

# Koo Chang-mo End of Season Report

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# Introduction

Vitals	Pitch Type	Avg MPH	Usg%
Throws: LHP	4-Seam	88.3	44%
Age: 23	Slider	81.1	34%
DOB: 2/17/1997	Splitter	81.1	13%
Height: 6' 0"	Curveball	74.0	9%
Weight: 167 lbs			

Koo Chang-mo presents an interesting case as a pitching prospect from the KBO who may be interested in making the jump to MLB once he's eligible. He was electric in 2020, posting a 2.88 FIP with a 29% K%, but was limited to just 93.1 regular-season IP, plus 13 IP in the Korean Series. He's never thrown more than 133 regular season IP in a season, and his fastball velocity is below-average, at 88.3 mph in 2020.

In addition to his fastball, he throws a slider and splitter combination, both of which have been fantastic swing-and-miss pitches against KBO hitters. While his fastball velocity is below-average, he commands it extremely well and uses it effectively on the corners of the strike zone. While a high-80s fastball from an LHP isn't a profile that we usually see find sustained success in MLB, the two most successful KBO pitchers in recent memory, Hyun-jin Ryu and Kwang-hyun Kim, both fit that profile.

Ryu was a higher strikeout guy with the Hanwha Eagles than Kim was, and that's the path that Koo seems to be following. Ryu throws a fastball around 90 mph, but his best pitches are his changeup and cutter, both of which had a whiff% around 30% in 2020, giving him two strong weapons against right-handed hitters. Right now, Koo's splitter is the same sort of out pitch against RHH, while his slider is devastating against LHH. One thing that sets Ryu apart is that the pitch he throws the most is his changeup, around 27% of the time, while throwing his cutter and four-seam ~ 24% each to work around his reduced velocity.

This is not to say that Koo Chang-mo will be as successful as Hyun-jin Ryu has been, frankly not many pitchers are, but to acknowledge that this path has been walked before by a strikeout-heavy LHP from the KBO with strong swing-and-miss secondaries. Koo won't be eligible to be posted until after the 2022 season (his age-25 season) at the earliest, and there are plenty of things that he needs to work on before that season. (One factor that influences when Koo Chang-mo will be eligible to be posted is whether he plays for South Korea's National team and is eligible to receive an exemption from their mandatory military service. I expect that he will be included on their rosters for the next few events, like the 2021 Olympics, but I don't know for certain.)

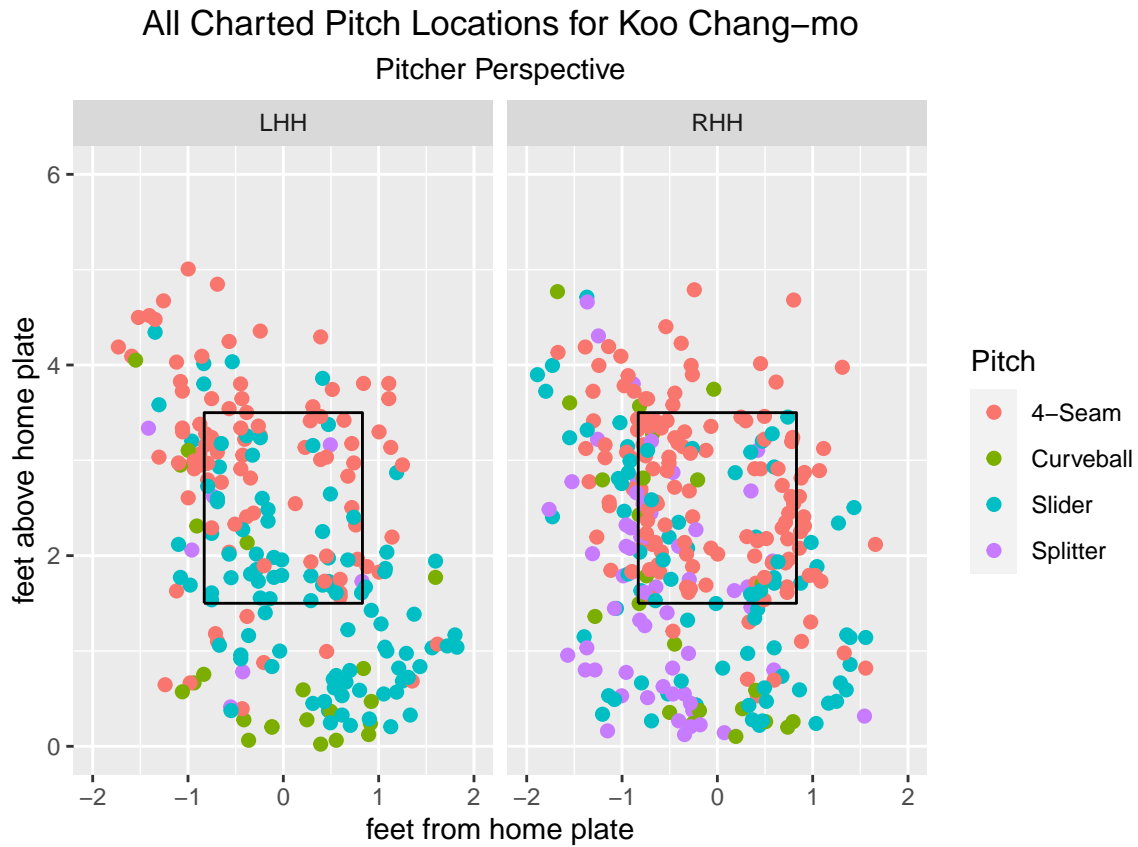
My main focus for Koo would be two-fold: staying healthy and adding velocity. Ryu threw 1,269 IP in the KBO over seven seasons, for an average of 181.1 IP per season. In his five KBO seasons, Koo has thrown 517 IP, averaging 103.1 per season; that's a drastic difference in experience, and how many professional hitters that they've faced. Dealing with forearm issues as he did during the 2020 season won't help him develop MLB-caliber velocity; I'm not asking for him to turn into Gerrit Cole out there, but even just sitting at 90-91 mph rather than 88-89 would increase my confidence in Koo's MLB potential. He has the swing-and-miss stuff, the impeccable command, and has proved himself in 100 IP stints; now, I'm looking for Koo to remain healthy and dominate over a full KBO season.

