

THE EFFECT OF STRENGTH TRAINING ON THE KINEMATICS OF THE GOLF SWING

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INTRODUCTION: Despite the wide acceptance of resistance training in other sports, use of such programs in golf is a relatively new concept; consequently there is a lack of research addressing the effects of these programs on golfing performance. The few studies addressing this issue have used golf-specific programs (Lephart *et al*, 2007) these can require specialist equipment and can be more difficult to follow. Outcome measures in these studies have shown that strength training improves performance measures i.e. distance the ball is carried yet neglected details of the coordination of the golfer themselves (Fletcher and Hartwell, 2004).

The aim of this study was to identify how a simple combined general resistance and plyometric program effects golf swing kinematics.

METHOD: Twelve category 1 golfers (mean handicap 3.51 ± 2.32) were assigned to two groups, Exercise and Control. Pre and post intervention kinematic data were collected, via a Vicon motion analysis system (250 Hz), of 10 swings with a 6Iron and Driver.

During the 5 week training period the exercise group carried out a strength and conditioning program based on that used by Fletcher and Hartwell (2004), 3 times a week, while the Control group did not perform any resistance training.

RESULTS: Strength training data showed improvements of between 25% and 809%, indicating that the intervention was successful and participants in the exercise group significantly improved their strength. There were significant increases for both clubs in exercise group wrist peak extension angular velocity (4% Driver; 16% 6Iron), maximum X-Factor (10% Driver; 8% 6Iron) and maximum X-factor velocity (20% Driver; 5% 6Iron) but no changes were observed for the control group. Exercise group peak driver club head velocity was also found to increase by 9% this increase was not evident in the 6Iron.

DISCUSSION: As in previous studies (Fletcher and Hartwell, 2004), the data indicated that a general strength training program can increase the club head velocity. Additionally this study also highlighted the improvements in key kinematic variables that are associated with increased club head velocity. The improvement in performance is even more remarkable considering the high standard of the participants and that the strength training program was less golf-specific than previous studies.

CONCLUSION: It is evident that after completing a 5-week strength training program a number of kinematic variables of the golf swing of skilled players can be improved. Exploration of the effects in less skilled golfers and different types of programs (golf-specific or non-specific) warrants further investigation.

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