

This week's issue:

WHO IS RESPONSIBLE FOR DOPING IN PROFESSIONAL TEAM SPORTS?

Why do so many well-known athletes use performance-enhancing drugs today? Baseball players like Manuel “Manny” Ramírez, Roger Clemens, and Alex Rodriguez have all been accused of using steroids or banned drugs (“doping”) to enhance their athletic performance. Ramírez retired in 2011 in order to avoid a 100-game suspension from the Tampa Bay Devil Rays after he tested positive for performance-enhancing drugs for the third time in his career.

Alex Rodriguez, a slugger for the New York Yankees, was suspended for the 2014 baseball season for using prohibited performance-enhancing drugs. Although Rodriguez denied the use of chemical **compounds**, he has been disgraced and his record remains under scrutiny.

Since steroids have been declared illegal and are now easily detectable, athletes have started **substituting** new ways of cheating that are harder to detect. For example, cyclists and other endurance athletes give themselves blood transfusions to **alter** the oxygenation of their blood.

In 2013, the cyclist Lance Armstrong finally admitted to doping to win his numerous titles and trophies, which had come with huge earnings and endorsement deals. Armstrong won the Tour de France seven times, but after evidence surfaced of his use of illicit compounds, the United States Anti-Doping Agency stripped him of his titles in 2012. The U.S. Postal Service is even suing Armstrong for fraud, because they paid millions of dollars to sponsor him and his team.

Some critics argue that athletes should not be blamed for engaging in doping. Sports writers point out that athletes are so pressured to continuously perform and outdo competitors that steroid use is very tempting. If fans and sponsors didn't push for more power hitting, faster times, and bigger championships, maybe athletes wouldn't be so inclined to alter their bodies with potentially dangerous drugs.

Many athletes are **conflicted** about using these chemical compounds, which take a toll on their mental and physical health. Those using steroids are aware of the negative consequences – men's breasts grow and their testicles shrink, they may get acne, and many users experience delusions or feelings of aggression, known as “roid rage.”

Some **fundamental** questions that perhaps should be asked are: Who is responsible for making illegal substances part of team sports? Would athletes alter their blood and body chemistry if they didn't feel so much pressure to outperform their peers? Should fans and sponsors bear some of the responsibility?





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fundamental | alter | conflicted | substitute | compound

USE THE FOCUS WORDS *and alternate parts of speech

fundamental (*adjective*) central; essential; basic

➞ *Sample Sentence:* A **fundamental** part of being able to read well is knowing a lot of vocabulary words.

🗣️ *Turn and Talk:* Sara says that reading is a **fundamental** skill. Give some evidence to support her claim.

alter (*verb*) to change

➞ *Sample Sentence:* Taking steroids can **alter** the way your brain works. People who take steroids can become violent toward others for no reason.

🗣️ *Turn and Talk:* Name a few ways you would like to **alter** the room where you sleep.

conflicted (*adjective*) undecided; having feelings that clash

➞ *Sample Sentence:* Mussa was **conflicted** about whether to save his birthday money for a trip to Washington, D.C., or spend it on a new Xbox game.

🗣️ *Turn and Talk:* Why might someone be **conflicted** about going to college?

substitute (*verb*) to replace

➞ *Sample Sentence:* Even though Terry mistakenly **substituted** oil for butter in the brownie recipe, the brownies still turned out fine.

🗣️ *Turn and Talk:* What ingredients could you **substitute** for chocolate chips in a pancake recipe?

***substitute** (*noun*) an object or person used in place of something or someone else, a replacement

➞ *Sample Sentence:* There is no **substitute** for a good night's sleep in preparing for a test.

🗣️ *Turn and Talk:* With your partner, think of some healthy **substitutes** for sugary sodas.

compound (*noun*) mixture

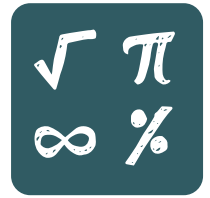
➞ *Sample Sentence:* Pharmacists often combine different chemicals to make **compounds** for medicine.

🗣️ *Turn and Talk:* What is the difference between an element and a chemical **compound**?

***compound** (*verb*) to complicate by adding to

➞ *Sample Sentence:* Don't **compound** the problem of forgetting your homework by being rude to your teacher.

🗣️ *Turn and Talk:* Can telling the truth ever **compound** a problem?



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DO THE MATH

Barry Bonds holds Major League Baseball's record for career home runs. Many people feel **conflicted** about this fact. On one hand, Bonds is a great athlete and the record is a historic accomplishment. On the other hand, Bonds has been accused of using chemical **compounds** to illegally **alter** his body. This kind of chemical abuse goes against **fundamental** sports ideals, like sportsmanship and fair play. Before Bonds, Hank Aaron held the home run record. He was a role model to other athletes and was one of the best players of all time. Some people think Barry Bonds is a poor **substitute** for Hank Aaron.


