

# Swedish PGA

## TEACHING AND LEARNING SUMMIT

- GEARS GOLF

- Michael Neff

- PGA member 1996

Graphs

Training

res

Select Captures

0 Recommendation(s)

No recommendations.

Over time:

Prepared Sample

Other samples

1.119

1.462

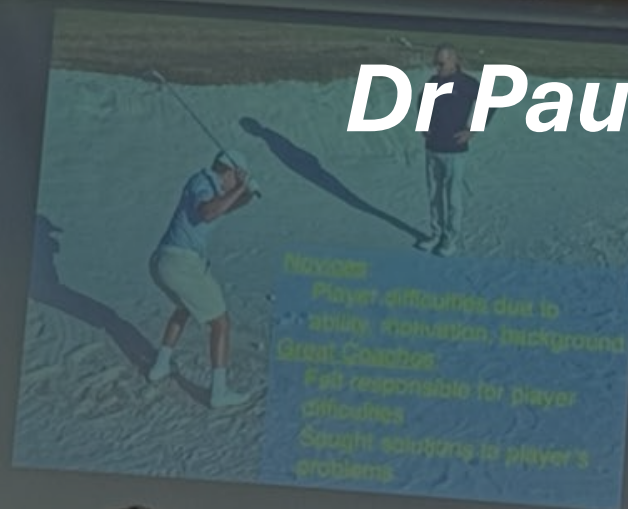
Backswing: 0.942 sec, Tempo: 0.227

Downswing: 0.214 sec

Downswing: 0.195 sec

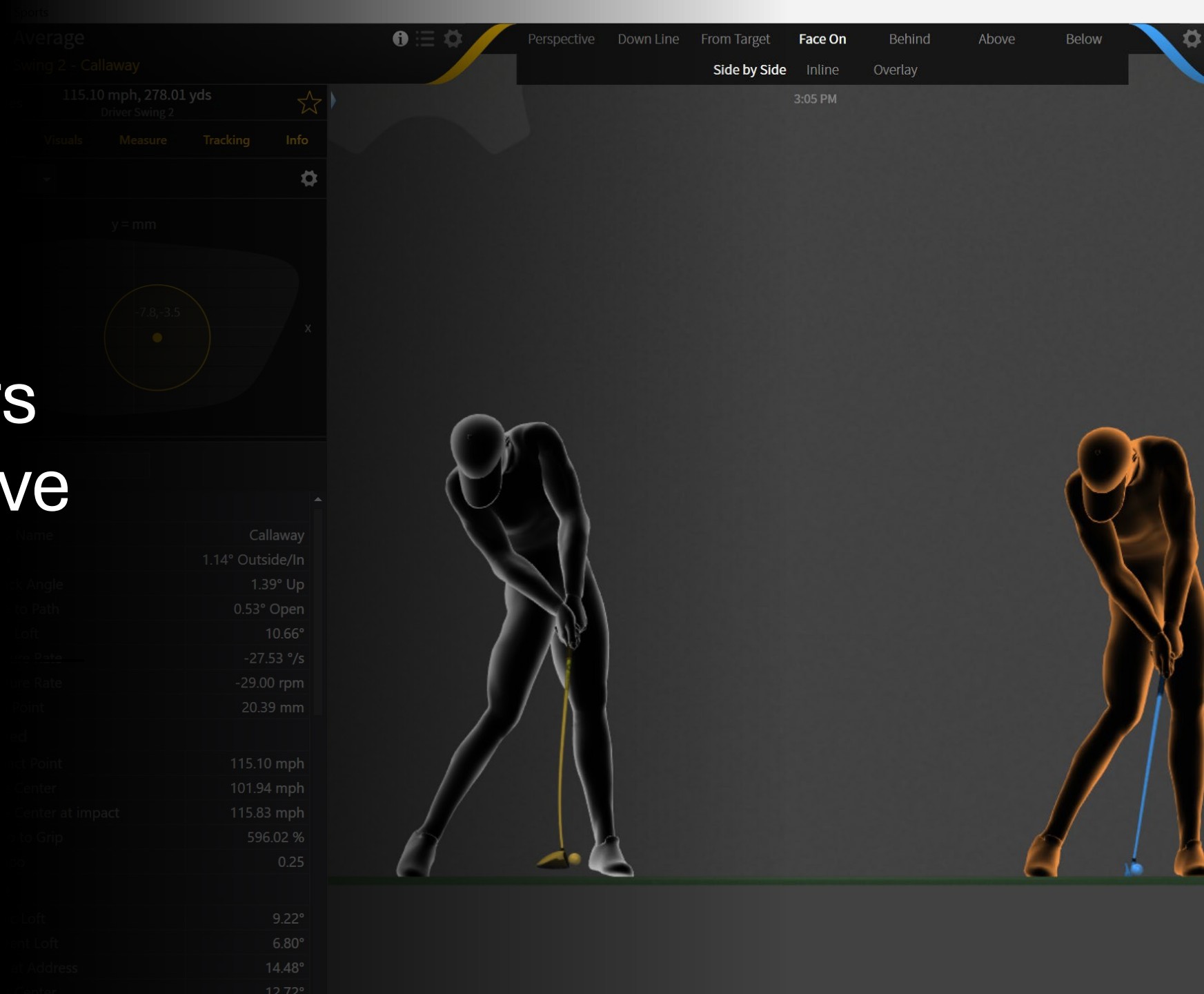
I love Swedish Golf pros  
“sought solutions to players problems”

*Dr Paul Shempp*



GOLF... ME-O

What swing mechanics do the best players in the world have in common



# What is GEARS Golf?

<https://youtu.be/XmKcJTb2gtk>



# Question



IS BODY **AND** CLUB  
MORE VALUABLE THAN  
BODY **OR** CLUB?



IF SO WHY?  
IF NOT WHY?

How much does accuracy matter?

GEARS Latency is **0.2 mm**

*That is the thickness of a piece of paper*

# 6 DEGREES OF FREEDOM

Rotations - bend, side bend, turn

Translations - lift, sway, thrust

What is 6 DoF?

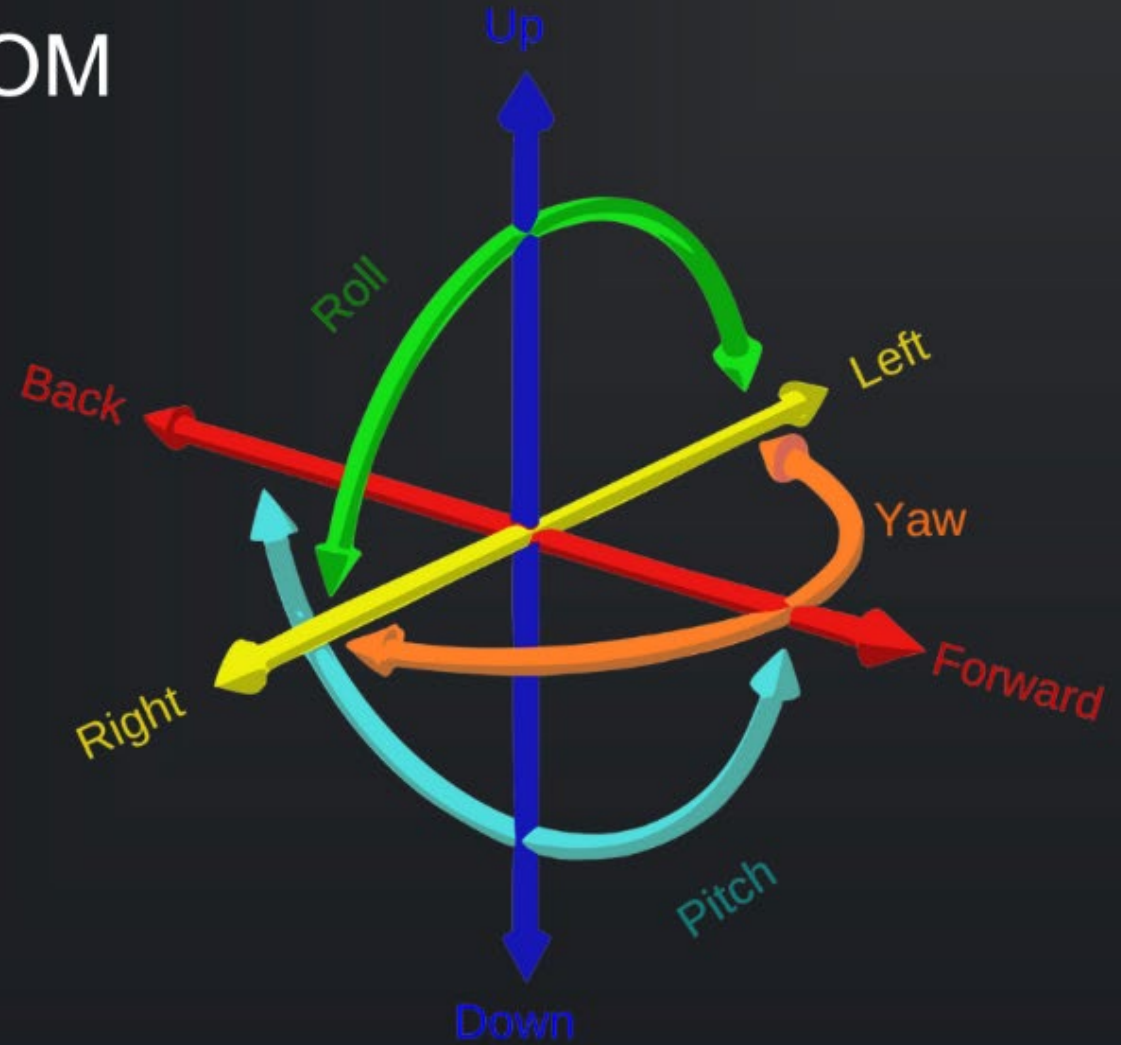
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6 DoF =

3 Translations +

3 Rotations

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# ROTATIONS

Movement around an axis

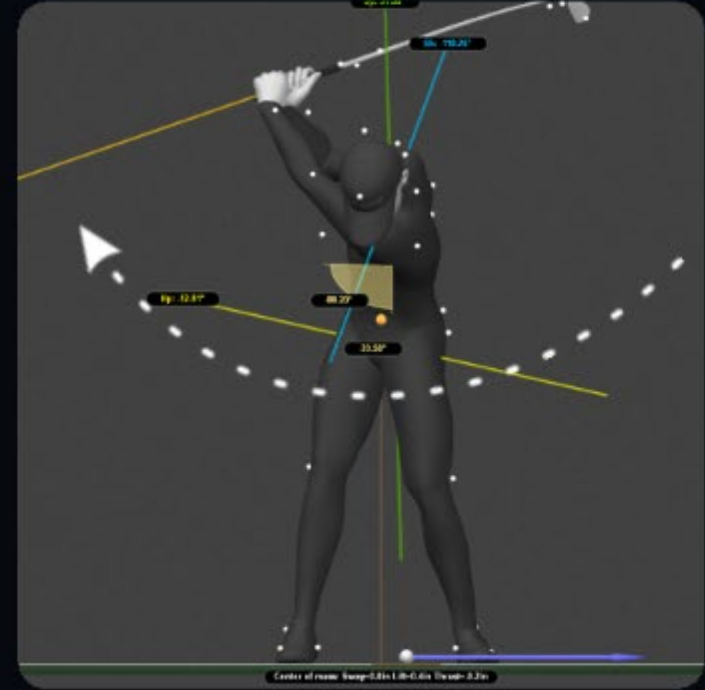
## Bend



## Side Bend



## Turn



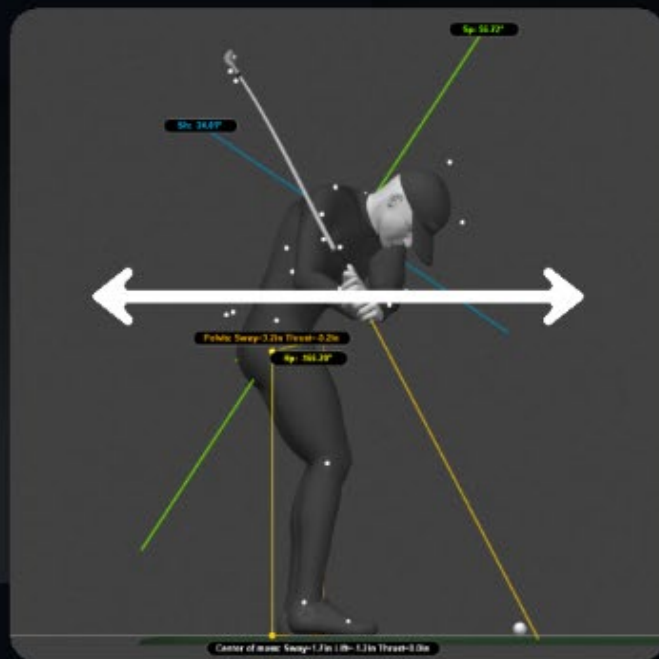


# TRANSLATIONS

Movement along an axis (linear)

