



SQAIRZ – Performance Study

April 13, 2021

My name is Terry Hashimoto, I am the Co Founder of BodiTrak and have been pioneering the use of Pressure Mapping in golf for almost a decade in the US, Canada, EU, UK and the world really...

With over 7500 PGA Professionals & Tour Coaches World Wide using BodiTrak, no one has directly and or indirectly helped more teachers help their students improve their games rapidly and gain distance using Pressure Mapping Technology knowledge developed on PGA Tours world wide than myself.

Shoe Fitting using BodiTrak for testing has been an obsession of mine since co developing the worlds 1st Portable Pressure Mapping System.

Throughout my 42 years in the Professional Golf Industry as a player, as a golf club designer, golf club manufacturer, technology developer and educator of Pressure Mapping to Professional Instructors I have observed with amazement how the majority of golfers try to buy distance with their hardware when in reality distance comes from the ground up.

This is not my 1st rodeo using BodiTrak Pressure Mapping to help fit footwear, but this time my role was different, which was to independently test Sqairz golf shoes and determine the impact the shoes have on the golf swing and why.

Research and testing were conducted at the BodiTrak Research Lab located at the Mount Academy in Charlottetown PEI, Canada.

In addition to golf at the BodiTrak Research Lab we also test for Gait Analysis, High Performance and everyday walking, balance assessments for fall prevention, performance testing for other sports and product development.

All integrated BodiTrak partners be it in hardware and or software all are tested at this BodiTrak Research Lab and it is where the Sqairz Shoes Test was independently tested.

Testing Protocols included the use of the following tools and brief description of each:

- 1.) BodiTrak Pressure Mat: BodiTrak measures center of pressure the average of all the forces created by gravity as you move or stand measured in X, Y, X - Side to Side, Heel to Toe and Up and Down
- 2.) Ernest Sports and FlightScope Launch Monitors: Launch Monitors were used to validate distance claims, ball speed, club head speed and smash factor.
- 3.) Hack Motion: Inertial Measuring Units to look at hand path and position
- 4.) Tuff Tread BodiTrak 3D Pressure Mapping Treadmill: To review Gait Analysis and Total Sway measured while walking in various degrees of incline ranging from 0 to 40 degrees and slow to fast walking speeds from 1 to 3 MPH

Software's used in the testing protocols & brief description included:

- 1.) BodiTrak Professional: Used to Measure Contact Surface area in total and specific regions of the shoes tested in addition to measuring PSI per square inch of load cell, both in static and dynamic positions of the golfer be it at address and or during the swing
- 2.) BodiTrak Golf App: Used to Measure Center of Pressure Trace, Velocity of Lateral Motion both laterally and heel to toe, Vertical Forces Trail, Lead and Total at all times during a golfers swing and includes Video for Positional referencing of the vertical forces in 'established golf terms" be it P1, P2, P3 etc.
- 3.) Swinguru 3D using the new Intel Real Sense N455 Depth Capturing Cameras for Range of Motion in Knees, Hips and Shoulders at key positions of a golfers swing. In addition to measure COM Center of Mass, how Sqairz and comparative shoes effected a golfers COM at address and dynamically during a golfers swing
- 4.) Kinetisense 3D Medical also using the new Intel Real Sense camera for additional 3D validation
- 5.) HackMotion Software for "Hand in Space" objective data information
- 6.) V1 Mobile & Studio for Positional & Pressure Comparison

Testing was conducted over a 100 day period consisting of a total of over 200 golfers in total ranging from Professional to rank beginner.

Golfers were tested using their own shoes using 7 irons and Drivers and then repeated the same tests using Sqairz Shoes

During the Sqairz Shoes test, golfers were allowed to warm up as per they normally. Testing was alternated as to which shoes, they used first be it Sqairz and or their own brand

Comparative brands being tested against included FootJoy, Puma, Ecco, New Balance, Sketchers, Nike and Under Armour

Key Metrics used were:

- 1.) Distance Yardage
- 2.) Ball Speed
- 3.) Clubhead Speed
- 4.) Smash Factor
- 5.) ROM Knees Shoulders Hips
- 6.) COM Total Sway
- 7.) COP at Address and During the Swing
- 8.) Lateral Speed
- 9.) PSI Per Load Cell
- 10.) Dynamic Vertical Forces
- 11.) Peak Velocity
- 12.) Release Factor which is the time from Peak Velocity to Impact

Distance and Performance Gains were seen uniformly in all golfers ranging from Professional to Rank Amateur

With novice golfers and those with high handicaps that had poor stability I witnessed performance gains up to 24.5 yards in just their 7 iron alone.

