



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

# Overcoming Hypotonia

*Maximising Gross Motor Potential*

*Tan Siang Yin*

*Principal Paediatric Physiotherapist*

*The Rehab Practice (Paediatric)*



# Contents



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

- ◆ Gross Motor Development
- ◆ Common Orthopaedic Conditions
- ◆ Practical







The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

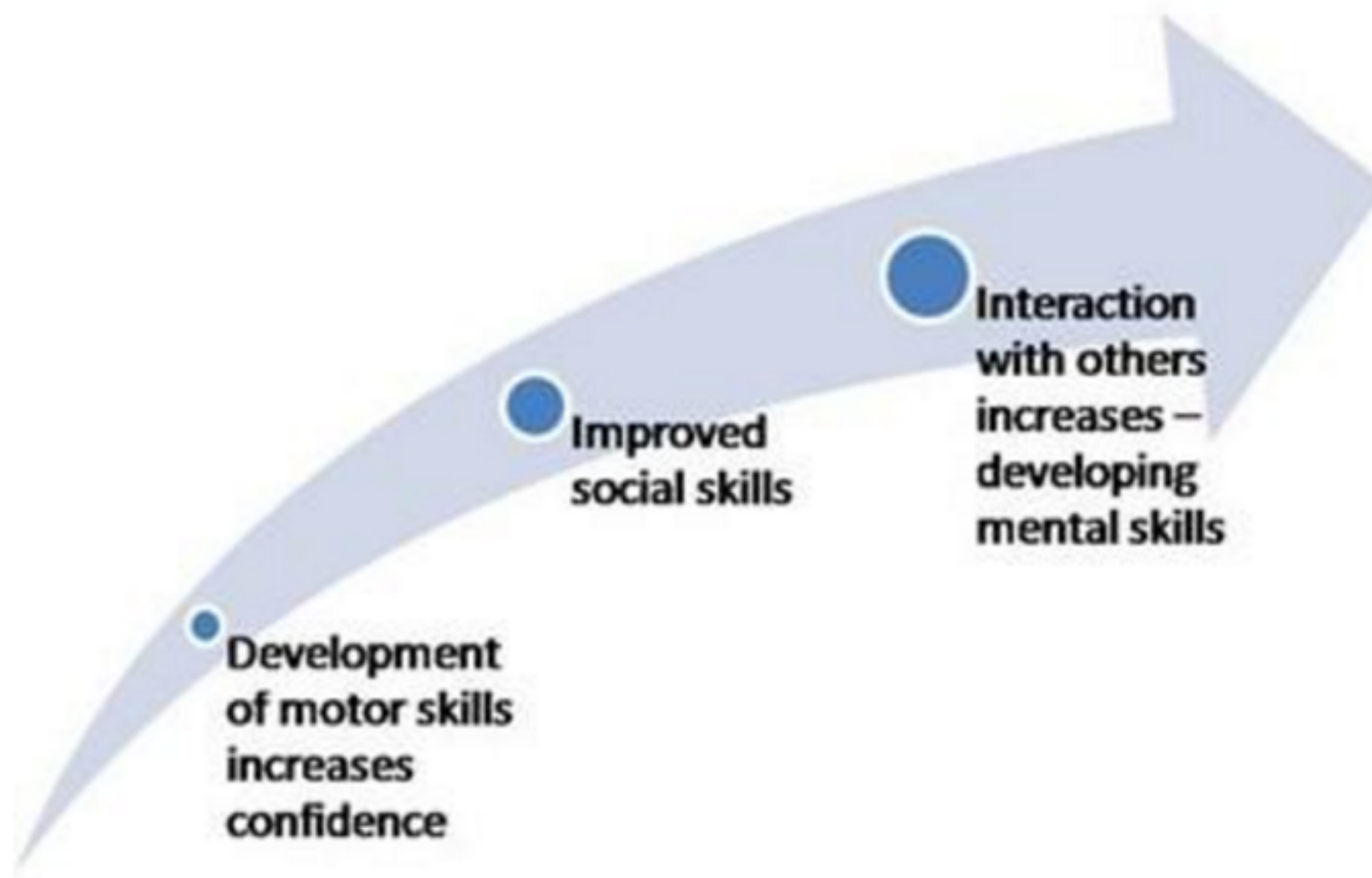
# Do Children With Down Syndrome Require Physiotherapy?





The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Gross Motor Milestones

|             | Down Syndrome |           | Normal  |           |
|-------------|---------------|-----------|---------|-----------|
|             | Average       | Age Range | Average | Age Range |
| Sits alone  | 11 mths       | 6-30 mths | 6mths   | 5-9mths   |
| Crawls      | 12 mths       | 8-22 mths | 9 mths  | 6-12mths  |
| Stands      | 20 mths       | 12-42mths | 11 mths | 8-17 mths |
| Walks alone | 24 mths       | 1-4 yrs   | 14      | 9-18 mths |



# Gross Motor Delay



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## ◆ Causes

- ◆ Ligamentous Laxity
- ◆ Hypotonia
- ◆ Delay development of postural reaction
- ◆ Heart defects



# Gross Motor Delay



The Rehab Practice  
Paediatric Physiotherapy

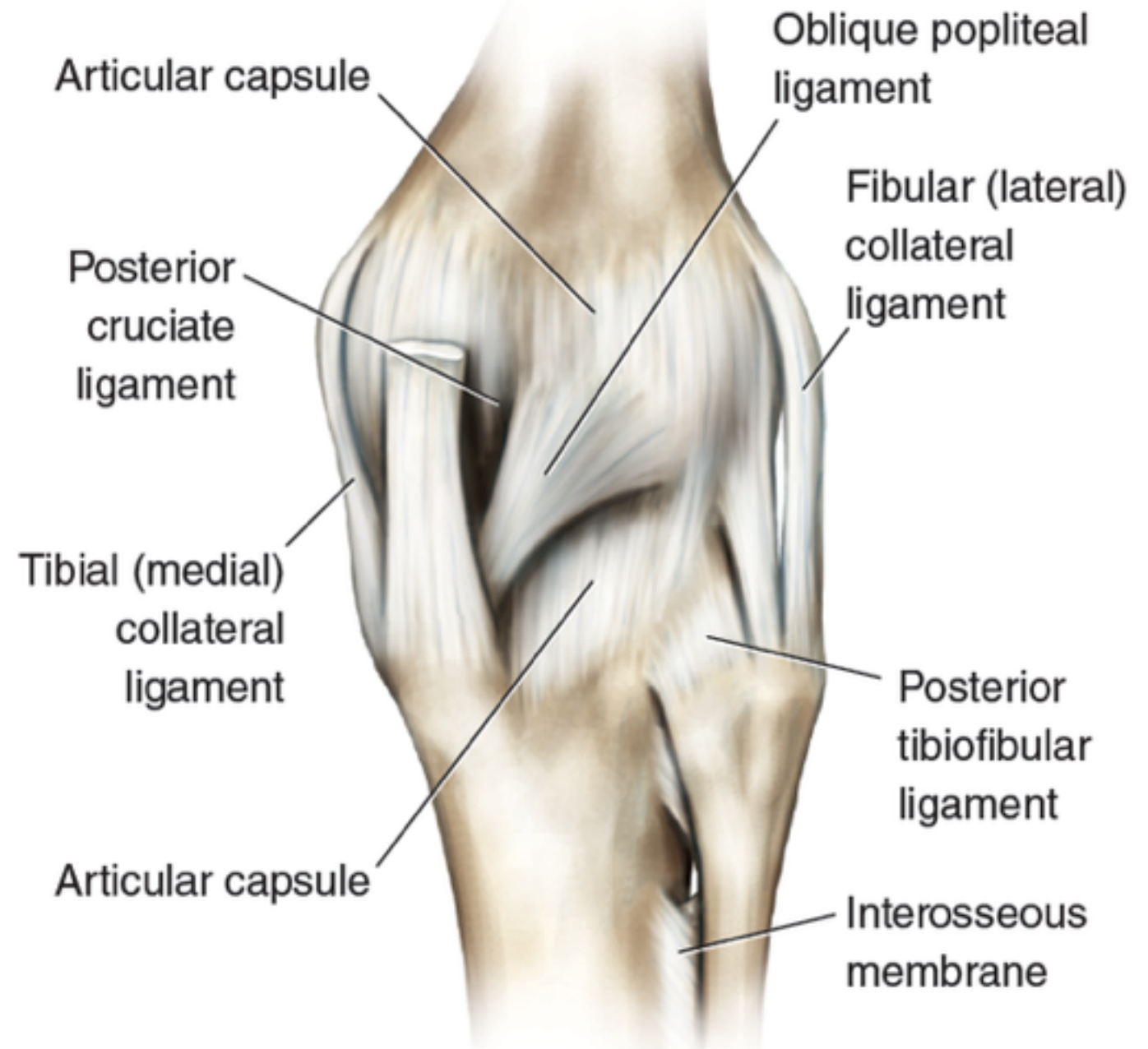
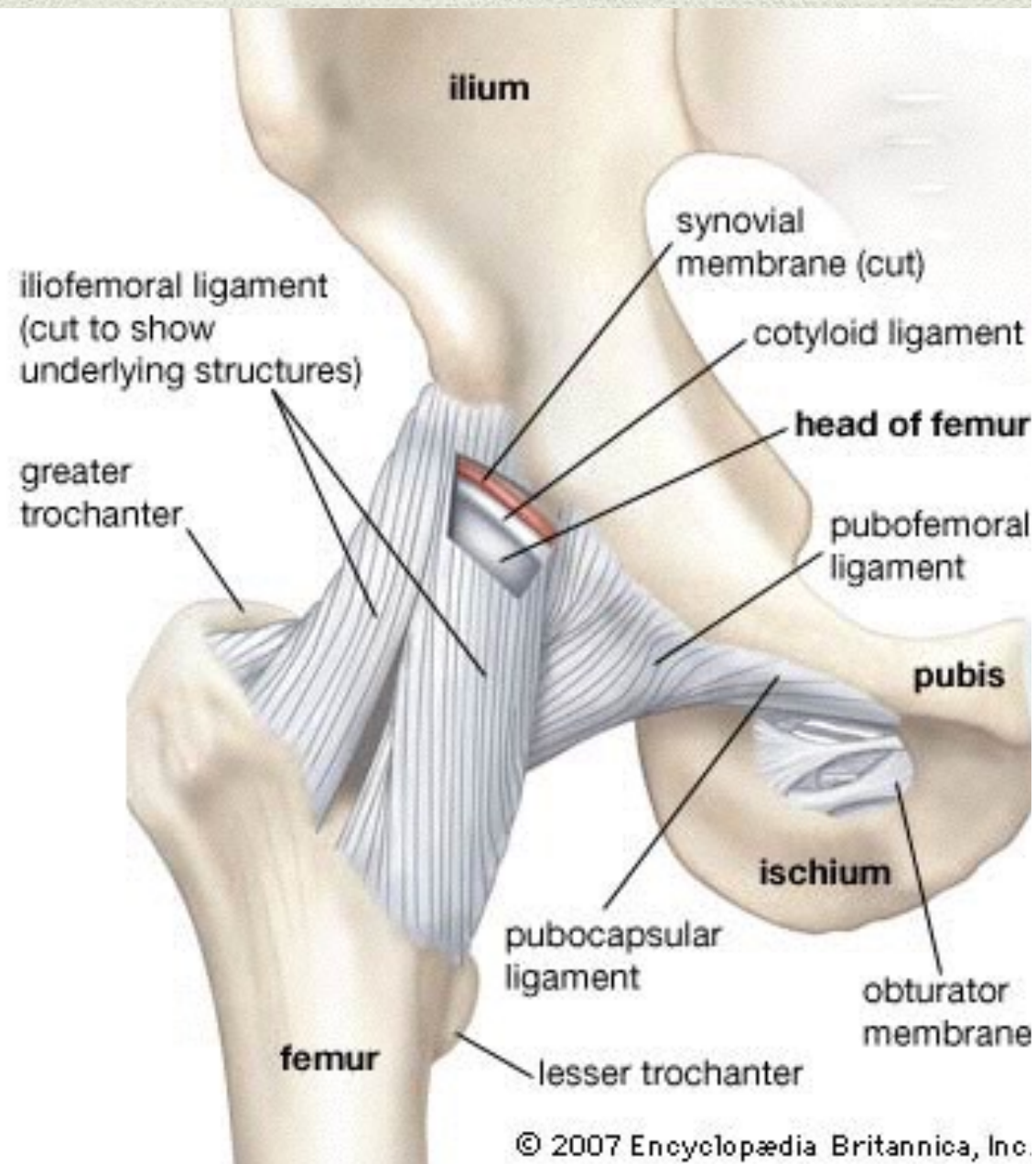
[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## ◆ Causes