# Stats and Graphics

Table 2: Stats from FanGraphs for Koo Chang-mo

Season	Team	IP	HR/9	K%	BB%	K-BB%	AVG	WHIP	BABIP	LOB%	ERA	FIP
2016	Dinos	68.2	1.18	22.6	12.5	10.1	0.237	1.43	0.287	77.8	4.19	5.22
2017	Dinos	115.0	1.41	22.5	9.5	13.0	0.294	1.63	0.360	67.3	5.32	5.11
2018	Dinos	133.0	1.42	19.4	8.7	10.7	0.293	1.58	0.341	71.4	5.35	5.43
2019	Dinos	107.0	0.84	25.4	9.1	16.3	0.211	1.18	0.270	78.0	3.20	3.77
2020	Dinos	93.1	0.68	29.3	5.2	24.1	0.176	0.81	0.231	84.6	1.74	2.88

Pitch locations for Koo Chang-mo. Data for pitches from starts was manually charted from ESPN/Twitch broadcasts.



## Koo Chang-mo Swinging Strikes

Pitcher Perspective

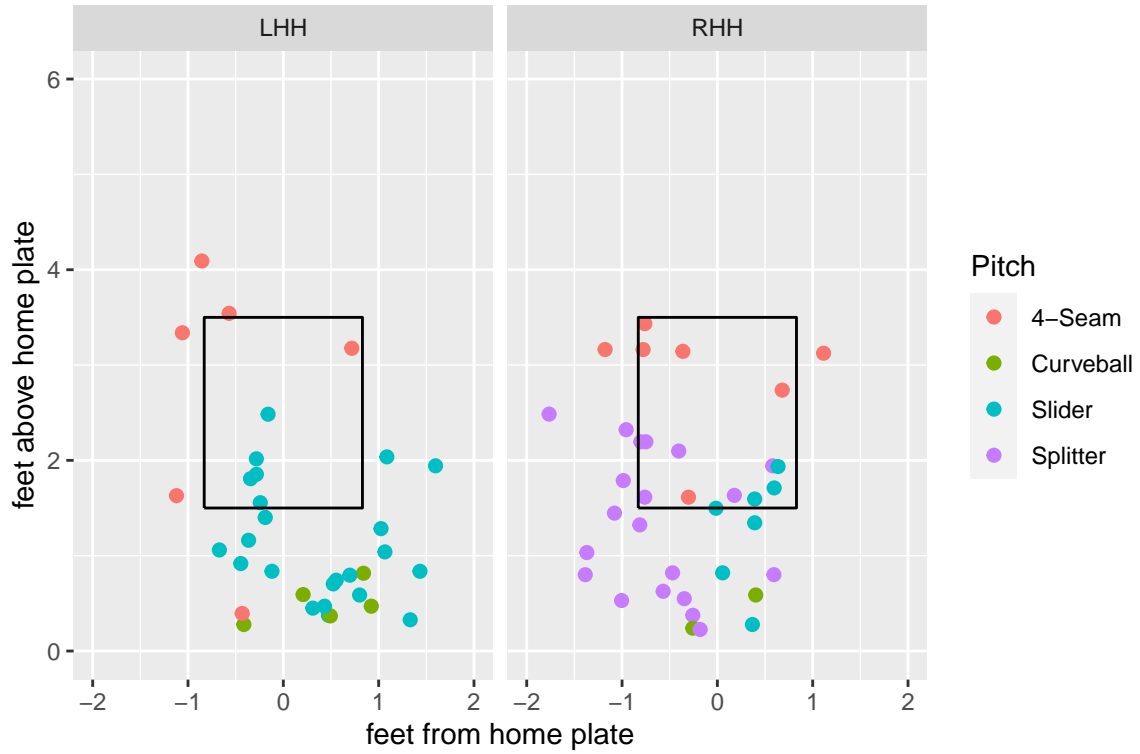


Table 3: Overall Charted Stats for Koo Chang-mo

Pitcher	Pitches	wOBA	ExwOBA	ExwOBACON	CSW%	SwStr%	Whiff%	CS%	Swing%	Contact%
Koo	519	0.307	0.338	0.380	32.2	13.5	29.2	18.7	46.2	70.8
KBO	29734	0.337	0.338	0.361	27.6	10.4	22.2	17.2	47.1	77.8

Table 4: Overall Charted Batted Ball Event Data for Koo Chang-mo

Pitcher	BBEs	GB%	FB%	LD%	PU%	Soft%	Medium%	Hard%	Pull%	Straight%	Oppo%
Koo	90	47.8	25.6	16.7	10.0	31.1	36.7	32.2	41.1	36.7	22.2
KBO		51.2	26.0	14.0	8.7	30.4	40.8	28.7	34.1	42.8	23.1

Koo Chang-mo Velocity Distribution  
 4-Seam ~ 88, Slider ~ 81, Splitter ~ 81, Curve ~ 74

