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Forward Head Posture and the Golf Swing

Mark R. Bull, **Matthew W. Bridge**
University of Birmingham, Birmingham, UK

Biomechanics and Physiology

Purpose

According to Smith (2010), the dynamics of the golf swing are to a large extent dictated by the anatomical and physiological make-up of the body with swing types usually governed by what the player can and cannot do with their bodies during static and dynamic positioning. Most golf literature focuses on spine positioning when describing upper body posture (e.g. Hume et al., 2005), with little reference if any directed to the role of the neck and head. Booth (2005) found that prolonged playing and practice in a professional player had led to postural adaptations due to the excessive time spent in 'golf posture'. This was manifested in a 'poking chin' which was prevalent in both the golfer's anatomical and golf posture (Booth, 2005). Such a postural abnormality commonly known as forward head posture (FHP) changes the mechanics of the shoulder, scapula, upper thoracic and cervical spine (Braun & Amundson, 1989). As such FHP could have an impact on a golfer's technical performance and swing kinematics.

Method

A between groups repeated measures design approved by the University Ethics Committee was used to assess the impact of an 8-week myofascial release intervention to correct forward head posture on golf swing kinematics. 3D swing kinematic data were collected pre and post the intervention using Golf Biodynamics Software. The experimental group (n=16) undertook a self-administered myofascial release intervention which consisted of two 10 minute sessions daily. Both experimental and control (n=16) groups also maintained any normal training that they were already undertaking and were asked not to start any new forms of exercise and to maintain their level of playing and practice during the intervention period.

Individual participant pre-test, post-test difference scores for each variable measured were calculated and any effects of the intervention on these variables were examined by within-subject modelling using an independent samples t-test on the change scores between pre and post-testing with group as the between samples factor. This provides a robust approach to the analysis and accounts for violations of asphericity (Hopkins, 2000).

Results

The training intervention produced a change in the head bend with the rotation in the anteroposterior plane reducing in the experimental group post-intervention (t_{33}=2.3, p=.03 r=.37). There was also a difference in the change in head-thorax alignment at address between groups (t_{29}=2.5, p=.02 r=.42). No changes in head rotation at address were seen (t_{33}=.8, p=.45 r=.14) but the groups showed different changes in head rotation at the top of the backswing (t_{33}=2.8, p<.001 r=.44) and at impact (t_{33}=2.1, p=.04 r=.34). These changes were evident in the head being less rotated to the right at the top of the backswing after training in the experimental group. At impact head rotation in the control group was similar in its rotation to the left in pre and post trials, whilst in the experimental group the head was more rotated to the left at impact in post-testing. There were no notable differences between groups in the pre-post change scores for any other variables except for pelvic lift at impact (t_{33}=2.3, p=.03 r=.37).

Discussion

The eight-week intervention produced a change in head bend at address in the experimental group with a mean reduction in forward head bend of 4° from 64° to 60°, whilst the control group values remained constant. This change is similar in magnitude to that seen by Lynch et al. (2010) in standing posture although the angular measurement used differs. What is perhaps more important from a functional perspective in rotational movement is the relative alignment of the head and torso in the sagittal plane (Takeshima et al., 2002). The greater change seen in the torso-head alignment at address in the experimental group resulted in a closer match of head and torso alignment. This improved postural alignment may have resulted in the other kinematic changes seen in the experimental group during the swing with a reduction compared to the control group in the head rotation to the trail side at both the top of the backswing and impact. This would suggest that the

myofascial release intervention 'freed up' the head's rotational movement allowing the golfer to better maintain their head position throughout the swing (Draovitch and Simpson, 2007). It would perhaps be expected that alteration in the kinematics of the head would have the potential to also impact upon those of the torso but no such changes were seen. This may have been a result of considerable individual variability seen in the response to the intervention.

Practical Application

The current work provides some support for the potential of postural realignment interventions being beneficial for changing the golf swing. It should however be noted that physical training alone may have little impact upon positional and rotational swing kinematics, instead simply providing more movement options for a player.

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