



## 3D Golf BioDynamics Swing Analysis

<b>First Name:</b> Joe	<b>Last Name:</b> Golfer	<b>Test type:</b> Initial Test
<b>Date:</b> 1-Sep-2011	<b>Email:</b> jg@gmail.com	<b>Data Date:</b> 22-Aug-2011
<b>Mass:</b> 184 lbs	<b>Handicap:</b> 0	<b>Height:</b> 6,1"

### Summary

Joe, your swing is looking very sound. Here are a couple of things for you to work on:

1. Push more laterally with your pelvis to start the downswing (not up with the right hip/leg)
2. Improve your single leg stability so that you can have a sound base from which to build your swing.
3. Eat more food (regularly); It should be HEALTHY food (not junk)
4. Work out

### Setup Foundations

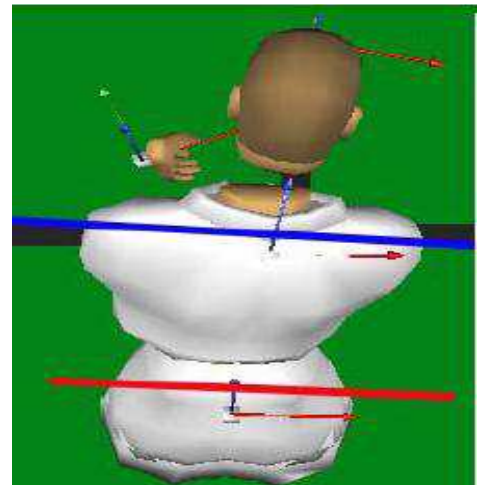
#### Alignment

	Corridor	You
<b>Hips</b>	0 to 8 °	13 Open
<b>Shoulders</b>	5 to 12 °	20 Open

Green = within corridor

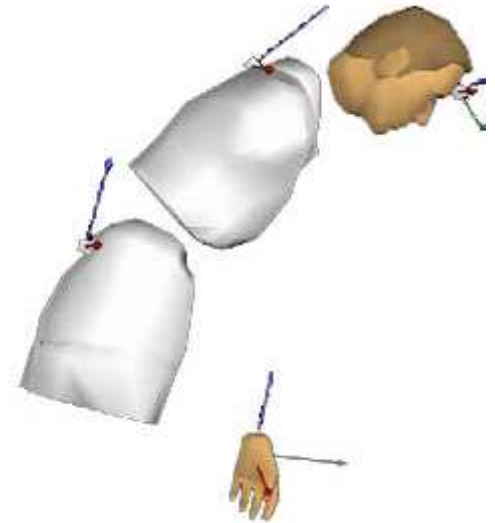
Yellow = just outside corridor

Red = well outside corridor

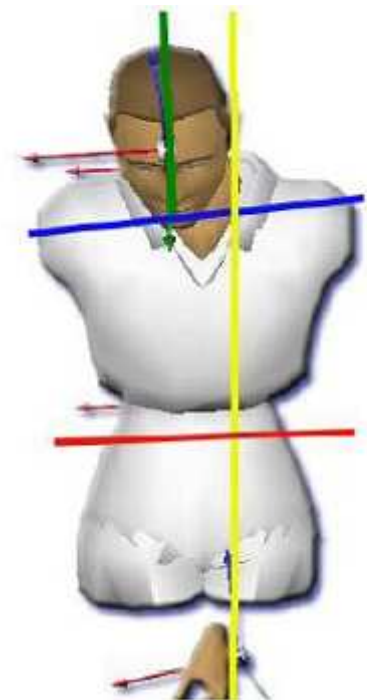




Bending		
	Corridor	You
<b>Hips</b>	13 to 26 °	<b>27</b> Forward
<b>Shoulders</b>	27 to 40 °	<b>45</b> Forward
<b>Head</b>	35 to 55 °	<b>46</b> Forward



