INTEGRATED vs. TRADITIONAL TRAINING

COMPARISON OF ISOLATED AND INTEGRATED TRAINING ON FUNCTIONAL PERFORMANCE MEASURES // UNC RESEARCH STUDY

Traditional performance enhancement programs emphasize strength training. However, strength is only one aspect of functional performance. Other factors, such as speed, agility, power, motion control and flexibility, are also essential.
overview

Traditional weight training programs utilize an exercise prescription strategy that emphasizes improving muscle strength. Muscle force production is an important aspect of functional performance; however, muscle strength is only one aspect of overall functional performance. Other factors, such as stability, endurance, movement quality, power, flexibility, speed and agility, are also essential elements to improving overall functional performance.

To improve overall functional performance, there is a need to develop integrated training programs which successfully improve muscle strength while also improving other aspects of functional performance. Therefore, the purpose of the study was to compare the effects of a traditional resistance training program and an integrated training program on movement quality, vertical jump height, agility, muscle strength/endurance and flexibility.

testing

SUBJECTS

30 subjects were randomly assigned to either an integrated (n=15) or traditional (n=15) training program.

TRAINING PROGRAM OVERVIEW

Each training group performed their respective exercise programs 2 times per week over an 8-week training period. All training sessions were supervised by 2 trained personnel to ensure proper performance and compliance. The total training volume was identical between the 2 training programs.

The TRADITIONAL PROGRAM involved participants first performing a series of standardized warm-up and cool-down exercises before and after the training program, respectively. Specifically, the participants rode a stationary bike for 10 minutes followed by static stretching of the calves, groin, hip flexor, low back and chest muscle groups.

Also, abdominal crunches were performed following the static stretches during the warm-up. After completing the traditional exercise program, the static stretches were repeated as part of the cool-down.

• During weeks 1–4 the following exercises were performed:
  – Power clean, hip sled, knee curl, lat pull down, lying triceps extension and upright row

• During weeks 5–8 the following exercises were performed:
  – Hang snatch, back squat, lunge, knee curl, seated calf raise, push jerk, incline bench press, bent-over row, shoulder press, barbell biceps curl and triceps pushdown

The INTEGRATED PROGRAM also involved a standard warm-up and cool-down that was identical to the traditional program, except that lateral tube walking was incorporated and abdominal crunches were not performed. The integrated program involved exercises aimed
at improving core stability, power, agility and strength. These exercises progressed to more demanding exercises over the 8-week training program. Sample exercises performed are described below:

- Core and Balance: Opposite arm and leg lift, hip bridge, side-lying leg lift, ball crunch with rotation, ball back extension, step-up to balance, single-leg Romanian deadlift, ball crunch with rotation, multiplanar hop to balance and ball rotation
- Power (reactive): Box jump-up with stabilization, squat jumps, side cone hops
- Agility: Speed ladder
- Resistance: Standing cable 2-arm chest press, standing cable 2-arm row, staggered stance dumbbell 2-arm press, standing 2-arm bicep curl, supine lying 2-arm triceps extension, side step-up to balance

**TESTING PROCEDURES**

The following tests were performed before and after the training programs:

- Landing Error Scoring System (LESS): assessed movement quality during a jump-landing task
- Vertical Jump Height: assessed lower extremity strength/power
- T-Test: assessed speed and agility
- Push-Ups: assessed upper extremity strength/endurance
- Sit-Ups: assessed abdominal strength/endurance
- Sit and Reach: assessed flexibility

**RESULTS**

Statistical analyses revealed the following:

- Movement quality, speed/agility, upper extremity strength/endurance, abdominal strength/endurance were all improved following the integrated program, but not the traditional program.
  - Vertical jump height and flexibility were improved following both the integrated and traditional training programs, but there was no difference in improvement between the two programs.

**CONCLUSIONS**

Based on these findings, the integrated training program was able to successfully improve all aspects of functional performance that were assessed (movement quality, speed/agility, strength, endurance, flexibility and power). However, the traditional training program only improved power and flexibility.