

PURPOSE

To expand students' knowledge of the development and changes that happen in puberty and their relation to the hormone testosterone.

LEARNING OBJECTIVES

By the end of the lesson students will be able to:

1. Understand the importance of healthy hormones for a healthy body.
2. Understand the impact of the hormone testosterone on the physical and emotional changes of puberty.

MATERIALS & RESOURCES

- **Lesson 5 teenMEN powerpoint**
 - **Game: Ten True or False facts about Testosterone!**
- **Worksheet: Think and Write Journaling**

VOCABULARY

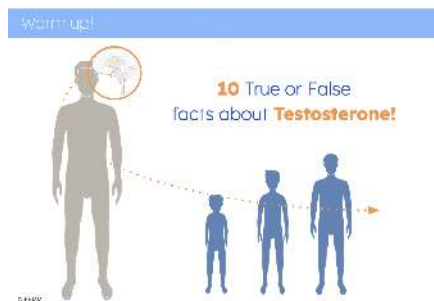
- **Hormones:** Chemical signals that travel in the bloodstream, directing the activity of every system. The body has many different hormones, produced in different parts of the body.
- **Testosterone:** The main male hormone, produced in the testes.
- **Puberty:** Time when physical and sexual characteristics mature due to hormonal changes (typically between 10-17 years old for a boy, and 9-14 years for a girl).
- **Maturity:** The growth and development of the body, brain, emotions.
- **Hygiene:** The habits that keep your body clean and contribute to your overall health.

PREPARATION

- ☐ Print the **Think and Write Journaling** worksheet for each student.

Step 1 (10 minutes): Ten True or False Facts about Testosterone!

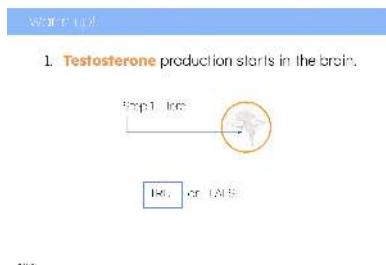
Since we are going to learn about the effects of testosterone in puberty today, let's warm up with **Ten True or False facts about Testosterone!**



Read each statement aloud on the slide and choose one student to answer. Students will not have seen all of this content before, so there will be some guesswork involved.

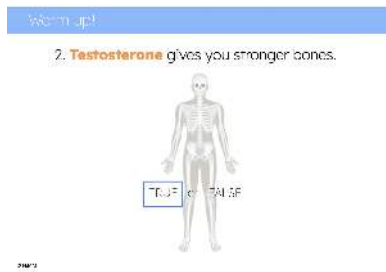
Clicking on the slide will reveal whether the statement is true or false.

1. Testosterone production starts in the brain.



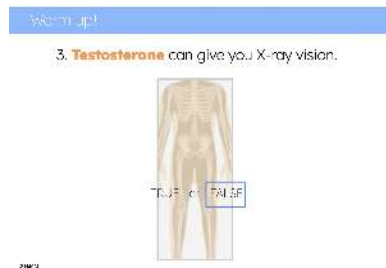
True. All hormonal activity is controlled by the brain. Testosterone production is started by another hormone in the pituitary gland (that small kidney-bean-sized part of the brain) that tells the testicles to begin producing testosterone.

2. Testosterone gives you stronger bones.



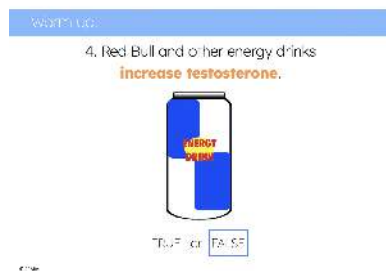
True. Testosterone plays a role in bone density and in maintaining bone health.

