

The Effect of Resistance Training on the Forehand Groundstroke

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INTRODUCTION

- Dynamic resistance training programs have been linked with enhanced strength gains in untrained and trained individuals as well as decreases in the risk for soft tissue injuries and increases in general fitness levels.
- There is also some evidence that tennis performance can be maintained or improved through increased strength, muscular endurance, agility, and explosive movements on the court that occur from these same training regimens.
- With the current popularity of resistance training programs and their role in enhancing general sport and specific skill performance, many individuals involved with tennis are interested in a time efficient weight training program.
- Therefore, this study was designed to investigate the effects of two circuit (time efficient) resistance training programs on players' cross-court forehand groundstroke performance.

PURPOSE

- The purpose of this study was to examine the possible influence of a lower/mid-body circuit weight training program and a total body circuit weight training program with respect to changes in speed, accuracy and the combination of speed and accuracy in the tennis forehand.

SAMPLE

- Participants for this study were 45 male and female students (18 to 49 years of age) enrolled in beginning, advanced beginning, and intermediate tennis classes at a west coast state university.
- Individuals who had previous experience at the interscholastic, intercollegiate, or tournament levels or who had strength trained during the previous three months were excluded from the study.

YEAR PERFORMED 1989

METHOD

All participants were tested on their forehand drive performance (accuracy and speed) before the nine week training period in.

- The study used three groups of participants in different programs:
 - One-third of the group participated in a mid/lower body circuit program (comprised of the seated leg press, seated toe press, horizontal sit-up, leg extension, leg curl, and reverse trunk twist),
 - One-third of the group participated in a total body circuit program (consisting of the bench press, seated leg press, lat pull-down, seated toe press, seated overhead press, leg extension, horizontal sit-up, leg curl, bicep curl, and elbow extension),
 - The last third of the group did not participate in any resistance training programs (control group).
- Players in the 2 circuit programs trained 3 days a week for a total of 27 (25 to 30 minute) training sessions.
- The intensities of the exercises in both programs were cycled identically throughout the week (60-90%) and gradually increased throughout the training program.
- All participants took part in their regularly scheduled tennis classes during the training period and were then re-tested for the accuracy and speed of their forehand drives at the end of the nine weeks.



RESULTS

- There were no significant differences in the forehand groundstroke performances of the two treatment groups after the training programs.
- There were no significant differences in forehand performance of the treatment and control groups after the training programs.
- The total body resistance training program produced the only significant improvement in forehand performance scores (speed and accuracy) and the speed-accuracy relationship from pre-training to post-training.



RECOMMENDATIONS

- Although this study did not reveal significant differences in performance of the forehand groundstroke between the three groups, the group who participated in the total body circuit resistance training program improved their speed, accuracy and the speed/accuracy relationship of the forehand drive.
 - By improving the skill scores and the speed/accuracy relationship, a player would be able to hit a more penetrating shot and/or consistent shot from the backcourt.
 - A penetrating shot that has more speed can elicit an un-returnable or weak return shot from an opponent as well as an increased chance the opponent will commit and error (especially from the backcourt).
- The circuit weight training program has the potential to be particularly beneficial because of its effectiveness, time efficiency, and applicability to the club, tournament or school-team player.
 - Because training is costly in terms of time, players cannot afford to waste time on activities that will not result in better performances.
 - With circuit training (the total body program specifically), positive outcomes occur within a relatively short amount of time (20-30 minutes per session) needed to complete the circuit three times a week over a training program.
 - This minor time commitment allows a player more time on the court to develop necessary technical and strategic skills and match competition.
 - The circuit program also allows time for other methods of conditioning (e.g., cardiovascular, plyometric/agility, etc.).
 - Further benefits of this type of training are that circuits can be modified to fit the needs of any team or individual player and can be carried out at a relatively low expense.
- To make a resistance program even more effective, you must know the specific areas of muscle length needed for a particular sport.
 - For tennis, muscles such as the quadriceps, hamstrings and other rear-leg muscles, abdominals, pectorals, biceps, and forearm muscles should be included in any strength training program.

