

Without A Hitch

NBA Players Who Made Big Shooting Changes

Josh LaFronz

September 15, 2025

Introduction

Many NBA players undergo an evolution in their shooting form and mechanics after arriving to the league. Not every player can be Ray Allen or Stephen Curry. Some changes are subtle: Fixing an elbow flare, the release point, etc. It's rare that a player enacts a drastic change to their shot. These players have been shooting a certain way for a decade or two plus, so a huge modification is a large hurdle. There are several modern and historic examples of players who undertook such an endeavor, and I'm going to present my analysis of the difference in results.

Test Design

This is the hypothesis test I conduct for each case study:

$$H_o : \theta_{\text{before}} = \theta_{\text{after}}$$

$$H_a : \theta_{\text{before}} < \theta_{\text{after}}$$

Where θ is a given shooting statistic that is being evaluated. The difference in means will be tested with a 95% bootstrap interval across $B = 10,000$ iterations.

Switching Hands

Tristan Thompson



Figure 1: Photo from the SI article[7]

The first case study is an NBA champion and somehow still active: Big man Tristan Thompson. After a single year at Texas-Austin, Thompson was the fourth overall pick in the 2011 NBA Draft. Two years into his career, Thompson spent the summer of 2013 changing his shooting hand. I wasn't aware of this change before watching a [video about the Miami Heat's incredible comeback](#) against the Cavs in March 2013. Thompson steps to the line for a pair of free throws and takes them with his left hand. His southpaw shot was news to me. Thompson's free throw percentage was actually on the rise heading into the 2013-14 season.

Season	FTA/g	FT%
2010-11 (at Texas)	7.3	.487
2011-12	3.2	.552
2012-13	3.5	.608

Table 1: No Hope Left?

Regardless of the improvement, Thompson made the switch. According to Jerry Colangelo, this switch in dominant hand was unprecedented. Thompson changing his shooting hand was a historic development. The early returns were strong; Thompson shot a career-high .692 from the line in 2013-14 on a career-high number of attempts per game. Unfortunately, that season has remained his career best and he has not come particularly close to matching it.

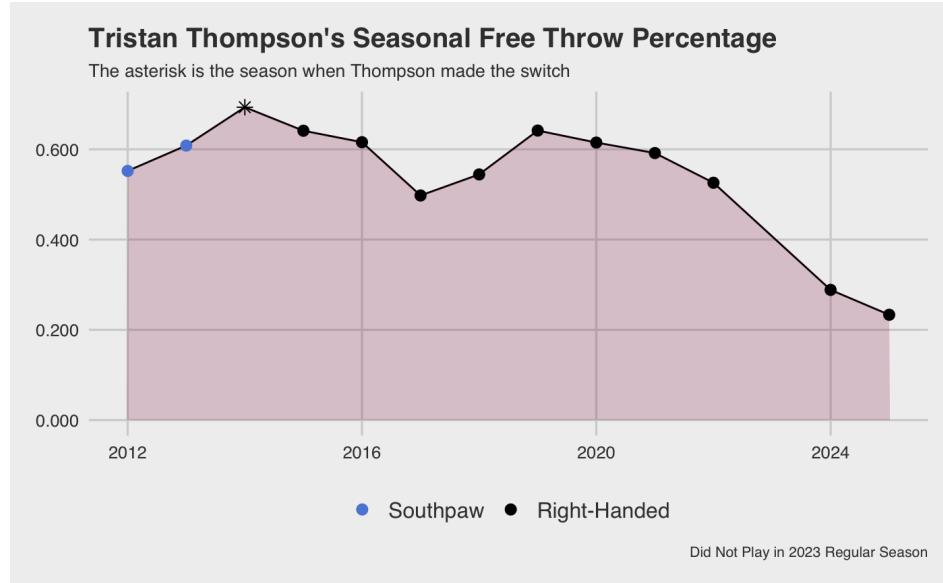


Figure 2

The right-handed Thompson never eclipsed 70% or finished near it, and his percentage has tanked ever since the turn of the decade. I ran a bootstrapping test on the difference in FT% before and after Thompson made the change. The results indicate there was no significant difference; even when I limited the range of testing to the seasons when Thompson was a Cavalier, the verdict did not change.