3. Testosterone can give you x-ray vision.



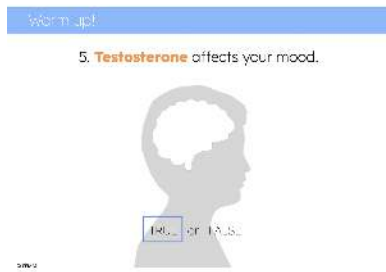
False. Your vision is dependent on several factors, but testosterone isn't the main one. (Plus, x-ray vision only happens in video games!)

4. *Red Bull* and other energy drinks increase testosterone.



False. Red Bull has not been proven to make testosterone levels better and in fact causes heart problems and nervous system disorders. Yikes!

5. Testosterone affects your moods.



True. Testosterone affects thinking, mood, and memory. Low testosterone can sometimes lead to feelings of depression. In puberty, as testosterone levels change, it's normal for moods to change as a result.

6. Exercise has no real impact on your testosterone.



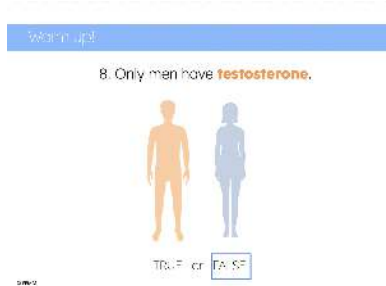
False. Research shows that testosterone levels rise after exercise. And in fact, teens get a bigger boost post-exercise than adult men.

7. Alcohol and smoking or vaping (marijuana or tobacco products) lowers your testosterone.



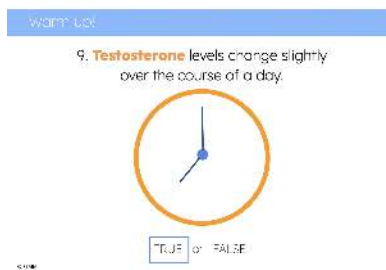
True. In the testes, alcohol negatively impacts the Leydig cells, which produce and secrete the hormone testosterone. Smoking has been shown to lower testosterone levels and sperm.

8. Only men have testosterone.



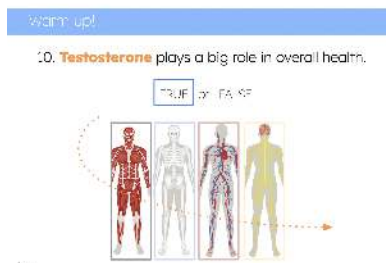
False. Women also have testosterone, just as men have the main female hormone, estrogen. But where these hormones are made and the amount that is healthy for their bodies is different in men and women. For example, the male body makes about 15-20 times more testosterone than the female body.

9. Testosterone levels change slightly over the course of a day.



True. Testosterone levels are highest in the morning and lowest in the evening, though they do not change much once you have started making adult amounts of testosterone.

10. Testosterone plays a big role in overall health.

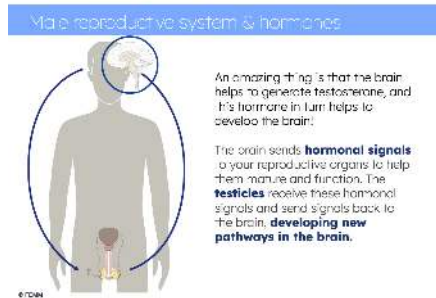


True. You need your body to make the right amount of testosterone for your age,

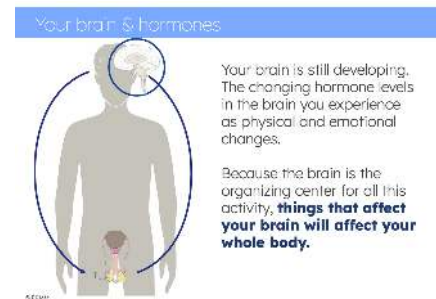
in order to support your energy levels, mood, growth, muscle tissue, etc. You can help your body make the right amount of testosterone by making healthy choices.

