

# Puberty/Adolescence

# What is adolescence and puberty?

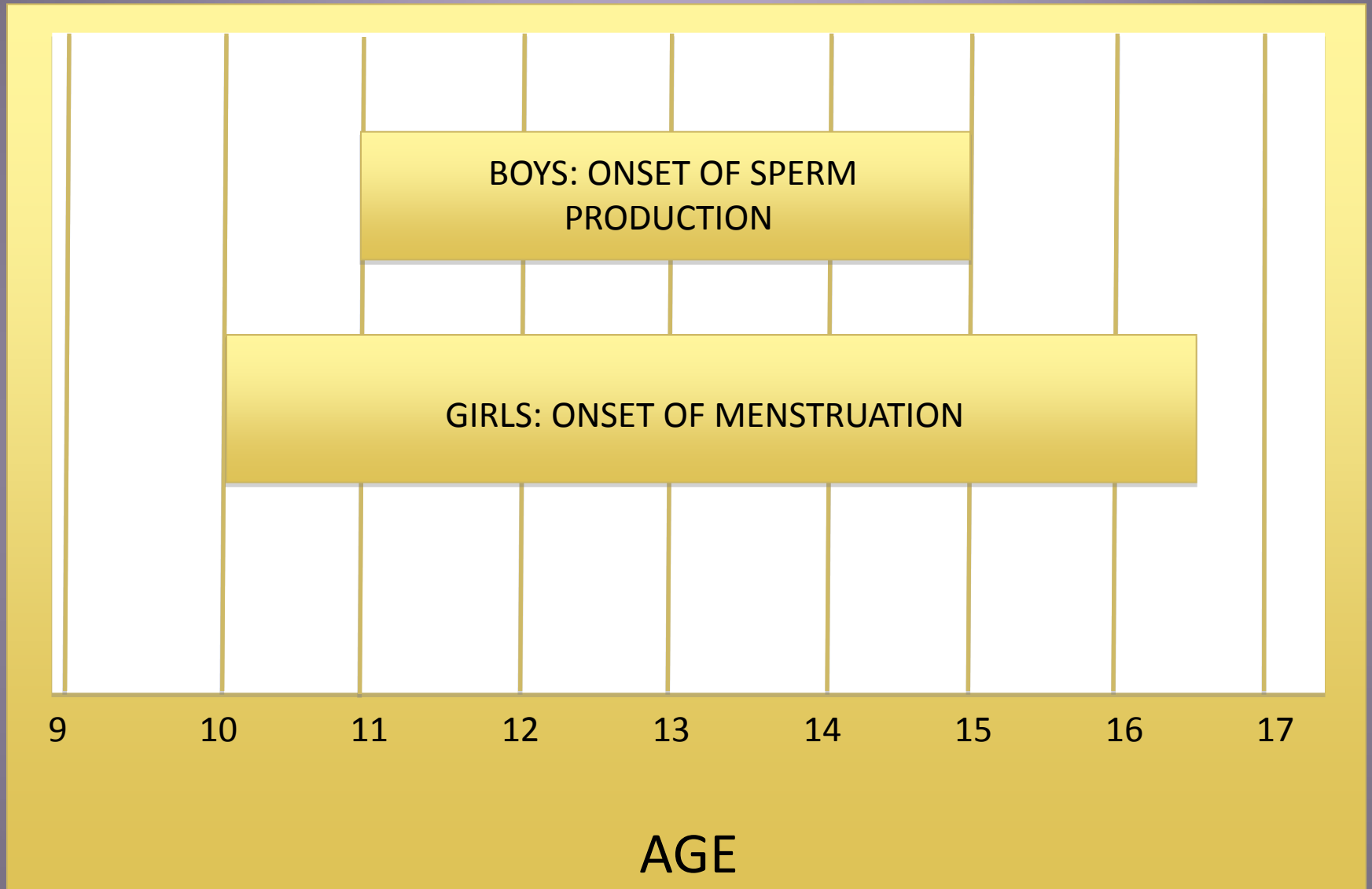
- During adolescence the reproductive system matures, adult features appear, and height and muscle mass increase.
- Adolescence is a period of gradual change.
  1. Physical
  2. Mental
  3. Emotional

- Puberty are changes that happen to your reproductive system. This is when your body becomes sexually mature and is able to reproduce

- Puberty usually happens between ages 9 and 16, when the pituitary gland in the brain signals a girls ovaries (produce estrogen and progesterone) and a boy's testes (testosterone) to begin producing sex hormones.

- Ovulation in girls and sperm production in boys signals reproductive maturity.