Since 2020, Thompson has become one of the most notorious free throw shooters in the NBA. He has air-balled at least four free throws in the last five seasons¹. Ever since

¹[04/15/21, 02/26/22, 11/21/23, 01/11/24](#). I had to watch a Steve Nash highlight reel to cleanse my palate.

rejoining Cleveland in 2023-24, he's been awful from the line. Since Thompson is now a "vet," it doesn't matter that his percentage has fallen south of 30%. He's a junk-time player at this stage of his career.

Mason Plumlee



Figure 3: Photo from ESPN article [14]

Mason Plumlee, another big man drafted in the first round in the 2010s, also made the transition. Near the end of the 2022 season, he switched his dominant hand to his left for free throws. Plumlee's 2021-22 FT% fell to a career low below 40%. After the change, Plumlee had a career-high year in 2023-24, shooting above 70% from the stripe for the first time in his decade-plus career. The form looks funky, but results outweigh appearances. From 2022-25, Plumlee shot above 60% from the line in three consecutive seasons for the first time in his entire career. He had never done it in even back-to-back seasons.

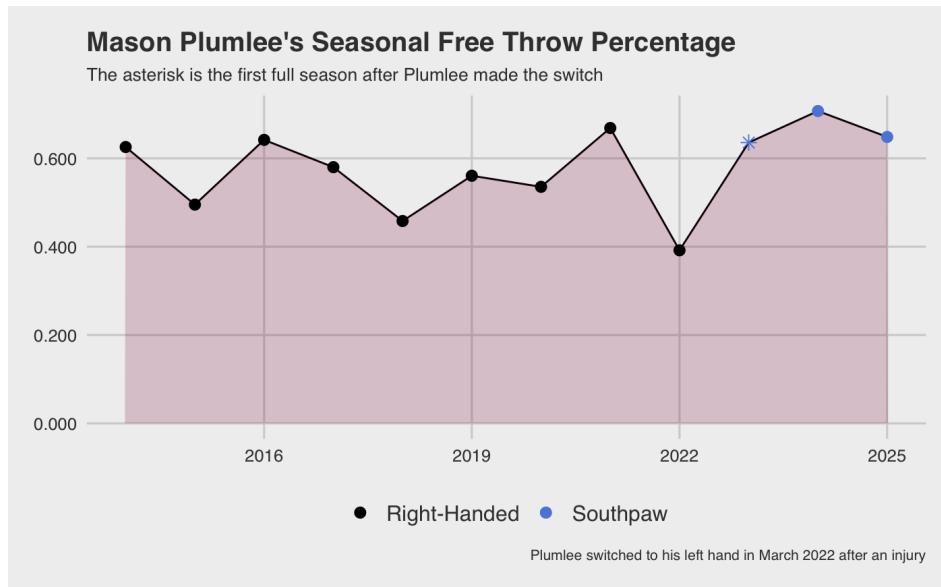


Figure 4

Using bootstrapping, I tested the difference in means before and after Plumlee's

southpaw swap. Unlike Thompson, the results indicate a significant difference in Plumlee's free throw shooting in favor of his left hand.

Statistical analysis aside, Plumlee's transformation is incredibly impressive. He changed his dominant hand in March 2022 and it only took a single offseason for the huge strides (.557 vs .652 after). He's still a below-average free throw shooter, but a percentage in the mid-60s makes it less practical for opposing teams to enact a Hack-a-Plumlee strategy.

Same Hand, New Man

Jeremy Sochan



Figure 5: Photo taken from a Reddit post [13]

Spurs youngster Jeremy Sochan is the other recent example alongside Mason Plumlee, but Sochan's change has attracted much more attention. The forward remains a right-handed shooter, but he completely ditched the guide hand. He shoots free throws with just one arm; it looks like a practice drill is being used in game. Just like Plumlee, it looks very odd, but as seen in the Spurs' broadcast graphic above [5], the results were immediate.