## Thrust

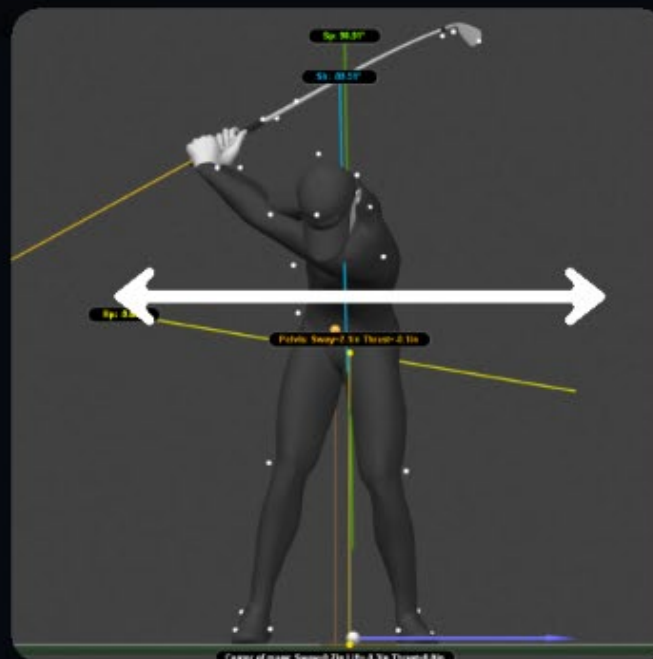
Towards the ball and away from the ball



## Sway

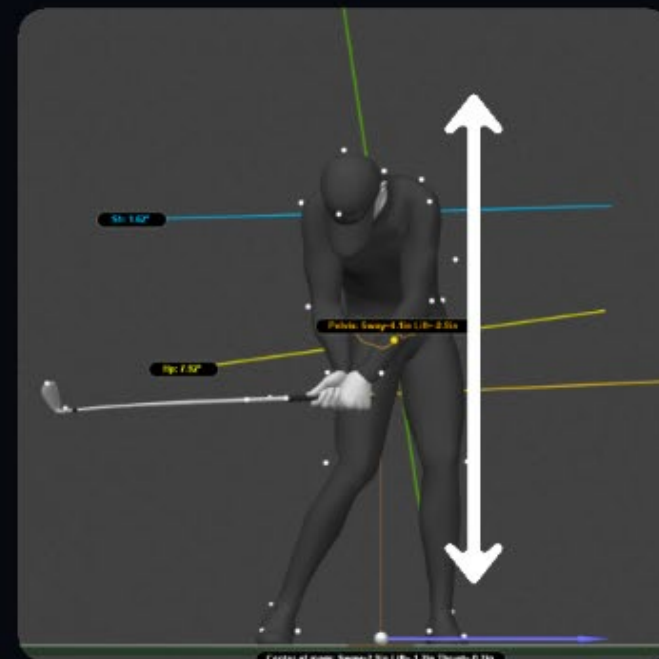
Side-to-side

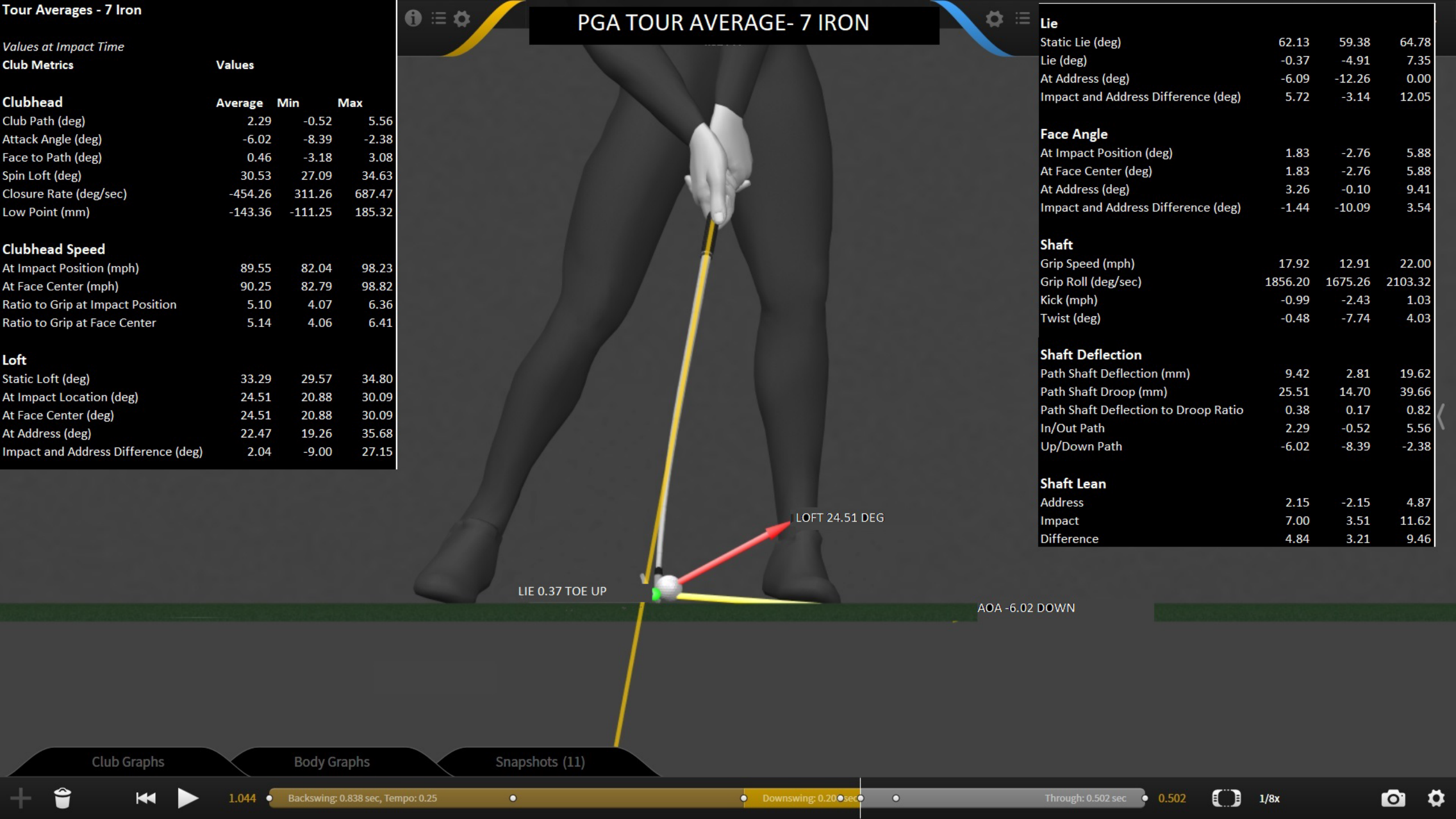
Trail side and lead side

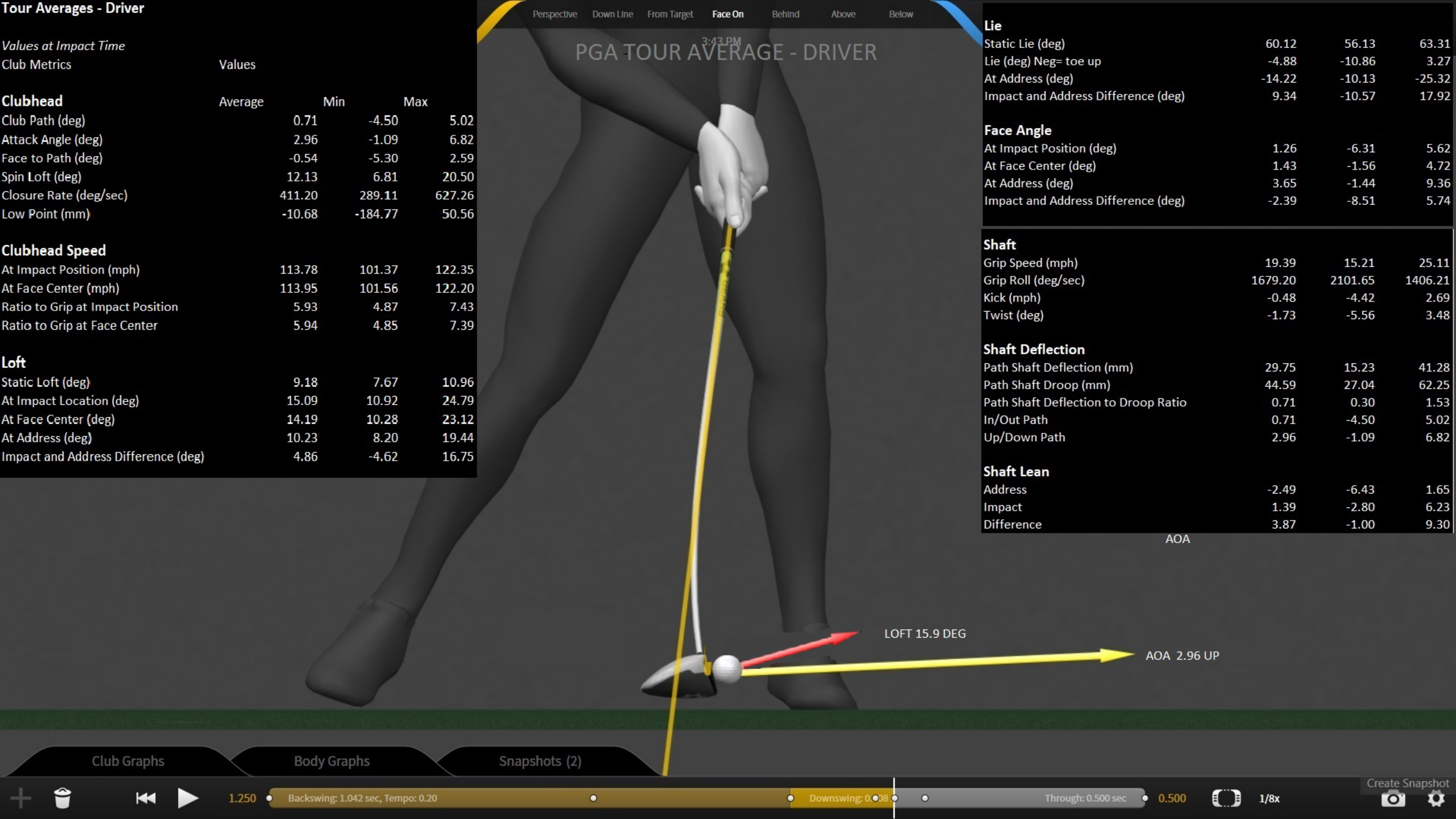


## Lift

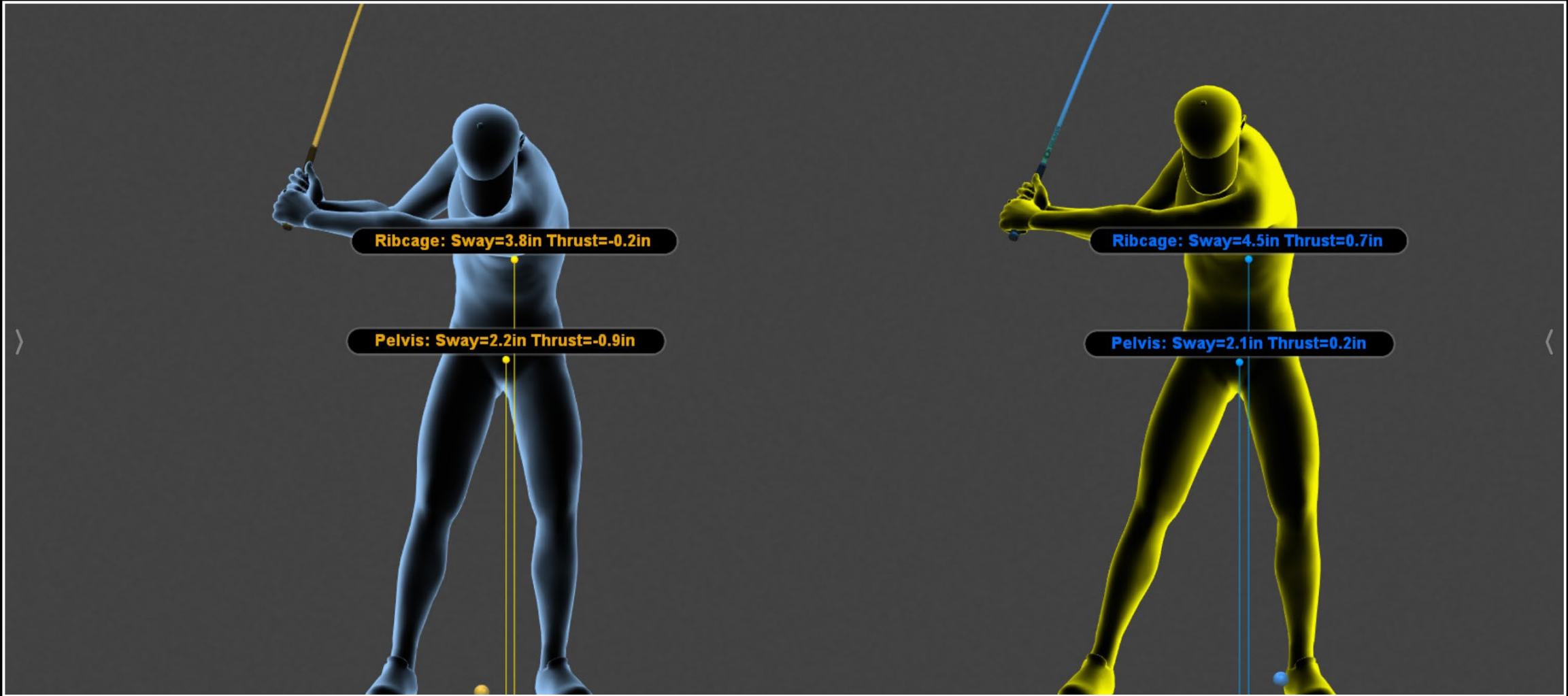
Up and down





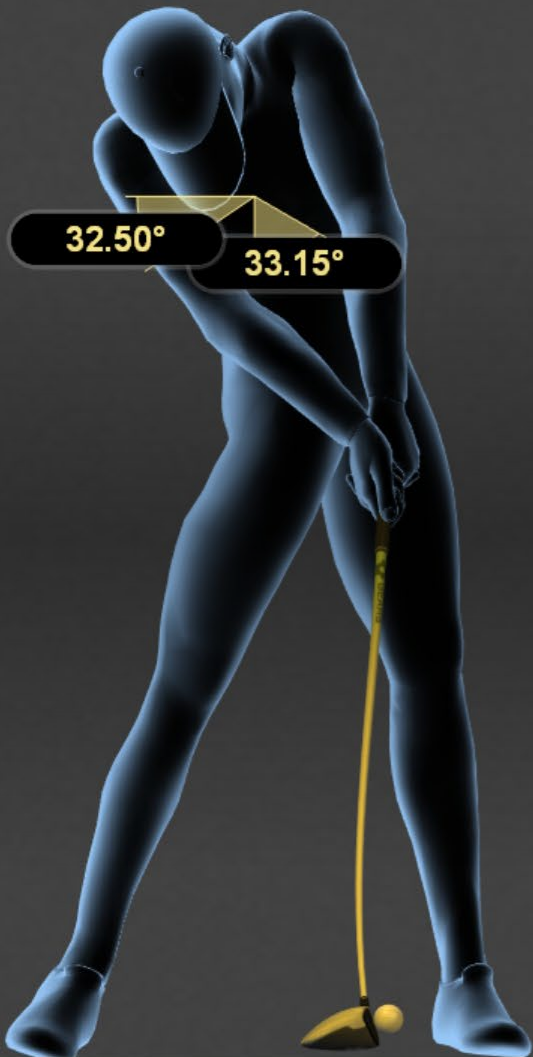






RECENTERING





# Tilts and Turns



Graphs

Training

1.153

Backswing: 0.925 sec, Tempo: 0.246

Downswing: 0.227 sec

Through: 0.502 sec

0.502

1.202

Backswing: 0.962 sec, Tempo: 0.248

Downswing: 0.239 sec

Through: 0.503 sec

0.503



1/8x



Side by Side    Inline    Overlay

Search

▲ Club

Club Name	Srixon Siron
Path	0.24° Outside/In
Attack Angle	6.37° Down
Face to Path	0.01° Closed
Spin Loft	23.04°
Closure Rate	-581.58 °/s
Closure Rate	-14.63 rpm
Low Point	-208.88 mm

### Speed

Impact Point	99.71 mph
Face Center	81.14 mph
Face Center at impact	100.39 mph
Ratio to Grip	423.46 %
Tempo	0.22

▲ Loft

Static Loft	26.54°
Current Loft	2.26°



Tour Average

Driver Swing 2 - Callaway

Captures

115.10 mph, 278.01 yds

Driver Swing 2

Metrics

Visuals

Measure

Tracking

Info

Club

y = mm

-7.8,-3.5

x

Search

Club

Club Name	Callaway
Path	1.14° Outside/In