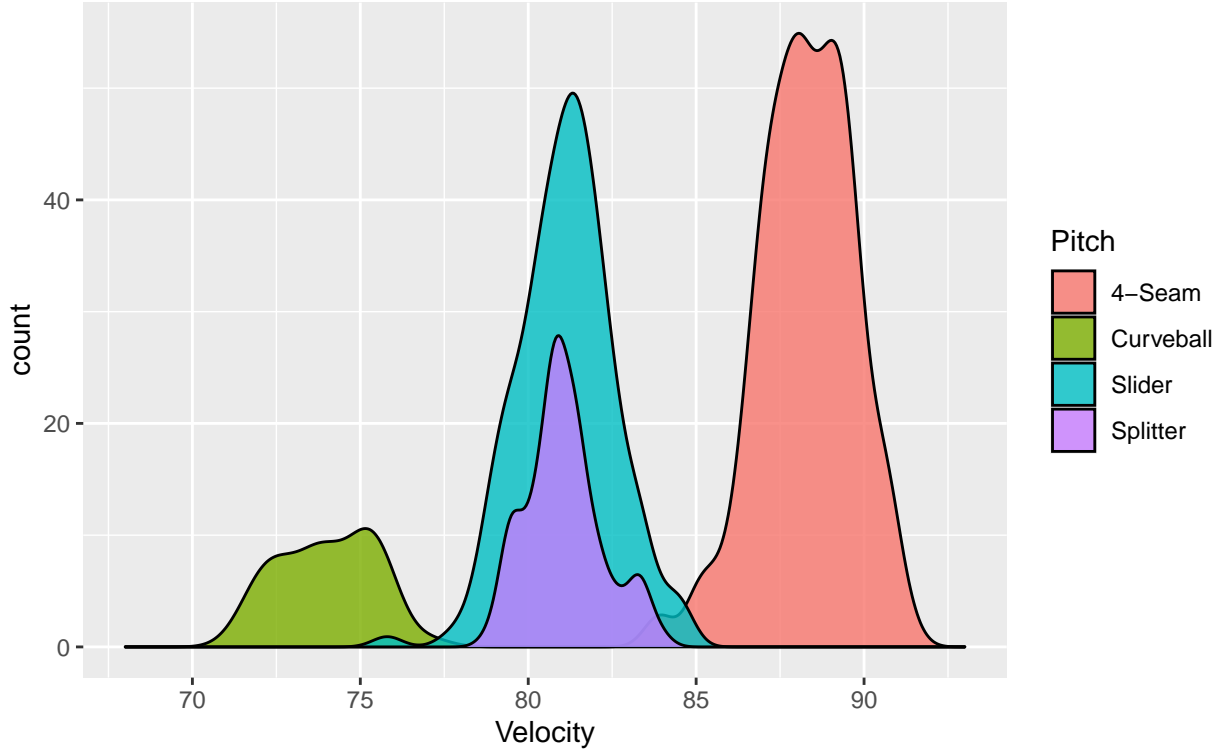


Table 5: Pitch Usage by Batter Side

Bats	Pitches	4-Seam%	Slider%	Curveball%	Splitter%
RHH	296	45.6	26.4	8.1	19.9
LHH	222	41.9	44.6	10.4	3.2

Table 6: Pitch Type Charted Stats for Koo Chang-mo

Pitch	Velo	Usg %	Pitches	wOBA	ExwOBA	CSW%	SwStr%	Whiff%	CS%	Swing%	Contact%
4-Seam	88.3	44.0	228	0.406	0.413	29.8	5.7	12.4	24.1	46.1	87.6
Slider	81.1	34.2	177	0.198	0.291	34.5	16.9	37.0	17.5	45.8	63.0
Splitter	81.1	12.7	66	0.267	0.298	39.4	30.3	50.0	9.1	60.6	50.0
Curveball	74.0	9.1	47	0.197	0.160	25.5	14.9	50.0	10.6	29.8	50.0

Table 7: Pitch Type Charted Batted Ball Data for Koo Chang-mo

Pitch	Velo	Usg %	ExwOBACON	BBEs	GB%	FB%	LD%	PU%	Soft%	Med%	Hard%
4-Seam	88.3	44.0	0.407	47	29.8	38.3	19.1	12.8	34.0	23.4	42.6
Slider	81.1	34.2	0.345	29	65.5	10.3	13.8	10.3	34.5	44.8	20.7
Splitter	81.1	12.7	0.409	8	75.0	12.5	12.5	0.0	0.0	62.5	37.5
Curveball	74.0	9.1	0.293	6	66.7	16.7	16.7	0.0	33.3	66.7	0.0

## Breakdown

Koo Chang-mo took his performance to another level in 2020, posting a 1.74 ERA, a 2.88 FIP, and a 29% K% in 93 IP. He didn't hit the IP mark to qualify for the end-of-season leaderboards, but the only qualified pitchers to post a sub-3.00 FIP and a K% above 28% since 2002 are Hyun-jin Ryu in 2012 and Chris Flexen in 2020. Ryu has been an incredible big leaguer, and Flexen signed a two-year deal with the Mariners in the 2020 offseason; not bad company for the 23-year-old Koo Chang-mo to be in.

While Koo has always been a high-strikeout guy in the KBO, with a career K% of 23.3%, he's taken big strides by cutting down on his BB% and HR/9. His 2020 BB% of 5.2% was the lowest of his career, and his 24.1% K-BB% would have led the KBO if he qualified. He allowed an HR/9 of 