Step 2 (10 minutes): Hormones and the Brain

*Ask: where do all of the physical and emotional changes of puberty **start**? In the **brain**!*



An amazing thing is that the brain helps to generate testosterone, and this hormone in turn helps to develop the brain! Did you know that the male brain doesn't fully mature until the age of 25?



This means that right now, your brain is wide open and ready for knowledge! What are you doing to teach your brain each day? Changing hormone levels in the brain cause all of the physical and emotional changes that you experience in puberty. Because the brain is the organizing center for all this activity, things that affect your brain affect your physical and emotional health.

You body and testosterone

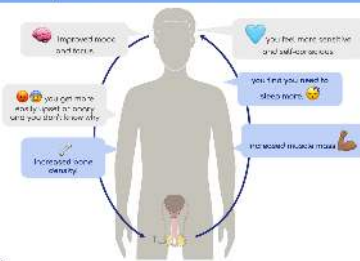
Hormones are POWERFUL.

Small changes in hormone levels cause huge changes in your mood and in your body.

© 2014

Hormones are powerful. The smallest changes in hormone levels can cause huge changes in your body.

You body and testosterone



© 2014

Testosterone impacts your brain, your emotions, your sleep, your muscles, and more. The increasing testosterone levels in your body cause the physical changes that you can see, like getting taller, but also the emotional changes you experience, from feeling sensitive and self-conscious to energetic and competitive.

This chart shows only a few of the amazing things happening in your body during puberty, thanks to testosterone. Note that testosterone increases brain cells, which increases your ability to learn, for starters!

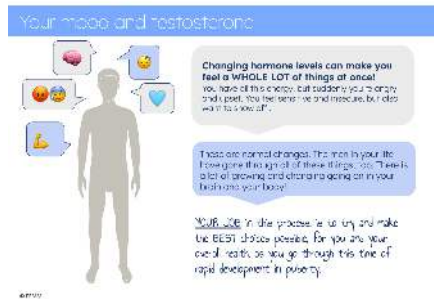
You body and testosterone

testosterone	
brain cells	increases ability to learn
bones	bone formation & density
muscle mass	builds
hair growth	promotes
fat metabolism	helps promote fat burning
blood sugar	helps keep at healthy level
well-being	normal levels promote confidence and motivation

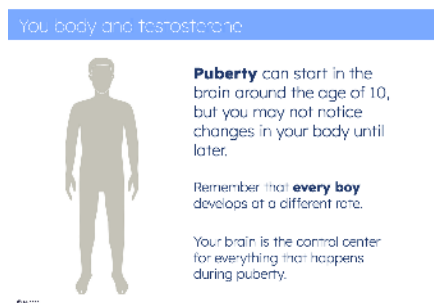
© 2014

Changing hormone levels can make you feel a whole lot of things all at once. One minute you want to show off, the next minute you feel insecure. This is normal as your brain is

changing. The most important thing for you to remember is that *your job* is to try to make excellent choices for yourself, for others and for your health as you develop through puberty.



Step 3 (10 minutes): Changes to expect during puberty

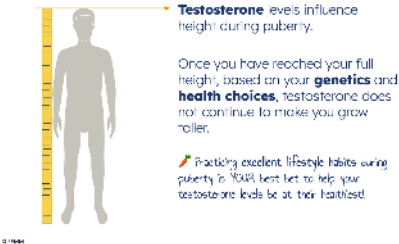


Puberty starts to happen around the age of 10, but for most boys they won't notice any physical changes until much later. Things take time. Remember: everybody is different and when you start puberty will depend on your genetics as well as your health habits.

Let's talk about some of the changes you will see and address some concerns guys have as they enter puberty.