Tilting		
	Corridor	You
<b>Hips</b>	0 to 3 °	<b>5</b> Right
<b>Shoulders</b>	7 to 13 °	<b>11</b> Right
<b>Head</b>	-3 to 10 °	<b>6</b> Right

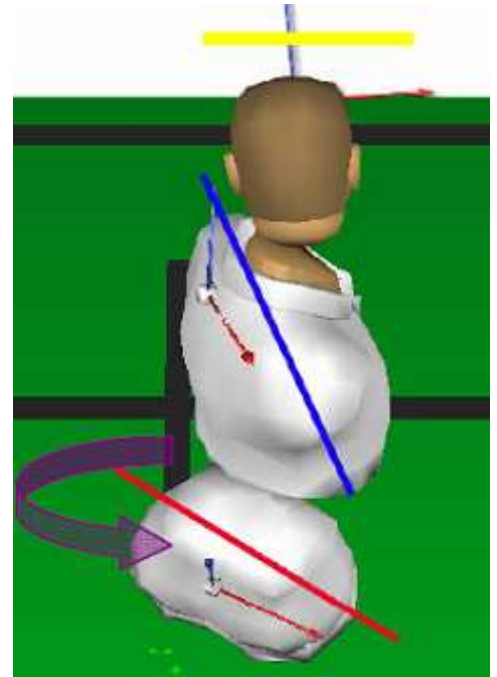




## Backswing

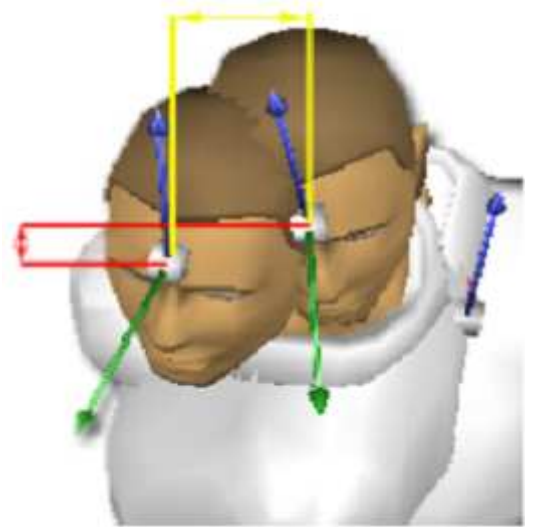
### Rotations

	Corridor	You
<b>Shoulder Turn</b>	-85 to -98 °	<b>-94</b> Closed
<b>Hip Turn</b>	-37 to -48 °	<b>-33</b> Closed
<b>X-Factor</b>	-40 to -50 °	<b>-61</b> Closed
<b>X-Factor Stretch</b>	-15 to -25 °	<b>-11</b> Closed
<b>Head Turn</b>	-20 to -40 °	<b>-11</b> Closed