# AGE RANGE FOR ONSET OF PUBERTY



# Sex Hormones

FEMALES



PROGESTERONE ESTROGEN



THE RELEASE OF THESE  
SEX HORMONES SIGNAL  
OVULATION AND  
MENSTRUATION

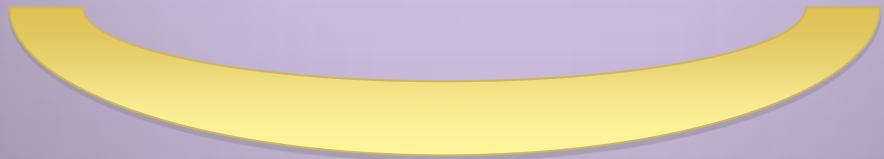
MALES



TESTOSTERONE

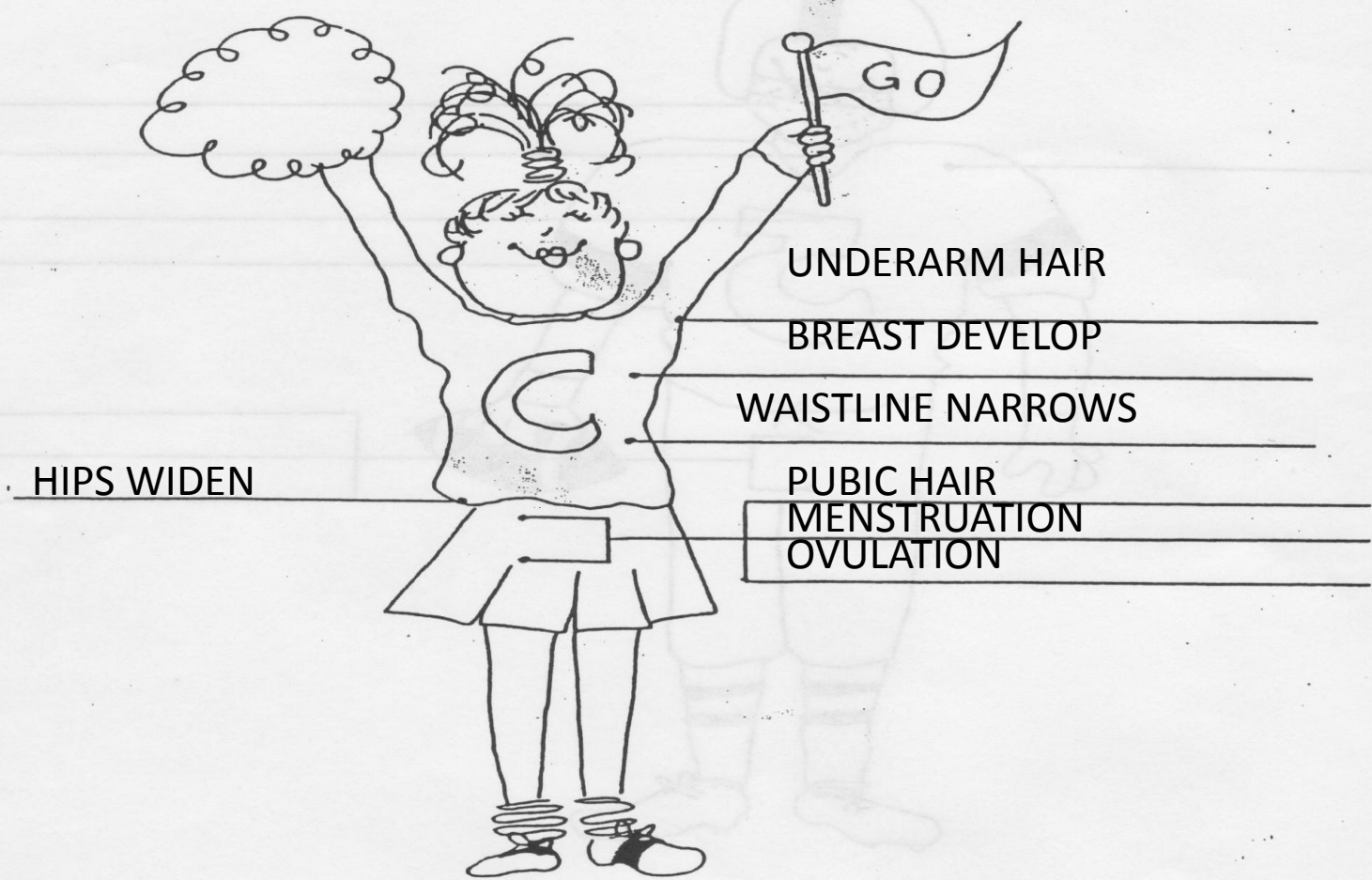


THE RELEASE OF THIS SEX  
HORMONE SIGNALS THE  
PRODUCTION OF SPERM



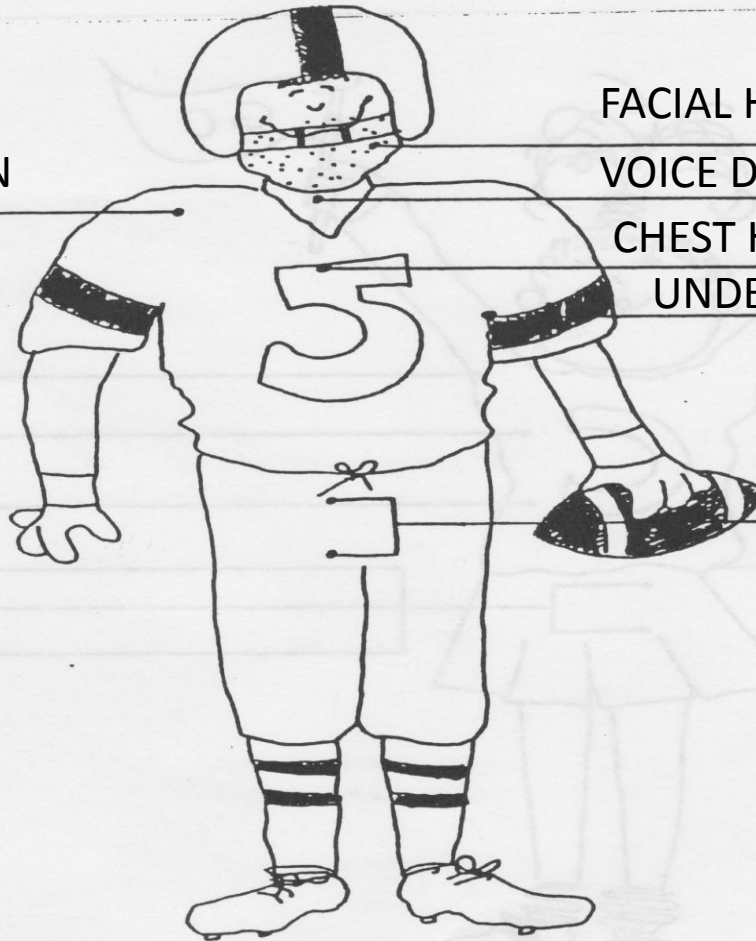
REPRODUCTIVE MATURITY

# PUBERTY IN FEMALES (SE-1)



# PUBERTY IN MALES (SE-2)

SHOULDERS BROADEN



FACIAL HAIR

VOICE DEEPENS/ADAMS APPLE

CHEST HAIR

UNDERARM HAIR

PUBIC HAIR

SPERM DEVELOPMENT

NOCTURNAL EMISSIONS

"WET DREAMS"

Understanding puberty worksheet

# Other changes

Physical	Social	Mentally/Emotionally
- Acne	- More independence	- Mood swings
- Body hair	- More time with friends	- Brain Development (not done until 20's)
- Permanent Teeth	- Less interest in family	- Interested in opposite sex
- Growth Spurts		
- Reproductive parts develop		



# Secondary Sex Characteristics

are physical changes that develop during puberty, but are not directly involved in reproduction.

In Girls ONLY	In Boys ONLY	In BOTH Girls and Boys
1. Breasts develop	1. Shoulders broaden	1. Voice deepens
2. Hips widen	2. Hair appears on face and chest	2. Muscle strength increases
3. Body fat increases		3. Body hair appear
		4. Skin releases more oils
		5. Perspiration increases

# Height and Muscle Mass

- The pituitary gland increases its production of growth hormone
- Growth hormone- a chemical messenger that activates growth
  - First your hands and feet grow, then your arms and legs
- Girls grow before Boys
  - Boys start their growth spurt later and grow for a longer period of time, which makes them taller than girls

# Growing Pains

- Rapid lengthening of the bones in your arms and legs can cause aches and pains
- Feelings of awkwardness and discomfort
- Challenge your body with a variety of physical activities, this will help you to adjust more rapidly
- Physical activity also helps to develop your muscles and coordination

# Energy Demands

- “Bottomless Pit”
- It is normal to be very hungry during adolescence, you need extra energy to fuel your growing body
- Eat nutritious meals and snacks to supply your body with the nutrients it needs

# Early and Late Bloomers

- Early Bloomers
  - Adolescents who develop at an early age before most other adolescents
- Late Bloomers
  - Develop later than most adolescents their age
- The ages at which people mature sexually and grow to their adult height are determined in large part by heredity
  - You are probably maturing at the same age and speed as your parents did

# Mental Changes

- When you were first born millions of brain cells and pathway connections formed when first born
- Between ages 10-13 a second wave of growth and development took place
  - Brain grew too big
- During the rest of adolescence only those brain cells and connections that you use will survive and flourish (pruned back)
- Mental changes during adolescence include improved abstract thinking, reasoning skills, and impulse control.