One-Hand Sochan	FT-FTA	FT%
Before Dec. 19	11-24	.458
Rest of 2022-23	70-92	.761

Table 2: The 2022-23 Free Throw Story

With such a staggering gap, any analysis is a formality, but Sochan's difference in free throw percentage was statistically significant. Since 24 free throw attempts is a small sample size, I included Sochan's free throw shooting while he attended Baylor as a one-and-done (53-90 FT, .589).

There was a report stating Sochan intended to return to a normal two-handed shooting form prior to the 2024-25 season, but that didn't happen. Sochan persisted with the lone hand form and had a relative down year from the line compared to his previous seasons.

Season	FT%
2022-23 (since Dec. 19)	.761
2023-24	.771
2024-25	.696

Table 3: Sochan experienced a slight dip in FT% in 2024-25

Lonzo Ball



Figure 6: Photo from SBNation Article [4]

Upon leaving UCLA, Lonzo Ball was a scary prospect. As a Bruin, he displayed his electric athleticism, passing vision that can't be taught, and a sweet jump shot. The jump shot drew some uncertainty from scouts. Like many players before and after Ball, he had a very unorthodox jump shot; his release point was along the side of his head. We have seen players who entered the NBA with strange jump shots and have success (Tyrese Haliburton, Shawn Marion, Jamaal Wilkes) and others not so much (Michael Kidd-Gilchrist, Ronnie Brewer). Usually, teams adapt the "If it ain't broke, don't fix it" philosophy with unconventional shooting forms. Unfortunately, in Ball's case, it was broke.

Lonzo's tenure in Los Angeles was a nightmare. After lofty expectations from Lakers' president of basketball operations Magic Johnson, he struggled out of the gate. His shooting was a mess; after shooting 41% from three as a Bruin, Ball shot 30.5% in 2017-18. He had the second-lowest 3P% among qualified shooters in the NBA. The following season wasn't much better. After acquiring LeBron James, the Lakers' situation vaulted from rebuilding to "win now." Lonzo and other Lakers prospects were dangled in trade rumors and offers all season. He improved slightly from three, but still shot just 32.9% on less attempts than the previous season. It wasn't just Ball's poor three-point shooting, Lonzo was also a horrible free throw shooter. He shot just 43.7% from the line in his two seasons as a Laker. Along with the noise, Ball struggled to stay healthy, missing a combined 65 games in his first two seasons. That is an unstable foundation for a young draft pick as one will find.

After the Lakers' tumultuous 2018-19 season, they finally put a bow on the Anthony Davis saga. He was traded to the Lakers in return for a package of young players and