### Stability

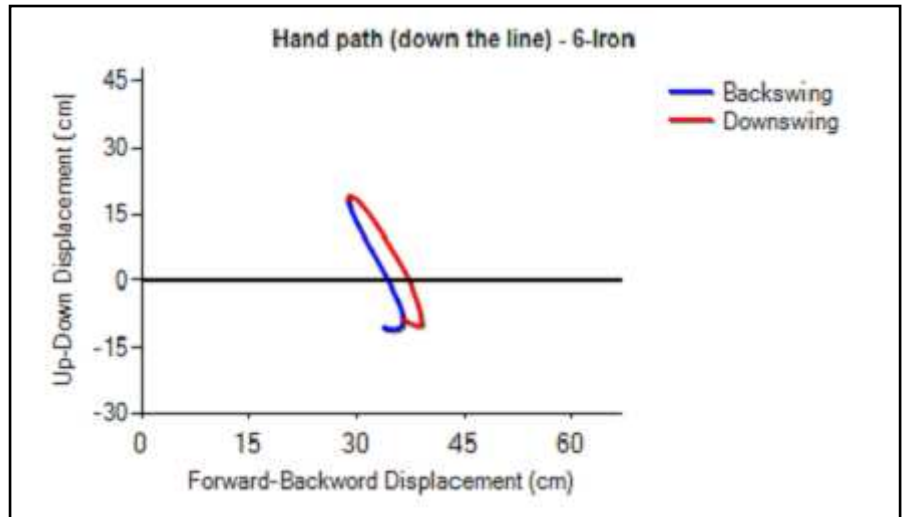
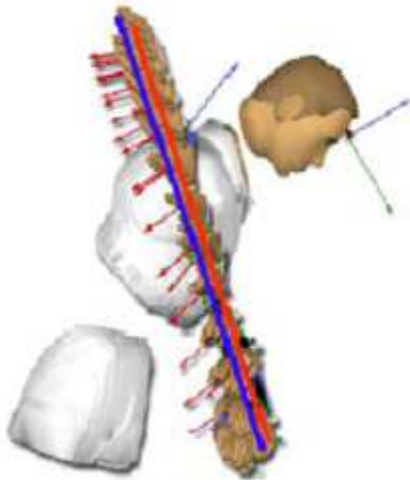
	Corridor	You
<b>Head sway</b> (Address to top)	0 to 3"	<b>1.9</b> Away
<b>Head lift</b> (Address to top)	-1.5 to 0.5"	<b>-1.3</b> Down
<b>Head thrust</b> (Address to top)	-0.75 to 0.75"	<b>1.6</b> Forward
<b>Hip drop</b> (Address to top)	-1.25 to 0"	<b>-0.3</b> Down
<b>Hip sway</b> (Address to top)	-0.5 to 0.5"	<b>0.7</b> Away





**Ideal Hand Path**

**Your Hand Path**

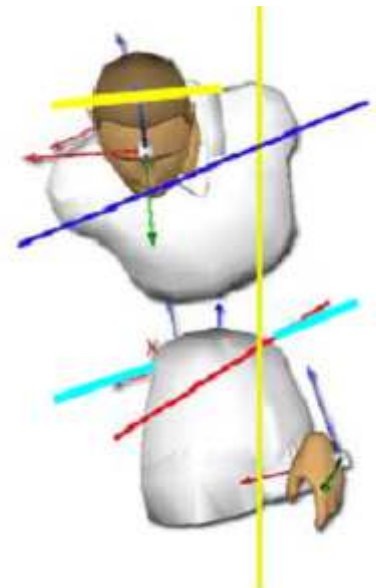


Blue = backswing      Red = downswing

**Downswing**

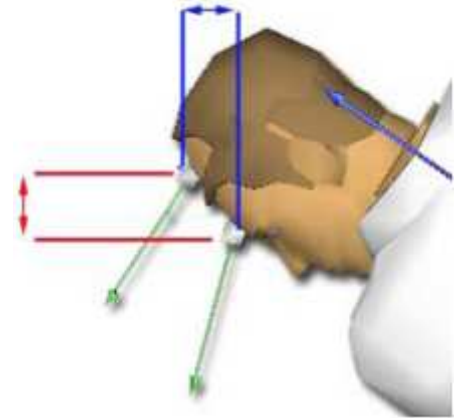
**Impact Zone**

	Corridor	You
<b>Hip Turn</b>	35 to 55 °	<b>48</b> Open
<b>Shoulder Turn</b>	35 to 55 °	<b>46</b> Open
<b>Head Turn</b>	10 to 40 °	<b>-15</b> Closed
<b>Hip Tilt</b>	10 to 15 °	<b>13</b> Right
<b>Hip Bend</b>	0 to 10 °	<b>8</b> Forward