# Abstract Thinking

- Young child
  - Thoughts and feelings tied directly to physical experiences at each moment
  - Ex) you thought about hunger only when your stomach was empty
- As you grow older
  - Easier to consider ideas that are not concrete or visible
  - Ex) think about chronic hunger in communities all over the world
  - The ability to think abstractly is due to the dramatic growth in your brains frontal cortex

# Reasoning Skills

- Problem solving
- Decision making
- Able to see more than one side
  - Think about pros and cons of decisions you face
- As you gain experience making wise choices in simple everyday dilemmas, you find it easier to make wise choices when more difficult situations arise



# Impulse Control

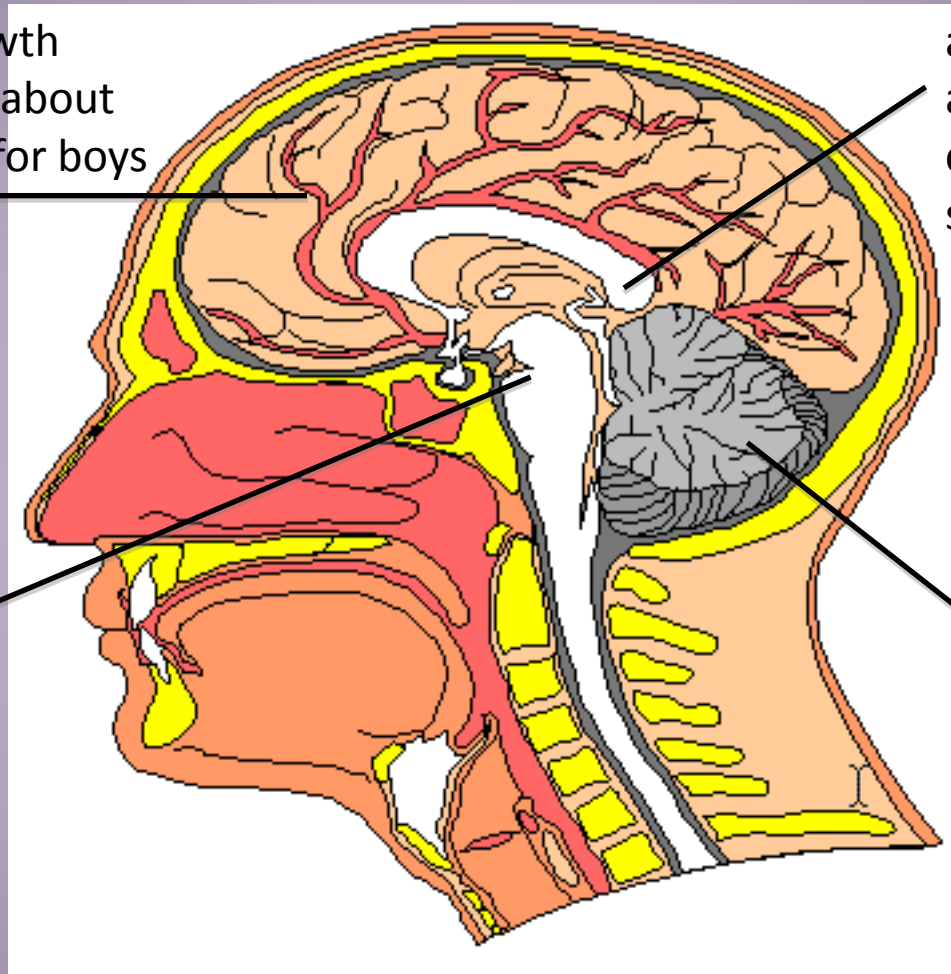
- When you are younger you make decisions without thinking
- As you get older you stop and think about the situations, weigh the pros and cons and make a rational decision

### Frontal Cortex

This “thinking” region of the brain's cerebrum plays a role in planning, judgment, and memory. Dramatic growth occurs in this region at about age 11 for girls and 12 for boys

### Corpus Callosum

This cable of nerves that connects the two halves of the cerebrum grows and changes throughout adolescence. It aids creativity and problem-solving abilities.



### Amygdala

This “emotional center” of the brain is partly responsible for your impulses, or gut responses to emotional situations. This region is more active in adolescents than in adults

### Cerebellum

The part of the brain, which coordinates physical movement, grows and changes dramatically during the teen years

# Emotional Changes

- During adolescence individuals start to define meaning in their lives, a set of personal values, and sense of self.