



Physical Development

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Adolescence

Adolescents experience a growth spurt, which involves rapid growth of bones and muscles.

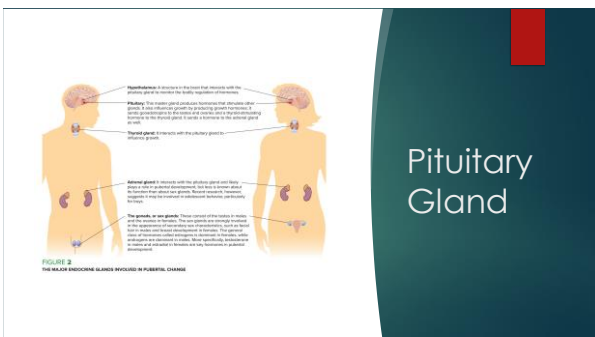
Changes in the stature and dimensions of the body

Sexual maturation

This begins in girls around the ages of 9-12 and in boys around the ages of 11-14.

Timing and psychological effect

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Pituitary Gland

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Puberty

Oilier skin and some acne.

Increased sweating especially under arms, growth of pubic and underarm hair, and facial and chest hair in boys.

Changes in body proportions.

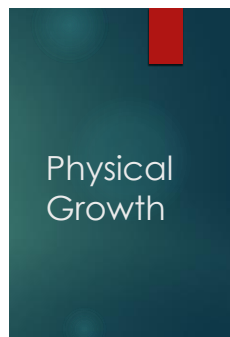
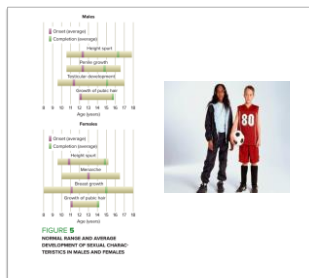
Masturbation and fantasies about sexual intimacy.

Boys, enlargement of testicles, erections, first ejaculation, wet dreams, and deepening voice.

Girls, breast budding, increased vaginal lubrication and the beginning of the menstrual cycle.

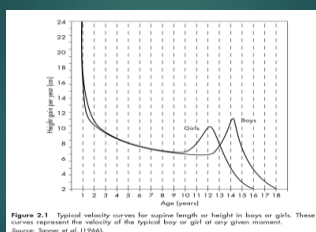


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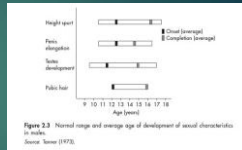
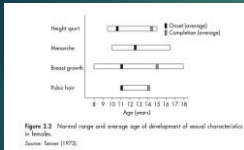
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Growth Spurt



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Growth Spurt



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Physical Growth

Pre-pubertal growth – trunk is the aspect that grows the earliest/quickest, followed by arms/legs, then hands and feet.

Adolescence growth spurt – opposite directions – hands and feet (quickest to fully develop, followed by arms/legs and then trunk)

Tanner (1990) – Rapid increase in shoe size is a telling sign that a child is about to enter puberty.

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Physical Growth

Gender Differences:

Very large sex difference in fine motor skills during adolescence.

Tanner (1990) – Girls achieve full wrist development by their mid teens.

Boys later

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Physical Growth –

Muscle Tissue

Both males and females – muscle fibres become thicker and denser.

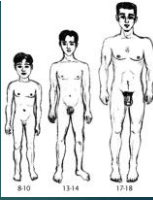
Increases in strength – although greater in boys. Linked to testosterone secretion.

Adult men – 40% of total body mass is muscle, 24% in adult women (Boyd & Bee, 2009).

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Sex Characteristics

- Most obvious changes of puberty are associated with sexual maturity.
- Primary sex characteristics.
 - Boys – Growth in testes and penis.
 - Girls – Growth of ovaries, uterus and vagina.
- Secondary sex characteristics.
 - Male – Voice change, facial hair development.
 - Females – Breast development.
 - Both – Body Hair.



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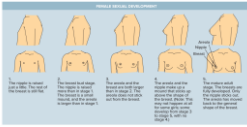
Menarche

The onset of menstruation

95% of girls experience it between 11-15
12 ½ - 13 ½ is the norm (Malina, 1990).
More recent studies have suggest 99% experience between 9-12 (Adelman & Eiten, 2002).

Linked to nutrition
Also related to social class (more affluent sooner)

Influenced by environmental stress
Girls in divorced families or high conflict families start sooner



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The Secular Trend (Roche, 1979)

Puberty is starting sooner:

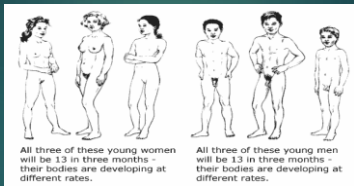
- In 1900 average age of menarche was 15
- In 2000 average age of menarche is 12
- Likely to be due to higher standards of living, though the age of onset can vary widely suggesting perhaps a genetic element.

Recent research showing same trends in boys, but not as well documented

- Harder to establish due to lack of clear cut marker like first menstruation
- More of a medical or parental judgment call

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Timing of Puberty



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Timing of Puberty

Each teenager has an internal model (mental image) of "normal" or "right" timing for puberty.

Discrepancies between an adolescents' expectation and what happens has a major bearing on the psychological effect of puberty.

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Psychological
Effects of
Puberty

Past association with pain, mess and anxiety
Now seen as more positive
Menarche associated with increase in self-esteem, status and self-awareness
Menarche usually quickly shared with significant others

First ejaculation roughly equivalent to menarche
A more private event, rarely shared with parents or friends
Likely due to uncertainty about their emerging sexuality

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Factors that
may influence
the impact and
behavioural
consequences
of pubertal
timing

Parental style

A number of studies (e.g., Costello et al. 2007) stated that early maturing boys and girls were more likely to engage in under-age sexual activity and substance abuse if they have permissive parents.

Early developing boys and girls of authoritative parents (those high in rules AND love) least likely to engage in such risk-taking behaviours.

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The Adolescent Brain



- Recent studies reveal that the high point of the volume of gray matter occurs during early adolescence.
- In terms of the volume of gray matter seen in brain images, the brain does not begin to resemble that of an adult until the early 20s.
- Synaptic pruning
- More connections develop between the prefrontal cortex and other parts of the brain.
- Significant changes in the limbic system (emotion area).
- Significant development in the motor cortex.

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Challenges
to Brain
Development

Chronic stress, abuse, and neglect sensitize neural pathways and over-develop within the limbic system, particularly those related to anxiety and fear. Evidence suggests that this may lead to under-development in the frontal lobe, thus affecting future ability to plan, organise, etc.

There is an argument that chronic stress from fear, violence, abuse, hunger, and pain has the effect of focusing the brain's resources on survival leaving insufficient capacity for learning social and cognitive skills (Shore, 1997).

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Implications
for
Education

If you were to develop a workshop on puberty, what would you include?

What rituals (or rites of passage) would be appropriate to support young people's pubertal changes?

How would you initiate a conversation with an adolescent about potentials scenarios to manage their sexuality?

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