Height:

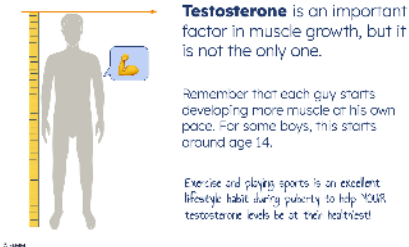
Hormones & your height



Testosterone levels influence height during puberty. Yet, many boys your age are shorter than the girls. This is normal, because girls get a head start on puberty (typically ages 9-14 for a girl, and ages 10-17 for a boy). Boys also go through puberty for a longer time, so making healthy choices as you go through puberty is the best way to grow as you should.

Muscles

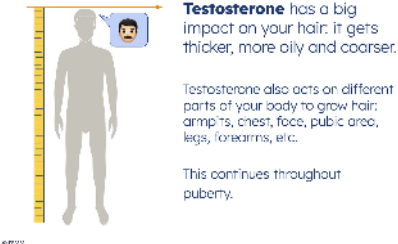
Hormones & your muscles



You might be worried about how your body will develop. Guys can expect their shoulders to broaden and muscles to grow, but be patient - all guys grow differently and at different times. For most boys, this part of puberty starts around the age of 14. The best way to support muscle development is to exercise and play sports as it reduces stress, boosts your mood and helps keep your hormones healthy, too.

Hair growth

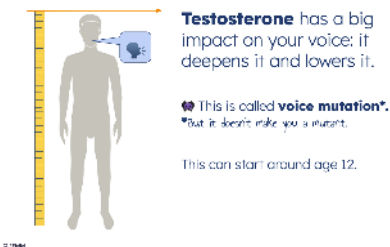
Hormones & your hair



In puberty, the hair all over your body begins to thicken. Boys begin to see hair growing on the chin and upper lip, chest, armpits, and in the pubic area (around the reproductive organs). This hair growth is a result of hormones, particularly testosterone, working hard to develop your body from the inside out.

Voice

Hormones & your voice



Testosterone acts on your vocal cords and larynx, causing your voice to become deeper and lower. This usually starts to happen around age 12.

Sweat

Hormones & sweat



Have you noticed that you're sweating more? It's because hormones are driving so much

activity in your body! You sweat when your body gets warm, and then sweat evaporates, cooling you down. Sweat itself is not smelly, but in contact with the bacteria on your skin -- sweat + bacteria = smelly. Just shower more often and let your body do its normal thing. Also, you can wash your face with a warm washcloth when you wake up and before you go to bed, to help keep your face clean.

Remember, all of these changes in puberty are signs of health! It means your body is receiving the right hormonal signals and in the right amounts. If you have specific questions about what is happening to your body at any given time during puberty, it's always best to ask a trusted adult: your dad, your mom, a family member or your doctor can help give you the best advice for you and your health.

Step 4 (5 minutes): Hygiene + Think and Write: Journaling

As you grow and mature, you become responsible for keeping your body clean and healthy.

Hormones and you

Hygiene: habits that keep your body clean and contribute to your overall health

- **Bathe** or shower daily, or as needed after exercise
- **Use deodorant** to help eliminate body odor
- **Brush** your teeth morning and night
- **Clean** and trim your nails 1 a week
- **Wash your face** morning and night
- **Wash** your hands after using the bathroom



It's important to bathe or shower once a day. You may need to start using a deodorant to help eliminate body odor. Brush your teeth in the morning before school and at night, before bed. Cut your nails once a week. Nails can hold bacteria underneath them, so it's best to make sure they are clean. Washing your face in the morning when you wake up and at night, before you go to bed, will help your skin clear away excess bacteria and oil. You can just use a washcloth with warm water.

Maintaining healthy habits in each of these areas is important for your entire life, but especially in puberty. Getting in the habit of good hygiene will help you feel more confident in yourself as you go through puberty.



Handout the **Think and Write: Journaling** prompts to students. Take the remaining class time and have each student respond to the questions. Let them know they can keep this information to themselves if they wish.

CONCLUSION

Testosterone and other hormones cause changes in our body during puberty. Puberty is a sign of health! Next lesson we'll learn about the three pillars of health and how we can make excellent choices that will support our health and hormones!

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