Attack Angle	1.39° Up
Face to Path	0.53° Open
Spin Loft	10.66°
Closure Rate	-27.53 °/s
Closure Rate	-29.00 rpm
Low Point	20.39 mm

Speed

Impact Point	115.10 mph
Face Center	101.94 mph
Face Center at impact	115.83 mph
Ratio to Grip	596.02 %
Tempo	0.25

Loft

Static Loft	9.22°
Current Loft	6.80°
Loft at Address	14.48°

Perspective

Down Line

From Target

Face On

Behind

Above

Below

Side by Side

Inline

Overlay

3:18 PM

GEARS

29.58°

Wrists Rotation: 8.09°

24.31°

Wrists Rotation: 9.30°

Tour Average

Iron Swing 1 - Srixon Siron

Captures

99.71 mph, 217.17 yds

Iron Swing 1

Metrics

Visuals

Measure

Tracking

Info

Club

y = mm

-5.1,1.8

x

Search

Club

Club Name	Srixon Siron
Path	0.24° Outside/In
Attack Angle	6.37° Down
Face to Path	0.01° Closed
Spin Loft	23.04°
Closure Rate	-31.27 °/s
Closure Rate	-10.33 rpm
Low Point	-208.88 mm

Speed

Impact Point	99.71 mph
Face Center	88.17 mph
Face Center at impact	100.39 mph
Ratio to Grip	539.57 %
Tempo	0.22

Loft

Static Loft	26.54°
Current Loft	14.55°

# Pronation : Driver vs Iron – impact



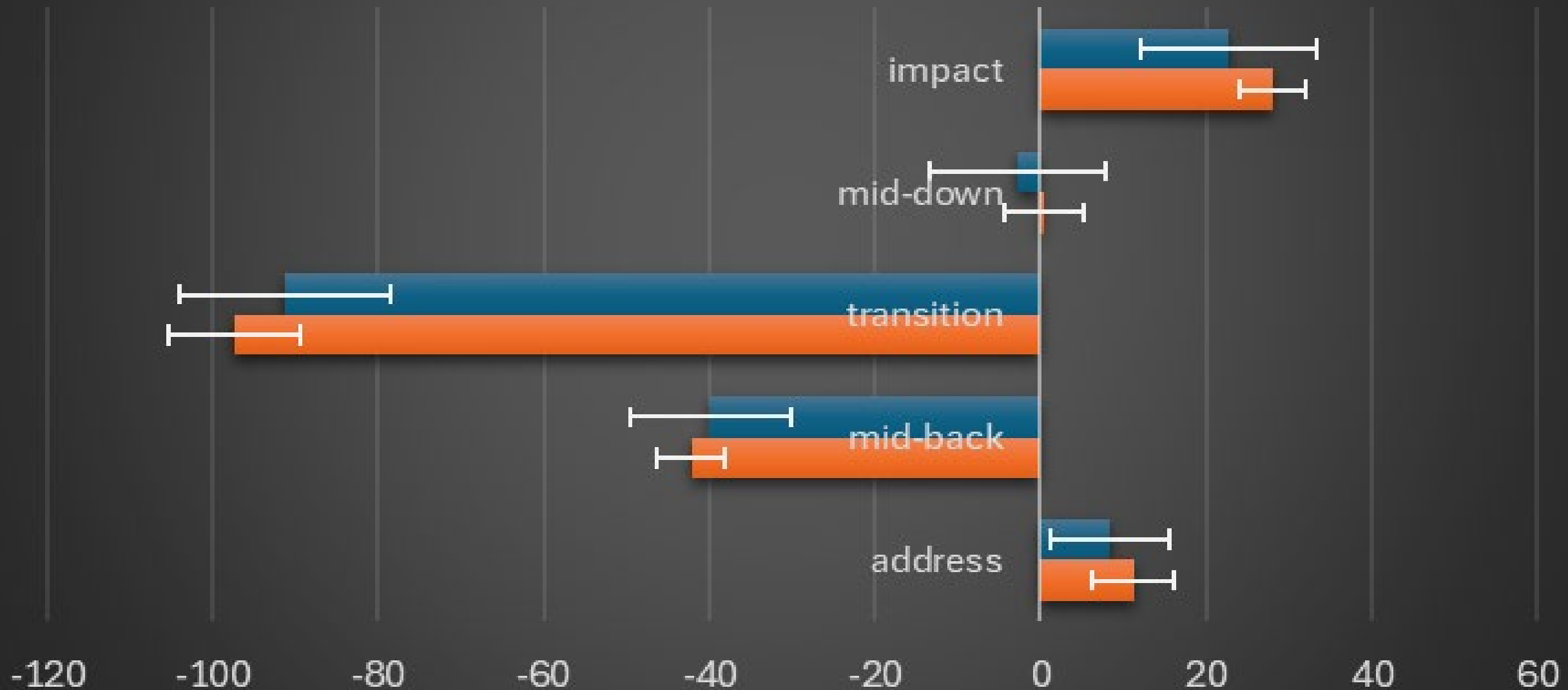
Smallest standard deviation on any body metric Tour  
Average – Rib cage turn at last parallel – VERY HARD  
to see with video camera





