

The inter-relationship between controlled body movements and custom club-fitting – Considerations for further research

From: Dan Goldstein, PT, OCS, SCS, ATC
Developer of the Dynamic Balance System-DBS
17 handicap golfer with minimal technical knowledge of club-fitting

Several years ago, I had a club-fitting session with Charles Cowan, PGA Professional who utilized the Dynamic Balance System-DBS during this procedure. I experienced a change in the 'feel' of my swing motion with custom-fitted clubs, as compared to my old set. I felt a greater ease in maintaining a balanced movement pattern, as observed on the DBS, with the more suitable clubs.

Human beings have a wonderfully adaptive neuromuscular system. We have the ability to very rapidly adjust to various stimuli, alter our motion patterns and achieve a desired goal. The pattern that is chosen to accomplish the desired goal may, however, not be the most efficient or reproducible. Additionally, this chosen movement pattern may require detrimental physical compensations, which can increase fatigue and possibly lead to injury. Success in golf requires achieving an efficient, fairly reproducible movement pattern that minimizes compensated motions. As in other sports, we alter our mechanics based on the instrument in our hands:

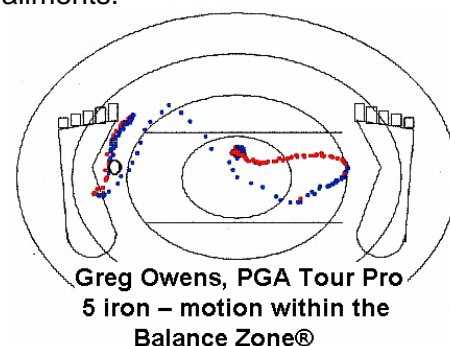
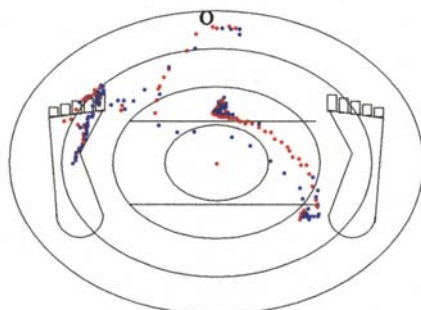
Example: If I asked you to through a baseball from the pitching mound to home plate, within 2 or 3 throws you would achieve this goal and be able to demonstrate a fairly reproducible motion. If I then gave you a tennis ball, you would achieve the same goal within several throws but your mechanics would change slightly. The same would be repeated with a slightly heavier ball.

Therefore, our neuromuscular system quickly adjusted to the weight in our hand and biomechanical alterations allowed us to achieve the goal.

Current procedures in club-fitting usually involve observations of the ball contact point on the clubface and ball flight measurements. If the fitter does not consider the effect of the club on resultant body motions (specific body motion parameters are observed on the DBS) then *possibly compensated movements* would be required to maximally benefit from the new club. Inconsistency and increased biomechanical stresses could occur.

Proper club-fitting should improve performance by helping to optimize this inter-relationship between the body and club. To minimize movement compensations, the student, I believe, should have a club that is close to their needs early in the learning progression, as improvements are observed relatively minor club changes will assist maximizing ball flight parameters.

The example on the left is a DBS graph of a PGA Tour Professional hitting his custom-fit driver. When he made good contact was one of the longest drivers on tour. However, he was inconsistent being ranked about 200th in driving accuracy and making the cut, on average, every 6 weeks. Consider the biomechanical compensations required for his legs, back, shoulders, arms and hands to make ball contact ("0") so far outside of the Balance Zone™. He is currently inactive due to physical ailments.



Research is needed to substantiate this hypothesis: It would appear that a higher degree of success during custom club-fitting would involve procedures which achieve maximal ball flight capabilities while providing for improved body motion parameters.

Professional Responses:

From Charlie Cowan, PGA Professional
Symbiotic Golf, Deer Creek Country Club, FL

Your paper strikes at the heart of the matter that a golf club forces the manner in which a club must be used. From my point of view the golf swing does not exist as a noun. It is not a person, place, or thing. To me the golf swing is a verb and very rapid reaction to an event. Therefore, the psychological and physiological reaction becomes what we call the golf swing. The golf swing is not something that lives in memory but in the reaction when a belief system and golf club meet the desire to hit the ball to a target. It is about generating force and applying it to a desired outcome. My direction as one who would help people to enjoy golf should be to help them identify those skills we have inside us. We must identify and draw out this information. I believe we all are born with the ability to throw and furthermore I believe the golf swing is essentially the throwing motion using a tool. We can measure this activity by putting the golfer on the **DBS** and essentially demonstrate deviation from a throw. It now can be demonstrated and quantify the contribution of lie angle, shaft flex, and head designs among other factors that the make up of a golf club contributes.

The **DBS** therefore is an identifier of optimum intentions and attention to this information can help the golfer find the ideal motion we carry inside us. This motion can only happen when native motion is rewarded by the dynamic fit of the club. For the best fit the golfer must fit his balance. The **DBS** makes that balance identifiable for the golfer and his teacher.

From Bobby Brankley, Golf Instructor/Engineer
Sarasota, FL

I personally feel that your article is a very accurate summation of how an improperly fit club could possibly affect the body. Balance is related to a person's momentum in a given direction and their ability to stabilize/manage momentum generated from both linear lateral and sheer forces. $P=MV$. Torque of the shaft and whether it is a low, mid, or high kickpoint, and where the shaft is spined, will have more of an effect on impact timing, in my opinion, which is very important. It would be interesting to see if those things alter momentum and balance. It seems to me that the **DBS** could certainly measure any differences in balance from a golfer's known balanced swing pattern as they change clubs.

From Kelli Kostick, PGA, LPGA Professional
Brae Burn Golf Club, MA

What I see is so called "club fits" by professionals where they have no clue what is happening to their students' motion because they don't know the student well enough or they aren't paying attention to their motion. They pay attention to the computer, launch monitor, and numbers coming up on the screen. Distance and spin are an issue as well as launch angle. We can get pretty good at matching these desired variables but if the player is standing on their head to achieve these numbers, what good are they? I use the **DBS** tempo feature as well--to me this is one of the most important features.

I like to use a bowling analogy. If we were bowling and you saw a bright red ball on the rack and you loved it but it weighed 50 pounds and you rolled in the gutter every time, how long would it take you to switch to the plain black ball that weighed 10 pounds and produced a strike three out of 4 times?