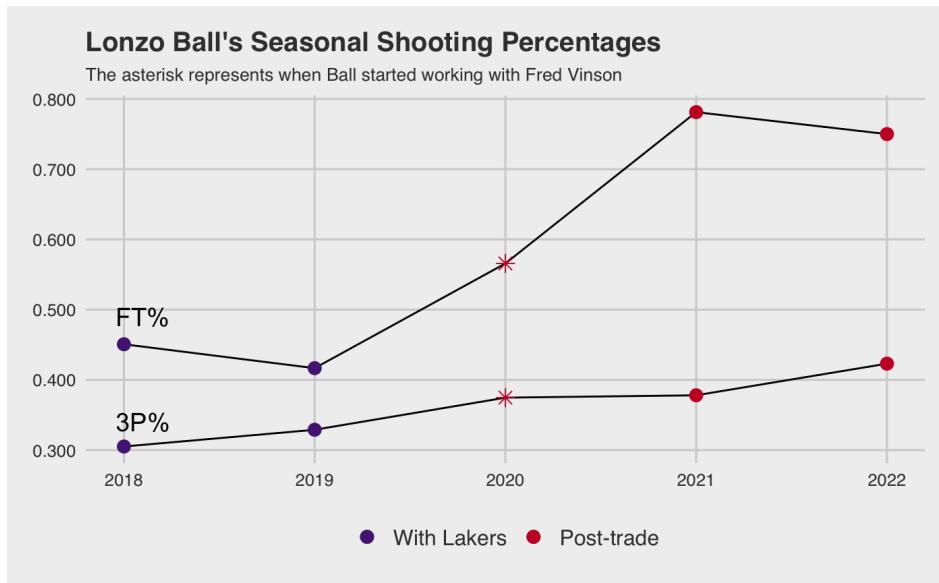
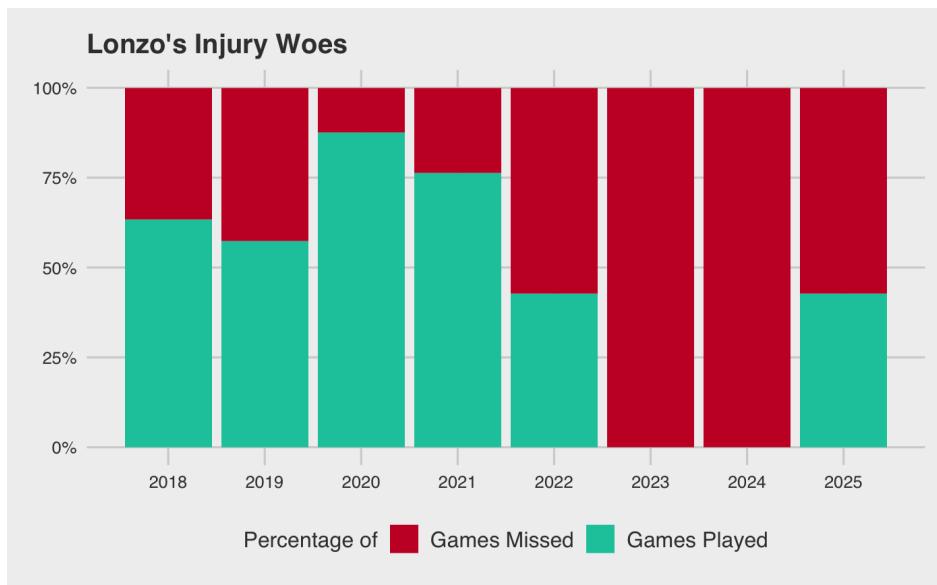


Figure 7

picks that included Lonzo Ball. The arrival in New Orleans instantly changed Lonzo's career. He was able to work with "The Shot Doctor" Fred Vinson. From that point on, Ball became a very adept shooter (Figure 7). He became an above-average three point shooter immediately after joining the Pelicans and his free throw percentage jumped to the high-70s beginning in the 2020-21 season. He had completely transformed from a liability into a reliable and even deadly shooter (.423 from three in 2021-22). With such a huge jump in proficiency, bootstrapping difference in medians supported the notion of a significant change in Ball's shooting before and after leaving Los Angeles.

Lonzo's shooting certainly improved, but one motif from his Laker days remained after the trade: unfortunate injury luck.



After Ball's knee injury in 2022, there was real concern that he would never play in the NBA again. The videos of his physical therapy left fans in horror when contrasted

with the optimism and beauty of the Bulls' brief occupation of first place in the East. Fortunately, he returned in the 2024-25 season, but only played 35 games due to the Bulls demonstrating caution with his knee and a wrist injury. He looked rusty, but that's to be expected. His three-point percentage was his lowest since 2019. Ball was traded to the Cavaliers in the offseason, presenting him a chance to bring his plus passing, defense, and shooting to a contending team.

You Laugh, But It's Effective!

Wilt Chamberlain



Figure 8: Photo taken from article [10]

“The Big Dipper” is the most dominant force to ever step on an NBA court. His stats read like a video game, his 100-point game is viewed like a tall tale; Wilt has a mythical aura that shrouds his NBA career. Wilt was so dominant, but could not make a free throw. He led the league in attempts in eight of his fourteen seasons and shot just above 50% for his career.

He shot above 60% from the stripe in just one season: his 1961-62 campaign, in which he averaged 50.4 points per game. That season, Chamberlain adopted a new technique to improve his free throw difficulties, and it wasn't dunking from the line this time. He started shooting his attempts underhand. 61.3% isn't an inherently impressive percentage, but relative to Wilt's other seasons, it certainly is.

As mentioned above, Wilt led the league in FTA eight times; 1962 was the only season in which he led the league in free throws made (835). That total is second highest in NBA history behind Jerry West (840 FTM in 1965-66). In Wilt's thirteen other seasons, he shot .497 from the stripe. In theory, if he shot free throws in his normal fashion in 1962, he would have only converted 677, a difference of 158. Bootstrapping indicates a significant different in Wilt's free throw percentage after using the underhand technique.