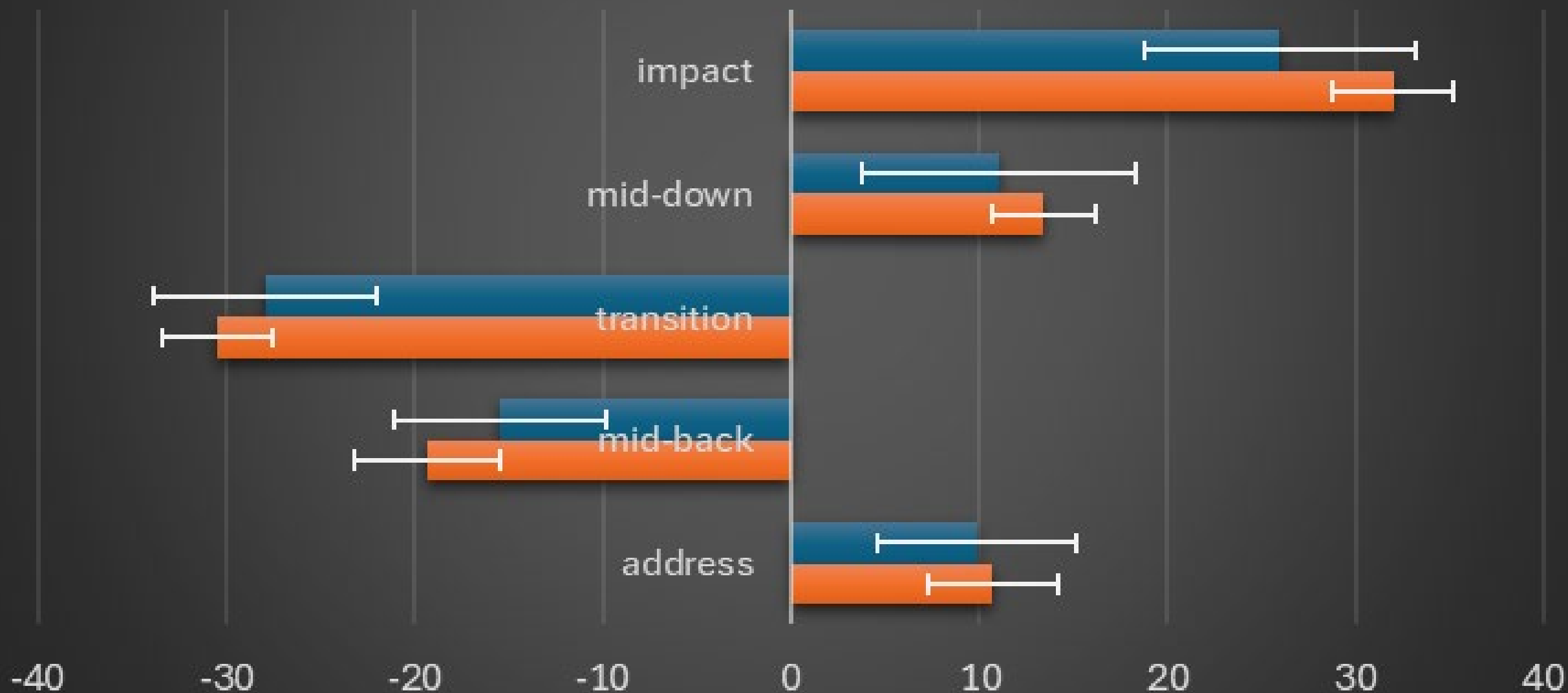
# Average Ribcage Turn

Pro vs Non-Pro



# Average Ribcage Side Bend

Pro vs Non-Pro



# Hand Path Iron Vs Driver – Tour Average



# Tour Average – Impact Iron and Driver

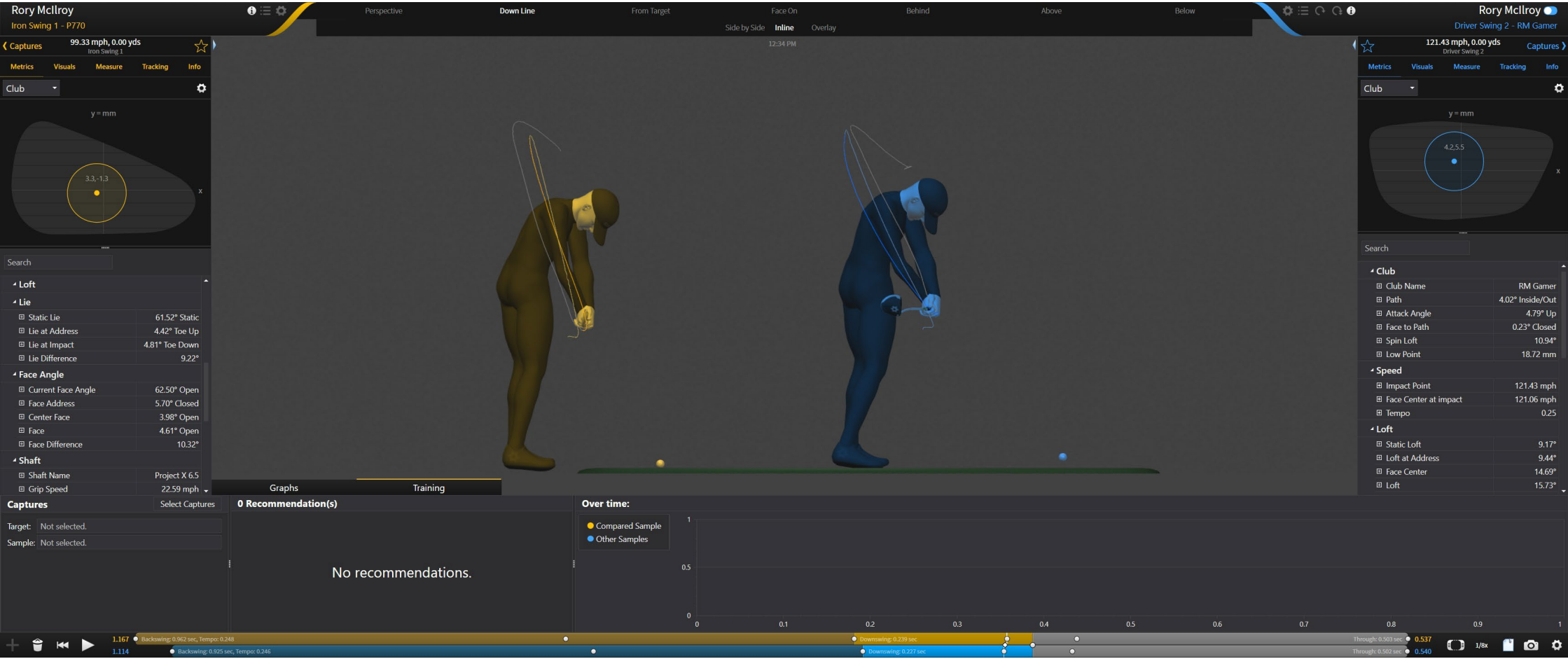


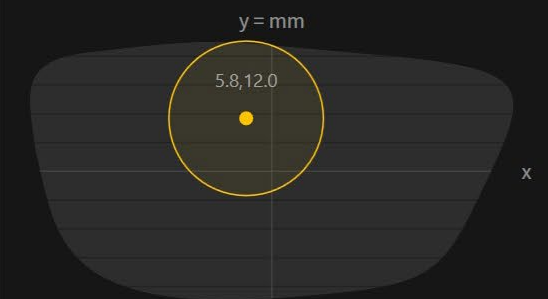


# RORY LITTLE SECRET



# Hand path Iron Vs driver – Rory





## Speed

Ratio to Grip	15.1%
Tempo	0.29

## Loft

Static Loft	10.33°
Current Loft	6.76°
Loft at Address	11.48°
Face Center	10.28°
Loft	12.65°
Loft Difference	1.17°

## Lie

Static Lie	61.49° Static
Lie at Address	22.00° Toe Up
Lie at Impact	5.81° Toe Up
Lie Difference	16.19°

## Face Angle

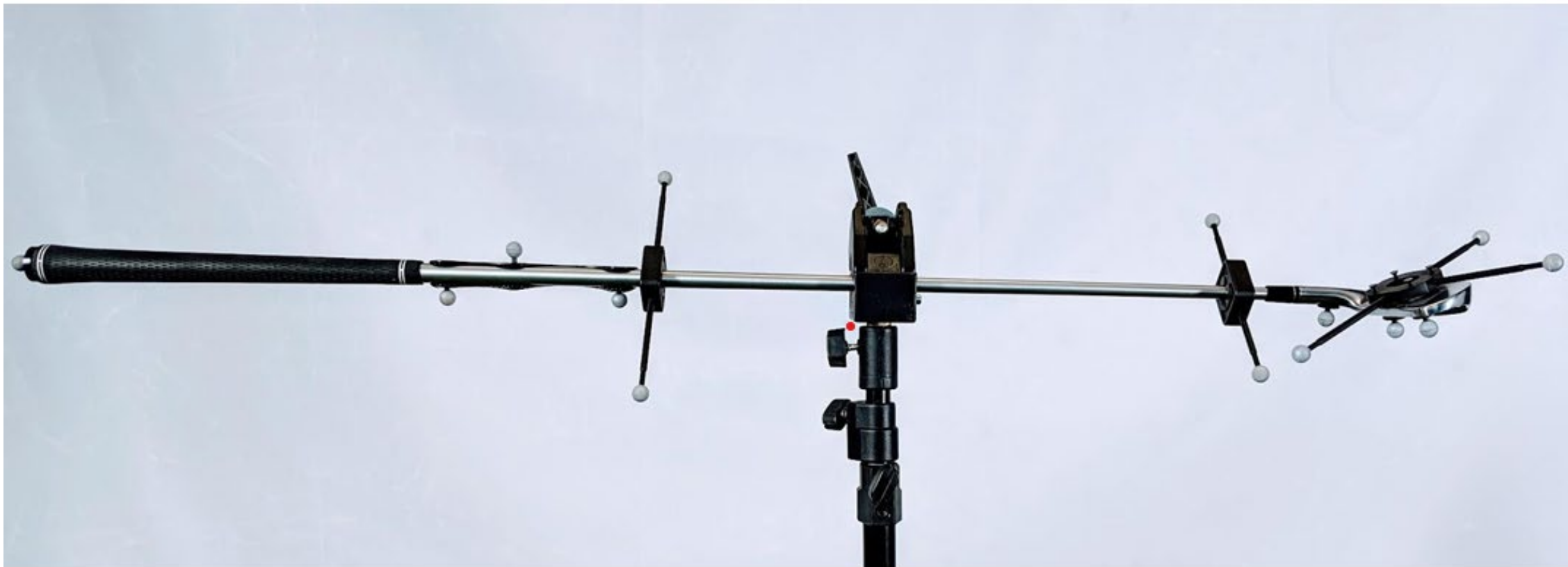
Current Face Angle	0.51° Open
Face Address	0.98° Closed
Center Face	1.37° Open
Face	2.24° Open
Face Difference	3.22°

