

# adolescent insight

*Learn, share & grow.*



## ADOLESCENT GROWTH 101

Welcome parent.....

Growing is typically all that children want to do, grow taller, be stronger, faster and more like an adult.

As parents, understanding what is happening in these years of BIG growth changes, empowers you as a parent to better support your child. Welcome to the journey of understanding adolescence.

Adolescent years are a UNIQUE time of life; this newsletter will outline some of the changes during these formative years and how to use this knowledge to better support your teen.

Adolescents is the second time in life where the human body will undergo rapid vertical growth and HUGE brain changes with a dramatic increase in hormone

Firstly, to outline useful language around this time of life:

Adolescents is defined by the 'World Health Organisation' as a phase of ***enormous physical and psychological changes, spanning between the years of 10-19 years of age.*** "Youth" is defined as 15-24-year age group and these two age groups combined form "young people".

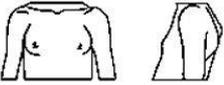
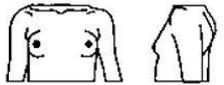
During the "adolescence" phase of life an individual develops across many fronts, with the appearance of secondary sex characteristics (puberty), to sexual and reproductive maturity, the development of mental processes, adult identity and the transition from total socio-economic and emotional dependence to relative independence. The body also undergoes enormous growth, and maturation of the musculoskeletal system, and maturation and development continues into mid 20's, however, adolescence is a time of the most rapid phase of change. These growth

The start of puberty symbolizes the maturation of the hypothalamic-pituitary-adrenal axis and gonadal axis (if we are being technical) and puberty can be assessed using the Tanner Stages of Puberty.

Developed in the 1970's by Dr Tanner, there are 5 stages of maturation, based on the growth of secondary sex characteristics. Whilst as a physiotherapist we do not objectively assess this, and as a parent ***you do not need to assess*** this either, just having the knowledge of these 5 stages as a reference point for adolescents builds a greater understanding of the skeletal and movement changes at play.

Different Tanner Stages have been correlated with certain changes to the physiology of the body. The injuries we see and the musculoskeletal changes that occur during these phases are unique to each phase of development. Knowing these phases as a parent, you are better equipped to understand the growth elements of your adolescent and educate them on their bodies during this unique time of life.

## Tanner Stages of Puberty

Tanner Stage	Male genital appearance	Male genital description	Female pubic hair appearance	Pubic hair description	Breast appearance	Breast description
1		Testicular volume <3ml		No pubic hair		Elevation of papilla only.
2		Testicular volume <3ml, change in texture to scrotal skin.		Sparse growth mainly along the labia/base of penis.		Breast bud stage.
3		Increase in size of penis with further testicular enlargement		Darker, coarser, more curled hair.		Enlargement of breast and areola.
4		Further enlargement of penis and testicles with development of glans penis.		Adult type hair over a smaller area.		Projection of the areola and papilla
5		Adult size and shape.		Spread to the medial surface of the thighs		Recession of the areola to contour of the breast, projection of papilla only.

### Tips:

1. Track their height growth every 3 months
2. Girls should start their menstrual flow within 3 years of starting Tanner Stage 2.
3. Teach and help girls to track their menstrual cycles.

# BRAIN

Brain development is HUGE, during this phase of life they are developing a sense of **independence** and throughout this process they undergo a period of intense identification with their peers. Acceptance and acknowledgement of this is important, they are seeking to understand themselves in reference to their peers. This is a fundamentally important part of adolescence, the brain is moving them towards an independent human being.

**In injury:** Linking adolescents with others who are experiencing the same injury or assisting them to feel **connected to their peers** despite a shift in ability to participate in sport at times of injury is important.

As their parent, seek to understand what this injury means to them in the form of their **identity** and acknowledge that their sport may be part of their 'who I am'. Helping them map out a pathway back to their sport maybe helpful OR supporting them in finding another sport/group OR directing them to other appropriate psychological services may also be helpful in their journey.

TIP

Assisting your teen with **setting goals** that are meaningful to them helps them to develop this skill, a teen brain is learning how to forward plan and execute in the now for a future goal, so your guidance will help them practice this new skill. This may be helping them map out their pathway of rehabilitation back from injury (with a health professionals guidance) or a physical task like running in the 'City to Surf' or advocating for a particular interest group.

Many parents say "You need to be responsible and do your rehab exercises yourself". And whilst this would be ideal, it is often unrealistic expectation for their level of brain development. Helping them plan a time that works with the family and then start the exercise program on the day with them is **far more helpful** over **parental nagging**.