For the purposes of this test what I am presenting here is based on the range of golfers from 18 handicap to professional level.

In the below chart represents a summary of the yardage gained, increase in the ball speed, percentage of improvement in the Smash Factor, increase in the range of motion both in the shoulders and hips, the increase in percentages of the vertical forces both lead side and total and in final the increase in the speed as measured in centimeters per second

Carry Yards Gain	Ball MPH +	Smash % +	ROM Shoulders Degrees Increase	ROM Hips Degrees Increase	Max Vertical LEAD % +	Max Vertical Total % +	PV Lateral Speed CMS +
8	13	7	10	11	17	18	25

All testing conducted inside and on flat level surfaces.

The top 3 Pressure Flaws in Golf are:

- 1.) Too much pressure in the toes during a golfer's swing
- 2.) Backing up prior to impact in irons
- 3.) Pressure too slow to the lead side

Key metrics measured and observed but not included in the above graph during the Sqairz Comparative Shoe test were:

- 1.) Much less Supination to the Trail Side as measured by BodITrak Pro Research Software in PSI load per cell.

When the pressure gets to the outside of the Lateral Longitudinal Arch supination occurs on the trail side and slows down the pressure getting to the lead side reducing distance. Sqairz shoes reduced and or eliminated Supination effectively allowing the golfer to get pressure to the lead side and reducing Pressure Flaw # 3 in a consistent across the board manner

- 2.) The Sqairz Shoes had the highest contact surface area in any of the comparative shoes used between the Distal Transverse Arch (Ball of the Foot) and the Proximal Transverse Arch (Where the Foot connects to the ankle)

“The toes are the brakes the heels the accelerators... The ankles the shock absorber and propulsion system” is a key principal witnessed over the years using BodiTrak on PGA Tour Players and Top Golfers all around the world.

It is a well-established fact that great golf is played between the balls and heel area of the foot. Sqairz shoes put pressure in the golfers foot correctly where it should be to optimize performance and distance.

- 3.) Pressure transition defined as, “ the point in time during the golfers swing when the center of pressure changes from the trail side to the lead side”. It was observed in Sqairz shoes tested that the center of pressure was consistently more towards the Proximal Transverse Arch (heel) than any of the other comparative shoes and occurred earlier in the backswing; allowing for greater range of motion in the knees, shoulders and hips as seen in 3D , thus resulting in distance gains validated by launch.

“Try putting all your pressure on your trail toe and taking the club back, you will note a more restricted backswing and less range of motion...Now put all your pressure towards the trail heel and take it back, much greater range of motion in the knees hips and shoulders.

- 4.) I observed much higher vertical forces (in total and on the lead side) in comparative testing with golfers wearing the Sqairz shoes. It is a well-established fact in pressure mapping that shifting pressure to the lead side fast and having higher vertical forces on the lead side prior to impact the # 1 way to gain distance.

Suggesting “Curling up your toes” in conventional shoes something I have successfully advised from Major Championship Winners to the average golfer. With the Sqairz Shoes I observed how much more effective the ankle was working optimizing the vertical propulsion system creating more vertical power at prior to impact, this was an amazing revelation and validated what we’ve seen on BodiTrak and 3D for a decade now.

- 5.) Gait Analysis testing using Sqairz Shoes walking on flat, incline and uneven surface by perturbing the foot with medical tools used on BodiTrak Pressure Mapping Systems indicated less total sway over same lengths of time using comparative golf shoes, a key indicator of total energy burn.
- 6.) Faster lateral speeds were observed getting pressure to the lead side quicker and generating significant greater vertical forces prior to impact “Brake Effect” in Sqairz Shoes a key metric in distance gains with the highest distance gain seen in a 7 iron of over 24 yards in both 7 Iron and Driver testing with an average of 1 club gain in iron in handicap golfers ranging from 18 to Pro. Massive distance gains excluded from the subject test sample as they were in the novice category.

- 7.) Major benefits were seen in stability both in the trail and lead side, creating less to no

supination in the trail side during the backswing and superb braking power on the lead side reducing total sway in the COP Trace, all attributing to distance gains generated.

In my conclusion in the Sqairz shoes comparison test, the Sqairz shoes allowed pressure to get to the trail heel portion of the foot faster during the backswing generating more acceleration to the lead side quicker and creating a much greater “brake effect” generating more vertical power on the lead side prior to impact with impressive distance gains. Balance and stability translate to less sway better accuracy and energy transfer. Significant increase in hip and shoulder rotation. Eliminated inefficiencies witnessed in sneaker like golf shoes.

Sincerely

Terry Hashimoto

Co Founder BodiTrak Golf