- ◆ **Ligamentous Laxity**
- ◆ Hypotonia
- ◆ Delay development of postural reaction
- ◆ Heart defects



# Ligamentous Laxity





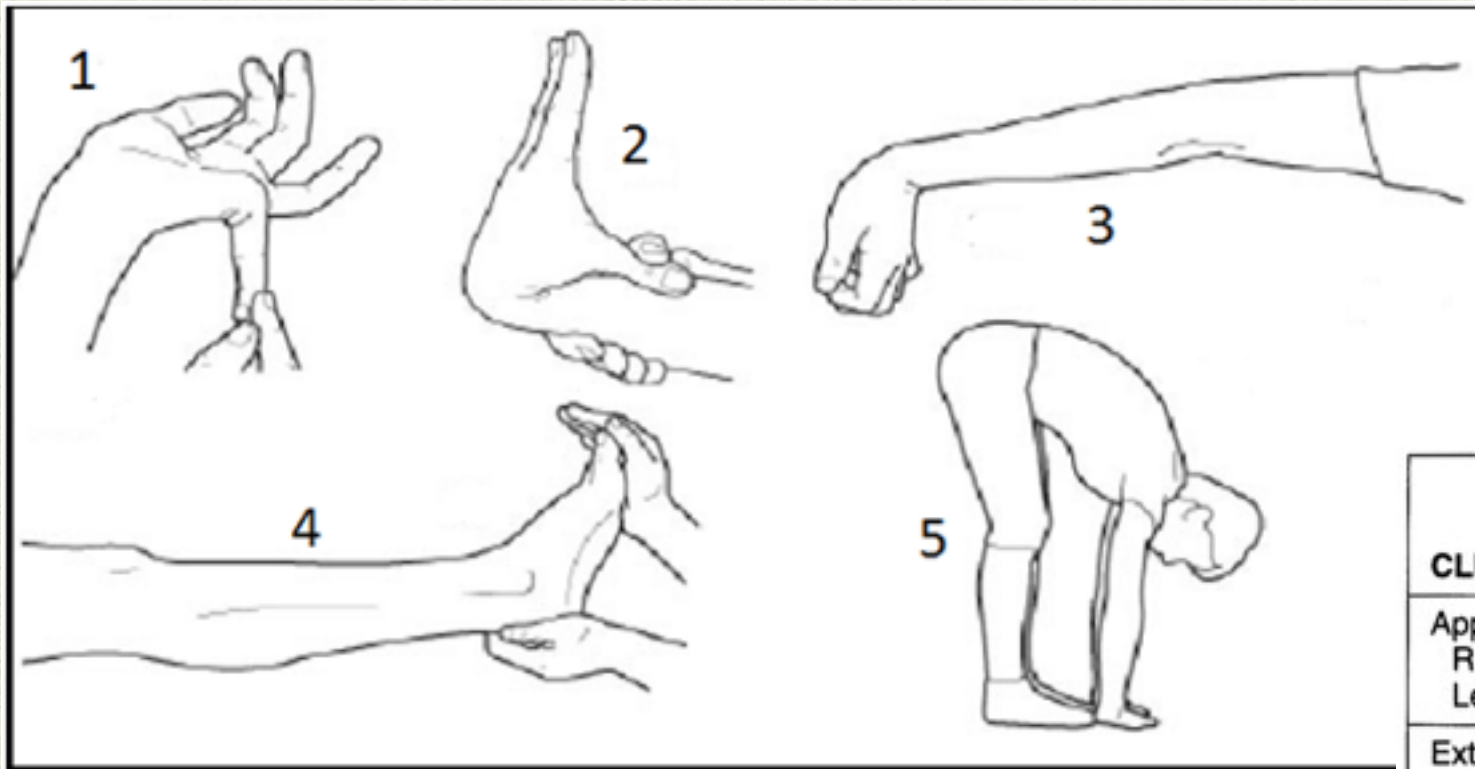
# Ligamentous Laxity



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## Beighton Hypermobility Score



| CLINICAL MANEUVER                                                | UNABLE TO PERFORM<br>(0 POINTS) | ABLE TO PERFORM<br>(1 POINT) |
|------------------------------------------------------------------|---------------------------------|------------------------------|
| Apposition of thumb to forearm                                   |                                 |                              |
| Right                                                            | 0                               | 1                            |
| Left                                                             | 0                               | 1                            |
| Extension of fifth finger beyond 90 degrees                      |                                 |                              |
| Right                                                            | 0                               | 1                            |
| Left                                                             | 0                               | 1                            |
| Extension of elbow beyond 10 degrees                             |                                 |                              |
| Right                                                            | 0                               | 1                            |
| Left                                                             | 0                               | 1                            |
| Extension of knee beyond 10 degrees                              |                                 |                              |
| Right                                                            | 0                               | 1                            |
| Left                                                             | 0                               | 1                            |
| Forward flexion of trunk, legs straight,<br>palms touching floor | 0                               | 1                            |
| <b>Total Beighton Score</b> (sum of points<br>for each maneuver) | 0 to 9 points                   |                              |



# Gross Motor Delay



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## ◆ Causes

- ◆ Ligamentous Laxity
- ◆ **Hypotonia**
- ◆ Delay development of postural reaction
- ◆ Heart defects



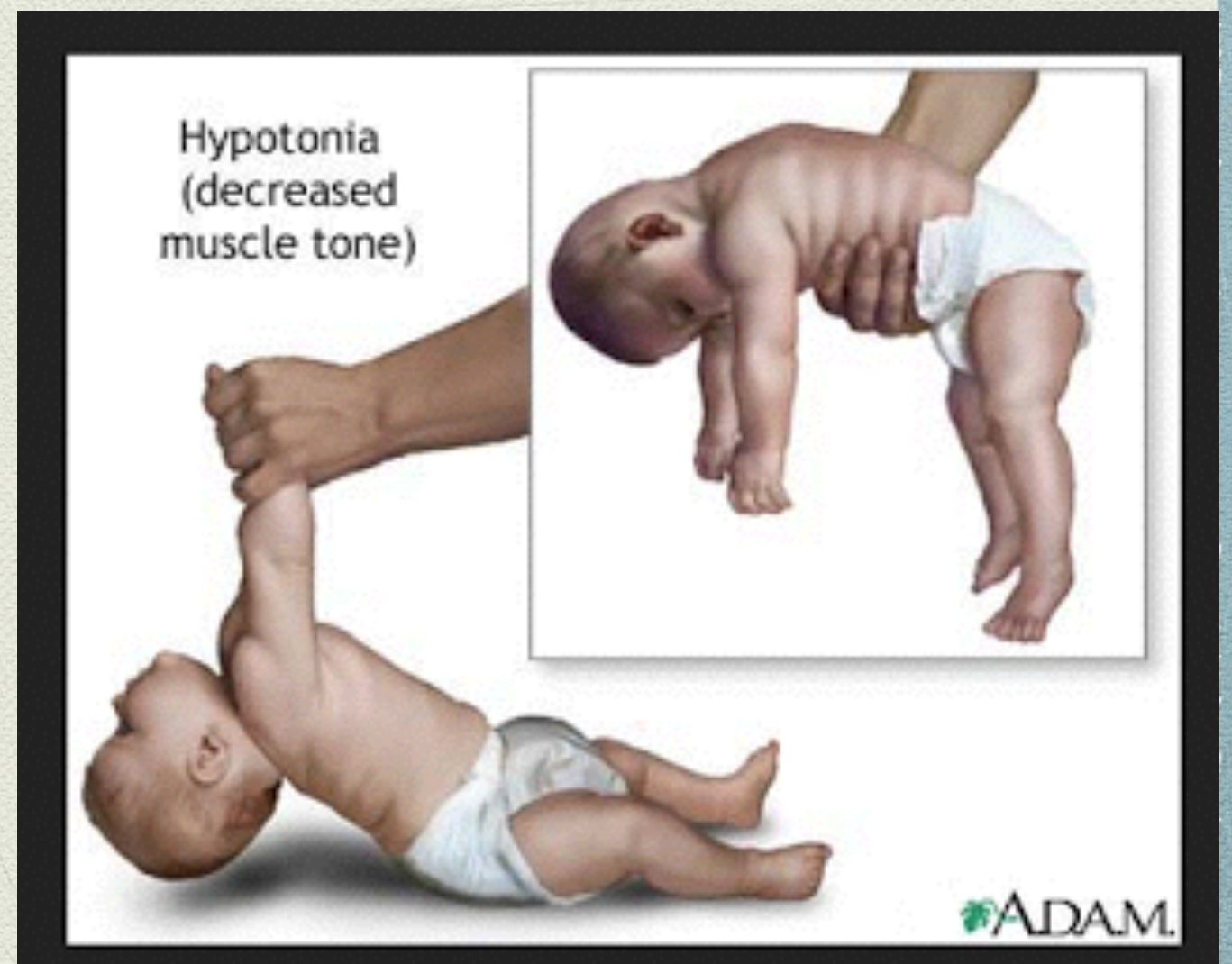
# Hypotonia



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

- ◆ Tone: amount of tension in muscle
- ◆ Hypotonia:
  - ◆ More effort required to move a joint