## Shaft

# What is the most important thing to measure correctly?



# Club calibration





# FACE MAPPING

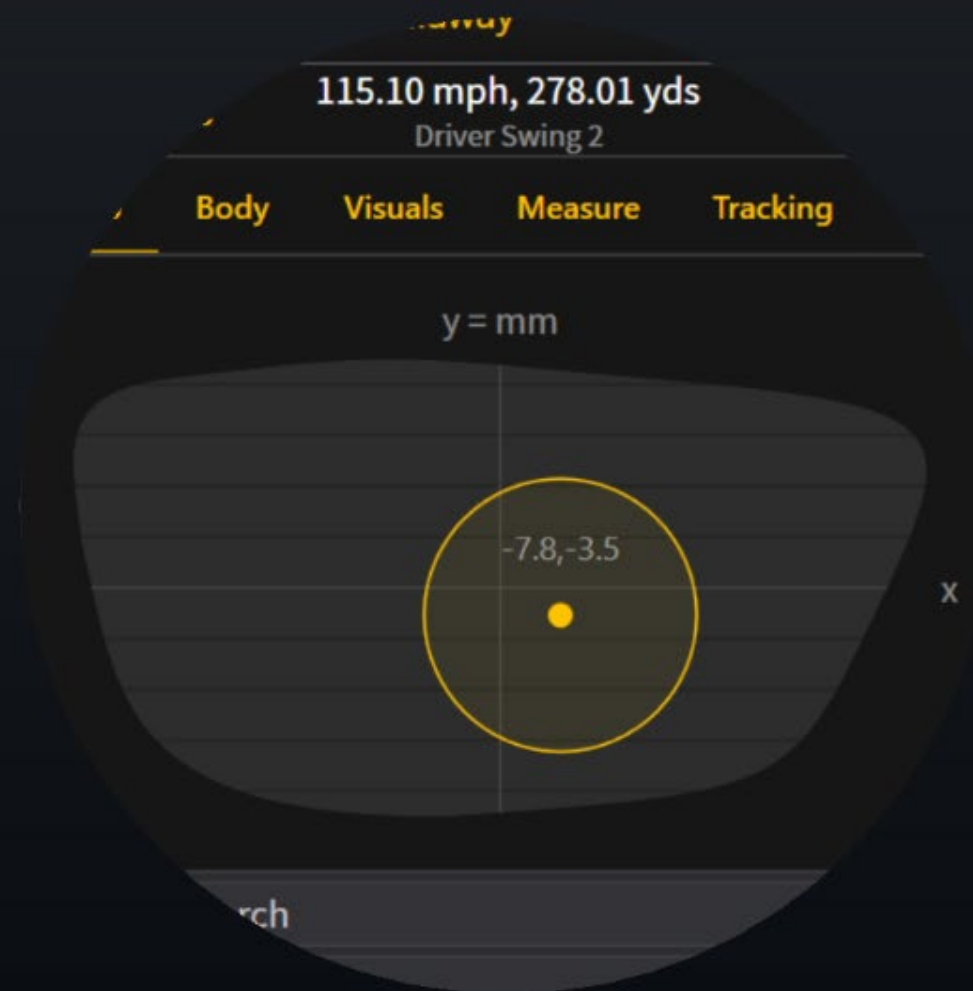
Precise mapping of impact location.  
Bulge and Roll accounted for

## Speed

Impact Point	115.10 mph
Face Center	115.83 mph
Face Center at impact	115.83 mph
Ratio to Grip	6.70
Tempo	0.252

## Loft

Static Loft	9.22°
Current Loft	12.72°
Loft at Address	14.48°
Face Center	12.72°
Loft	12.05°
Loft Difference	-2.43°



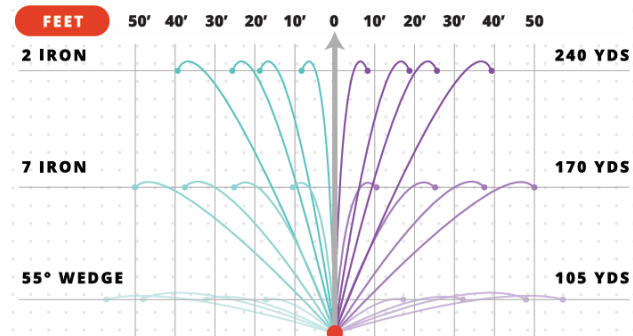




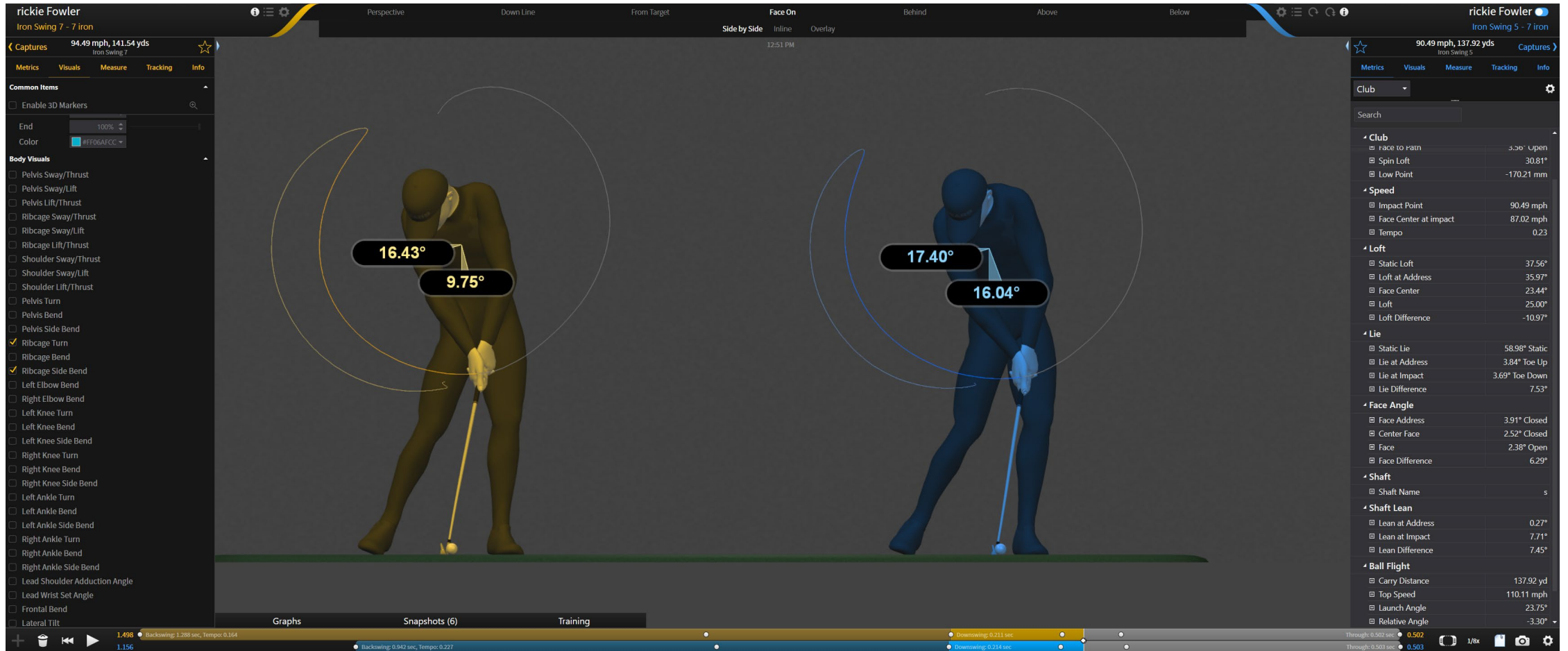


## Influence loft/lie Angle with directional displacement

Club	Degree	Distance	Directional Displacement			
			2°	4°	6°	8°
2 Iron	17°	240 Yds	7.6	18.5	25.7	39.7
3 Iron	20°	230 Yds	8.2	20.1	27.1	42.6
4 Iron	23°	220 Yds	9	21.6	29.9	44.2
5 Iron	26°	200 Yds	9.7	22.8	32.1	46.3
6 Iron	30°	190 Yds	10.8	24.2	35.6	48.1
7 Iron	34°	170 Yds	11.9	25.9	37.8	51.8
8 Iron	38°	160 Yds	12.9	27.3	40.1	54.2
9 Iron	42°	150 Yds	13.7	28.9	41.5	56.9
PW	46°	130 Yds	14.4	30.1	43.8	59.6
SW STG	50°	115 Yds	15.5	31.5	46.1	61.1
SW MID	55°	105 Yds	17	33	48.5	64.1

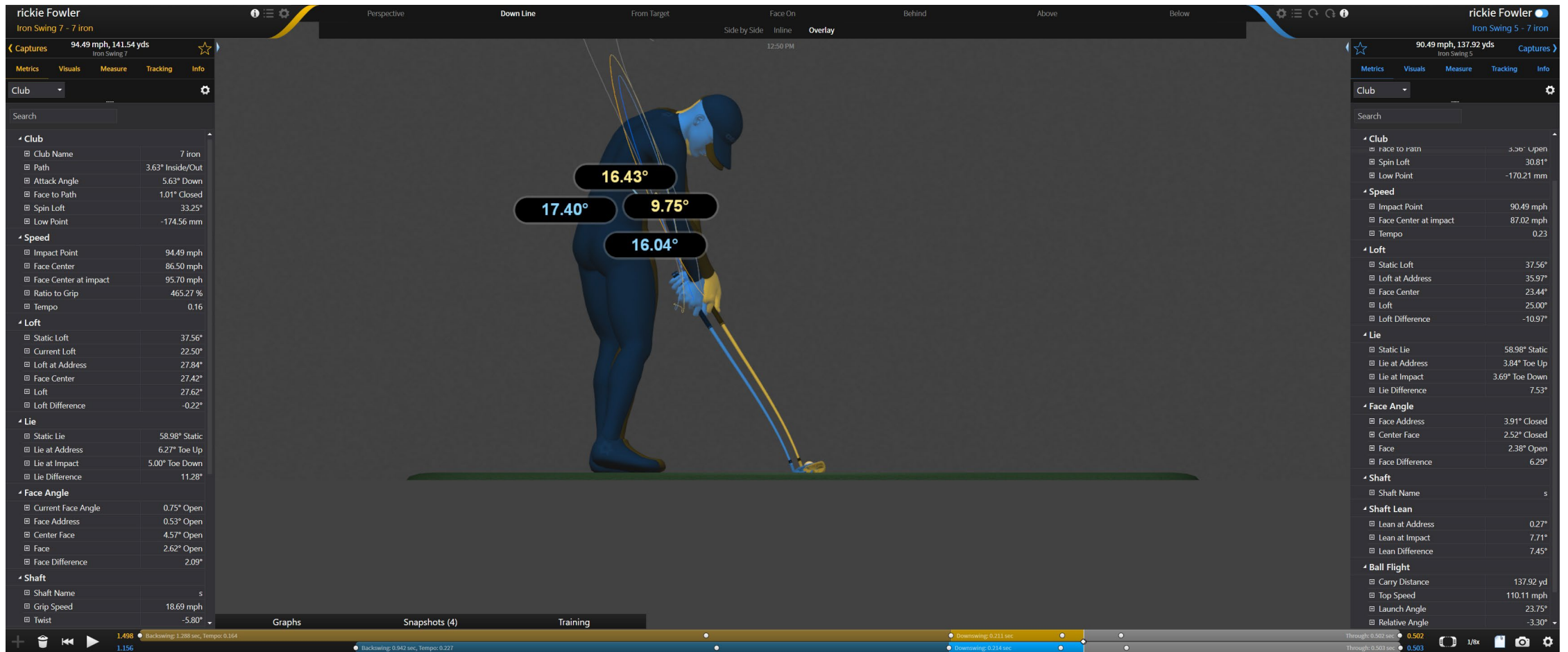


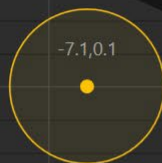
# Rickie before and after





# Rickie before and after





X

Search

◀ Club

Club Name	AMP Cell 7 Iron
Path	2.26° Inside/Out
Attack Angle	8.39° Down
Face to Path	0.22° Closed
Spin Loft	31.29°
Closure Rate	9.47 °/s
Closure Rate	5.70 rpm
Low Point	-198.16 mm

### Speed

Impact Point	94.78 mph
Face Center	81.45 mph
Face Center at impact	95.83 mph
Ratio to Grip	505.07 %
Tempo	0.28