Unfortunately, Chamberlain decided not to continue shooting granny-style following the record-breaking campaign. The aesthetic tax was too much for him. It is understandable, but most fair people would argue that effectiveness trumps appearances. Wilt's numbers would have been even more video game-esque. Among the seven single-season leaders in free throws attempted, Wilt occupies six of them (Figure 9). If he

maintained the underhand form, perhaps he shoots closer to 60% than 40%. His 1967-68 season (in which he won the championship with Philadelphia) was another in which Wilt led the league in free throws attempted, but he only shot .380 from the line. It was a glaring crack in Chamberlain's armor, but he was so dominant aside from the free throw line that it didn't affect his impact on the game.

Rank	Player	FTA	Season
1.	Wilt Chamberlain*	1363	1961-62
2.	Wilt Chamberlain*	1113	1962-63
3.	Wilt Chamberlain*	1054	1960-61
4.	Wilt Chamberlain*	1016	1963-64
5.	Wilt Chamberlain*	991	1959-60
6.	Jerry West*	977	1965-66
7.	Wilt Chamberlain*	976	1965-66

Figure 9: Six of the top-seven total FTA seasons belong to Wilt

Chinanu Onuaku



Figure 10: Still photo from ESPN clip [5]

Unlike Wilt Chamberlain, former Rockets draft Pick Chinanu Onuaku embraced the granny shot method. Onuaku only played six games in the NBA, but that was enough time to go viral. He made his debut in a blowout against the Phoenix Suns and made a trip to the free throw line. He brought out the granny-style method and sank two free throws in front of a raucous crowd. Onuaku went 4-4 from the line in his NBA career.

The origin of the technique goes back to college. After a difficult freshman season at Louisville (14-30 FT, .467 FT%), coach Rick Pitino suggested that he should shoot free throws underhand instead. He obliged and displayed huge improvement from the line (33-56, .589 FT%). That difference wasn't significant by bootstrapping standards, but this new method served Onuaku well for the rest of his playing career.

League	FT-FTA	FT%
NCAA	47-86	.547
NBA Summer League	22-36	.611
NBA	4-4	1.000
NBA G-League	288-423	.681
Overseas (through 2024-25)	218-329	.663

Table 4: Onuaku’s FT% in different settings

As Onuaku’s career continues, his free throw percentage has improved to near 70%, a huge improvement from his freshman season at Louisville. He embraced the method and became very comfortable with it. There is even a [compilation](#) of Onuaku granny style free throws, including several clutch time swishes!

George Johnson



Figure 11: Photo from Dillard Alumni Article [3]

The next entry is George Johnson, an underrated shot-blocking terror from the 1970s and 1980s. From 1977-82, Johnson led the NBA in blocks three times and averaged 3.3 blocks per game. Before then, he was simply trying to stick in the league. He averaged 1.6 points per game in his rookie season and was notably poor at free throw shooting (.412 FT%). As a Golden State Warrior, he had access to Rick Barry, one of the best scorers and free throw shooters in NBA history. Barry recommended that Johnson shoot free throws underhand. He took Barry up on that advice and became a very strong free throw shooter.

Johnson became a regular 70+% free throw shooter, a far cry from his poor numbers early in his career. I was unable to pin down a specific time when Johnson adopted the underhand technique, so I didn’t run any bootstrapping. However, which such a drastic increase in free throw percentage, it’s safe to say Johnson’s mix of hard work and maximizing the granny shot worked out for him.