0.68, a batting average against of 0.176, and a BABIP of 0.231, all the lowest marks of his career. Over 519 charted pitches (regular and post) season, Koo allowed an Estimated xwOBA (ExwOBA) of 0.338, right at the KBO average, with a KBO-leading CSW% of 32.2%, thanks to a 13.5% Swinging Strike% (SwStr%) and an excellent 18.7% Called Strike% (CS%).

The conversation starts with Koo's four-seam fastball, which he threw about 44% of the time around 88 mph. He used it evenly against both right-handed and left-handed hitters, primarily throwing it early in the count when he needed a strike. His fastball saw mixed results; his fastball had a CSW% of 29.8% on a 24.1% CS%, but it also allowed a 0.413 ExwOBA. Koo worked his fastball on the edges of the strike zone, working inside and outside against both RHH and LHH, which induced a lot of those called strikes.

But, when hitters swung, they made contact and hit the ball hard. His four-seam fastball allowed an FB% of 38% and a hard-contact% of 43%, two marks that grade out poorly even among KBO fastballs. He's riding a fine line with this approach; working edges is great until you miss over the plate, which is when your fastball gets hit hard. I do think that part of the reason that Koo's wOBA and ExwOBA on his fastball are so high is that he throws his fastball frequently in three-ball counts. If he misses with that pitch, it's a walk, which hurts those metrics. However, it's still not a great look, and if hitters are already teeing off on his four-seam, I don't know if it would be a throwable pitch against MLB hitters. As is, the 88 mph average velocity is going to hinder him, but improving even to 90 mph gives him a much better chance of finding MLB success.