Stability (Spine Angle Control)		
	Corridor	You
<b>Head drop</b> (Address to impact)	-2.5 to 0.5"	<b>-2.8</b> Down
<b>Head thrust</b> (Address to impact)	-0.75 to 0.75"	<b>1.4</b> Forward
<b>Head sway</b> (Address to impact)	-1.25 to 0.75"	<b>0.5</b> Away
<b>Hip sway</b> (Address to impact)	-4.25 to -5.75"	<b>-2.9</b> Toward
<b>Hip thrust</b> (When Hip rotation = 0)	-0.75 to 0.75"	<b>1.0</b> Forward



Body Speed		
	Corridor	You
<b>Hips</b>	>= 430 deg/s	<b>441</b>
<b>UT</b>	>= 640 deg/s	<b>765</b>
<b>Arm</b>	>= 880 deg/s	<b>943</b>
<b>Hand</b>	>= 1400 deg/s	<b>1,472</b>
<b>Club</b>	>= 1400 deg/s	<b>2,005</b>

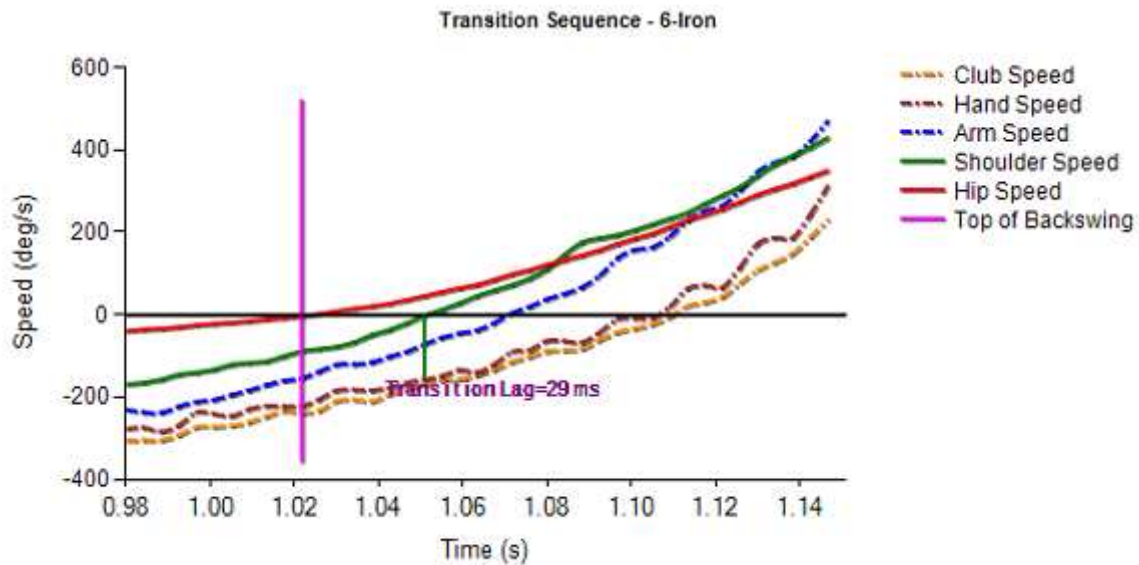
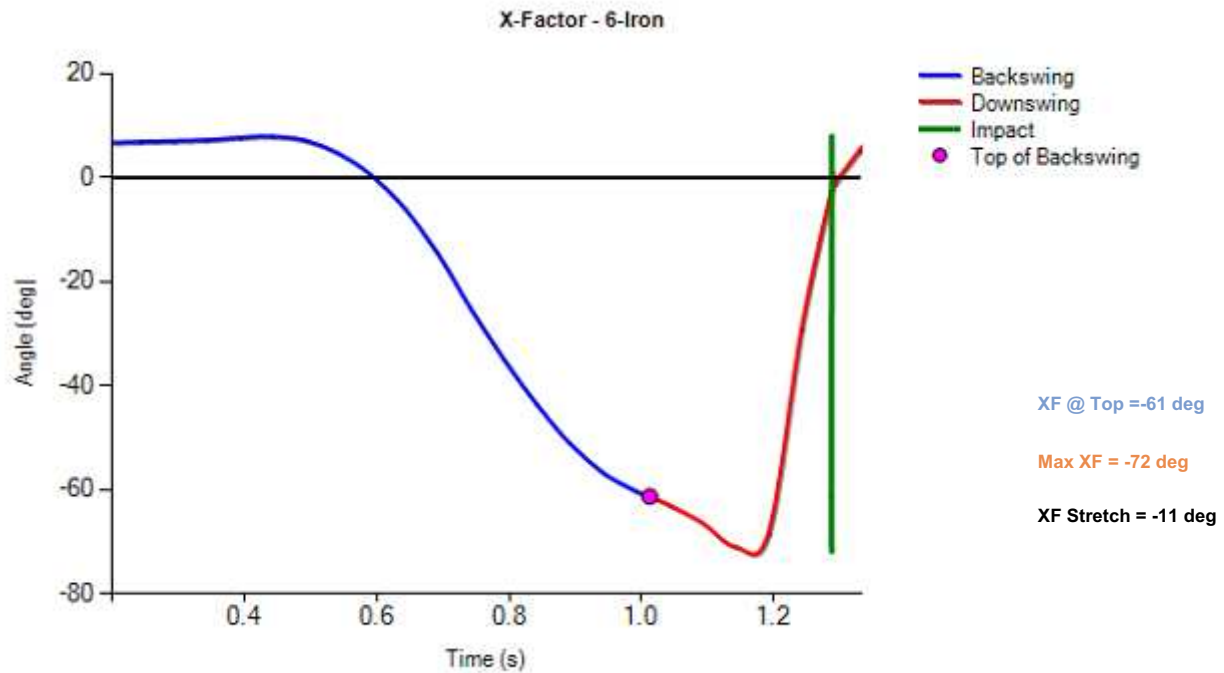
Transition Sequence				
order that body segments change direction				
	Hips	UT	Arm	Hand
<b>Ideal</b>	1	2	3	4
<b>You</b>	1	2	3	4