▲ Loft

Static Loft	32.88°
Current Loft	23.32°

 $y = mm$ 

Search

▲ Club

Club Name	7 iron
Path	3.63° Inside/Out
Attack Angle	5.63° Down
Face to Path	1.01° Closed
Spin Loft	33.25°
Closure Rate	-1.77 °/s
Closure Rate	-9.96 rpm
Low Point	-174.56 mm

### Speed

Impact Point	94.49 mph
Face Center	86.50 mph
Face Center at impact	95.70 mph
Ratio to Grip	465.27 %
Tempo	0.16

▲ Loft

Static Loft	37.56°
Current Loft	22.50°

6:35



## Player Details

[Done](#)APP PRESENTED BY 

SCORECARD

GROUP

PROFILE

## TOURNAMENT PERFORMANCE

SG: AROUND THE GREEN	2.231		10
SG: PUTTING	1.262		51
SG: TEE TO GREEN	8.994		1
SG: TOTAL	7.731		T3
DRIVING ACCURACY	80.36%	45/56	T2
DRIVING DISTANCE	320		5
LONGEST DRIVE	354		T24
GREENS IN REGULATION	87.50%	63/72	1
SAND SAVES	50.00%	1/2	T31

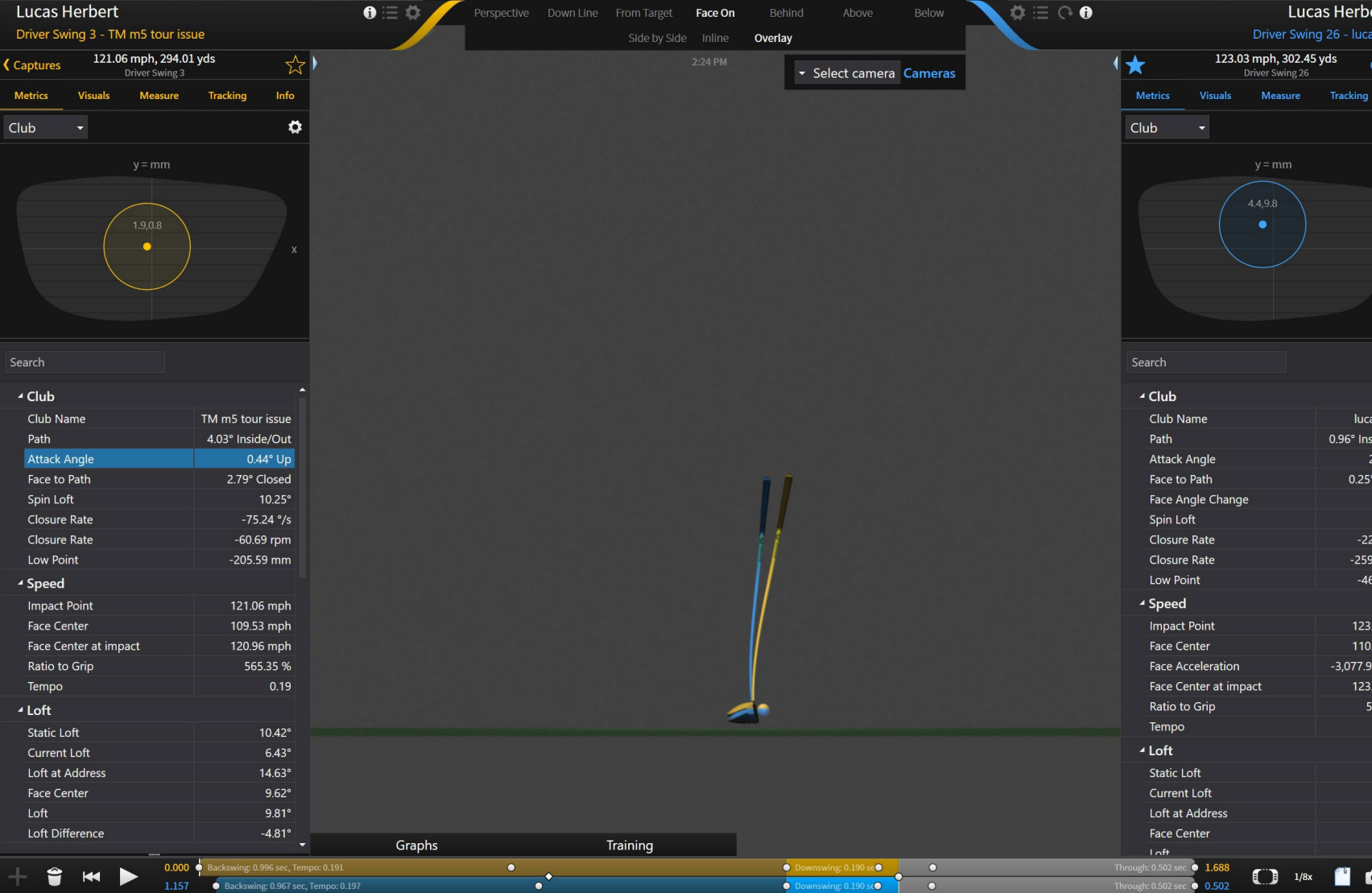
# How to find the middle with shaft adjustment

- [https://youtu.be/6q\\_7emGNLJM?si=ggzpWDX1VcVq3A0D](https://youtu.be/6q_7emGNLJM?si=ggzpWDX1VcVq3A0D)









#1

DRIVING DISTANCE  
LUCAS HERBERT  
AVERAGED 326y

Lucas Herbert



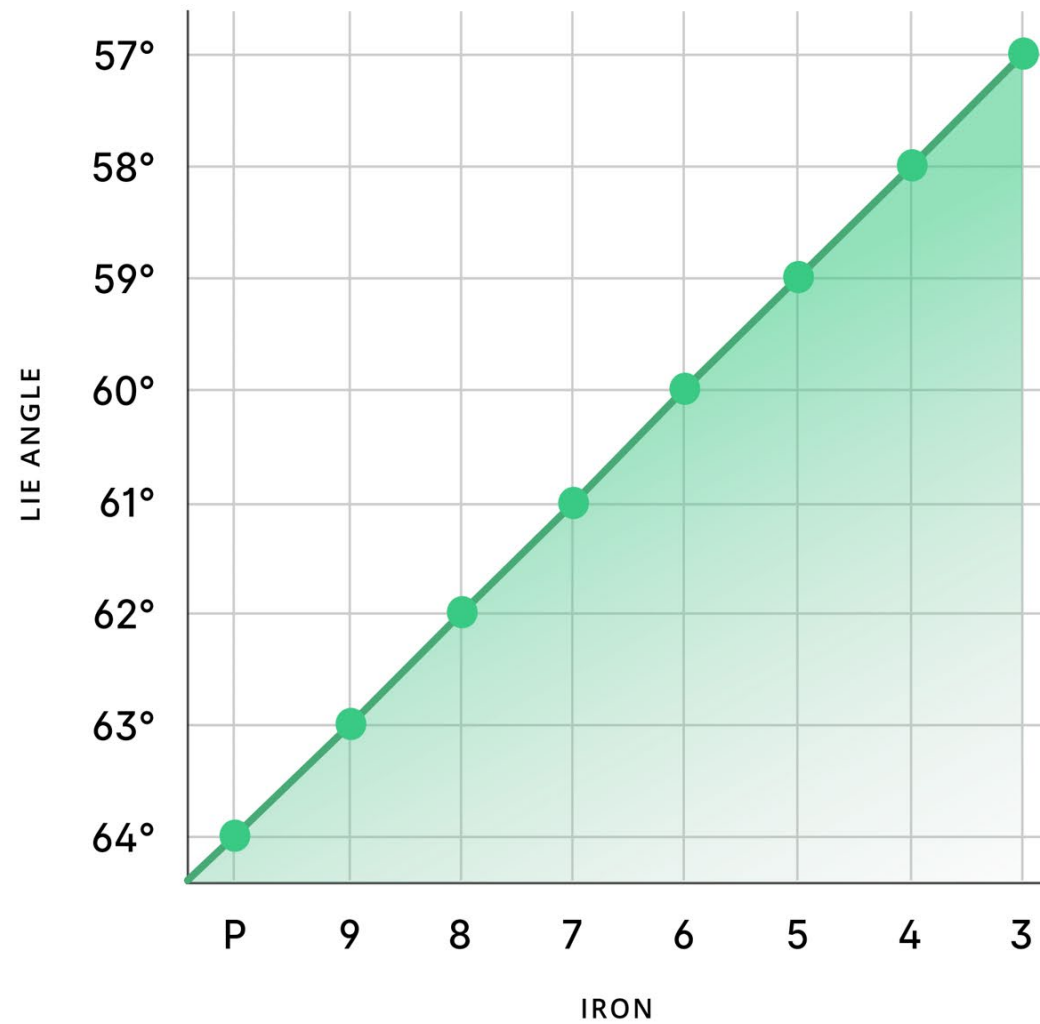
nipper curve



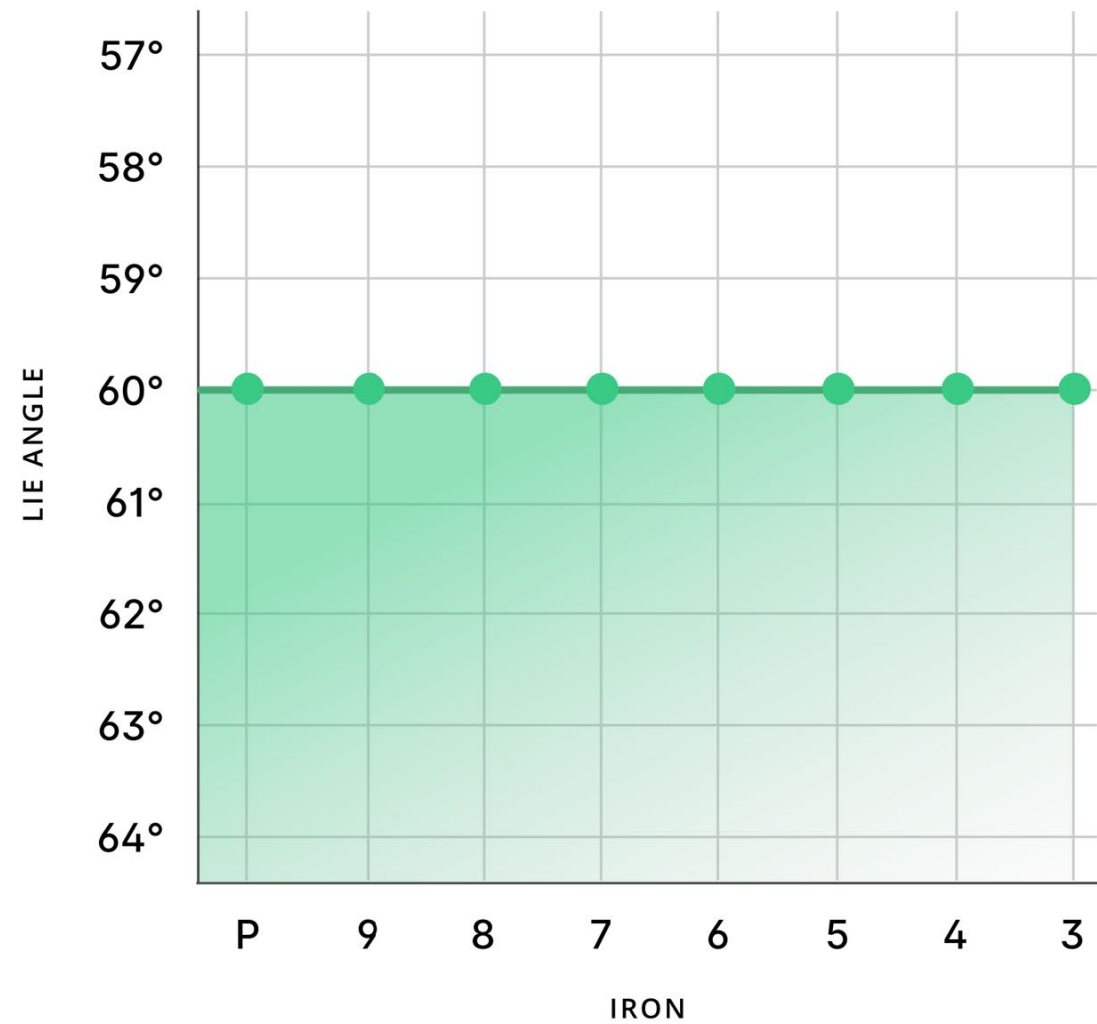
“I have to aim a little differently for my long irons since they go more right”



