

Adolescence  
by Ian McMahan

Chapter 3  
Puberty and Physical  
Development

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Hormones, Puberty, And  
Growth

- Endocrine glands produce hormones that control growth
- The hypothalamus controls the endocrine system
- Endocrine system includes pituitary, gonads
- Gonads are ovaries (females) and testes (males)
- Gonads produce sex hormones: estrogens, androgens

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The HPG Axis

- Feedback loop involving hypothalamus, pituitary, gonads
- Hypothalamus monitors levels of sex hormones
- When levels too low, hypothalamus signals pituitary
- Pituitary signals gonads: produce more hormones
- At puberty, set point for hormones rises
- Increased hormones initiate physical, sexual development

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## Physical Development During Adolescence

- Adolescent growth spurt—rapid changes
- Girls start growth spurt two years earlier
- Spurt starts at 10 (girls), 12 (boys)
- Body parts develop at different rates
- Height, weight, muscles, fat, body proportions change
- Spurt ends at 16 (girls), 18 (boys)

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## Sexual Maturation During Adolescence

- Reproductive organs mature
- Ovaries (girls) produce egg cells or ova
- Testes (boys) produce sperm cells
- Genitals (penis, vagina) become more adult-like
- Secondary characteristics—breasts, pubic hair
- Tanner stages describe course of development

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## Menarche And The Secular Trend

- Menarche: girl's first menstrual period
- Menarche comes late in puberty
- In US, age of menarche 12-13 years
- Secular trend: age declined in recent decades
- Menarche affected by nutrition, physical exertion
- Menarche comes later in poorer countries

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## How Girls Respond To Puberty

- Leaving childhood brings pride and stress
- Breast development noticed by others
- Some girls not prepared for menarche
- Early-maturing girls more anxious and depressed
- Early-maturing girls draw attention from older boys

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## How Boys Respond To Puberty

- First emission of sperm early in puberty
- “Wet dreams” and masturbation
- Self-consciousness about penis size and growth
- Early-maturing boys seen as more mature
- Early-maturing boys more popular with peers

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## How Parents Respond To Puberty

- Parents must adapt to adolescent changes
- Teens demand more input, fewer restrictions
- Parent-child conflict eases across adolescence
- Gender intensification—push toward typical roles
- Distancing hypothesis—less parent-child intimacy

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### How Cultures Respond To Puberty

- Puberty rites recognize transition to adulthood
- “Sweet sixteen,” quinceañero, Bas/Bar Mitzvah
- Traditional rites for girls at menarche
- Rites for boys harsher, more painful

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### Brain Development During Adolescence

- Brain almost adult size by adolescence
- Synaptic pruning: less-used circuits eliminated
- Myelination leads to greater efficiency
- Decision-making areas of cortex mature slowly
- “Pleasure centers” mature more quickly

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### How Puberty Affects Mood

- Young adolescents more emotional than children
- Emotional swings reduced later in adolescence
- Hormones and mood affect each other
- More social stressors during adolescence

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## Effects Of Puberty On Body Image

- Physical changes focus attention on body
- Cultural standards linked to dissatisfaction
- Unrealistic media images of ideal adult bodies
- Media effects different for boys and girls
- Barbie and GI Joe

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## Health Issues During Adolescence

- Changing sleep needs with adolescence
- Most American teens are sleep-deprived
- Teens need more calories than children or adults
- Fast-food habits linked to being overweight
- Physical activity drops off across adolescence
- Regular exercise has physical and psychological benefits

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