Timing Lags		
	Corridor	You
<b>Hips to UT</b>	25 to 40 ms	<b>17</b>
<b>UT to Arm</b>	15 to 30 ms	<b>13</b>
<b>Arm to Hand</b>	5 to 20 ms	<b>25</b>
<b>Hand to Impact</b>	15 to 45 ms	<b>46</b>

Timing Sequence				
order that peak speeds occur in downswing				
	Hips	UT	Arm	Hand
<b>Ideal</b>	1	2	3	4
<b>6-Iron</b>	1	2	3	4
<b>-</b>	0	0	0	0



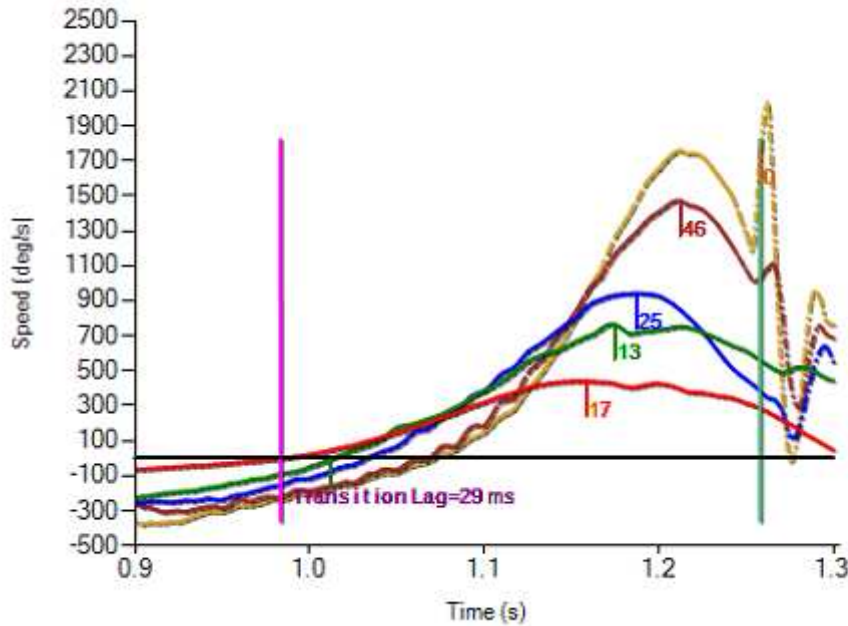
## Dynamics





## Dynamics

Timing Sequence - 6-Iron



- Club Speed
- Hand Speed
- Arm Speed
- Shoulder Speed
- Hip Speed
- Top of Backswing
- Impact

