

# The Mechanics Of Baseball

Baseball has evolved in favor of the hitter. Here are nine factors that have changed the game.

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***Editor's Note: A major-league pitcher for 25 years, left-hander Jim Kaat won 283 games and earned 16 Gold Gloves while playing for the Washington Senators, Minnesota Twins, Chicago White Sox, Philadelphia Phillies, New York Yankees and St. Louis Cardinals. He currently broadcasts Yankee games on the YES network and WCBS.***

Critics of baseball will tell you that Abner Doubleday of Cooperstown, N.Y., invented the game in 1839 and not a thing has changed since. Nothing could be further from the truth. First, no one has yet proved that Ol' Abner actually invented the game, and second, the game of baseball changes constantly--with every game, every day, and every player bringing something unique to the sport.

The peanuts and Cracker Jack are still there, but everything else is different than it was 20, 30, even five years ago. In my opinion, no sport has changed as radically as baseball has in the past 20 years. To me, baseball is a matter of who is in control--the pitcher or the hitter. The vast majority of the changes in major-league baseball over the past 20 years have favored putting the hitter in control. Why? Because fans would rather see an 11-8 ballgame with balls getting smacked over the fence than a 2-1 pitcher's duel. And hitters today are delivering.

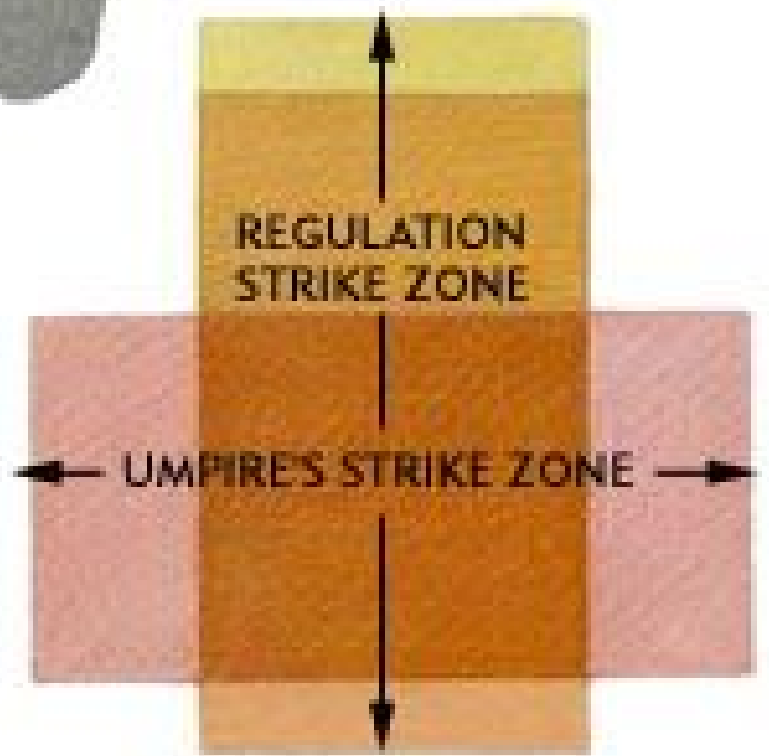
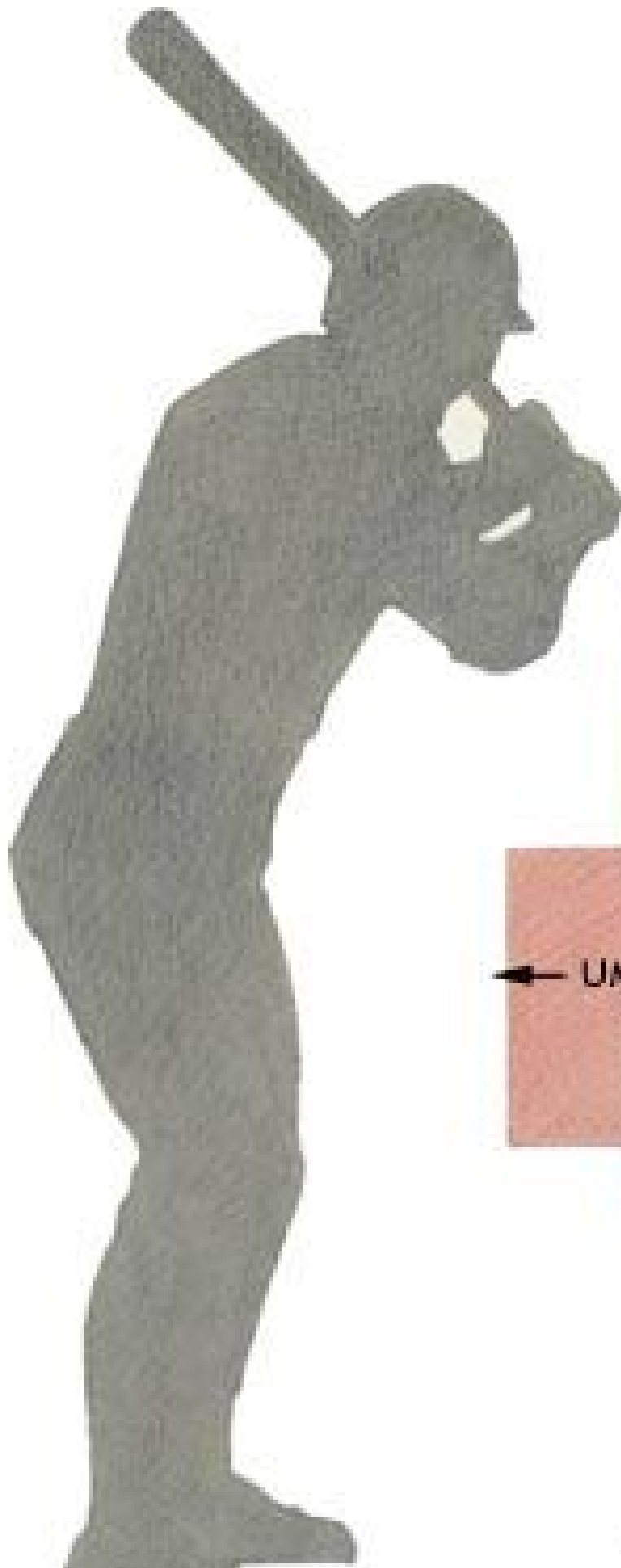




