

Catcher's Defensive Rating System

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Managers, scouts, and catchers themselves will tell you that a good defensive catcher is one who can be effective and injury free all season, one who can field the ball error-free, one who can throw out base stealers, one who can handle bunts, one who can call a good game and handle the pitching staff, and generally a good ability to make plays. But what objective statistics can be used to evaluate a catcher's defensive performance in these areas?

Various rating systems have been used (fielding average, zone rating, range factor, fielding runs, stolen bases against ratio, etc.), but none of them truly measure a catcher's performance in all of the areas mentioned above. For the most part, these rating system were developed for all fielders and adapted/modified for catchers. What the professionals¹ have described are the six tools of a catcher: (1) stamina, (2) good glove, (3) good arm, (4) ball handling, (5) effective game play, and (6) game calling.

Stamina: A starting catcher is expected to catch at least 50% of his team's games at a minimum and around 75% year after year if he is really good. Therefore, one component of the measure should reflect one's ability or lack thereof to have the stamina of catching the majority of games during a season. On this assumption the Stamina Measure should be the "*Percentage of the Team's Innings Caught divided by the League Average Inning's Caught.*" A league average catcher would score 1.00 while catching more than expected would result in a score greater than 1.00. For those seasons where innings are not available, a surrogate would be games caught instead of Innings Caught.

Good Glove: Fielding Average $[(PO+A)/(PO+A+E)]$, or as it has been sometimes called Error Rate, has been the standard measure yet it is filled with errors and bias. However, by excluding PO's as a result of strikeouts one can use the remaining PO's called Independent Putouts (IPO). Taken in context with a catcher's contemporaries, it does yield some meaningful description. An error-free catcher in an era where errors are commonplace does tell something about the glove work. Because non-strikeout putouts by catchers have decreased every decade since 1900, the only true use of the IPO fielding average is to compare it to the league average for that year. On this basis, a good glove would be the "*Catcher's IPO Fielding Average divided by the League IPO Fielding Average for All Catchers.*" An average catcher would score 1.00 (exactly the league average) and a better-than-his-contemporaries catcher would score greater than 1.00.

Good Arm: To be an effective catcher who catches would-be base stealers, one has to be alert to running situations, to receive the ball cleanly, to make a quick release, to throw with power and to throw with accuracy. The result is either a caught stealing by catcher (CCS) or a stolen base against the catcher (SBA). The odds are in favor of the runner (70% success rate during the period 1980-2002). Therefore, a catcher who has a better

rate that catching 30% (MLB average) would score greater than 1.00 if the formula for a good arm is “*Number of Caught Stealing divided by the Number of Attempted Steals times the League Average Success Rate*”. $[CCS/(CCS+SBA)*LgCCS\%]$. The coefficient of LgCCS% is the actual for a specific season.

Ball Handling: Generally catchers who field bunts have a higher putout rate than other fielders, but measuring how well he does against other catchers determines his rating at this skill. For this reason the measure for ball handling would be “*Catcher’s Bunt Out Percentage divided by the League Bunt Out Percentage*.” Again, a better than average catcher would score greater than 1.00 and a worse-than catcher would score below 1.00.

Effective Game Play: This is the ability to make heads-up, error-free plays as measured by both the number of Double Plays made and the number of Passed Balls allowed, plus minimizing the number of Sacrifice Hits. Essentially it is a simplified measure of the number of runs saved versus allowed. Using Pete Palmer’s Expected Runs Table to measure the Run Value of a Passed Ball and the Run Value of a Double Play, one can compute an equivalency between the two for each year which would yield a score of 1.00. The formula for effective game play would be the “Number of Double Plays divided by the Number of Passed Balls times 1.2 $[DP / (PB*1.2)]$. The coefficient of 1.2 is the equivalency for the entire period of 1980 to 1998. This means that for every 5 PB’s a catcher would need 6 DP’s to score 1.00 (or the equivalent number of runs saved versus allowed). The resulting ratio would be divided by the League Ratio of $DP/(PB*1.2)$.

Game Calling: This answers the question, “Does a catcher get more out of his battery mates than other catchers?” Basically it is a Catcher’s Earned Run Average (CERA) as measured against all other catchers on his team. The formula is the “*All Other Catcher’s on his Team Earned Run Average divided by The Catchers’ Earned Run Average*.” $[OCERA / CERA]$.

Now that we’ve identified the six tools of a catcher, how do we assemble them into a meaningful way? Some catchers have better “Good Arm” skills than others, but may lack in “Game Calling” or may not have the “Stamina” of other catchers. Each of the measures of the six tools has been constructed so that the Average Catcher would score a 1.00. Rather than being additive where the average catcher would have a 6.0 for scoring average on all six, the tool measures should be multiplicative. This would better describe a “Good Arm” catcher with a score of 1.5 (CCS rate of 37.5%) but only having a Stamina score of 0.667 (playing only 1/3 of his team’s innings due to injury). Multiplying the two together would yield 1.00 or an average catcher overall. For the six tools, the complete base formula is:

Stamina (CDR1) [Rin]	$(C-INN/T-INN) / LgAvg-INN$
Good Glove (CDR2) [Rfld]	$C-Fld\% / LgC-Fld\%$
Good Arm (CDR3) [Rcs]	$CCS / ((CCS+SBA)*LgCCS\%)$

MIKE	REDMOND	1.36	1.00	1.27	0.98	2.61	1.13	5.65
CHRIS	HOILES	2.34	1.00	0.86	1.16	1.74	1.05	4.78
ELI	MARRERO	1.04	0.99	1.22	1.10	2.01	1.03	4.48
TOM	PAGNOZZI	1.95	1.00	1.15	1.01	2.07	0.96	4.26
JASON	KENDALL	2.91	1.00	1.01	1.02	1.31	0.97	3.80
JUNIOR	ORTIZ	1.32	1.00	1.29	1.09	1.68	0.96	3.72
KIRT	MANWARING	2.07	1.00	1.13	0.96	1.65	0.99	3.34
TERRY	STEINBACH	2.54	1.00	1.09	0.92	1.06	1.03	3.00
GREG	OLSON	2.16	1.00	0.99	1.07	1.34	1.03	2.99
TONY	PENA	1.90	1.00	0.89	1.13	1.25	1.02	2.92
MIKE	MATHENY	1.94	1.00	1.11	1.01	1.22	1.00	2.84
JOHN	ORTON	0.74	1.00	1.17	1.04	2.78	1.14	2.81
BRENT	MAYNE	1.72	1.00	0.85	1.12	1.49	1.04	2.81
MIKE	SCIOSCIA	2.41	1.00	0.91	1.01	1.35	1.05	2.70
GARY	CARTER	1.58	1.00	0.91	1.07	1.46	1.10	2.67
BENITO	SANTIAGO	2.30	1.00	1.07	1.02	0.88	1.06	2.66
DAVE	VALLE	1.71	1.00	1.03	1.07	1.04	1.08	2.60
JOE	GIRARDI	1.92	1.00	1.00	1.00	1.40	1.01	2.57
DANNY	SHEAFFER	0.86	1.00	0.79	1.04	2.61	0.96	2.55

¹ A survey by the author of 75 current and former major league catchers, including ex-catcher managers and one Hall of Fame catcher, was conducted to ascertain the specific measurable skills that should be included within any catcher's defensive rating system.

² Data for this survey was obtained from www.Retrosheet.Org.