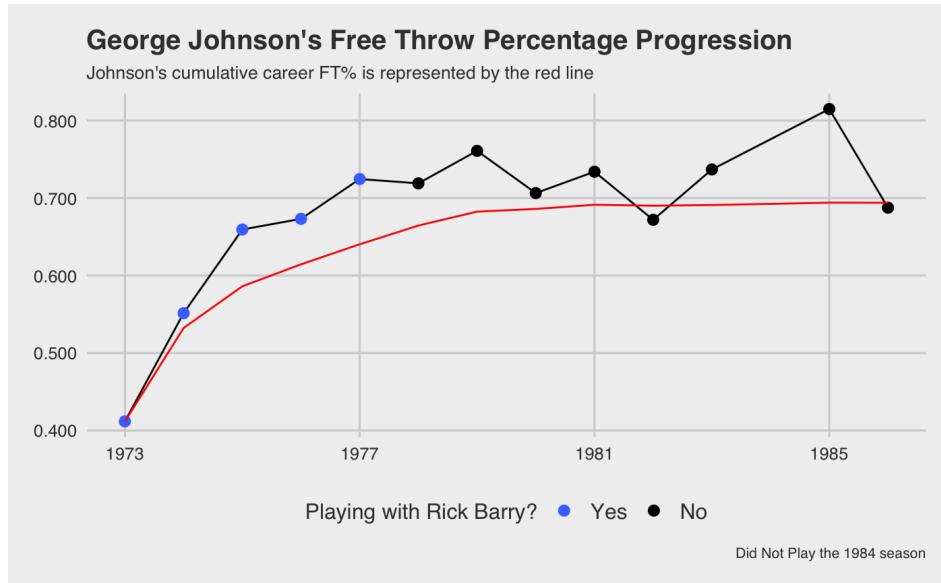


Figure 12

A Fresh Start

Markelle Fultz



Figure 13: Photo from NBA.com

Markelle Fultz experienced one of the most unique and tumultuous career beginnings in recent NBA history. Entering the 2017 draft, Fultz was a true can't-miss prospect. He was a dominant three-level scorer on the lowly Washington Huskies, and he was considered the last piece for the Process in Philadelphia.

Following the draft, one bizarre event came after another. The summer league did not cause alarm. Fultz played in three games before being shut down after injuring his ankle. He averaged 16 points per game and shot 37.5% from three and 66.7% from the line; no problems yet. Heading into the season, the optics were not good. Fultz started suffering from a shoulder injury, concerning videos of his practices emerged, there were rumors of a motorcycle accident. His trainer, Drew Hanlen, kept making public statements reassuring the public that Fultz was totally fine and ready to contribute.

The preseason began and something was clearly wrong. Fultz did not shoot jump-shots, which was alarming for someone who shot more than 40% from three in college. He still looked great as a slashing scorer, but his game was missing a level possessed a year prior. And then Fultz went to the line—good God. In the Sixers’ 2017 preseas-on game against the Celtics, we all got our first glimpse of his free throw. His form was painful to watch, it looked uncomfortable, and it was a mechanical nightmare. He just launched the ball towards the rim. As the season began, it was clear that Fultz’s shoulder was not healthy. He took zero threes, and his free throw attempts would trend on Twitter. He was shut down after four games and his shoulder injury remained a mystery hanging over the team for the rest of the season. Fultz returned at the end of the season for ten games and had some good moments, but still took just one three and shot 4-9 from the line.

The 2019 season was arguably uglier. Fultz [debuted a new free throw](#) that featured a ghastly hitch. He played in Philadelphia’s first nineteen games before, once again, being shut down. He made 57% of his free throws and even four threes, but attempted very few.

Period	FTr	FT%	3PAr	3P%
NCAA	.383	.649	.287	.413
Summer League	.205	.667	.364	.375
2017-18	.189	.476	.009	0
2018-19	.239	.568	.090	.286