Here are the all-time top five career home-run hitters as of 2014:

Barry Bonds	762
Hank Aaron	755
Babe Ruth	714
Alex Rodriguez	673
Willie Mays	660

Option 1: What percentage more home runs did Barry Bonds hit than Hank Aaron?

- A. 5% more
- B. 2% more
- C. 12% more
- D. less than 1% more

Option 2: A physicist at Tufts University estimated that steroids could help a person hit 50% more home runs. Let's assume he is right. If a player hit 762 home runs on steroids, how many home runs would he have hit without the 50% increase that steroids provide? (For example, we're assuming a person who hit 15 home runs on steroids would have hit just 10 home runs without steroids. Ten, increased by 50%, becomes 15.)

 **Discussion Question:** Steroids **alter** the body in **fundamental** ways, such as increasing muscle mass. Are they responsible for baseball's recent record-breaking performances? The list of great players caught up in the conflict over steroids is growing. Batting greats Jose Canseco and Mark McGwire have both admitted to using illegal **compounds**. Should Major League Baseball try to **substitute** clean players for the ones who built their bulk with the help of steroids? Or should we accept that steroids were part of this era, and focus on the future?

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THINK SCIENTIFICALLY

“It seems like there is always some conflict over new performance-enhancing drugs in sports,” says Michael. “If you stop players from using one chemical **compound**, they just **substitute** another. Maybe it would be simpler if everyone just decided players can use whatever chemicals they want.”

“No way!” says Chris. “That would change the whole idea of athletic competition in a **fundamental** way. Using drugs is cheating. And if we stopped thinking of it as cheating, it would put pressure on all athletes to keep up by using drugs that might have unsafe side effects.”

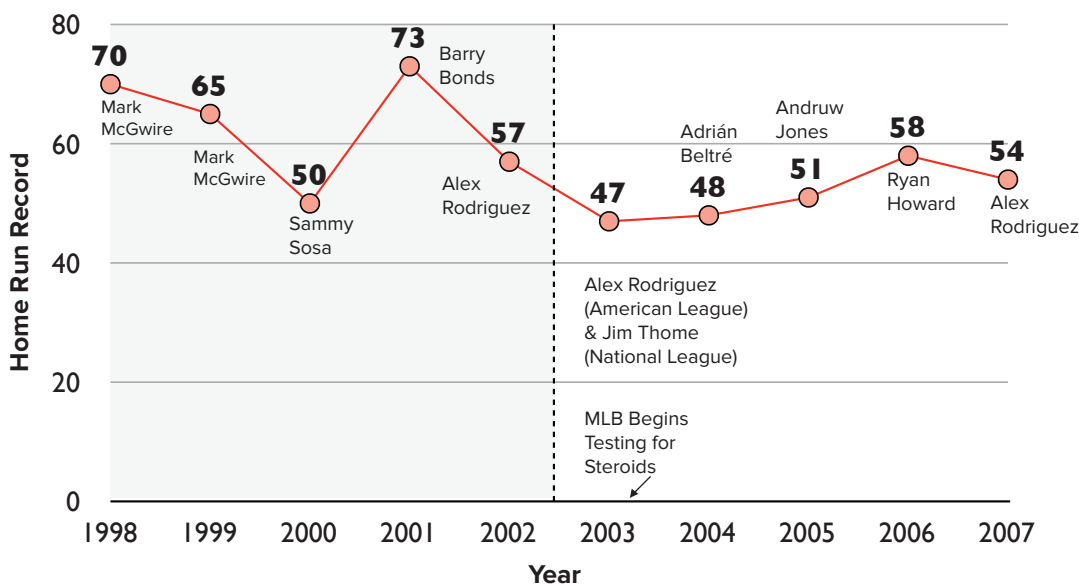
“I don’t know,” says Michael. “Do you really think drugs like steroids make a big difference in baseball, for example? I mean, just having bigger muscles doesn’t mean you’re going to be coordinated enough to hit better.”

“Steroids might not **alter** your coordination,” says Kyra, “but strength obviously plays a role in baseball. If two batters are equally coordinated, the stronger one should get more home runs.”

“Can you prove that?” asks Michael. “I mean, as long as steroids aren’t allowed, players try to keep any drug use secret. That makes it hard to compare batters with steroids to batters without steroids.”

“That’s an interesting problem,” says Ms. Kahn. “Can you think of a way to find some data that might be relevant?”

Michael, Chris, and Kyra did some research and learned that Major League Baseball started testing players for steroid use in 2003. They figured that with testing, illegal steroid use might have dropped abruptly in 2003. They decided to compare the average yearly home run records in the five years before testing to the average yearly home run records in the five years after testing began.



What was the average annual home run record in the five years before steroid testing started?



What was the average annual home run record the first five years after steroid testing started?

What do you think these data suggest about the effect of steroids on batting? Explain, and make sure you state your evidence.