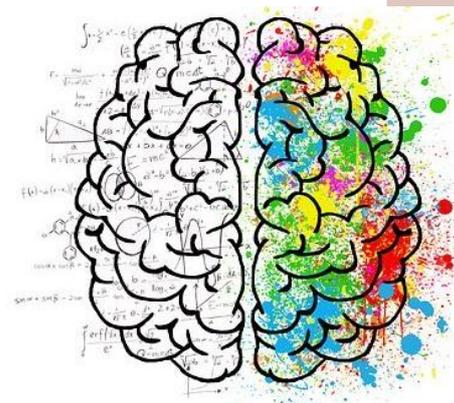
TIP

When pain or disability extends past the expected timeframes for recovery, understand that other **psychosocial factors** may be complicating their return to activity and injury resolution.

When assessing adolescents, health practitioners should pay close attention to **body language** and remember teens typically have a heightened sense of social anxiety to personal scrutiny. Their **modesty should be protected** and be guided by them. The brain of an adolescent, feels more vulnerable to their physical appearance.

References:

- Check out Sarah-Jane Blakemore TedTalks
- The Brain, The Story of You, David Eadleman, Patheon Books, USA, 2015
- The Teen Years Explained – Johns Hopkins University



# MUSCULOSKELETAL SYSTEM

Thinking back to Tanner Stages of puberty, lets take a shallow dive and link these into some of their bone growth and movement changes.....

Feet first..... the growth of feet happens first, typically in *Tanner Stage 2*, you may notice that their feet look completely out of proportion to their body suddenly. This is also a time when 'Sever's Disease' and other overuse foot injuries become prevalent.

Next to grow, typically in *Tanner Stage 3 for girls and boys*, is growth of the long bones. Towards the end of Tanner Stage 3 boys will reach their fastest phase of growth and this will happen to girls in early Stage 3.

In these middle years of adolescents, prevalence of long bone fractures (bone break) rises as bones are busy gaining length but are not comparatively as dense. This also a time where muscles can pull off from the bone (avulsion fracture). So parents, be wary if an injury seems 'worse than just a sprain'. See your local family doctor. If your child dislocates any joint, it **should have an X-Ray**.

***Movement also changes as we grow through adolescents.***

Girls in Tanner Stage 3, show a considerable **loss in pelvic stability**, they may also experience an increase in knee laxity.

Just to add to poor knee control in adolescent girls, they develop a relative lack in hamstring strength, girls become quadricep dominant.

When considering the factors of; loss of pelvic stability, reduction in hamstring strength, poor knee control in landing and increased knee laxity there is no wonder why we see so many knee complaints and knee injuries in adolescent females. ***Strength and movement skills are essential for girls playing change of direction sport.***

On the plus side of puberty, it is a **unique window to load the bones** and this can influence bone health positively for life. Loading bones with jumping/change of direction sports 3 x per week is recommended.

Lastly in Tanner stage 4, the **spine and pelvis** hit their growth phase, and in males the pelvis may continue to have open growth plates until mid 20's. A maturing skeleton is still at risk with high loads through the pelvis as this phase of development even at this age.

It is also worth noting here the differences between individuals age and their Stage of Puberty. There are vast differences in strength, weight and speed, particularly in the male population. Keeping this in mind with contact sports is important, and talking this through with your teen as they grow is beneficial. Strength training during puberty is safe and brings about extra strength and power gains. However, for boys wanting to 'get big muscles' this **happens AFTER** they finish their growth.

## Tips:

1. Throughout **periods of rapid growth**, the bones and areas of the body are more **susceptible to injury and overload**.
2. Tracking loads as parents is vital (you can download the "Monitoring Load in Teens for help on this. You are at the center of knowing all their activities.
3. Tracking their growth in height is helpful.
4. Nutrition is essential, a growing body needs more food intake, a growing body that is training/playing sport needs more again. Not having enough nutrition sets them up for injury.



A message from Chloe.

Adolescent years are an amazing time of growth and development. The body is undergoing so much change and together with the brain, it is striving towards independence.

Teens are looking for acceptance of who they are, aren't we all, however they can be especially susceptible to loved ones criticisms, so broaching subjects around puberty and maturation with compassion will be helpful in communication.

View puberty as a journey, a lot is changing in their body, a lot is changing in the way they view their world. Their compass is shifting from 'what my family thinks' to 'what do I think', and this is a change for everyone.

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Empowering parents with knowledge on adolescent growth, development and injuries is my passion. Providing parents with tips, tools and knowledge to be able to better support their teen through their growth and maintaining healthy developing teens is the 'why' behind the founding of Adolescent Insight.

Thank you for choosing Adolescent Insight to empower you with knowledge on your teen's growth and development.

All the best.

Chloe



To learn more about your teen's growth and development, you can continue your empowerment journey with Adolescent Insight.

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