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STERIODS: SUBSTANCE ABUSE OR AN INNOCENT BOOST FOR ATHLETES?

Word Generation - Unit 1.10

Focus Words

alter | compound | conflict | fundamental | substitute

Weekly Passage

After his success in the 1990s, the great homerun king, Barry Bonds, came under pressure. His fans began questioning whether he had been using steroids throughout his baseball career. Bonds has denied using any illegal chemical compounds to improve his athletic performance. However, a teammate wrote a book saying that Bonds used steroids to get stronger and bigger. Now that steroids have been declared illegal, many athletes are substituting new types of drugs that are hard to detect using traditional testing methods.

In 2001, Bonds reached a new record for the number of home runs in a single season. But sports writers and fans felt conflicted about recognizing the record. Did Bonds deserve recognition if he achieved his record with the help of drugs?

Many sports fans think steroid use is wrong. They believe that showing good sportsmanship is a fundamental part of athletic success. Some baseball greats like Babe Ruth, Roger Maris, and Mickey Mantle reached their

home run records without drugs. If Bonds is eventually found guilty of steroid use, should his home run record be thrown out? Should the rules be altered to allow performance-enhancing drugs? What if athletes use vitamins to boost their health or pain relievers to help them play through injuries? Are some chemical compounds okay for athletes to use? How much chemical help is too much?

TEACHER

Reading Comprehension/Discussion Questions:

- ▶ Why do fans think Barry Bonds might have altered his body with chemical compounds to improve his athletic performance?
- ▶ Why are fans and sports writers conflicted about recognizing Barry Bonds' record for the number of home runs in a single season?
- ▶ Why do some athletes take steroids? Why are some of them now substituting new types of drugs?
- ▶ Should we focus on what an athlete achieves, or on how he achieves it? Is good sportsmanship a fundamental part of athletic success?
- ▶ If Bonds is guilty of steroid use, should his record be thrown out?

Unit 1.10

Steroids: Substance abuse or an innocent boost for athletes?

Focus Word Chart

Word	Meaning	Forms			Related Words
		Inflectional	Basic Word Classes	Prefixes/ Suffixes	
alter	(v.) - to change	alters altering altered		alteration alterable inalterable	alternate
compound	(n.) - mixture	compounds (pl.) compound (v.) compounds compounded compounding		compoundable	component expound impound position postpone
conflicted	(adj.) – confused; undecided; having feelings that clash or conflict	conflict (n.) conflict (v.)		conflictual	afflict inflict
fundamental	(adj.) - central; essential		fundament	fundamentally	foundation
substitute	(v.) - to replace	substitutes substituted substituting substitute (n.) substitute (adj.)		substitutable substitution	constitute institute restitution destitute statue

Unit 1.10

Steroids: Substance abuse or an innocent boost for athletes?



Problem of the Week

Barry Bonds holds Major League Baseball's record for career home runs. Many people have **conflicted** feelings 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 as well as 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:

Barry Bonds	762
Hank Aaron	755
Babe Ruth	714
Willie Mays	660
Ken Griffey, Jr.	630

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

Teacher's Note: $(762 - 755) / 755 \approx .00927 = .927\% = \text{less than } 1\%$

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.)

Answer: 508

Math Discussion Question: Steroids **alter** the body in a **fundamental** way, by 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 Conseco 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?

Steroids: Substance abuse or an innocent boost for athletes?

Debating the Issue



1. Get ready...

Pick one of these positions (or create your own).

A An athlete's records should be thrown out if he uses any chemical compounds to help him play the game, even pain relievers.

B Athletes should be allowed to use pain relievers if necessary, but should not be allowed to use any drugs that will give them an advantage over other players.

C Athletes should be allowed to use steroids and other compounds to improve their performance, as long as they are honest about what they have taken.

D An athlete's records should not be thrown out if he uses steroids, because what is important is what he accomplished, not how he did it.

E _____

GO!

Be a strong participant by using phrases like these.

In my experience . . .

that's similar to what I think too...

What makes you think that?

When I re-read the text, it reminded me...

2. Get set...

Be ready to provide evidence to back up your position during your class discussion or debate. Jot down a few quick notes:

TEACHER

Whatever the debate format, ask students to use academically productive talk when arguing their positions. In particular, students should provide reasons and evidence to back up their assertions. It may be helpful to read these sample positions to illustrate some possibilities, but students should be encouraged to take their own positions about the issue at hand.

Unit 1.10

Steroids: Substance abuse or an innocent boost for athletes?

Science Activity

Tufts University physicist Roger Tobin is interested in the **conflict** over illegal **compounds** used by some major league baseball players. Steroids and similar, **substitute** chemicals **alter** the body in a **fundamental** way. They help athletes increase muscle mass. But what does this mean for baseball players? Will players on steroids hit more home runs?

Tobin says yes. Steroids can increase muscle mass over 10%. Tobin found that a 10% muscle mass increase could help a player hit 50% more home runs.

Major League Baseball began testing for steroids in 2003. Players who are caught using steroids are fined, suspended without pay, or banned from the major league. If baseball players before 2003 had help from steroids to hit home runs, then home run records should be higher before 2003 and lower after 2003.

Question:

Did the yearly home run record decrease after 2003?

Hypothesis:

The average yearly home run record during the 5 years before 2003 will be higher than the average yearly home run record during the 5 years after 2003.

Materials:

- ▶ Major League Baseball statistics



This activity is designed to help you practice thinking like a scientist and to use this week's focus words. Sometimes the data are based on real research, but they should never be considered true or factual.

TEACHER

-Our hypothesis is a narrow one. We certainly have not answered the fundamental questions at the heart of the steroids debate: How have steroids changed the game? Who is using steroids?