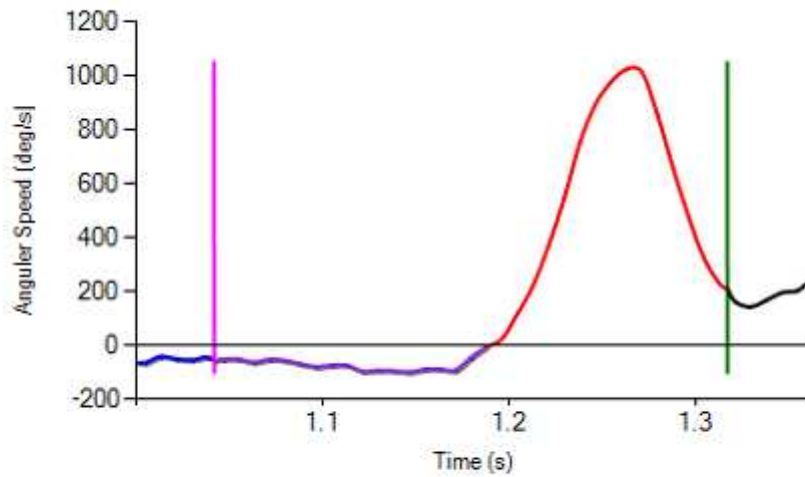
Max Hand Speed=1,472 deg/s

Max Arm Speed=943 deg/s

Max UT Speed=765 deg/s

Max Hip Speed=441 deg/s

Rate of X-factor Stretch & Recoil - 6-Iron