The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

# Hypotonia



# Ligamentous Laxity



# Musculoskeletal Problems

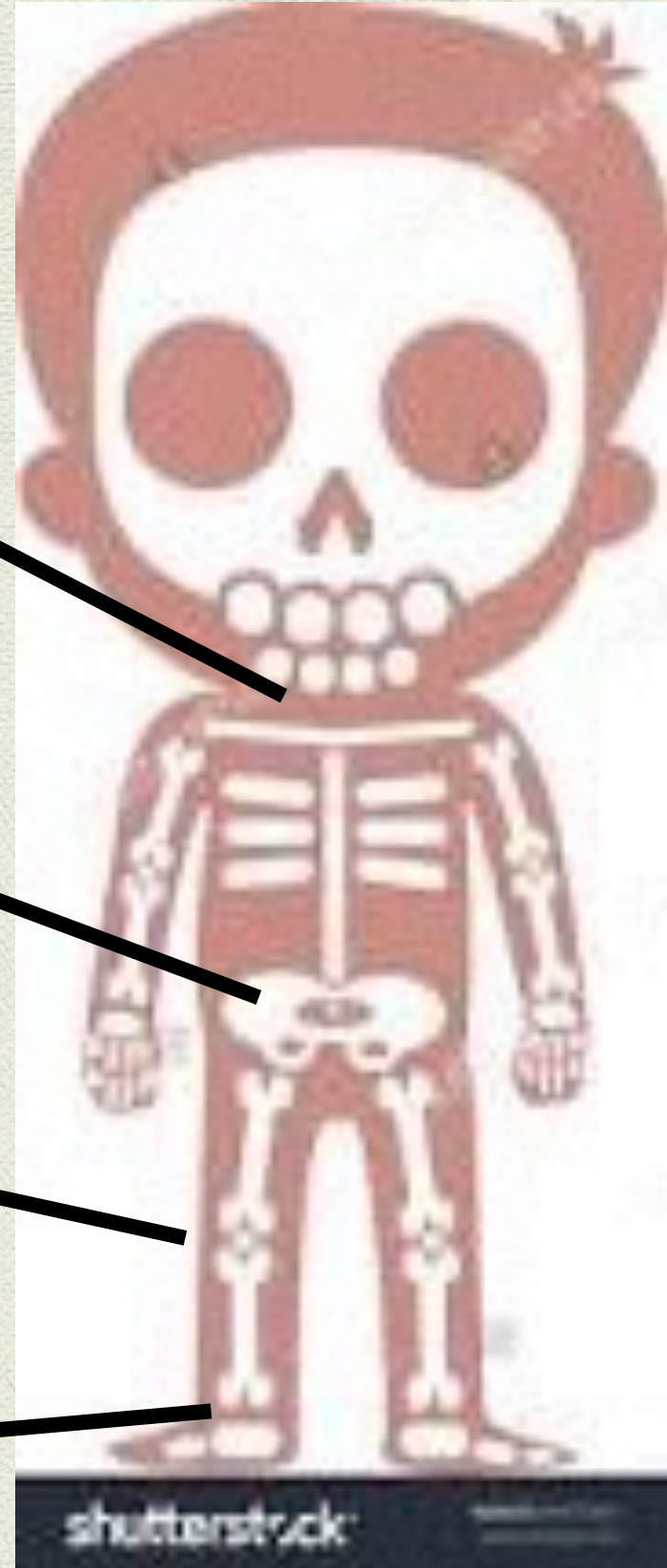


Spine

Hip

Knee

Feet



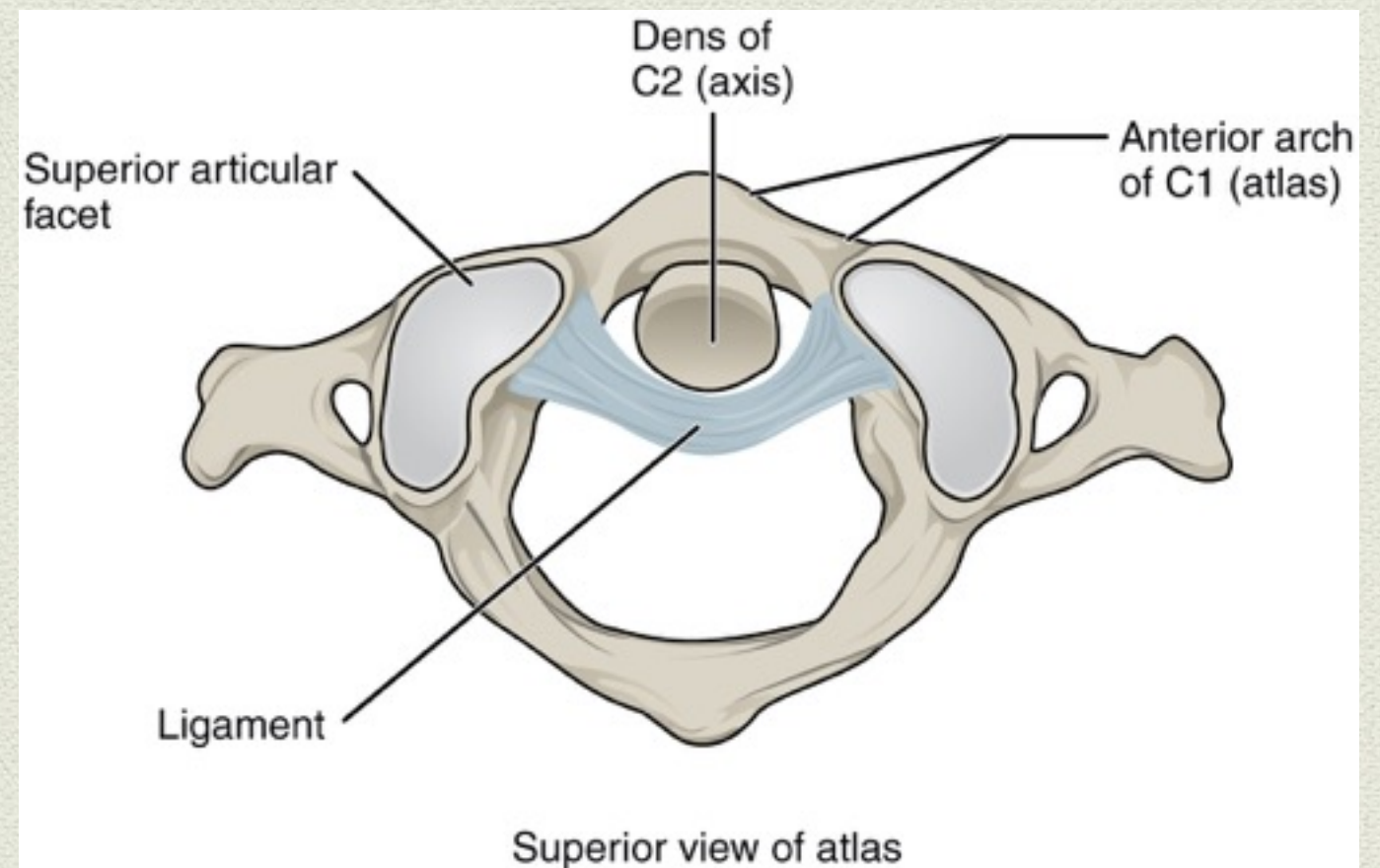
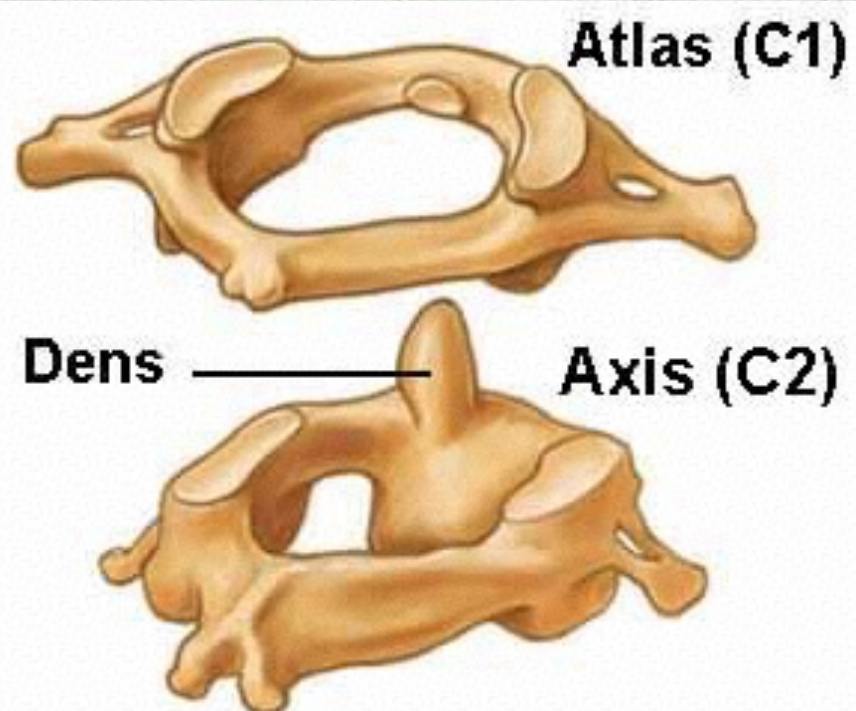
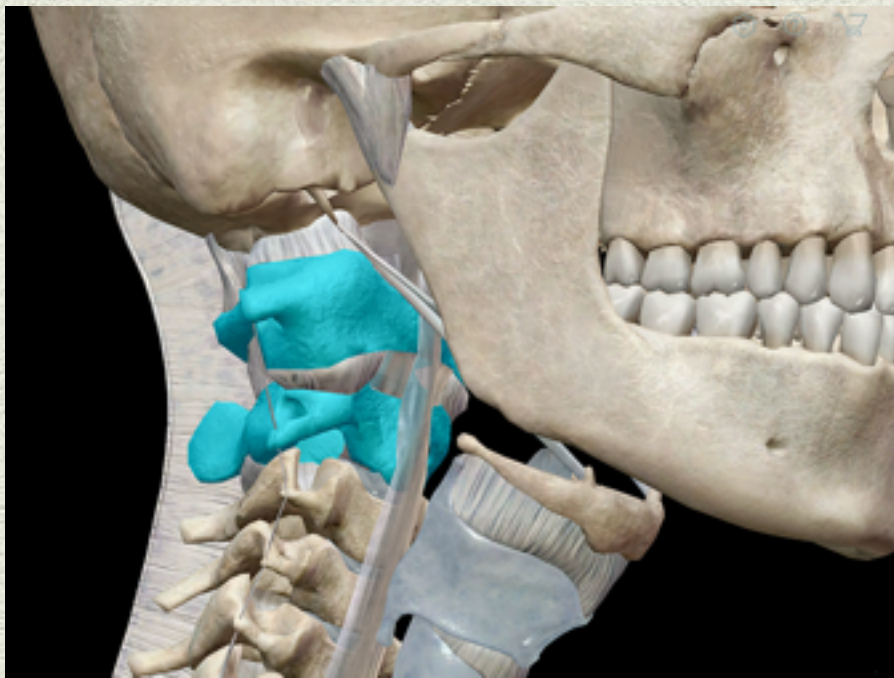


