

Issues Regarding Wood v Non-Wood Bats

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“The pitcher has got only a ball. I've got a bat. So the percentage of weapons is in my favor and I let the fellow with the ball do the fretting,” said Hank Aaron. The pitcher is always the one with higher risk when they step between the lines. Not only is the mound the loneliest spot on the field, it can be the most dangerous. In the majors, wood bats have always been used, but that does not diminish the risk of “come backers”.

SAFETY

In today's world, with the high tech design of non-wood bats, more and more people have concern for that possible incident where a baseball has the trampoline effect ricocheting off the bat with a force strong enough to fatally damage the pitcher. The popular perspective is that non-wood bats are more dangerous than wood bats. However, there is no scientific data to back this up.

The National Consumer Product Safety Commission completed a study on this issue and concluded in 2002 that there is no evidence to suggest that non-wood bats pose any greater risk than wood bats. Multiple amateur baseball governing bodies, including the NCAA, National High School Federation, Little League International, PONY, et al, all track safety statistics and have concluded that non-wood bats do not pose a safety risk.

Nonetheless, safety is the leading issue in the debate over wood versus non-wood in high school baseball. Due to concerns over an imbalance of offense and defense, the NCAA created the Bat Exit Speed Ratio (BESR).

As quoted from Easton's Jim Darby, “With BESR bats, the performance of aluminum bats were changed. In the late 1990's aluminum bats were more powerful than wood bats. But leagues mandated changes. Today's aluminum bats are heavier, have smaller barrels, and have mandated maximum exit speed of 97 mph on the NCAA test – the same exit speed as Northern White Ash Wood bats.”

Even without data to back up the issue of safety, the New York City Council bans the use of metal bats in high school baseball in March of 2007.

As reported by the Associated Press, New York City Council Minority Leader James S. Oddo said:

"This effort always has been about the safety of our kids and eliminating an unnecessary and unreasonable risk from their baseball games. Parents, organizations, leagues of all ages, municipalities and state governments should take this Federal Court's ruling as a green light to return the game to its roots by enacting similar laws to prohibit the use of metal bats so that kids can enjoy a better, purer and safer brand of baseball..."

Also as reported by the Associated Press, Judge John Koeltl, of U.S. District Court in Manhattan, wrote:

“The protection of the health and safety of high school-age students is entitled to great weight. While the record does not include clear empirical evidence showing that more serious injuries would occur without the ordinance, it is the city’s legislative assessment that the risk is too great.”

“This is a horrible law,” said David McWater, chairperson of Community Board 3 and founder of the six-year-old Lower East Side Gauchos youth baseball organization. “Yes, the ball does come off a metal bat faster,” he conceded. “However, metal bats don’t break, which means you don’t have pieces of wood, splinters, etc. flying across the field at children. Most kids, especially if they are good enough to play high school baseball, can defend themselves from a baseball. Whereas even big leaguers have a hard time defending themselves from flying spears of wood.”

The argument about safety being the number one reason metal bats are banned, is still being used. Even when there is information that shows the number of catastrophic injuries is not significant. Dr. Frederick Mueller, Director of the National Center for Catastrophic Sports Injury Research has indicated from his studies that catastrophic injuries from wood bats may be more frequent than aluminum bats. Two out of the three deaths from a batted ball in the last decade came from wood bats.

What some findings indicate is that injuries to the pitcher from batted balls are very rare and can happen while using metal or wood bats. There is nothing to validate that the few catastrophic injuries to baseball pitchers from metal bats would not have happened if the batter was using a wood bat.

COST

Since the New York City Council decision to ban metal bats from high school baseball the question of cost becomes important. While the one time investment of an aluminum bat can average from \$125 - \$350, the bat can be used for a couple of seasons. Aluminum bats rarely break or splinter.

The ban on metal bats is currently only for high school play. However there are some that feel this is just the beginning.

“Our league here in Bedford-Stuyvesant Brooklyn is on a shoe-string budget. As it is, we struggle, and I mean STRUGGLE each year just to have enough baseballs to use for the 350 kids. We would never ever have the money to purchase wood bats, not if, but when this law is forced upon youth baseball leagues.” Posted by: [Council Gone Batty!](#) In response to Michael Clancy’s Article from the Village Voice, “Court Backs Council Metal Bat Ban”.

As for costs associated with switching to wood, the New York City Council estimated it would cost the city's public high schools \$253,500 to replace some 5,070 metal or metal-composite bats. Then it would cost \$67,600 a year to replace broken wood bats. Reported by R.J. Anderson from Athletic Management Magazine, "Bat Battle Going Deep".