Table 5: Fultz’s declining shooting and aggressiveness

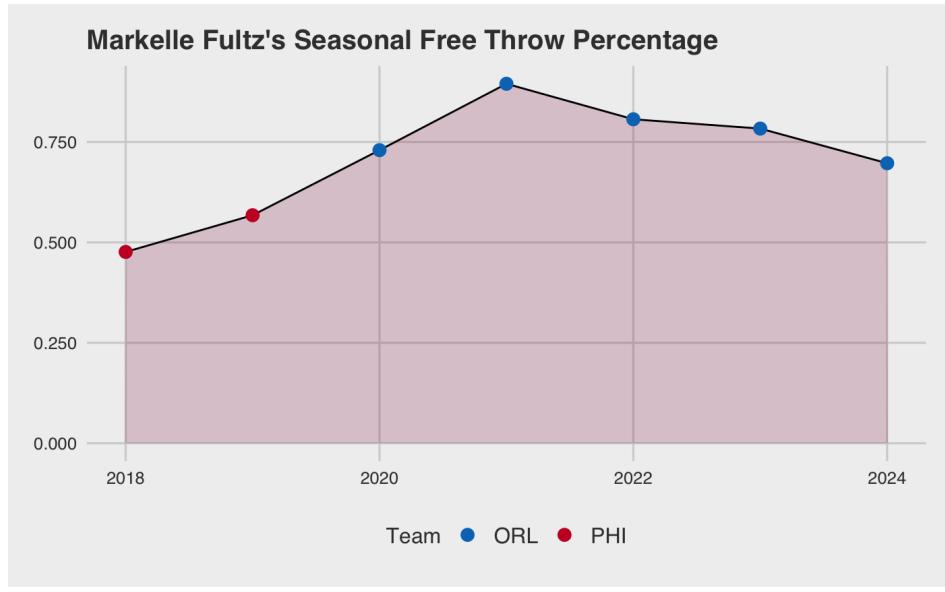


Figure 14

After being shut down, Fultz was diagnosed with thoracic outlet syndrome, amid public speculation of yips. His relationship with Drew Hanlen fell through, and it seemed that Fultz desperately needed a change of scenery. He was granted that in February 2019 when he was dealt to the Magic for Jonathan Simmons, a future second,

and a future first².

Upon arriving in Orlando, it appeared that a weight was lifted off of Fultz's shoulders. He played well for a playoff team; he scored much more efficiently and shot very well from the free throw line. His three point shooting did not return, and it hasn't throughout his NBA career. However, Fultz channeled the Huskies version of himself with his mid-range scoring.

As many pointed out, Fultz was at his best while shooting on the move in the midrange area. Yips or not, he was a very adept shooter when he had less time to think. Despite his shooting difficulties, Fultz still carved out a productive stint in Orlando. He missed most of the 2021 and 2022 seasons with a knee injury but posted a career-high scoring season the following year. However, the emergence of Jalen Suggs and the crowded Orlando backcourt pushed Fultz out of the Magic's plans. It didn't help that no one on Orlando can shoot, so that made Fultz's fit even more challenging. He played 21 games for Sacramento last season and is currently unsigned as of September 2025.

Fultz's case presented the largest opportunity to use bootstrapping analysis. I tested the difference in 3P%, FT% and midrange shooting before and after leaving Philly. Since Markelle never became a strong three-point shooter, that test produced insignificant results. However, the other two statistics showed a significant difference between Fultz's time in Philly and beyond.

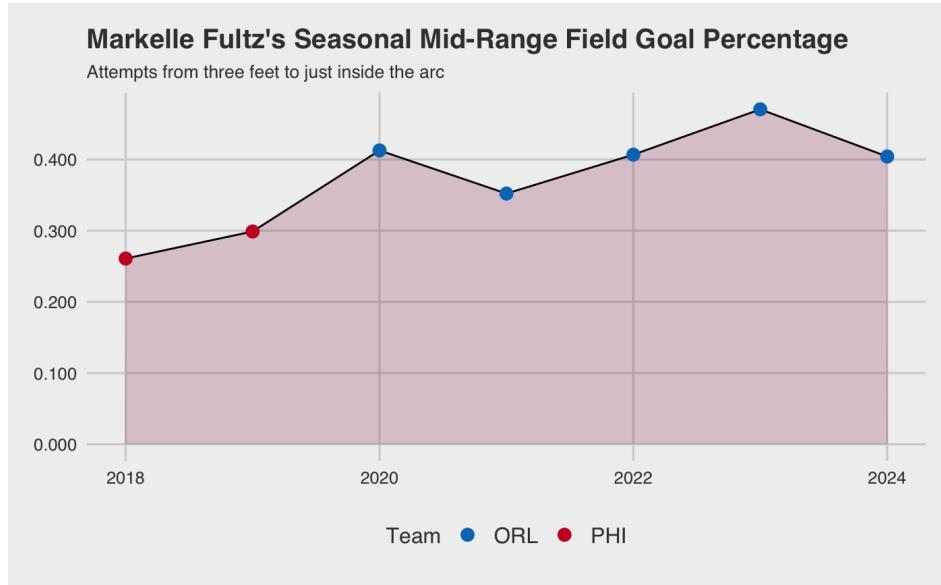


Figure 15: Fultz's revitalized mid-range game

²That future first became Tyrese Maxey!

