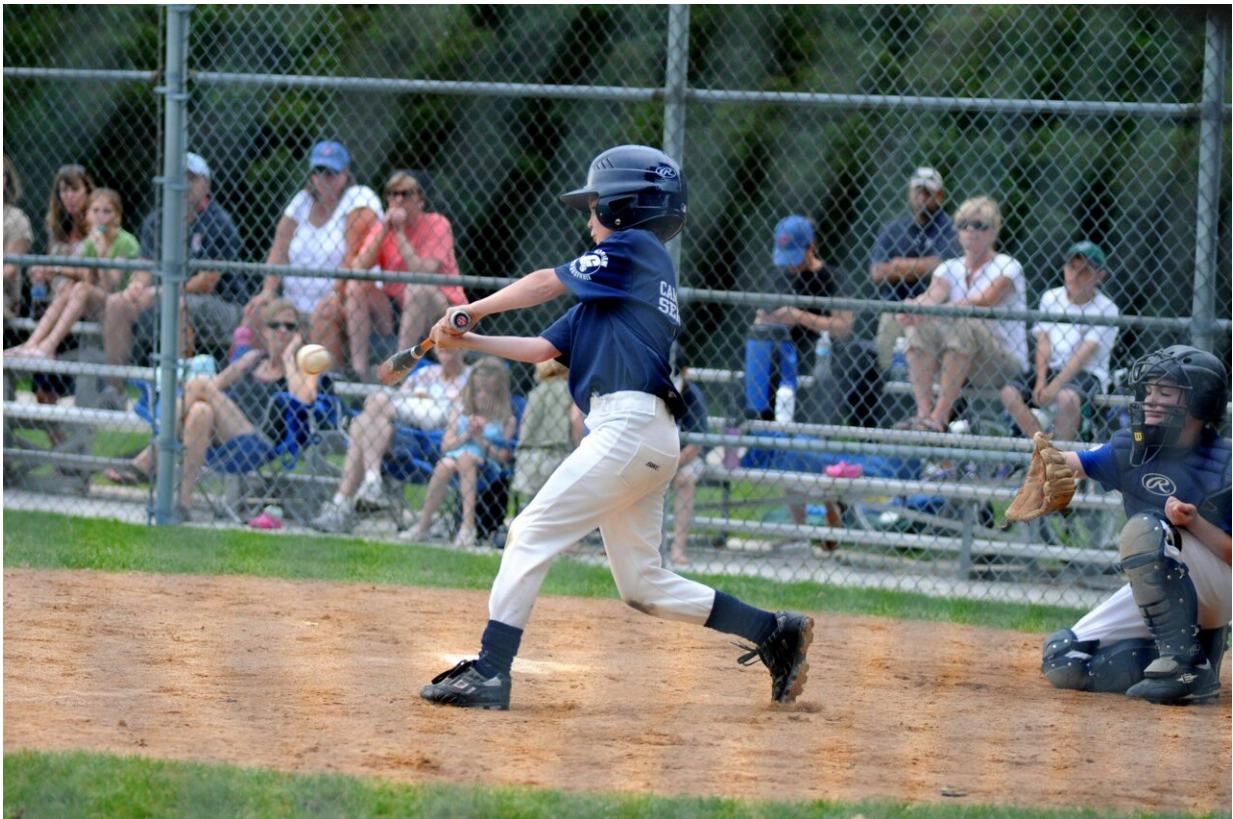


Metal baseball bats still help Little Leaguers hit a little better

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Credit: Unsplash/CC0 Public Domain

While meant to simulate wood bats, regulation USA Baseball metal bats are more forgiving than wood for young players who might not connect with the ball on a bat's optimal "sweet spot."

After testing [wood](#) bats and two types of [metal](#) bats with youth players, Washington State University researchers found that the exit speed of a hit [ball](#) was as much as 5% faster with metal bats over wood. Analyzing the data, they found that the performance of the USA Baseball metal bats at the sweet spot was similar to wood. It was when the hits were on less optimal areas that there was a bigger difference.

"There's more of a penalty when you're not on the sweet spot with wood bats than with the other metal bats," said Lloyd Smith, director of WSU's Sport Science Laboratory and lead author on the study [published](#) in *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology*.

Smith's team has been working with USA Baseball to develop a new wood-like metal bat standard. This study further investigated the performance of the bats designed to meet that standard with lab and field studies—in comparison to wood bats as well as the metal bats previously used in youth baseball, known as BPF 1.15.

The researchers had 52 players, with an average age of 12, take several swings with each type of bat in a batting cage for a total of more than 1,500 swings. The players, bats and balls all had motion sensors attached to measure the speed of the swing as well as the balls' exit speed.

As expected, baseballs hit with the BPF 1.15 metal bats had higher exit speeds than the wood bats, since these metal bats were discontinued in youth leagues because of their performance advantage. For the USA Baseball standard bats, the exit speeds were closer to those of wood but were still on average higher. The data analysis revealed that the difference was in hits that were outside the highest performance spot on the bat.

Metal bats were adopted in amateur baseball leagues back in the 1970s

in part because wood bats break and can be costly over time. Soon, players noticed the hollow metal bats conferred an advantage from their "trampoline effect"—an advantage that grew as companies competed to make a better bat. Seeing potential hazards and changes to the game from these metal bats, league officials tried to reign this in starting in the 1990s, ultimately restricting the use of metal bats to those that performed in a similar way to wood.

As this study shows, a small performance advantage remains even with the USA Baseball bat, but it is one that is acceptable to officials. There are also good reasons for leagues and coaches to use them over wood bats, Smith said. Namely, that performance advantage and their lighter weight can mean better batting averages for young players which can help leagues keep kids more excited about the game.

"Wood is still heavy. Part of [baseball](#) is hitting the ball far, but the other part is just hitting the ball," he said. "If you have a heavy bat, you're going to have a harder time making contact because it's harder to control."

Notably, despite the bat performance differences in this study, the skill of the hitters was still the biggest factor in how fast the ball came off the bat. Smith emphasized that if players really want to improve their batting average, the best thing to do is not to improve their bat, but themselves.

"If you're really trying to hit the ball far, you're going to get a much bigger payoff by working out and getting stronger, especially if you're a young kid and growing fast. That's going to have a much larger effect on how hard you hit the ball, then on what bat you buy," he said.

More information: Lloyd Smith et al, The effect of baseball bat properties and participant ability on youth hit ball speed, *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports*

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