter. The medium resistance, however, can keep the lifters in a safe repetition range.

After the first two weeks, progression was initiated by adding a third set to each exercise and reducing the rest period to one minute. In the second half of the program, participants could opt for heavier resistances. Finally, instead of the standard ten repetitions, we implemented the concept of 10-12 repetition range.

Test selection was based on at-home safety and easy technical execution of the exercises. Comparison of the pre- and post-test results showed significant improvements in most test exercises. Initial improvements during the first to months of a training program are attributed to neural adaptations of the human body. In addition to the improvement, motivation and adherence to the program remained very high, proven by the almost impeccable attendance rate at training sessions. Many participants expressed their gratitude too for the convenience of exercising at home with synchronous online coaching.

CONCLUSION

Even with limited availability of equipment, a beginner strength training program can be safely and effectively delivered online. Our study proved that by applying specific safety precautions, careful exercise selection, and applying basic training principles such as learning proper technique, progressive overloading, individualization, balanced training, and adequate recuperation, beginners experience improvement and maintain motivation throughout the entire program. For many participants, at-home, distantly supervised resistance training proved to be enjoyable and time-efficient compared to training in fitness centers.

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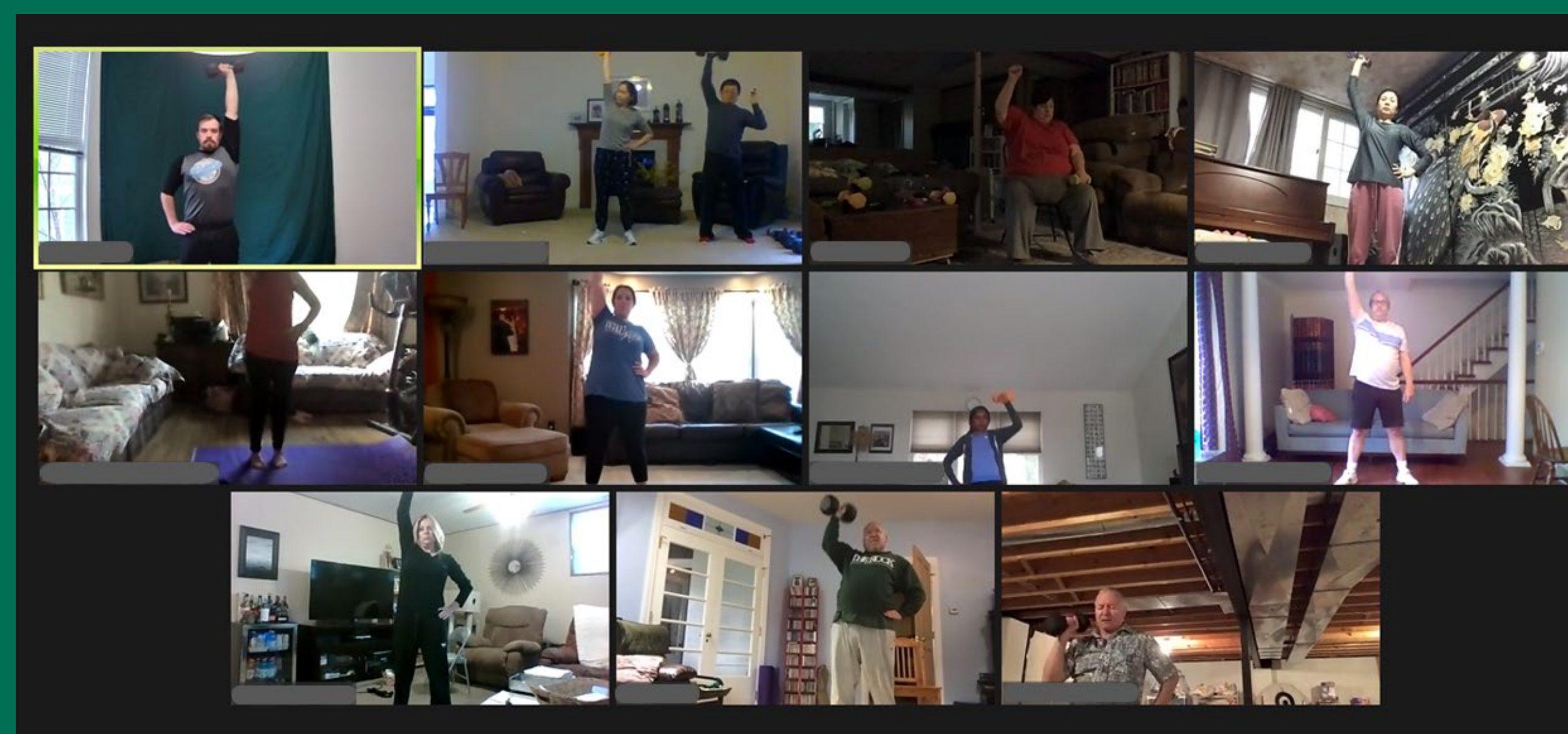


Figure 1. Participants during an exercise session