ILLUSTRATION BY PAUL KRATTER

## **Bigger And Stronger**

Players today are bigger and more durable than in years past. Take Anaheim's Troy Glaus, for example. This guy's 6 ft. 5 in. tall, 245 pounds and quick on his feet. It's a matter of simple physics that a stronger player is going to hit the ball farther. And they've been doing it with regularity.

## **Pitching Inside**

Today, many of the pitcher's weapons have been taken away from him. The Yankees' Roger Clemens and a few other old school power pitchers like him make their money pitching inside. That sets up low and away, which is the most difficult pitch to reach with the fat of the bat. Throwing high and inside makes a hitter feel uncomfortable and keeps him from diving in. That makes the outside corner fertile territory.

While there are no rules as to how close a hitter can crowd the plate, the current situation borders on ridiculous. Today, either the grounds crew doesn't line the inside of the batter's box at all or the first few hitters scratch it out with their foot. So you'll see the Mets' Mo Vaughn or the Yankees' Derek Jeter or the Giants' Barry Bonds right on top of the plate with their front arm hanging in the strike zone. They no longer fear the inside pitch. And why should they? Consider all the protective gear batters are allowed to wear today--wrist guards, forearm protectors, elbow protectors, gloves and double-flap batting helmets. Then there are the knockdown rules.

Can you imagine a guy hanging right over the plate in the old days with someone like the Cardinals' Bob Gibson or the Dodgers' Don Drysdale on the mound? As soon as a guy leaned over into the strike zone, the first pitch from one of those pitchers was a blazing fastball high and inside. Today, a pitcher can't push a hitter off the plate because of the knockdown rules that are in effect. If you do throw one

up and in and the umpire deems that you have thrown it there intentionally, there's a warning. A second close pitch gets you thrown out of the game. It's in the written rules. So that takes away the inside pitch immediately.

## The Incredible Shrinking Strike Zone

In 1963, the strike zone was defined in the rules as the width of home plate horizontally, extending vertically from the batter's letters down to the bottom of the knee. In '69, it was changed to the bottom of the armpit down to the top of the knee. In the rule book, that's still the strike zone. But today, umpires are allowed to "interpret" the strike zone as they see fit in any given game. Thus, on one hand, you see strikes being called that are well off the plate. On the other hand, when was the last time you saw a strike being called on any pitch higher than the batter's belt? It just doesn't happen.



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The 1968 season was the one that started the shrinking process. It has been called the "year of the pitcher." St. Louis's Bob Gibson had a monster year, winning 22 of 31 games, carving out a 1.12 ERA, striking out 268 batters and pitching 13 shutouts. If pitchers were hot, batters were not. Carl Yastrzemski of the Boston Red Sox led the American League in batting with a paltry .301 average. Baseball moguls feared diminishing fan interest in low-scoring games and felt they needed more excitement in the game--which translated into more offense. Since then, most rule changes have favored batters.

Television has given baseball an opportunity to review an umpire's performance and determine how many pitches he's missed--or called correctly. The pitch missed most often is on the low outside corner. That's due, in part, to the umpire's inside chest protector that has replaced the old, cumbersome inflatable protectors. Simply put, the inside protector is less bulky but doesn't protect as well. Nowadays, you don't see umps squaring up right behind the catcher, which would

allow them to see both corners. Instead, umpires peek over the inside corner. Why the inside corner? Because if a ball is fouled off, it's almost always toward the outside. The umpire doesn't want to get hit with a foul ball. They hurt. So he stays inside. Better for the ump, but it makes for a lot more guesswork in the outside pitch.

