Adolescence

Chapter 15

PED 201

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Adolescence

- Influenced by culture and biology.
- Secular trends in biological maturation have dramatically lowered the average age of puberty.

Adolescence

- During adolescence tremendous changes occur.
- The period of adolescence can be considered to be from age 11 to 20.

Adolescence

- Onset of adolescence is marked by a period of accelerated increases in weight and height.
- An individual's genotype (potential for growth).
- An individual's phenotype (environmental conditions).

Height

- There is considerable variability in the growth process during adolescence.
- There is a definite period of accelerated growth at the end of childhood.

Height

- The preadolescent growth spurt lasts about four and one half years.
- Begins for males (on average) around age 11, peaks at age 13, and tapers off by age 15.
- Begins for females (on average) around age 9, peaks at age 11, and tapers off by age 13.

Influences on Height

- Genotype
- Steroid Use
- Asthma Drugs

Weight

- Weight changes during adolescence are great.
- Changes in weight are due to: increases in muscle and fat tissue, organ growth, and skeletal maturation.
- Over reliance on weight/height curves is unwise, weight reflects a combination of developmental events.

Heart and Lungs

- The heart increases in size by about one half and almost doubles in weight during adolescence.
- There is a tendency for heart rate to lower throughout the entire growth period (although heart rate is related to overall body size).

Heart and Lungs

- Growth of the lungs parallels heart growth during this period.
- Respiration rates decrease throughout childhood and puberty for both males and females.
- Vital capacity increases more rapidly in males than females from age 12 onwards

Differences

- Physical differences between males and females are just....differences.
- Fundamental genetic differences between males and females are established at conception.

Differences

- These differences are heightened during the period of adolescence.
- There exist significant overlaps in those differences in a population.
- The only way males and females are truly unique is in reproductive functions.

Reproductive Maturity

- The integration of growth and maturation is supported by a continuous interaction of genes, hormones, nutrients, and environmental factors

Endocrine Glands

- "Glands of internal secretion"
- Secrete chemical substances (hormones) directly into the blood stream.

Actions of Hormones

- *Morphogenesis* (regulate the physical growth and maturation of the individual)
- *Integration* (part of complex mechanisms that integrate the activities of the body as a whole in response to internal/external stimuli)
- *Maintenance* (act to maintain the internal environment of the body and makeup of nutrients)

Hormones and their Functions

HORMONE	FUNCTIONS
Testosterone	Enlargement of penis, testes and prostrate; growth and coarseness of pubic, facial and axillary ha ir; voice change; development of sebaceous and sweat glands; increase in linear growth; and skeletal muscle hypertrophy.
Estrogen	Breast development, uterine growth, body fat accumulation and bone maturation.

Puberty

- Onset of puberty is generally termed pubescence.
- During pubescence, secondary sex characteristics begin to appear,
- Sex organs change, and the preadolescent growth spurt begins.
- The period of time culminates with reproductive maturity.

Puberty

- For females, the culminating event is the first menstrual flow (Menarche)
- Females (average onset: age 9, early <8, late >13, secular changes)

Puberty

- For males, the culminating event is less distinct, it is marked by the first ejaculation (the sudden discharge of semen)
- Males (average onset: age 11, early <9, late >14, secular changes?)
- These highlights of puberty, however, do not indicate reproductive maturity.

- Pace (earlier onset, but same duration)
- What triggers gonadotropic hormones?
  - Genotype
  - Stress
  - Diet & nutrition
  - Exercise & percent body fat
  - Chronic illness & disease
  - Environmental toxins