# Spine: C1 - C2



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# AAP Recommendation

American Academy  
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

Children are at increased risk of developing spine problems, and normal radiographs do not provide assurance that a child will not develop spine problems later.<sup>53,54</sup> For these reasons, routine radiologic evaluation of the cervical spine in asymptomatic children is not recommended. Current evidence does not support performing routine screening radiographs for assessment of potential atlantoaxial instability in asymptomatic children.<sup>55-64</sup>

- ◆ 10-30% incidence rate
- ◆ Neck x ray not effective in detecting abnormalities

**BUT**  
why take the risk



# Recommendation



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

- ◆ Xray in neck flexion / extension after 3yo

- ◆ Always on the look out

- ◆ significant neck pain

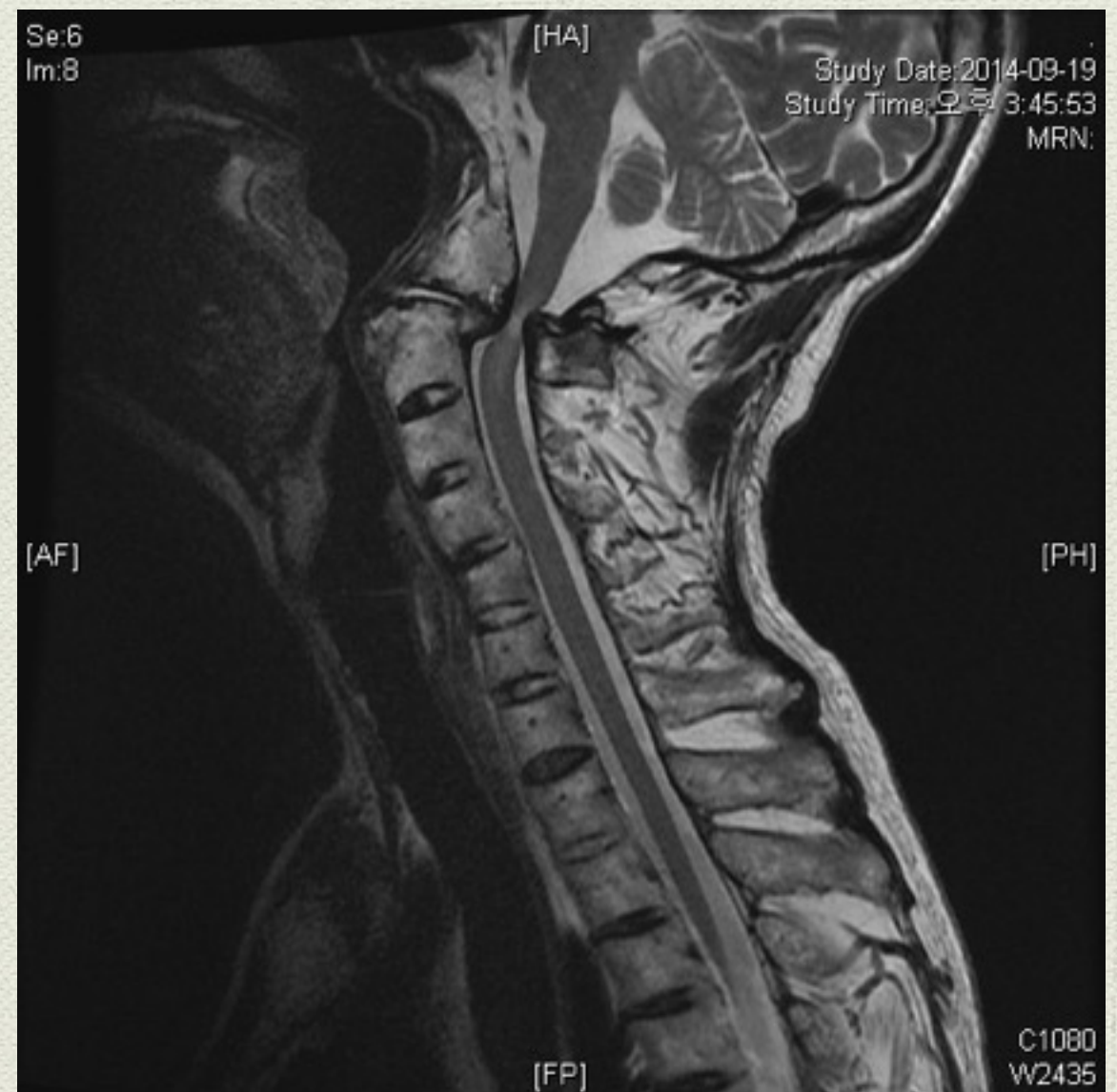
- ◆ radicular pain

- ◆ weakness / spasticity

- ◆ change in tone

- ◆ hyperreflexia

- ◆ bowel / bladder function





# Recommendations



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

- ◆ Avoid contact sports / gymnastic
- ◆ Avoid trampoline

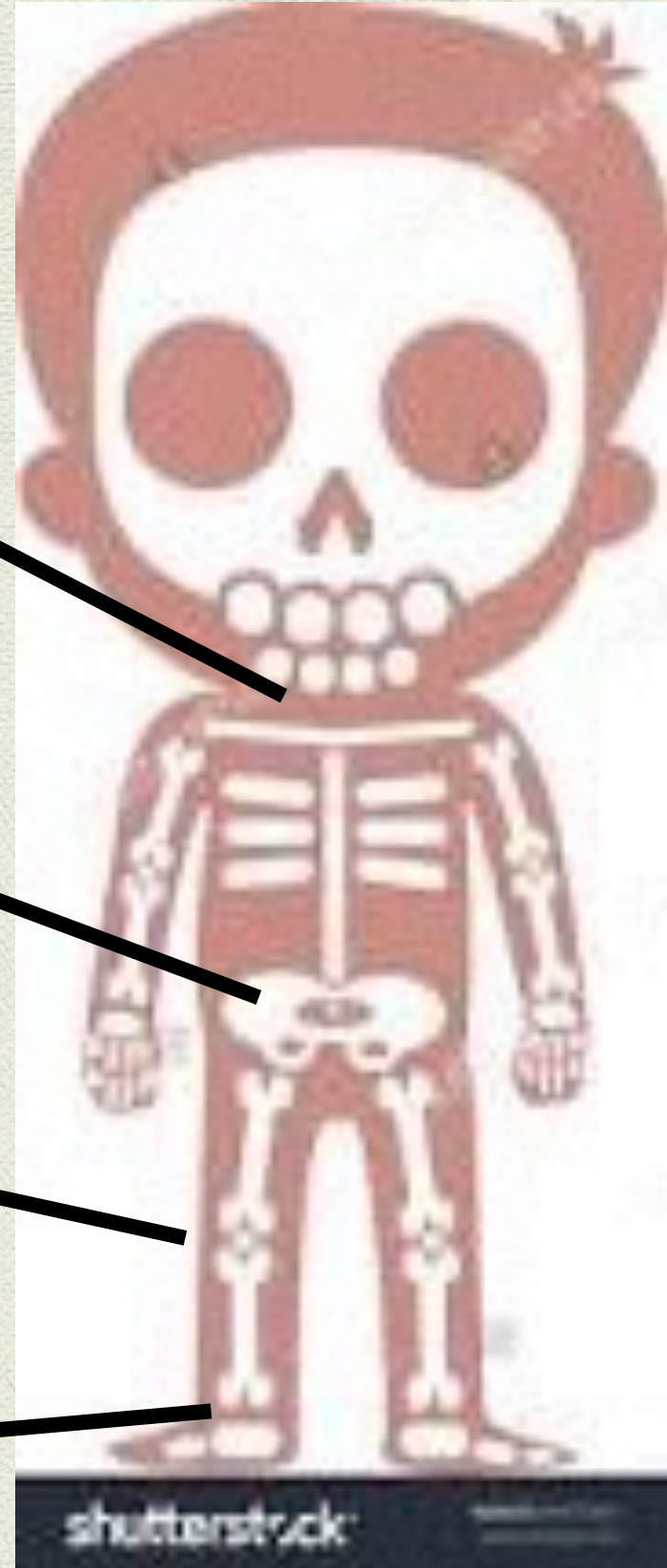


Spine

Hip

Knee

Feet



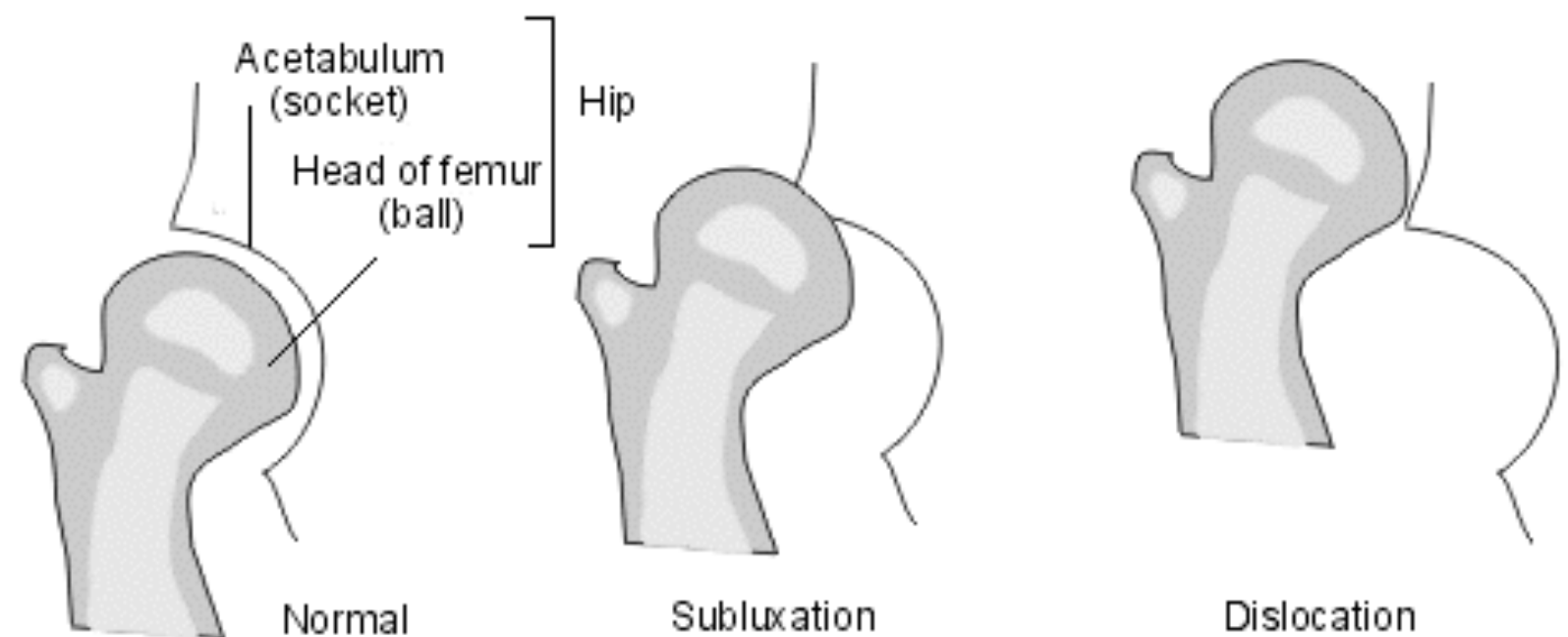
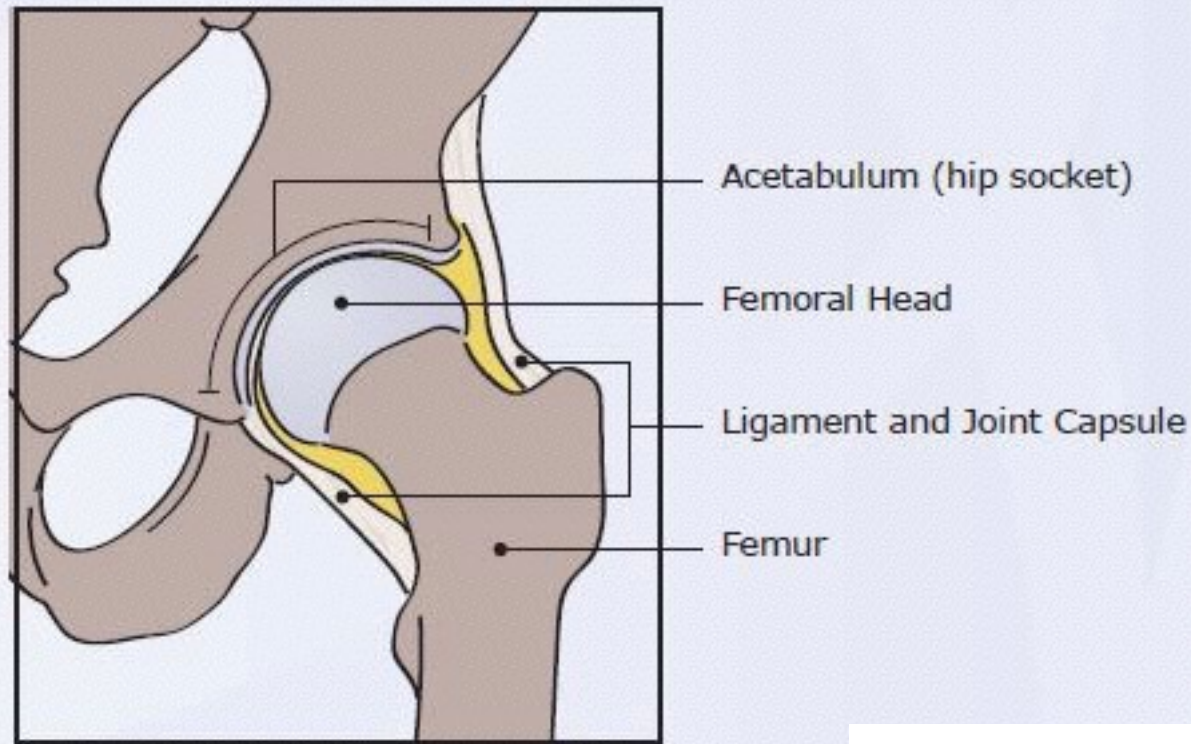


# Hip Dysplasia



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Position to Avoid



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)



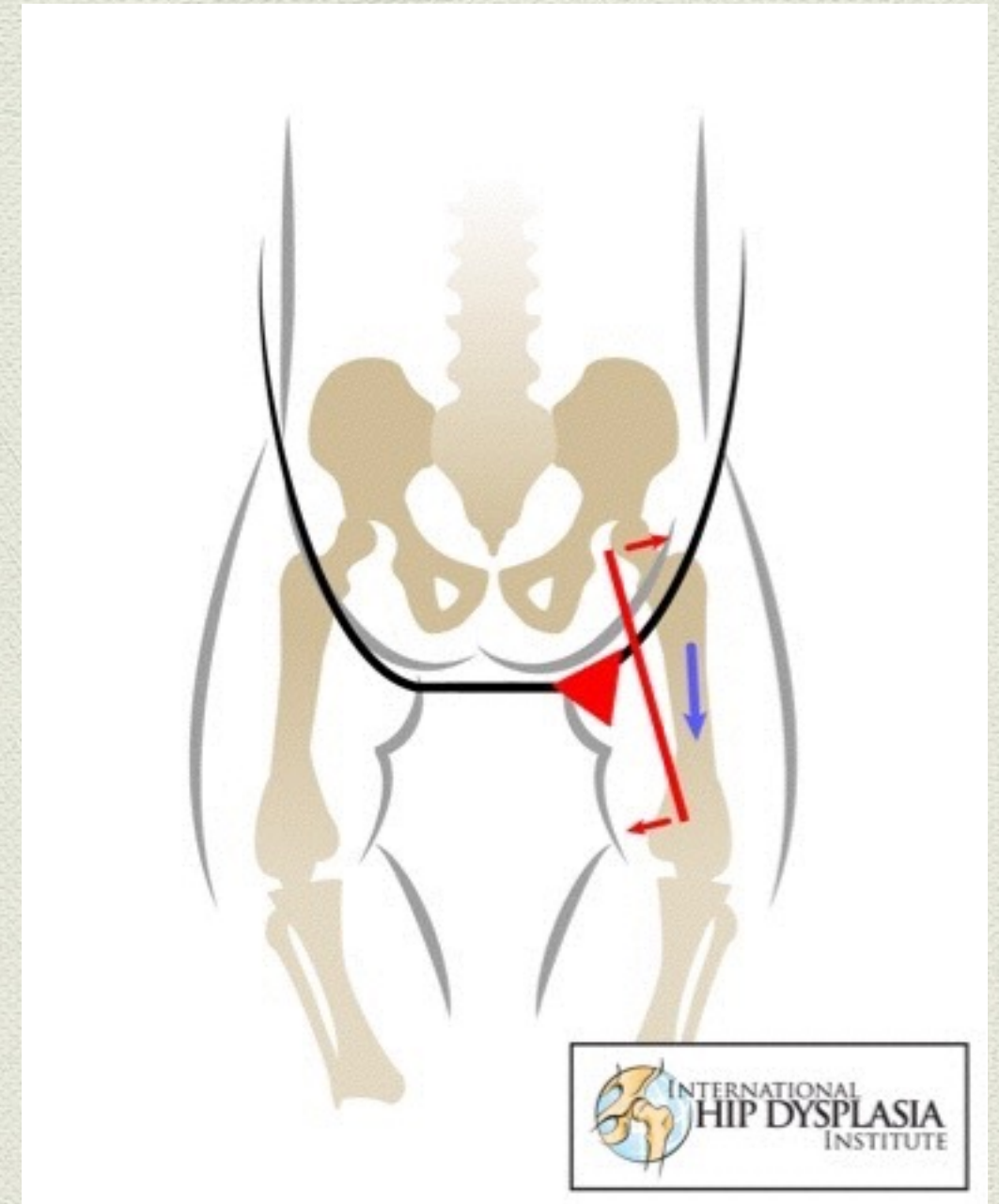


# Slings & Carriers



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)