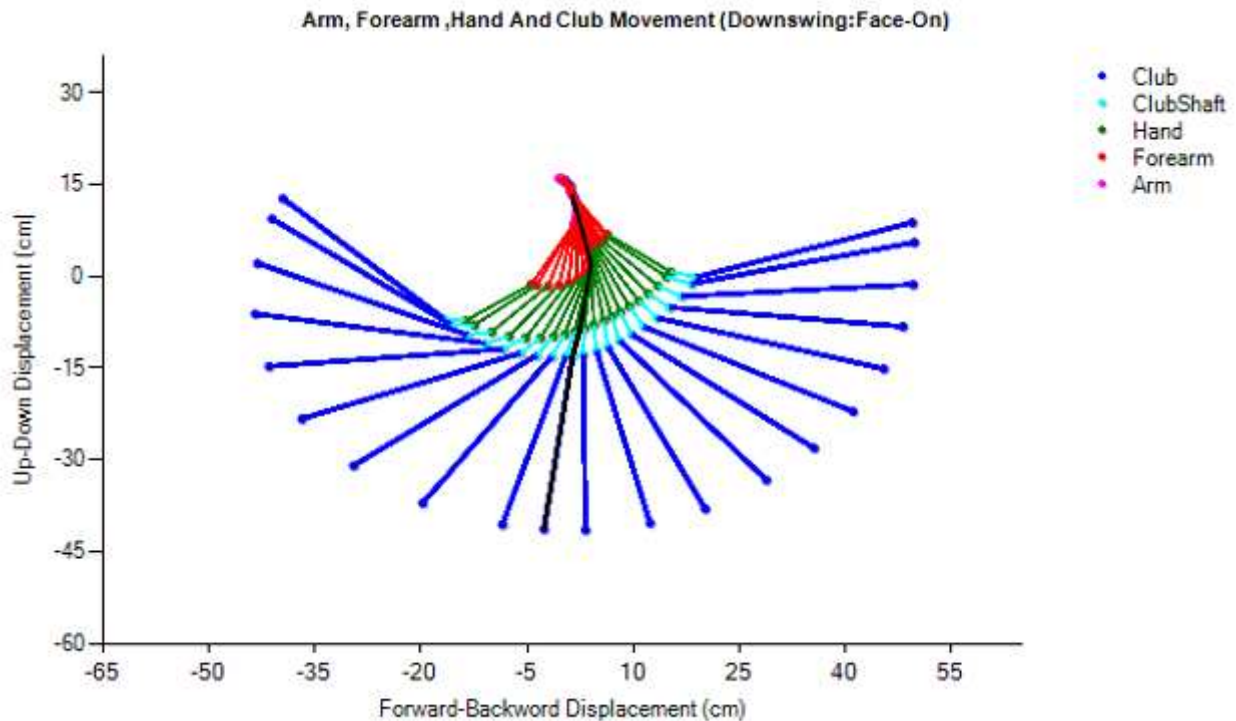
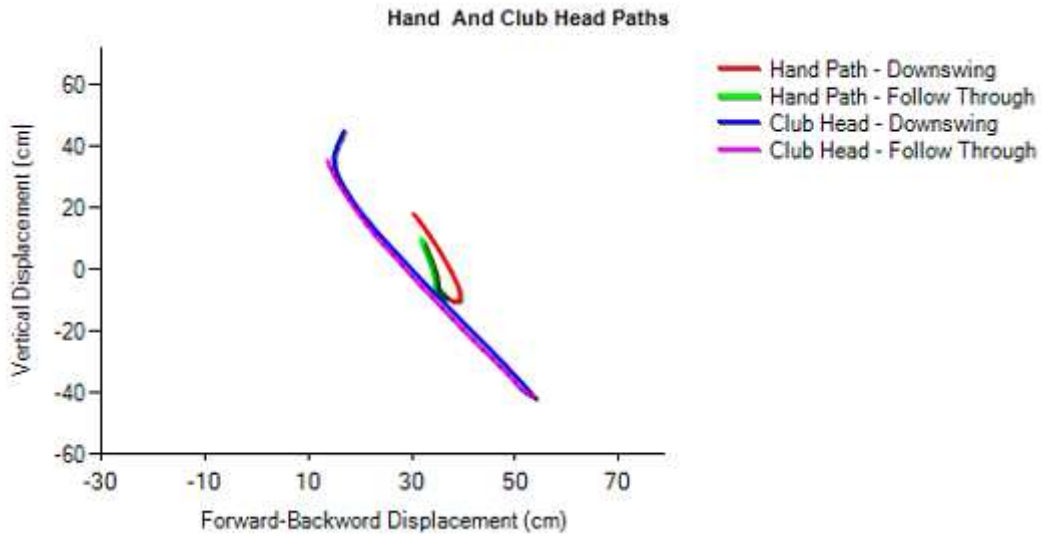
- Backswing
- Stretch
- Recoil
- Impact
- Top of Backswing
- Post Impact