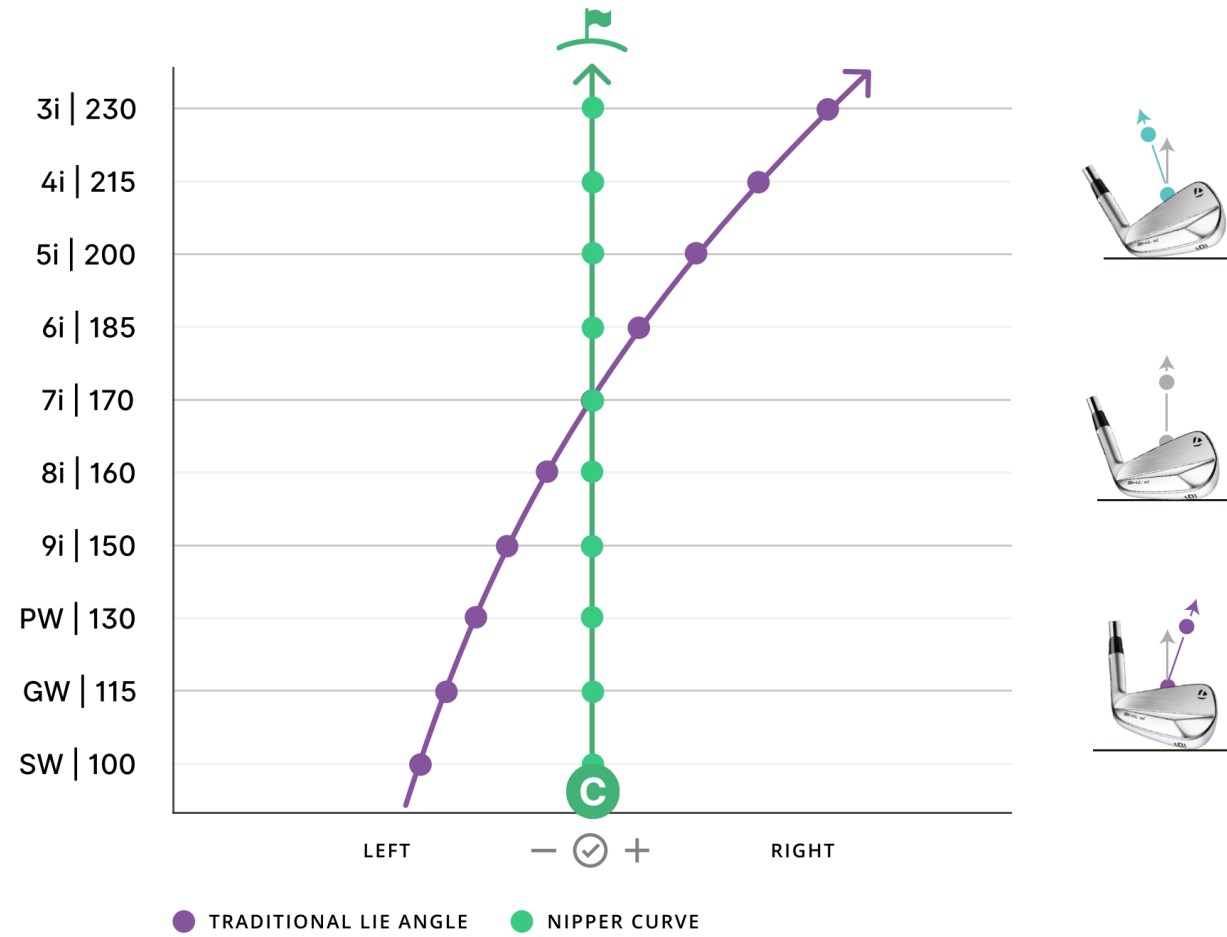




Standard Lie

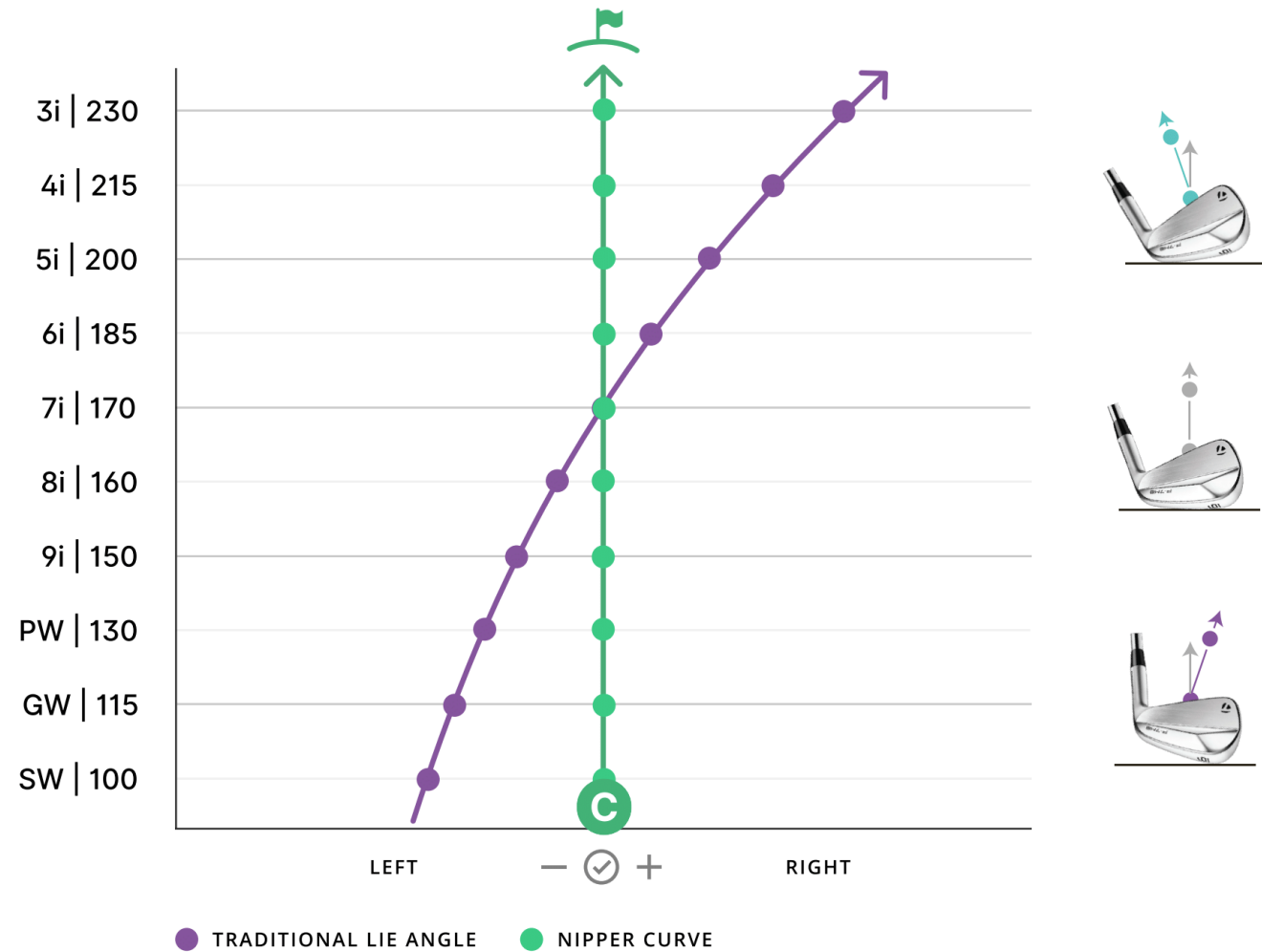


The Nipper Curve



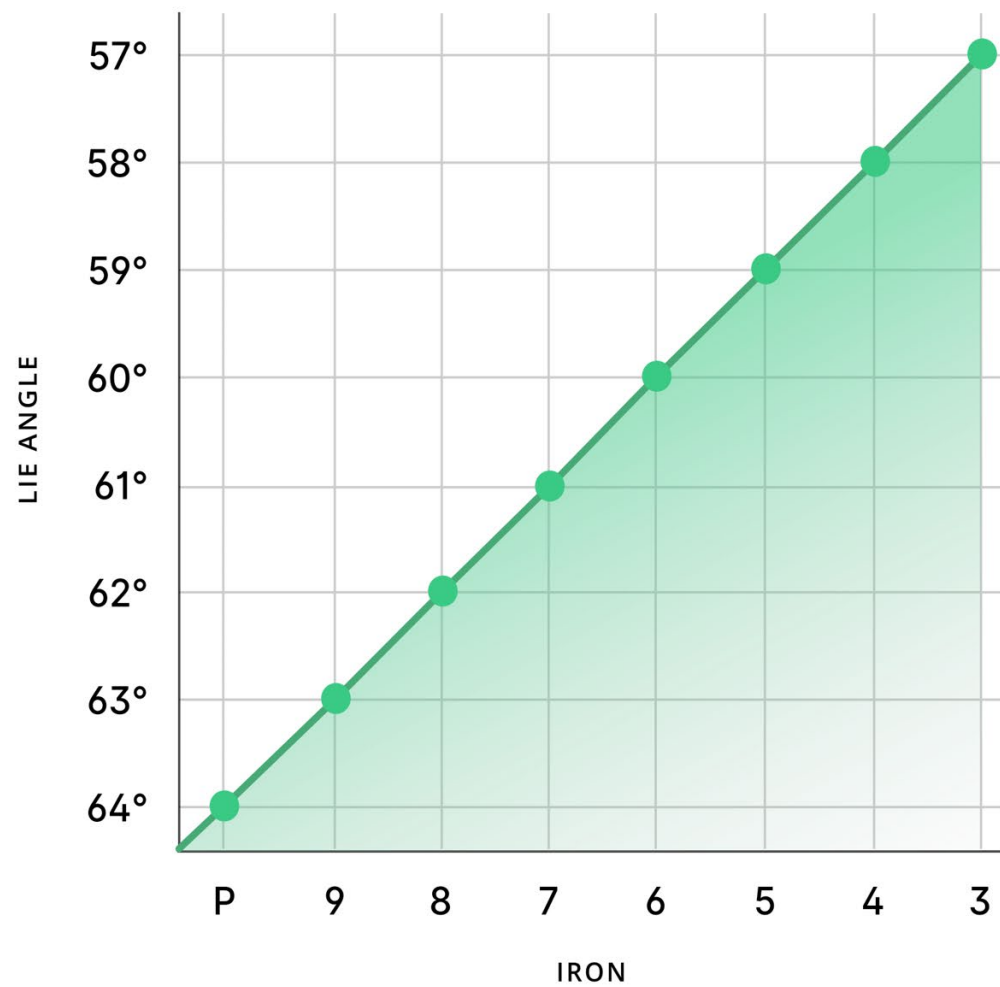
Nipper Curve vs. Traditional Lie Angle



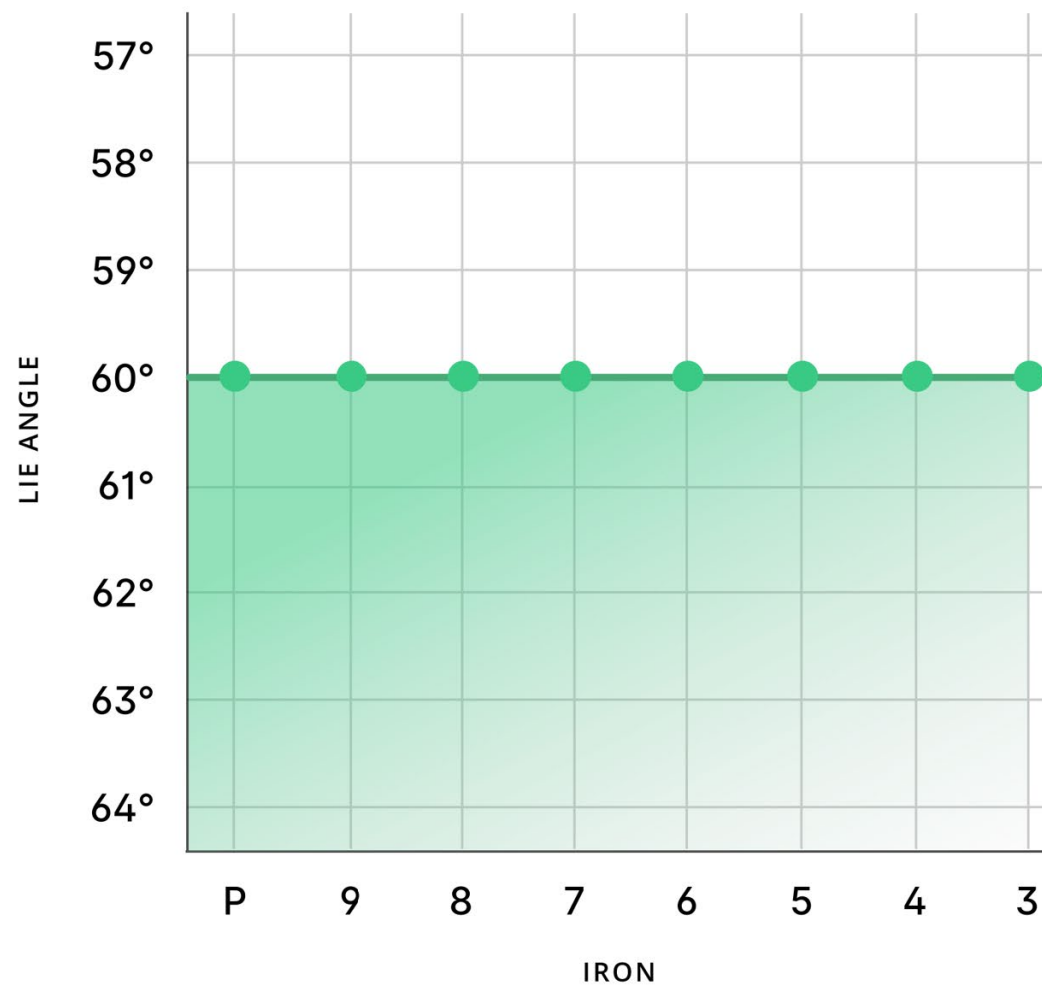


Nipper Curve vs. Traditional Lie Angle





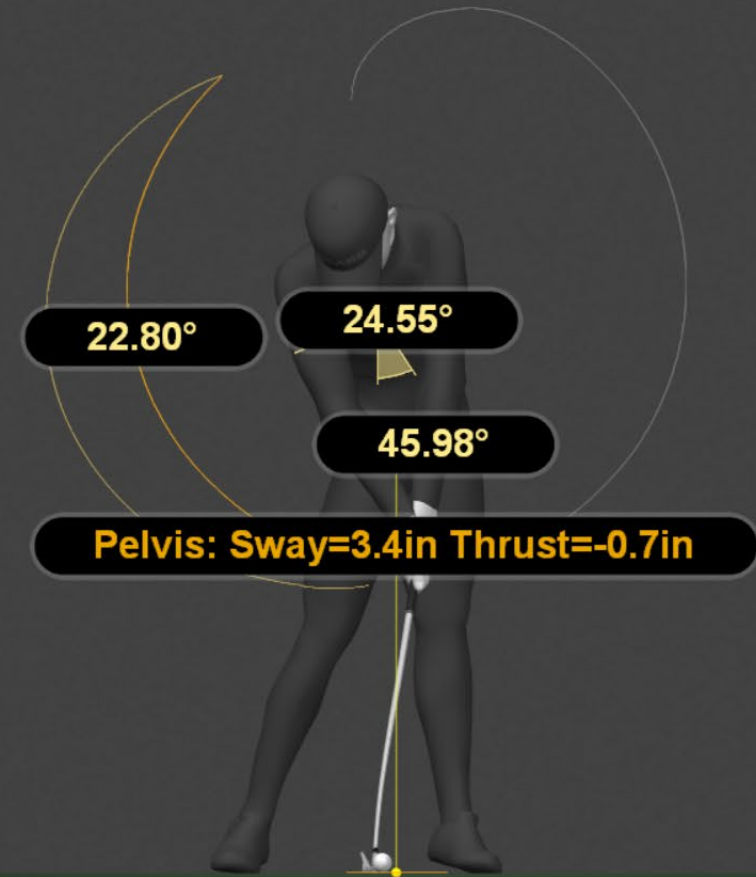
Standard Lie



The Nipper Curve

# Billy Horchall -

Club	
Club Name	billy iron
Path	0.63° Outside/In
Attack Angle	6.24° Down
Face to Path	2.45° Open
Face Angle Change	24.75°
Spin Loft	35.01°
Low Point	-226.32 mm
Speed	
Impact Point	91.85 mph
Face Center	83.52 mph
Face Center at impact	93.48 mph
Ratio to Grip	385.29 %
Tempo	0.21
Loft	
Static Loft	30.81°
Current Loft	24.07°
Loft at Address	31.46°
Face Center	28.77°
Loft	28.77°
Loft Difference	0.00°
Lie	
Static Lie	62.28° Static
Lie at Address	10.35° Toe Up
Lie at Impact	2.13° Toe Up
Lie Difference	
Face Angle	
Current Face Angle	8.22°
Face Address	5.00° Closed



“”

**WHERE I WAS LAST YEAR AFTER  
THE MEMORIAL TO WHERE I AM  
AT NOW, I'M IN A COMPLETELY  