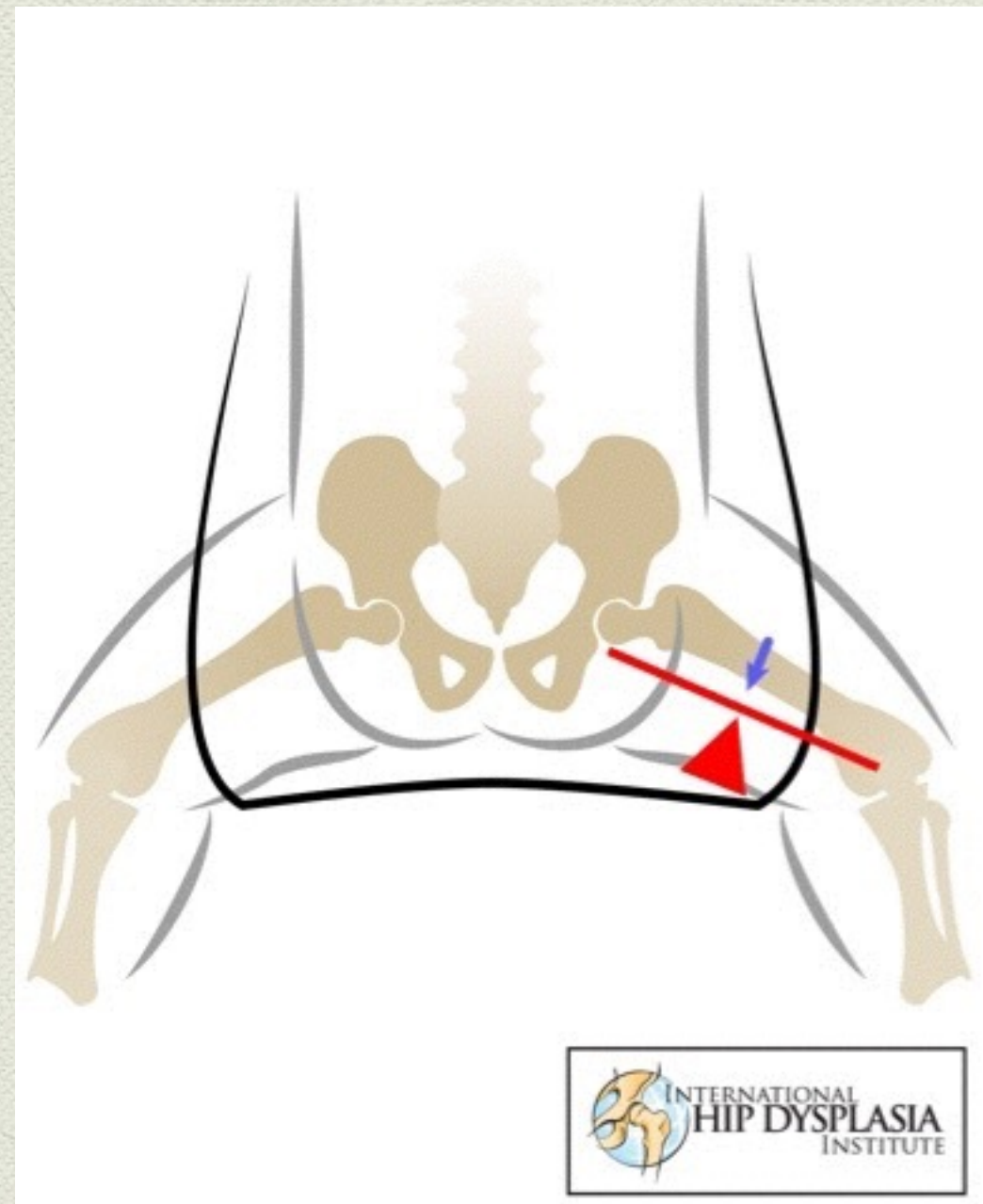


# Slings and carriers



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Car Seat



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## Car Seat Positioning

Not Recommended:



*Tight car seats prevent legs from spreading apart.*

Better:



*Wider car seats provide room for legs to be apart, putting the hips in a better position.*



# Happy Strap





# Happy Strap



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## Before



A child with hypotonia would typically sit in this position - with legs splayed at a **wide angle**

## After



With the Happy Strap, the angle is greatly reduced to a **normal sitting position**



# Hip Helper



The Rehab Practice  
Paediatric Physiotherapy

paediatricphysio.com.sg

**HIP  
HELPERS®**  
SUPPORT SHORTS

CONVENIENT • ATTRACTIVE • INEXPENSIVE ...BEST OF ALL--THEY WORK!



(757) 474-1579



SEARCH

HOME

**SHOP >**

SIZING CHARTS

MEASURING GUIDE

TESTIMONIALS

FAQS

CONTACT US

## CUSTOM SUPPORT SHORTS

**\$24.00**



[See what others are saying about Hip Helpers...](#)

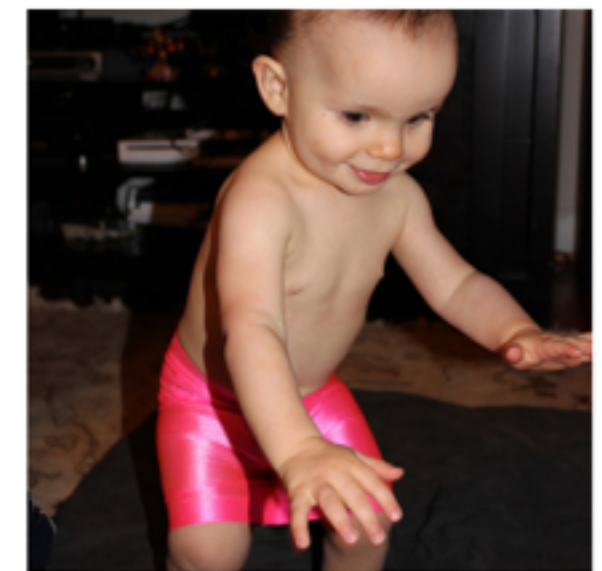
If you need 8 or more sent internationally, please use our **Mail-In Order Form** or email us to place your order. Thanks!