-Some sports experts wonder if athletes are outsmarting steroid tests by taking substitute compounds. For example, world-class sprinter Marion Jones gave up sports after admitting that she took tetrahydrogestrinone (also known as THG, or The Clear). The effects of THG are similar to anabolic steroids, but some athletes like Jones took THG because they thought it was undetectable.

-This press release from Tufts University explains the reasoning behind Tobin's conclusion. He found that a 10% muscle mass increase (a reasonable gain for a person taking steroids) could help a batter swing 5% faster, which would increase the speed of the ball by 4%. Applying this extra speed to each hit would result in 50% more home runs – a dramatic increase.

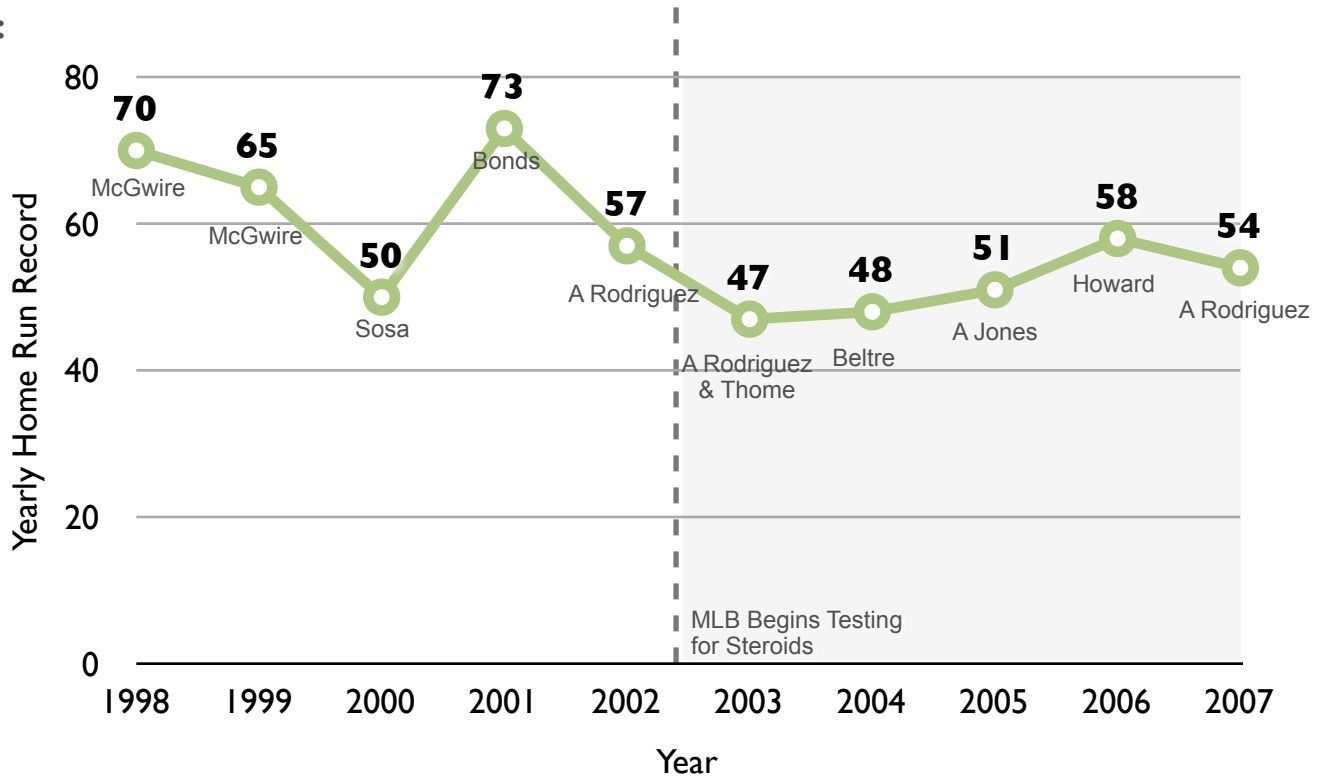
Tufts University E-News. (2007, September 24). Study: steroids can power home runs. Retrieved on November 19, 2009 from

<http://enews.tufts.edu/stories/89/2007/09/24/StudySteroidsCanPowerHomeRuns>

Procedure:

1. Calculate the average home run record from 1998 to 2002, before steroid testing began.
2. Calculate the average home run record from 2003 to 2007.
3. Compare the two averages.

Data:



Conclusion:

Is the hypothesis supported or not by the data?

Supported

What evidence supports your conclusion?

Average for 1998 – 2002: 63

Average for 2003 – 2007: 51.6

The average yearly home run record dropped almost 20% in the five years following the start of steroid testing.

How would you make this a better experiment?

Encourage students to consider sample size, number of trials, control of variables, whether the procedure is a true measure of the question, whether the experiment can be repeated by other scientists, data collection and recording systems, and other potential explanations for the outcome. Students should understand that these simple experiments represent the beginning of an exploration, not the end. If time permits, have students suggest how the experiment could be strengthened, emphasizing the use of the target words in the discussion.



Writing Prompt:

Should an athlete's records be thrown out if he or she is guilty of steroid use?

Support your position with clear reasons and specific examples. Try to use relevant words from the Word Generation list in your response.

Focus Words

alter | compound | conflict | fundamental | substitute

A tool to help you think about your own writing!

Remember you can use focus words from any of the WG Units.

Check off what you accomplished:

Good Start

- ☐ Stated my own position
- ☐ Included 1 focus word

Pretty Good

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1-2 focus words

Exemplary

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1 counterargument
- ☐ Used 2-5 focus words

TEACHER

Ask students to write a response in which they argue a position on the weekly topic.

Put the writing prompt on the overhead projector (or the board) so that everyone can see it. Remind students to refer to the word lists in their Word Generation notebooks as needed.

[illegible]