The effects of improving fitness characteristics on overall performance in junior golfers

Christopher John Smith
B Teach/B Health and Physical Education (HONS)

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Faculty of Health and Medicine

School of Biomedical Sciences and Pharmacy

The University of Newcastle

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Abstract

The game of golf is constantly evolving and elite players now use a number of strategies to maximize performance. One of these approaches is an increased focus on physical conditioning including resistance training. This has led to the suggestions that amateur and junior golfers may also benefit from physical conditioning.

Analysis of golf reveals that there is substantial physiological demand placed on the body in order to repeat a consistent and accurate high-speed golf swing. Junior golfers are potentially susceptible to poor golf swing mechanics and potential risk of injury if they lack the required strength and mobility to produce and control force and maintain posture during the golf swing.

Therefore the purpose of this research was to 1) establish what has been published in the literature relating to strength and conditioning programs designed to improve golf-related fitness characteristics and golf performance, and 2) design and evaluate a 12-week resistance-training program for adolescent golfers designed to enhance strength characteristics and golf performance.

The findings from the review suggest that strength and conditioning programs can have a positive effect on the golf swing and fitness characteristics. However there is large gap in regards to the development of junior golfers. As golf is a high skill sport, habits formed during the development years can impact performance both positively and negatively at a later stage, which can influence long-term success in the sport.

The intervention study used a quasi-experimental design where junior golfers (n= 30) were recruited and allocated to either an intervention (n = 20) or a control (n = 10) group for the 12-week study period. Sessions were ran twice a week for the intervention period with each session focusing on the full body and including exercises that utilised body weight and/or elastic resistance apparatus. Physical assessments consisting of single leg squat, modified push-ups, side bridge hold, sit and reach, and shoulder mobility were conducted at baseline and 12-weeks. Individual handicap was used as a measure of on-course golf performance.

The intervention resulted in strength increases with all variables showing high to moderate effect sizes (d = 0.64 to 0.96). There was a moderate reduction in golf handicap for the intervention group (d = 0.42). Therefore showing resistance training programs can positively affect strength characteristics in junior golfers, which may influence golf handicap.
This is one of the first studies to investigate the effects of resistance training on junior golfers’ fitness and performance. This study found that an entry-level resistance-training program is beneficial to junior golfers with no prior resistance training. Future studies are needed to examine the effects of more advanced training programs for golfers with more resistance-training experience. Further investigation of the relationships between increases in physical fitness and a range of golf performance measures is also required. Also, investigation is necessary to establish physical fitness parameters for junior golfers and the impact this has on performance. Best practice in terms of strength and conditioning programs for the junior golf athlete is yet to be established and requires further investigation.
Preface

Results from this dissertation have been published in scientific journals as well as presented at a scientific conference.

Publications

Peer reviewed papers


Smith, C. J., Callister, R., & Lubans, D. R. The effects of resistance training on junior golfers’ physical and on-course performance (Currently under review by the International Journal of Golf Science)

Abstract of paper presented at conference

Statement of Declaration

I hereby certify that this thesis is submitted in form of a series of papers of which I am a joint author. I have included as part of the thesis a written statement from each of the co-authors: and endorsed by the Faculty Assistant Dean, attesting to my contribution to the joint publications.

(Signed)........................................................................

Christopher John Smith

Co-Authors Statement

I Robin Callister and David R Lubans, attest that the Research Higher Degree candidate Christopher J Smith contributed to the publications outlined below.

(Signed)........................................................................

Professor Robin Callister

(Signed)........................................................................

Associate Professor David R Lubans
Statement of Candidates contribution

The author conducted the analysis for the systematic review; designed, co-ordinated and conducted the assessments and training sessions for the intervention study, analysed the data, drafted the manuscripts and wrote chapters 1 and 4 of the Masters thesis.

The role of both supervisors (co-authors) with regards to the published paper and manuscript under review presented in this thesis is outlined below:

Christopher Smith conducted all research and data analysis and wrote both manuscripts.

Professor Robin Callister provided guidance and assisted with project design. Robin also provided numerous comments and was involved in the editing process during the preparation of the two manuscripts.

Associate Professor David Lubans provided guidance and assisted with project design. David also provided numerous comments and was involved in the editing process during the preparation of the two manuscripts as well assisting with the statistical analysis.

Overall the work for this thesis was undertaken in collaboration with supervisors as well as the contributions of graduate research assistants who assisted with the collection of data (physical assessments under my direct supervision). The works for publication include the following:


Smith, C. J. (70%), Callister, R. (15%), & Lubans, D. R. (15%). (Currently under review by the International Journal of Golf Science) The effects of resistance training on junior golfers’ physical and on-course performance (see Chapter 3)
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