### COLOR

Choose an option

### ALTERNATE CHOICE

Choose an option



## TESTIMONIALS



# Spiral Thigh Brace



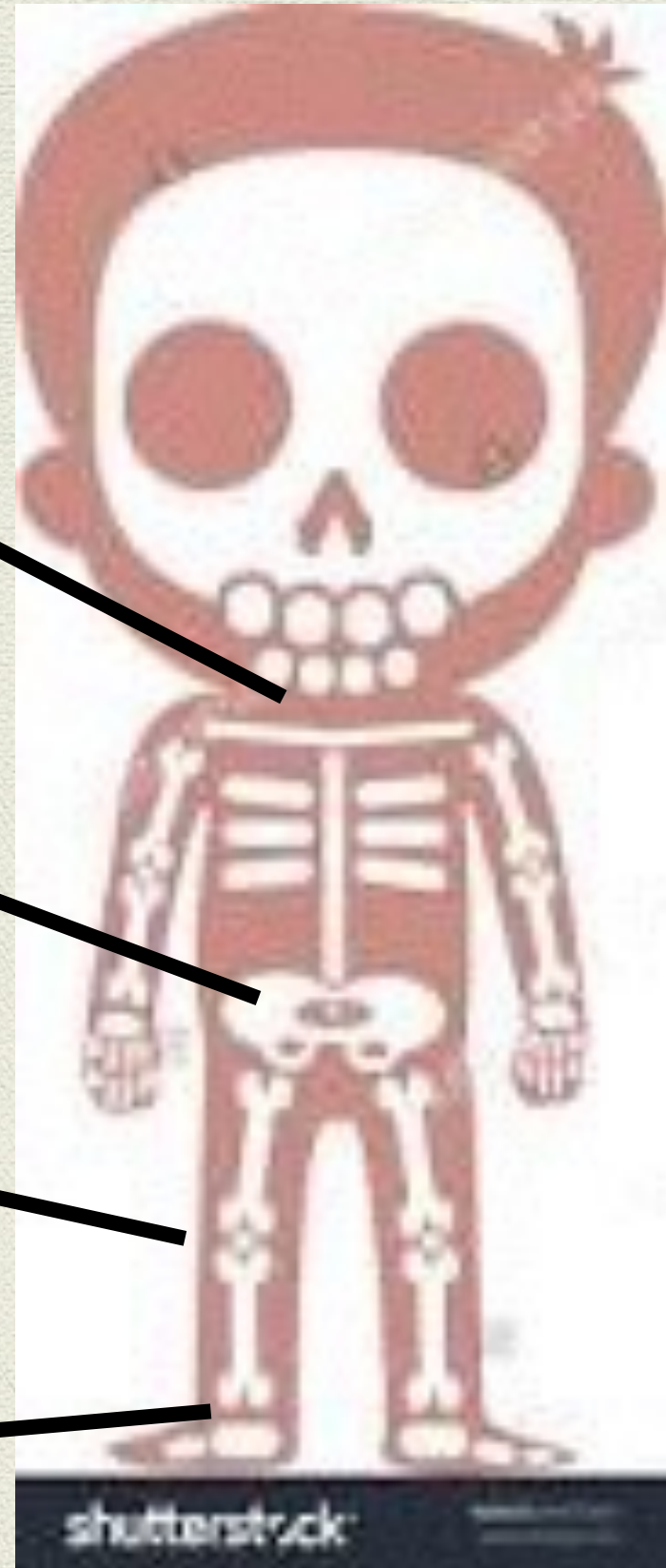


Spine

Hip

**Knee**

Feet

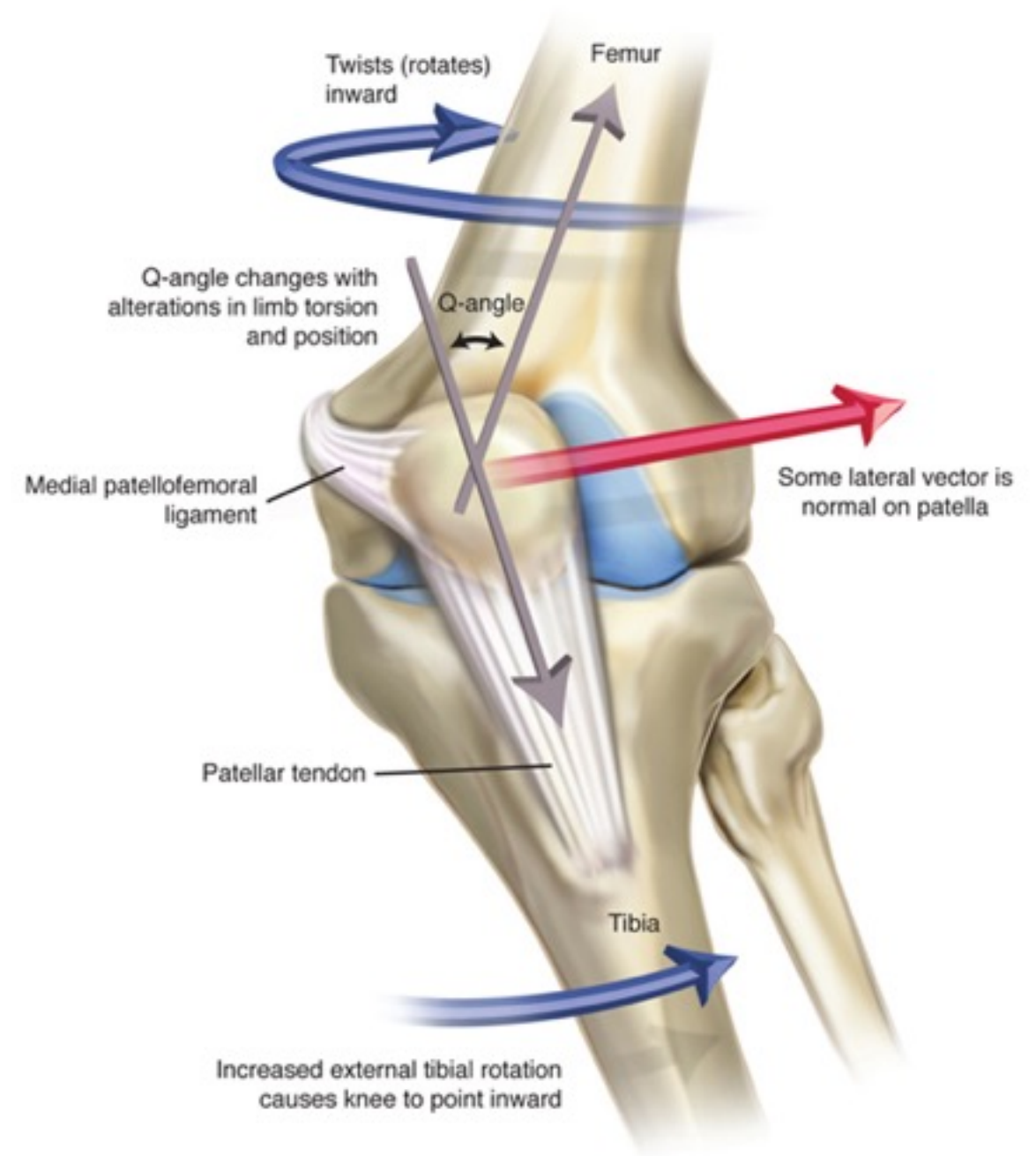




# Knee Cap Dislocation

## Contributing factors

- ◆ weak quadriceps
- ◆ loose ligaments
- ◆ improper lower limb alignment