## **Lowered Mound**

In '69, Major League Baseball also lowered the pitcher's mound from 15 in. to 10 in. The higher you can get on the mound and look down on the hitter, the more leverage you have and the more that ball is coming from 12 o'clock to 6 o'clock. That makes it more difficult to hit the ball squarely compared to pitches coming in on a flat plane. Again, another advantage for the hitter.

## **Smaller Ballparks**

With just about everything else in baseball shrinking except players' salaries, it's no surprise that most of the newer ballparks are smaller than the ones they replace. Take Yankee Stadium. In the original ballpark, the distance to hit one out in center field was an unbelievable 487 ft. Left-center wasn't called Death Valley for nothing. You had to slam it 500 ft. to reach the stands. The new stadium, remodeled in 1988, has left-center at 399 ft. and center field at 408 ft. Still healthy shots but nothing like it was. Poor Joe D. He hit many a tremendous shot to left-center or center at the old stadium and they were mere fly balls. Yet, the short 295-ft. distance down the right-field foul pole (314 ft. today) was tailor-made for the likes of the lefthand-hitting Babe Ruth and, in recent times, Mickey Mantle (when he batted left), Reggie Jackson, Bobby Murcer and Jason Giambi. Today, a season doesn't go by without a McGwire, Sosa or Bonds hitting 50, 60, even 70 home runs. No wonder.

## **Bats And Balls**

Speaking of hitting home runs, Baseball contends that ball specs are the same as they've always been. But players believe that the ball is harder and unquestionably more lively. I personally believe--and so do a lot of current players--that the ball today is livelier than it was 10 years ago. We've written extensively about the

physical changes in baseballs in POPULAR MECHANICS ("Baseball's New Baseball," Oct. 2000, page 62).

Couple that with the new bats, which reflect a much more significant change, and hitters have yet another big advantage. Bats traditionally have been made of ash, which is a less dense wood compared, say, to maple. Ash is porous and absorbs moisture. Years ago, hitters I played with, such as Mantle or Harmon Killebrew, wouldn't swing a bat that weighed less than 34 to 35 ounces. The Canadian-made Sam Bat used by Barry Bonds weighs just 30 ounces, has a very thin handle and is made of sugar maple. It is kiln dried down to a 7 to 9 percent moisture content and then varnished. Drier, harder bats give you a higher coefficient of restitution. In other words, they spring back quicker after making contact with the ball. This, combined with higher bat speeds and the livelier ball, means the ball jumps off the bat faster and travels farther. More home runs.

### **Turf**

Did you know that the artificial turf and "hard" natural grass found in today's ballparks give hitters yet another advantage over pitchers? They do. When hit on the ground, the ball travels much more quickly through the infield. More balls go through for hits because the infielders simply can't get to the ball in time. Batting averages go up, more runs are scored, and the fans cheer.





#### HARDER BATS

The lighter, harder maple Sam Bat.

### **Health And Fitness**

It's better. No question.

Years ago, a trainer was kind of an all-purpose guy who handed out vitamins and salt pills, and he had a can of ethyl chloride to temporarily freeze an area to kill pain if you got hit with a ball. Trainers today are much better qualified, and they have all kinds of special equipment to treat just about everything. Massage therapists, common today, were unheard of in the old days. And the list of bodybuilding supplements today--both legal and questionable--is almost endless.

With weight training and exercise regimens, players are stronger and more durable. Stretching exercises and equipment are used every day to prevent as well as treat injuries. Another thing: Nobody looks at you funny if you spend some time in the whirlpool. The old saying used to be, "You can't make the club in the tub."



Sports surgery is another area that's really come a long way, and it directly impacts player durability and longevity. Years back, surgeons would try to keep a player's muscles together with staples, and that just about ended many a career. With the new arthroscopic techniques, a surgeon can do a guy's knee or elbow, and the player can be back on the active roster in weeks. All this adds up to hitters who are bigger, stronger, more durable and hit the ball a ton--like that Troy Glaus guy I mentioned at the beginning.

## **Expansion**

Expansion has seen Major League Baseball go from 16 teams to 36 teams over the past 40 years. Is it any wonder that pitching talent is scarce and getting scarcer? There simply aren't enough good pitchers to go around. Which is great if you're a hitter.

In the old days, it was common for the best all-around athlete to be a pitcher. It was a prestigious position. After all, nothing happened until he threw the ball. I was very proud to be a major-league pitcher. But if I had to do it all over again today, I'd probably want to be a hitter like Jason Giambi or Paul O'Neill. That's where the glory is now.