Consider areas of low income. Is the ban on non-wood bats going to help recruit young ball players, when they have to continually buy new wood bats?

On the other hand, consider North Dakota, which has completed its first year with non-metal bats. Joel Swanson, head coach Shanley High School, ND, spoke at the BCA's National Convention in Oklahoma City this year. Coach Swanson discussed the financial benefits of the switch to wood. In his research of schools throughout North Dakota, he found that the Class A Baseball programs budgets' actually decreased this past year. Due to certain weather conditions, it was found that more metal bats were cracking in the cold than wood was being broken.

Again, the average cost of a quality aluminum bat is approximately \$300 whereas the average cost of a wooden bat is approximately \$100. Aluminum bats last much longer and are significantly less prone to breaking or shattering, a common occurrence with wooden bats.

OFFENSE

"During my 18 years I came to bat almost 10,000 times. I struck out about 1,700 times and walked maybe 1,800 times. You figure a ballplayer will average about 500 at bats a season. That means I played seven years without ever hitting the ball."- Mickey Mantle

Baseball is a sport of failure. Going 3 for 10 is only 30% which is failing, but as a batting average that's .300 and that's a great career. In the past much has been done to assist baseball with creating higher offensive numbers. The fact that the mound has been lowered, and the baseball has undergone some adjustments are just a few examples in the effort to make baseball more high scoring.

In a study for collegiate baseball, Division I Baseball Statistics Trends were gathered. Data was used from 1970-2007. The graph shows the mean batting average for all NCAA Division I college baseball players as a function of year from 1970 through 2006. It is interesting to note that from 1970 through 1981 there appears to be an almost steady increase in batting average. It should be noted that in 1973, NCAA instituted the designated hitter rule. Come to follow in 1974 was the NHSF. It is likely that the mean batting averages in the wood era prior to 1970 fluctuated around a value near .265 or so. The mean batting average spiked to .300 in 1981 and spiked even higher to .306 in 1985 before dropping and leveling around .290 for most of the early 1990's. An increase from .265 to .290 (or higher) is quite significant, and suggests that players using aluminum bats make solid contact with the ball more often than former players did with wood bats.

Aluminum bats typically have lower moments-of-inertia and therefore may be swung more quickly. A batter who can swing the bat faster has a much higher chance of making

contact with the ball since he can wait slightly longer to watch the ball before committing to a swing. Also, since metal bats don't break, many pitches that would have resulted in a broken bat dribbler for an out with a wood bat now result in base-hit singles from an aluminum bat.

The drop in batting averages after 1985 may be due to the fact that the NCAA introduced the "minus 5" rule after that year. This rule stated that the numerical difference between the bat weight (in ounces) and the length (in inches) could not be more than 5 units. A 34-inch bat manufactured in 1986 could weigh no less than 29 ounces. This change would have had an effect on bat swing speeds and might partly explain the immediate drop in batting averages starting in 1986.

But, bat performance didn't stay down. Starting in 1996 batting averages began increasing at a dramatic rate, reaching a record high during the 1998 season. Alarmed by this drastic increase in performance, the NCAA implemented a bat performance standard following the 1998 season. In 1999 NCAA introduced the BESR performance standard, the "minus-3" rule for bat length and weight, introduced a lower limit on a bat's moment-of-inertia, and reduced the maximum allowed barrel diameter. Now that bat performance is being controlled through laboratory testing and certification processes, batting averages appear to be remaining relatively constant near the values of the late 1970's and early 1990's. The NCAA is apparently happy with the current state of the game, and we will have to keep watching for the next several years to see if batting averages remain steady around .291 or continue to fall. Information gathered from Physics and Acoustics of Baseball & Softball Bats by Daniel A. Russel Ph.D., from www.kettering.edu/~drussell/bats-new/NCAA-stats.html.

THE BOTTOM LINE

The bottom line is that aluminum bats have had an impact on the game of baseball. Depending on your point of view one could argue that the impact has been either positive or negative. The facts show that batting averages and the frequency of homeruns in college baseball are higher now than they were before aluminum bats were introduced. However, pitchers finally appear to be adjusting and are currently striking out batters with the same frequency as they did in the wood only days. And, the recent restrictions on the performance of bats introduced by the NCAA in 1998 have brought the game back to the level of play in the early 1990's or early 1980's. It is not the same as in the wood only era, but batting averages and home runs are significantly lower than they were in 1998 when metal bat technology threatened to blow the game out of proportion.