THE AUSTRALIAN ORTHOTIC PROSTHETIC ASSOCIATION

Clinical specialties in orthotics and prosthetics

*Image Courtesy of Orthokids*

# Spinal orthoses to minimise deformity in young people with scoliosis and kyphosis

## What are scoliosis and kyphosis?

Scoliosis and kyphosis are types of spinal deformity (curves) that commonly affect young people. Scoliosis and kyphosis may be postural or structural. Treatment for these spinal curves is a priority during adolescence because the size of the curve can progress quickly during periods of rapid growth.

## Scoliosis

**Scoliosis is a sideways curvature of the spine**. A structural curve will also rotate (or twist) resulting in a rib 'hump' on one side of the back. There can be different underlying causes for scoliosis, however the most common is adolescent idiopathic scoliosis (AIS) – whilst the cause is unknown it has a strong genetic component. AIS affects 3% of girls aged 10-13 years but is much less common in boys.

## Kyphosis

**Kyphosis is an increased forward curve of the thoracic (upper) spine presenting as rounded shoulders**. Scheurmann's disease (also known as juvenile kyphosis or juvenile osteochondrosis) is one cause of structural kyphosis and is diagnosed by the presence of wedge shaped vertebrae on x-ray. Scheurmann's disease affects up to 8% of the population and is more common in males aged between 10-16 years.

## What treatment options are there?

Treatment options for scoliosis and kyphosis include **observation**, **spinal bracing** and **surgery**. The appropriate option depends on curve type, severity, age and growth potential.

## Observation

Observation is appropriate for mild curves (scoliosis 15-25° or kyphosis 45-55°) in young people who are still growing.

## Spinal orthoses

Spinal orthoses (or braces) are appropriate for structural curves of a moderate size (scoliosis 25-45° or kyphosis 55-80°) in people who are still growing. Spinal orthoses may also be used in some cases where the aim is to delay surgery.

## Surgery

Surgery is uncommon but may be appropriate for severe curves (scoliosis >45° or kyphosis >80°) in people who are still growing, or when curves are likely to become worse.

## Other Treatments

Electrical stimulation, stretching, manipulation, supplements and exercise have not been shown to change the natural history of a structural scoliosis and will not slow progression, however may be useful for postural curves. The effect of these techniques on kyphosis in Scheurmann's disease is not known.

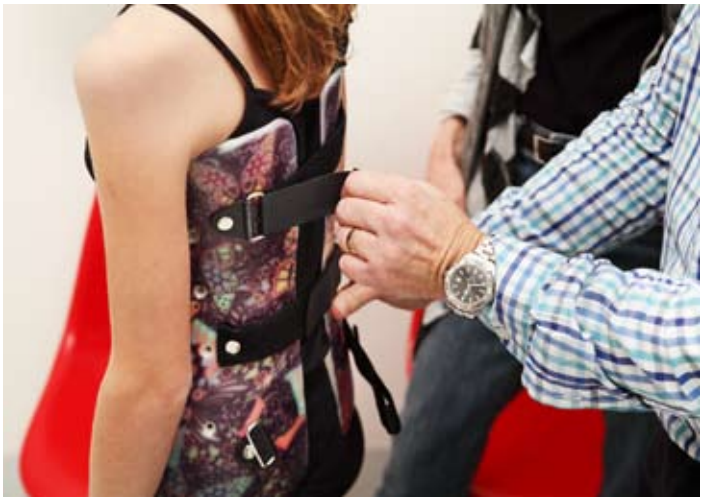

*Image Courtesy of Orthokids*

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# Orthotists – supporting the Australian community

## What is a spinal orthosis?

A spinal orthosis is a brace, typically made of rigid plastic, that may be custom-made or pre-manufactured. Spinal orthoses apply 3-dimensional corrective forces to the torso to improve spinal alignment and encourage symmetrical vertebral growth during periods of rapid growth.

Image Courtesy of Orthokids

The most appropriate type of orthosis will depend on the type of spinal deformity, as different corrective forces are required to improve spinal alignment. Some commonly prescribed orthoses include the Boston brace and Cheneau brace.

Spinal orthoses are worn under clothing, generally full time (16-23 hours) until skeletal maturity which occurs at 14-16 years for girls and 16-20 years for boys. Total treatment time might range from a few months to a few years depending on when treatment begins. Spinal orthoses are adjusted to maintain an optimal fit during growth periods and are replaced as often as necessary to achieve the required curve correction.

## What is the evidence for spinal orthoses?

The goal of treatment with a spinal orthosis is to minimise the size of the curve at skeletal maturity and reduce the risk of curve progression in adulthood. For scoliosis the goal is to prevent the curve from getting worse and for kyphosis the goal is to reduce the size of the curve. Research has shown that spinal orthoses are effective in preventing curve progression in AIS and at reducing kyphotic curves in young people with Scheurmann's disease. Although several factors may impact the success of treatment with spinal orthoses, compliance to a strict wearing regime has been shown to directly impact treatment.

## Who provides spinal orthoses?

An **orthotist** (pron. or-tho-tist) is a tertiary qualified Allied Health Practitioner who is trained to assess and treat the physical and functional limitations of people, using orthoses. Orthotists are the practitioners responsible for orthotic management of spinal deformities, including scoliosis and kyphosis. Orthotists combine clinical and biomechanical expertise with their knowledge of the current evidence, materials and product developments to support children and young people with spinal deformity.

If you need to use a spinal orthosis you will see an orthotist who will:

- Perform a clinical assessment
- Prescribe and provide the spinal orthosis, including measurement, manufacture and fitting
- Provide ongoing clinical support and education to the client including regular reviews
- Adjust and/or replace the orthosis to maintain an optimal fit
- Liaise with relevant members of the healthcare team (e.g. orthopaedic surgeon)

## How do I access treatment for scoliosis and kyphosis?

If a spinal orthosis is required for management of your scoliosis or kyphosis, your orthopaedic surgeon will refer you to an orthotist. **Certified Orthotist/Prosthetists** 'cOP-AOPA' can also be located using the 'Find a practitioner' search function on the AOPA website (www.aopa.org.au).

## Orthotic management of spinal deformity:

- Adolescent idiopathic scoliosis (AIS) and Scheurmann's kyphosis are common spinal deformities (curves) seen in children and young people
- Spinal orthoses (braces) are an effective means of preventing curve progression and the need for surgery
- Orthotists are Allied Health Professionals who support clients with spinal deformity by providing comprehensive and evidence based orthotic care and interventions

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*Disclaimer – This fact sheet does not replace clinical advice. If you require orthotic services AOPA recommend speaking to your practitioner. This fact sheet was developed based on interpretation of current evidence as of August 2016. References available on request.*