Max\_Recoil=1,050 deg/s

Max Rate of Stretch = 131 deg/s



## Dynamics





### Club Data

	Address		Impact		
<b>Shaft lean</b> (Viewed from face on to golfer)	1.5°			8.3°	
<b>Shaft plane</b> (Viewed from target line)	57.5°		<b>GBD</b> (n = 1)  <b>T/Man</b>	<b>62.0°</b> (n = 0)  <b>0.0°</b> (n = 0)	
<b>Face angle</b> (Viewed from above)	-5.2°		<b>GBD</b> (n = 1)  <b>T/Man</b>	<b>1.1°</b> (n = 1)  <b>0.0°</b> (n = 0)	
<b>Angle of attack</b>			<b>GBD</b> (n = 1)  <b>T/Man</b>	<b>-7.3°</b> (n = 1)  <b>0.0°</b> (n = 0)	
<b>Club path</b> (Viewed from above)			<b>GBD</b> (n = 1)  <b>T/Man</b>	<b>3.5°</b> (n = 1)  <b>0.0°</b> (n = 0)	
<b>Club head speed</b> (Estimated)			<b>GBD</b> (n = 1)  <b>T/Man</b>	<b>80.7 mph</b> (n = 1)  <b>0.0 mph</b> (n = 0)	<b>36.1 m/s</b>  <b>0.0 m/s</b>



**Joe Golfer**

Swing parameter	22-Aug-2011		6-Iron	
	Address	Top of Backswing	Impact	Finish
Pelvic Rotation (deg)	12.9	-32.9	48.0	104.1
X-Factor (deg)	6.7	-61.4	-2.0	42.4
Upper Torso Rotation (deg)	19.5	-94.3	45.9	146.6
Pelvic Bend (deg)	26.6	17.3	8.2	12.5
Spine Bend (deg)	18.1	-8.5	33.7	-45.6
Upper Torso Bend (deg)	44.7	8.8	41.8	-33.1
Pelvic Tilt (deg)	5.3	-12.5	12.9	4.3
Spine Tilt (deg)	5.5	-40.9	13.5	-0.2
Upper Torso Tilt (deg)	10.8	-53.4	26.4	4.1
Head Rotation (deg)	-1.8	-11.1	-14.9	91.6
Head Bend (deg)	45.9	49.6	65.8	4.0
Head Tilt (deg)	5.6	-0.9	5.2	22.2
Pelvic Sway (inch)	0.0	0.7	-2.9	-8.7
Upper Torso Sway (inch)	0.0	1.3	-1.2	-6.8
Head Sway (inch)	0.0	1.9	0.5	-8.6
Hand Sway (inch)	0.0	20.6	-3.3	5.8
Pelvic Thrust (inch)	0.0	1.3	1.9	6.4
Upper Torso Thrust (inch)	0.0	1.2	0.4	-0.8
Head Thrust (inch)	0.0	1.6	1.4	-4.6
Hand Thrust (inch)	0.0	-5.2	2.4	-7.2
Pelvic Lift (inch)	0.0	-0.3	0.9	1.7
Upper Torso Lift (inch)	0.0	0.1	0.9	6.1
Head Lift (inch)	0.0	-1.3	-2.8	8.5
Hand Lift (inch)	0.0	29.2	2.0	35.8
X-Factor Stretch (deg)	-11	Peak club twist velocity (deg/s)		2,571.8
Max. Pelvic Speed (deg/s)	441	Spine Angle (Address)		51.0
Max. Upper Torso Speed (deg/s)	765	Spine Angle (TOB)		51.9
Max. Arm Speed (deg/s)	943	Spine Angle (Impact)		54.3
Max. Hand Speed (deg/s)	1,472	Hip sway (Downswing hip rot=0)		-1.0
Max. Club Speed (deg/s)	2,005	Hip thrust (Downswing hip rot=0)		1.0
Max. Club Head Speed (mph)	83	Hip lift (Downswing hip rot=0)		0.0
Hip - Upper Torso lag(ms)	17			
Upper Torso - Arm lag (ms)	13			
Arm - Hand lag (ms)	25			
Hand Impact lag (ms)	46			
Backswing Time (ms)	808			
Downswing Time (ms)	271			
Total Swing Time (ms)	1,079			
Min hip sway on downswing (inch)	5.1			