What Koo does do with his fastball is set up his slider and splitter, his two best pitches. He works both the inside and outside edges of the strike zone against RHH and LHH, setting up each pitch differently. To set up his slider, Koo likes to work his fastball away from LHH on the outside edge of the strike zone. By following up with a slider that sweeps from left to right, the pitches look like they're headed to similar locations before the slider breaks down and away from LHH. It's proved to be an effective combination, and he's been able to get some swings-and-misses from RHH in a similar manner, attacking them with sliders down-and-in.

Overall, Koo throws his slider about 34% of the time, averaging 81.1 mph. He throws it against left-handed hitters 45% of the time and 26% against RHH. Despite its heavy usage, his slider allowed an ExwOBA of just 0.291, an SwStr% of 17%, and a CSW% of 35%; that's a pretty fantastic pitch. He threw it heavily in two-strike counts, peaking at a 62% usage in 0-2 counts against left-handed hitters.

The swing-and-miss aspect of his slider is its big draw; when it came to balls in play, his slider allowed an ExwOBACON of 0.345, better than the KBO average, but the middle of the pack for breaking pitches. His slider does have a 66% GB%, which is nice and his middle of the pack ExwOBACON is due to the combination of contact/batted ball that he allowed, rather than one specific problem area. Much of the solid contact that Koo allowed on his slider came when he hung it over the strike zone; with the lateral movement that he induces, he has to start his slider over the plate so that it breaks off of the plate to induce whiffs. I expect this will improve over the next few seasons as he refines his slider and throws it more.

As good as Koo's slider has been, his splitter might be his best pitch, one that he sets up well with his

four-seam fastball. Against RHH, he'll throw his fastball on the outside edge of the zone and then come back with a splitter that breaks down and away from RHH. He throws his splitter around 81 mph, nearly identical to his slider, using it almost exclusively against RHH, throwing it 20% of the time against RHH versus 3% against LHH.

His splitter allowed a wOBA of 0.267, an ExwOBA of 0.298, a CSW% of 39.4%, and a ridiculous SwStr% of 30.3% over the 66 times he threw it. Only eight MLB pitches posted a higher SwStr% than Koo's splitter did, including Devin Williams' Changeup and Edwin Diaz's slider, not bad company for his splitter. His splitter not only pairs well with his fastball up-and-away but goes well with his slider that breaks in against RHH.

Only eight batted balls were put in-play against Koo's splitter for his charted pitches. On those eight, he allowed an ExwOBACON of 0.409, but a GB% of 75%. Given where he locates his splitter, I'm inclined to believe in it being a groundball-heavy pitch while his ExwOBACON is influenced by the small sample of batted balls allowed.

Koo throws a curveball as his fourth pitch, using it 9% of the time and throwing it at 74 mph. In its limited sample, it was effective, with a 0.160 ExwOBA and a 15% SwStr%, but it's an average pitch right now. It's more of a change-of-pace pitch and has more depth than his slider to differentiate between his pitches. If he can develop it into an MLB-average curveball, he'll increase his MLB potential and be able to reduce his reliance on his four-seam.

I can see the pieces for Koo to be an effective MLB pitcher, but his margin of error is small with his reduced velocity. If he can raise his average fastball velocity to 90-91 mph, he raises his floor. He'll also need a strong arsenal of pitches, which he has displayed with his slider and splitter. Continuing to develop those pitches and his curveball is his path to MLB.

Koo stands 6' 0", 167 pounds, and his frame is relatively thin. He has dealt with multiple injuries throughout his career, but nothing long-term or as serious as a Tommy John surgery, as far as I could find. In 2020, Koo dealt with inflammation in his left forearm that masked a fracture in his arm. He returned after three months of recovery to pitch a few innings at the end of the regular season and in the Korean Series.

In 2019, Koo had a stress fracture in his back in October, which took him off the Korean Roster for the Premier12 and Olympic qualifying tournament. At the beginning of the 2019 season, Koo missed time with a right oblique strain. That's an unnerving amount of missed time for a young, 23-year-old. Dealing with these injuries may have hampered some of his ability to get in a groove and spend time improving, rather than rehabbing. Staying healthy and getting reps over a full 180-ish innings is important in Koo's development.

# Resources

- KBO Wizard to host ~ 30,000+ charted KBO pitches
- Koo Chang-mo FanGraphs page
- Koo Chang-mo myKBO.com Page
- Injuries
  - March 2019 Oblique injury
  - October 2019 Stress fracture in back
  - 2020 Left forearm inflammation and fracture