

# Chronic LBP

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## LBP in Adolescents

A recent article in the Journal of Orthopaedic & Sports Physical Therapy revealed some surprising information about low back pain in children and young adults.

### Prevalence

While LBP is rare in children under 10, it is quite prevalent in teenagers. Up to 30% of 14-year-old adolescents will report LBP within the previous month, and over 10% will report a history of LBP lasting for over 3 months (thus labeled as chronic). By the age of 17 years, 13% of boys and 26% of girls reported chronic LBP. Up to 45% of 22-year-olds reported LBP within the previous month.

In adolescents with chronic LBP, it is likely there will be associated health implications, including taking of regular medication, seeking health care, modifying sport or activities of daily living, and taking time-off school or work. There will often be associated poorer physical &/or mental health, and LBP in this group is commonly associated with neck pain &/or headaches.

### Presence of Structural Pathology

In this population, identifiable pathology associated with LBP is rare. As is the case with adults, imaging is often unhelpful. It is interesting to note that up to 30% of asymptomatic adolescents were found to have abnormal findings on MRI, such as disc degeneration (Kjaer et al 2005). While up to 6% of adolescents have the presence of a spondylolysis (pars defect) or spondylolisthesis, these are usually asymptomatic. Disc herniation associated with sciatica has been found to be present in under 0.5% of adolescents.

### Possible contributors to adolescent LBP

This is controversial, and is still an area of ongoing research. Commonly, LBP is attributed to causes such as poor posture, the presence of a scoliosis, a heavy school bag, a hypermobility syndrome, overuse due to sport, or muscle

imbalances. However, there is limited evidence for most of these causes:

*Hypermobility.* In adolescents, a high score on the Beighton scale (6/9 or above) was found to be unrelated to the presence of musculoskeletal pain, including LBP.

*Scoliosis:* This has a prevalence of up to 5% in adolescents. This population was found to have a similar prevalence of LBP to the general adolescent population.

*Posture.* There was a weak association between habitual slump sitting and the presence of LBP. It is likely that there is a 'subgroup' of LBP sufferers in whom slump sitting is a significant contributing factor. Slump sitting itself was found to be associated with male sex, lower self-efficacy, poorer low back muscular endurance, and higher BMI.

A hyperlordotic posture was somewhat linked to an increased frequency of LBP reporting, and was more strongly linked to LBP while carrying a backpack. This group were also more likely to have higher BMI scores.

*School backpacks:* A relationship between LBP & backpack use has been reported in previous research (Skaggs et al 2006). The current study also found a relationship, both with neck and back pain. However, it was also found that greater physical activity during bag carriage (walking or riding to school), tended to off-set the effects of backpack use.

*Relationship to sport.* While a degree of regular exercise is likely to have significant health benefits, and is often considered preventative for LBP, there is a subgroup of adolescents in whom their LBP is largely contributed to by their sport. Obvious examples include: a) the cricket bowler with LBP, attributed to adverse mechanical loading, due to repetitive lumbar extension & rotation forces; b) the rower with LBP related to repetitive bending.

Recent research has demonstrated the multidimensional nature of causative factors related to adolescent LBP. For many, the picture is complex, with potential confounding factors including:

### *Biological factors:*

Genetic-environmental factors may play a role in the development of LBP. A genetic contribution is difficult to quantify, and also difficult to separate from family and environment-related factors. Poor family functioning, life stress events, and poor mental health factors have all been shown to contribute. There are also complex biological pain perception factors, where some individuals have a different chemical response to noxious and non-noxious stimulation. For example, evidence of heightened stress response in 18-year-olds was predictive of later increased widespread body pain in 22-year-olds who had abnormal sensitivity to cold.

### *Psychosocial factors:*

As for adults with chronic LBP, back pain beliefs and fear of movement and activity can play a significant role in persistence of LBP. In these individuals, there will often be avoidant coping behaviors, a history of school absenteeism, and avoidance of physical activity, as well as ADLs. There will often be the presence of altered sleep patterns, and evidence of increased psychological and social distress.

### **Interventions**

In any adolescent with chronic LBP, it will be necessary to consider a multidisciplinary and wholistic approach to management. Important aspects of this management are listed below:

*Education:* The patient needs to understand that LBP does not mean that there is damage to the spine, but rather reflects sensitization of spinal structures. It is important for the patient to accept that postural variability, movement, and functional loading are safe and important for the health of the spine. They should be encouraged to remain active, and to engage in normal levels of ADLs, school and work.

*Functional:* If sport or other undue loading is considered a contributing factor, a programme of graduated conditioning should be undertaken. It is important in these individuals to identify the loading patterns that are most provocative, so they can be modified. This may be excessive lumbar flexion from slouched sitting, or excessive extension from sport such as bowling in cricket. The programme should encourage gradual building of confidence to engage in ADLs and sporting activities.

*Lifestyle:* For some, it will be important to assist them to engage in more positive behaviors and a healthier lifestyle. This may include improving sleep habits,

better diet, and more regular physical activity. All these factors are important for general as well as spinal and bone health.

### **Reference:**

O'Sullivan, P et al (2017). Understanding adolescent LBP from a multidimensional perspective: implications for management. *JOSPT*, 47, 10, 741-751.

Please contact me if you would like a copy of the full reference list.



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