Bootstrapping Test Results

Player	Timespan	Test	LB	UB	Verdict
Tristan Thompson	Career	FT%	-0.0419	0.0578	Fail to reject Ho
Tristan Thompson	2011-20	FT%	-0.0171	0.0825	Fail to reject Ho
Mason Plumlee	Career	FT%	0.0496	0.1407	Reject Ho
Jeremy Sochan	NBA + NCAA	FT%	0.0799	0.2826	Reject Ho
Lonzo Ball	Career	3P%	0.0172	0.1124	Reject Ho
Lonzo Ball	Career	FT%	0.1522	0.3701	Reject Ho
Wilt Chamberlain	Career	FT%	0.0880	0.1422	Reject Ho
Chinanu Onuaku	NCAA	FT%	-0.0952	0.3452	Fail to reject Ho
Markelle Fultz	Career	FT%	0.0926	0.3625	Reject Ho
Markelle Fultz	2018-20	FT%	0.0490	0.3395	Reject Ho
Markelle Fultz	Career	3P%	-0.2308	0.2216	Fail to reject Ho
Markelle Fultz	Career	Midrange FG%	0.0637	0.2170	Reject Ho

Figure 16: Bootstrapping Analysis

References

- [1] Acedera, Shane Garry, “Lonzo Ball recalls how his shooting coach fixed his jump shot: ‘He turned my career around, for sure,’” *Basketball Network*, 23 Aug. 2013, [URL](#).
- [2] Bhargava, Yakshpat, “I felt silly, like a sissy, I know I was wrong’ - Why Wilt Chamberlain never adopted the underhand free-throw routine,” *Basketball Network*, 17 Feb. 2025, [URL](#).
- [3] DUAumni, “Former Dillard star George Johnson remembers winding road to NBA,” *DU Alumni News*, 2 Jun. 2016, success[URL](#).
- [4] Ellentuck, Matt, “Lonzo Ball’s jump shot is better now. What changed?,” *SBNation*, 8 Nov. 2019, [URL](#).
- [5] “Chinanu Onuaku makes underhanded free throw,” *ESPN*, 2 Feb. 2016, [URL](#).
- [6] Giles, Matt, “Duke basketball alum Mason Plumlee making changes,” *Sports Illustrated*, SI, 3 Oct. 2022, [URL](#).
- [7] Golliver, Ben, “Cavaliers’ Tristan Thompson switches shooting from left-handed to right-handed,” *Sports Illustrated*, SI, 10 Aug. 2013, [URL](#).
- [8] Grange, Michael, “Thompson making a historic right turn,” *SportsNet*, 9 Aug. 2013, [URL](#).
- [9] Monroe, Mike, “Spurs’ Jeremy Sochan finds success with quirky one-handed free-thrown style,” *The Athletic*, nytimes.com, 27 Dec. 2023, [URL](#).
- [10] Pastor, Andrew, “THE GRANNY SHOT (OR WHY YOU SHOULDN’T ALWAYS LISTEN TO THE CROWD) – 4TH QUARTER, 2020,” *Cymbria*, 14 Jan. 2021, [URL](#).
- [11] Swisha’s Design Archive, “Chinanu Onuaku Underhand Free Throws,” *YouTube*, 10 Aug. 2017, [URL](#).
- [12] ”Jeremy Sochan goes back to shooting free-throws with two hands,” *TalkBasket.net*, 8 Oct. 2024, [URL](#).
- [13] u/borgore01. “Jeremy Sochan last 17 games free throw update.” *Reddit*, 24 Jan. 2023, [URL](#).
- [14] Youngmisuk, Ohm and Andrew Lopez, “The NBA vet and rookie who’ve embraced their unusual shooting forms: ‘I’m happy I made the change,’” *ESPN.com*, ESPN, 5 Jan. 2023, [URL](#).