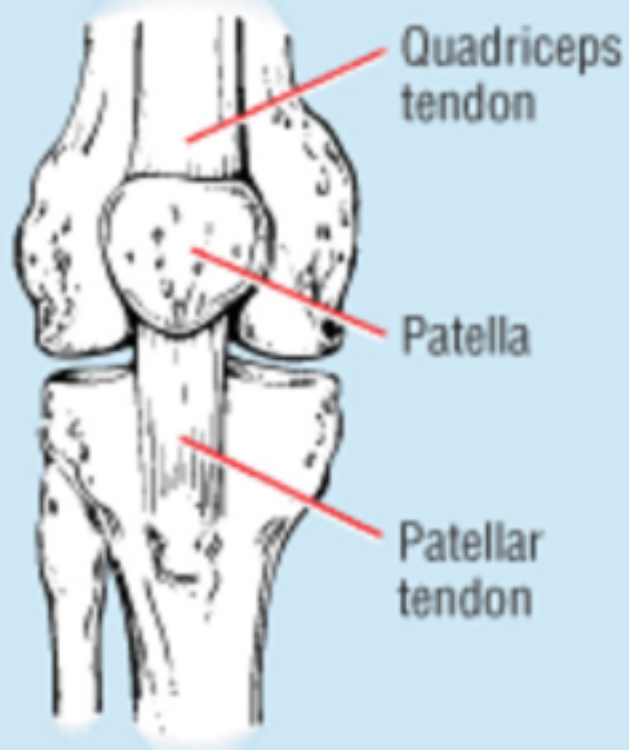
# Patellar subluxation



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

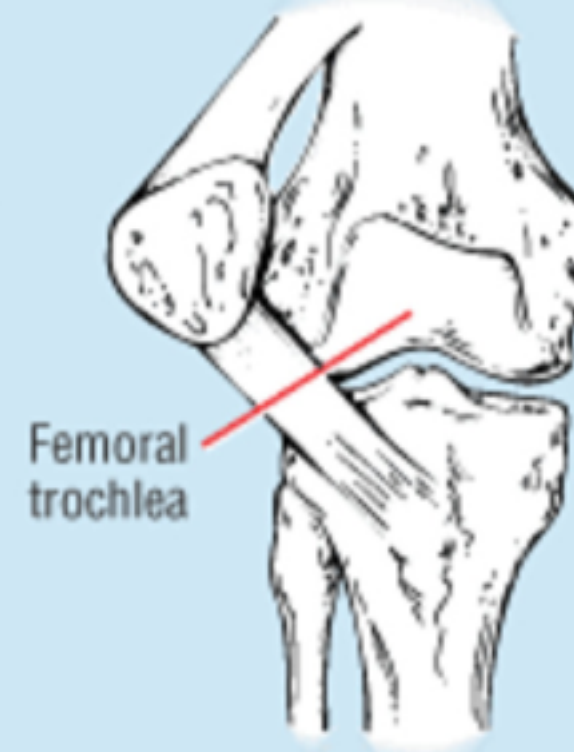
**A. Normal**



**B. Subluxated**



**C. Dislocated**



**Inferior Views**





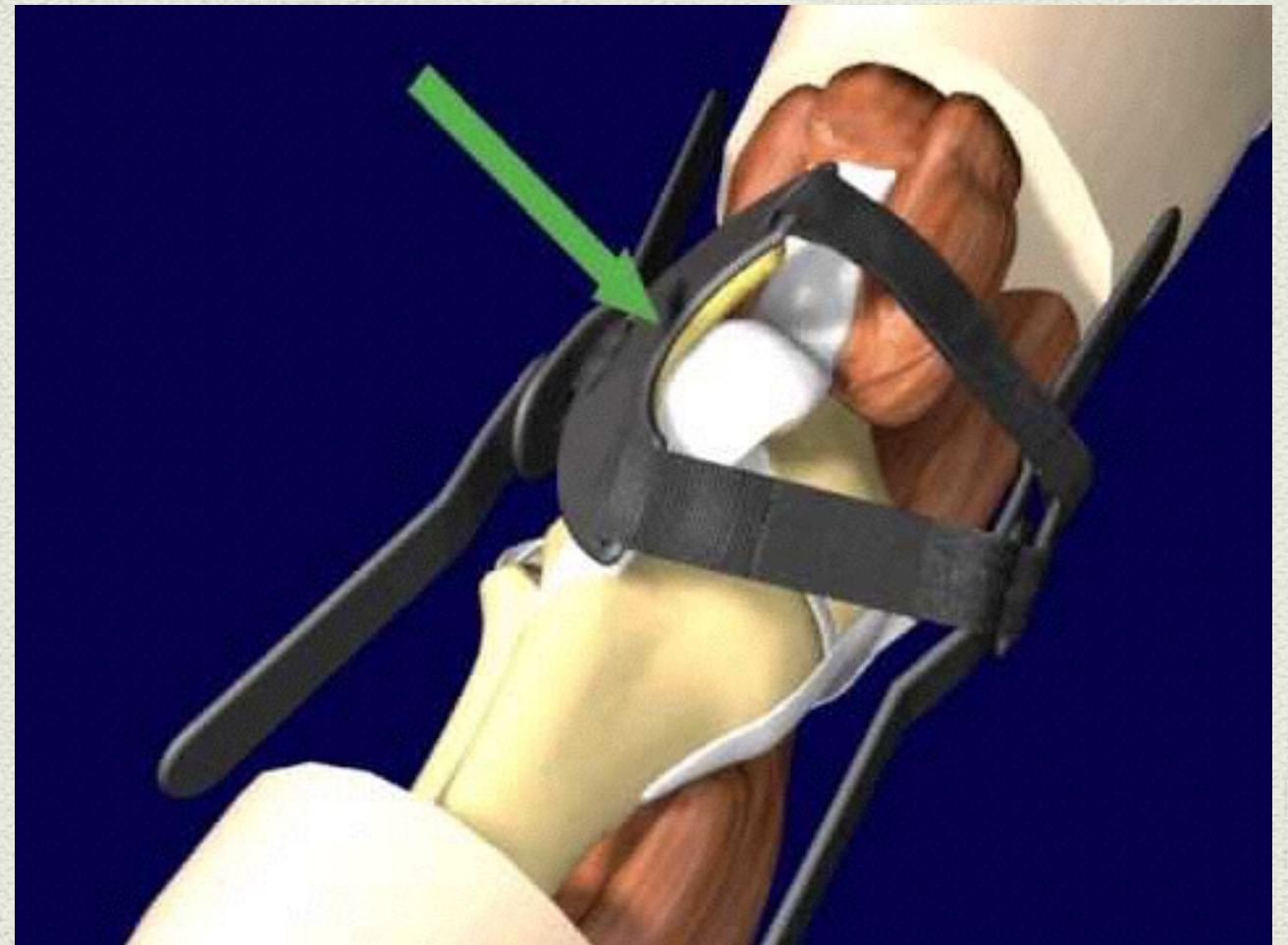
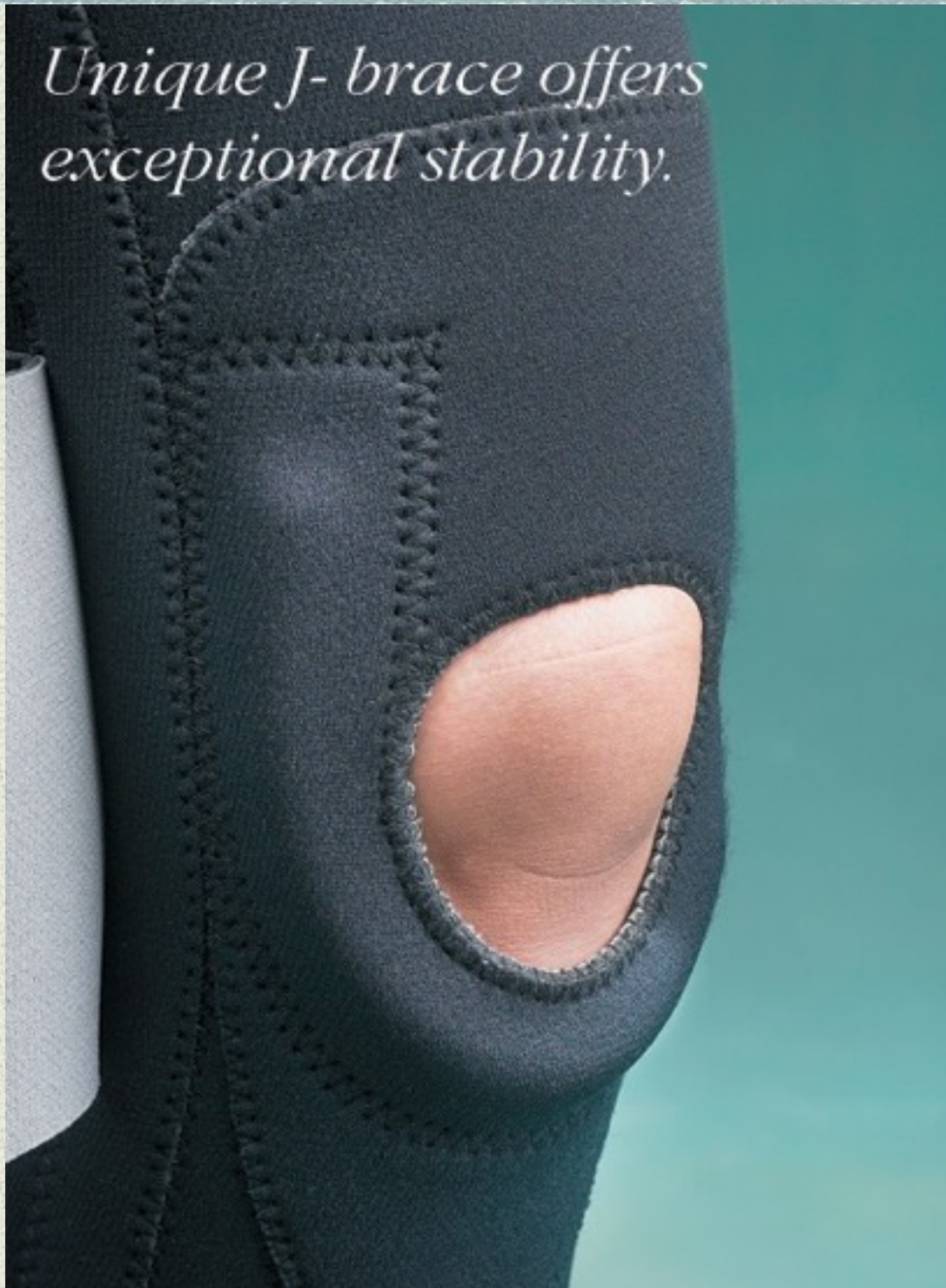
# J Brace