DIFFERENT REALM.**

Billy Horschel





# Biggest greens in regulation rank improvement

LAST SEASON vs THIS SEASON



**BILLY HORSCHEL**

	2023	2024
BILLY HORSCHEL	174th	7th
BYEONG HUN AN	171st	17th
TAYLOR MOORE	170th	20th
HARRIS ENGLISH	165th	22nd
PATRICK RODGERS	143rd	9th



My Best  
Friend



# WHY SWITCH TO THE NIPPER CURVE?

## 12 TOUR PLAYERS

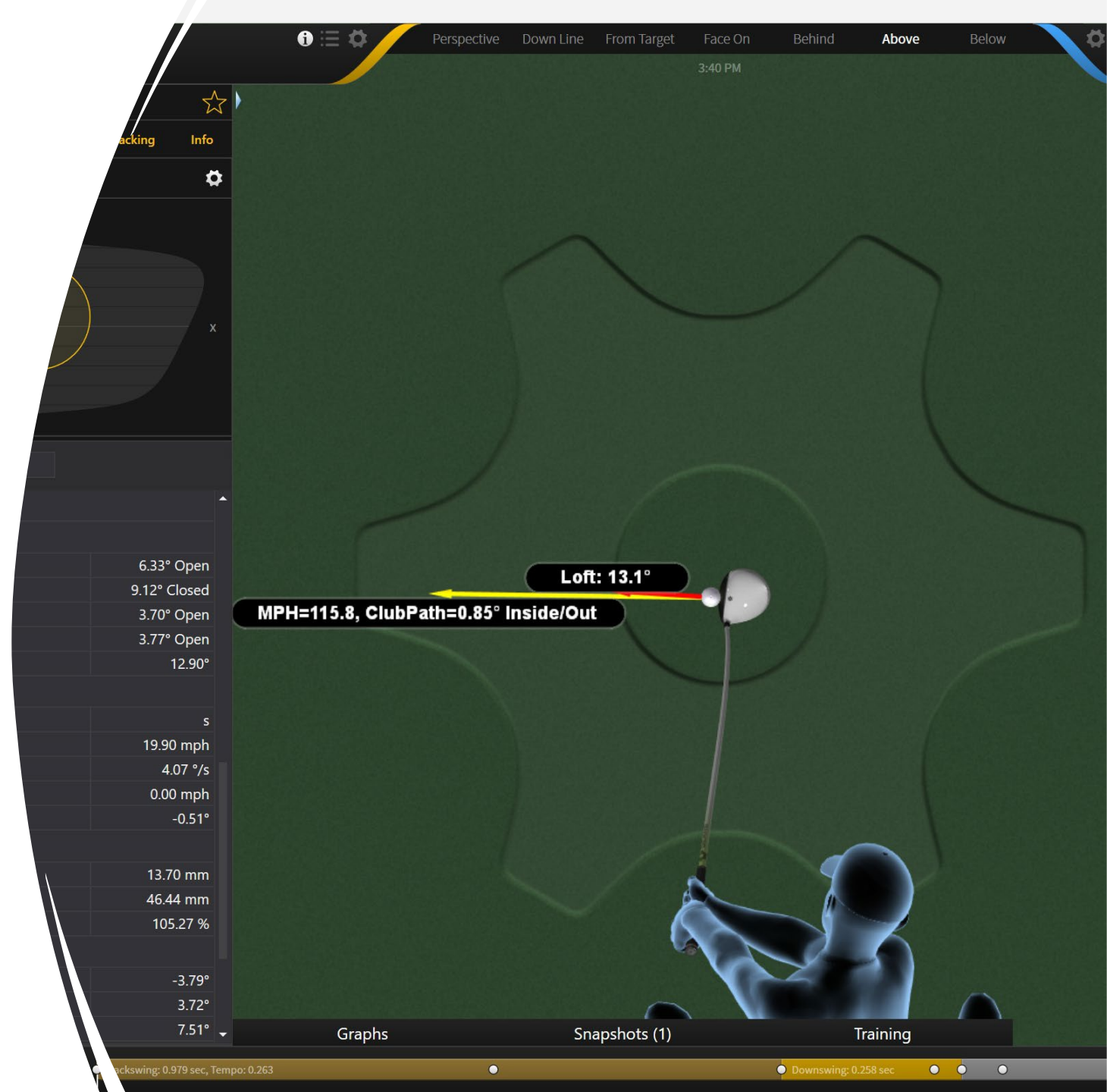
- **SG: APPROACH TO THE GREEN**
  - **INCREASED ON AVERAGE 2.47 SHOTS**
  - **NO ONE LOST ANY SG**



# Shaft XYZ!! View close up on GEARS

---

- Does the shaft bend?
- Droop
- Deflection
- Twist



# Filament winding vs sheet wrap

- [https://youtu.be/6q\\_7emGNLJM?si=ggzpWDX1VcVq3A0D](https://youtu.be/6q_7emGNLJM?si=ggzpWDX1VcVq3A0D)





OYVIO

OYVIO

SEAMLESS

GEARS

GEARS

# Gears shaft vs #1 shaft on PGA tour – ROBOT

## MORE

1. Ball speed
2. Club speed
3. Standard deviation on
  1. Face
  2. Face to path
  3. Angle of attack
  4. Closure rate
  5. Lie
  6. Loft
  7. Shaft deflection
  8. Shaft droop
  9. Shaft Twist