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

*Unique J-brace offers exceptional stability.*





# Patellar (Kneecap) Subluxation Rehabilitation Exercises



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)



Standing hamstring  
stretch



Quad sets



Straight leg raise



Side-lying leg lift



Prone hip extension



Step-up

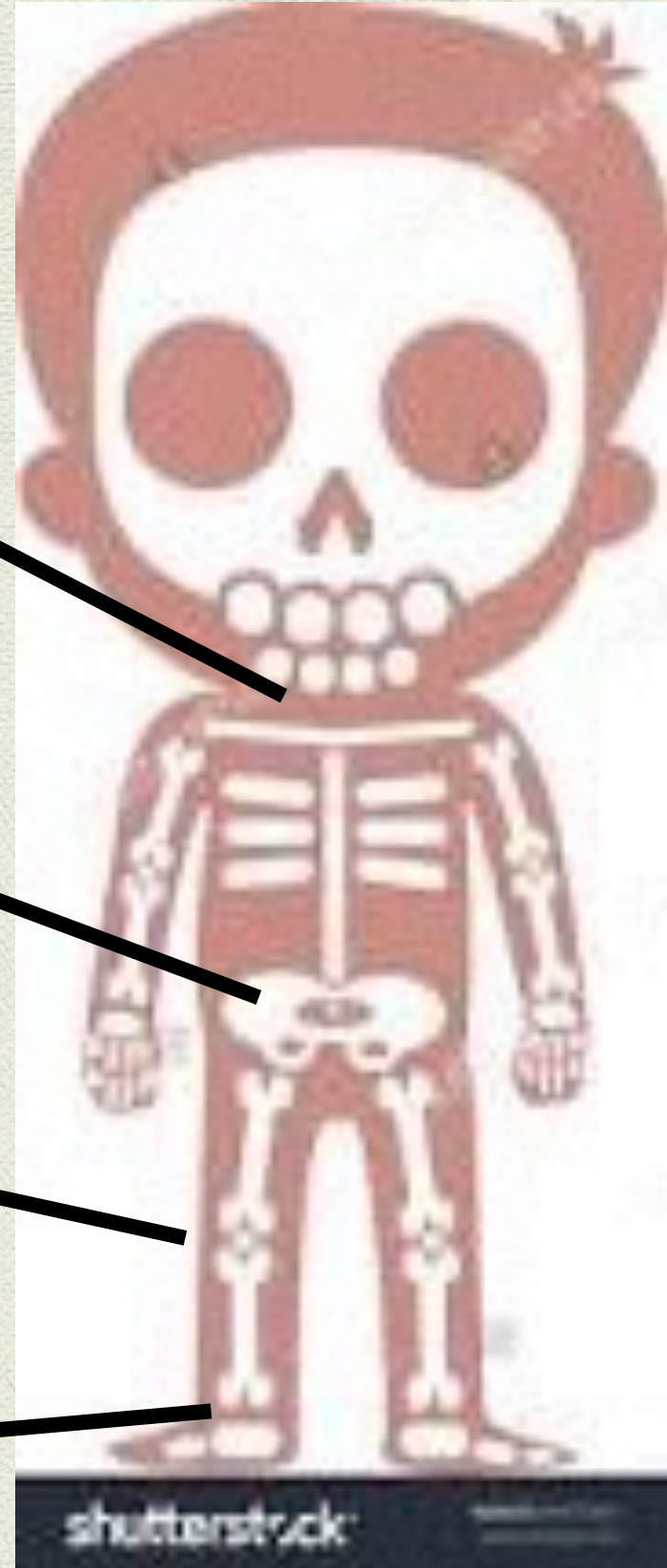


Spine

Hip

Knee

**Feet**





# Flat Feet



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)



high arch



normal to low arch



flat foot

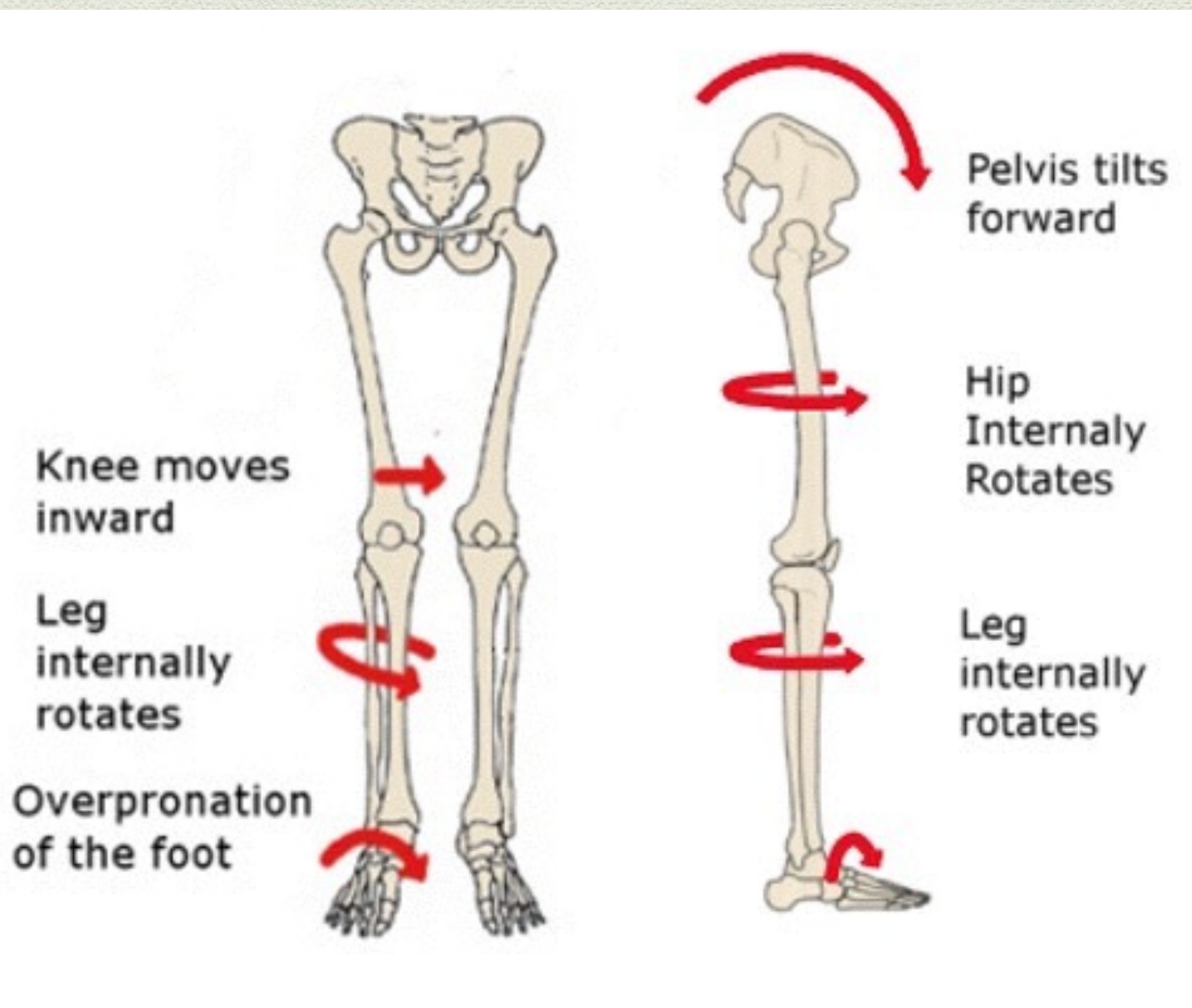


# Effects of flat feet



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Leap Frogs



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Insole



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

## // JUNIOR FORMTHOTICS™

Soft, flexible  $\frac{3}{4}$  length orthoses for 3 to 9 year olds

- Designed for the careful management of the growing foot
- Soft, flexible orthoses in 4 sizes from approximately 3 years
- A deep heel cup and wide medial flange gently supports the function of whole foot
- A colouring book is provided in each Formthotics™ Junior pack, only available to the person who wears the orthoses!

### Technology Features



3D MILLED



THERMOFORMABLE



HEEL CUP



JR  
JUNIOR



ARCH SUPPORT



ANTIMICROBIAL



Like 0 Share Tweet Pin it Share



# Treatment



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

- ◆ Active lifestyle
- ◆ 'Bag of Tricks' to make exercise easier
- ◆ Get out and PLAY!





# Therapists



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Kinesiology Tape



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)





# Treadmill





# Time For Fun!



The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

◆ Circle Time!





The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)







The Rehab Practice  
Paediatric Physiotherapy

[paediatricphysio.com.sg](http://paediatricphysio.com.sg)

# The Rehab Practice

*Paediatric Physiotherapy Centre*

*8 Biomedical Grove #01-04/07 Singapore 138665*

*[siangyin.trp@gmail.com](mailto:siangyin.trp@gmail.com)*