

## Low Back Pain During Childhood and Adolescence

Recent years of research have uncovered important information about the epidemiology, diagnosis, treatment and prognosis of children and adolescents with back pain. This fact sheet presents the state of the knowledge and provides evidence that refutes some common misconceptions. We recognize though that there is still much we do not yet know.

### Epidemiology and consultation rates

1. Low back pain affects 3-4 of every 10 children/adolescents at any point in time. A third to half of these will have pain that persists beyond 3 months, occurs on a regular basis, or impacts important day-to-day activities like school and physical activity participation (1-5).
2. Spinal pain during youth may co-exist with both upper and lower extremity pain (6).
3. The standardised annual primary care consultation prevalence per 10,000 registered persons (aged 3 to 17 years) for back pain is 101 (95% CI 86 to 115), and similar between boys and girls. Back and spinal-related pain account for 1% of adolescent and child-related consultations in general practice per year (7, 8). Prevalence and consultation rates clearly increase with age (7, 8).

### Risk factors

4. Evidence suggests that being female, greater height, female sex, smoking, low or excessive activity levels, parental spinal pain and poor mental health may be associated with increased risk of back pain in children/adolescents (3, 5, 9-12).
5. Although school-bag weight, school-furniture, muscle strength, flexibility, sitting posture and screen time are often proposed to contribute to LBP in children and adolescents, systematic reviews find no consistent association between these factors and child/adolescent LBP (13, 14).

### Diagnosis

6. As in adults, clinical diagnosis is based on symptoms, such that imaging is unwarranted in general (15). Although supporting data is scarce, between 95-98% of adolescent LBP-cases can most likely be categorised as non-specific i.e. without a distinct, identifiable pathoanatomical origin (4, 16).
7. Despite back pain during childhood / adolescence itself being considered indicative of serious pathology, the fact it affects 40% of this population demonstrates this is not useful for screening (4).
8. Though early clinical signs of axial spondyloarthritis may present during adolescence, this condition may not be detectable via imaging until adulthood. Further, pars defects and/or bone marrow oedema may be associated with LBP, but are also quite prevalent in adolescents without LBP. As such, routine imaging for adolescent LBP is not recommended, and is rarely diagnostic in isolation (17, 18).

## Treatment

9. Recommendations for the clinical management of adult LBP (i.e. active patient-involvement, shared decision-making, general advice on sleep and physical activity, consideration of psychosocial factors) are most likely applicable for the adolescent population, but remain understudied (19).
10. Despite more than 3500 trials testing different management strategies for adults with back pain (WHO Clinical Trials Registry), less than 12 trials specifically included children or adolescents, leaving an important gap in our knowledge of effective treatment strategies (5).

## Prognosis

11. Systematic reviews suggest that between 10-15% of youth with LBP may develop persistent symptoms (lasting >3 months) (1-5). However, there is a lack of prospective studies to help us understand the long-term prognosis for both care-seeking and non-care-seeking children/adolescents with LBP (5).
12. Prognostic factors for long-term pain (>3 months) appear similar to those in adults with LBP. These include psychological factors (anxiety, depressive symptoms and emotional distress), socioeconomic status (parental household income) and lifestyle factors (sleep and physical activity) and general health (19-21). Due to a lack of research in children and adolescents, there may be additional prognostic factors specific to this population.

## REFERENCES

1. Joergensen AC, Hestbaek L, Andersen PK, Nybo Andersen A. Epidemiology of spinal pain in children: a study within the Danish National Birth Cohort. *Eur J Pediatr*. 2019 Feb 20;;178(5):695-706.
2. Aartun E, Hartvigsen J, Wedderkopp N, Hestbaek L. Spinal pain in adolescents: prevalence, incidence, and course: a school-based two-year prospective cohort study in 1,300 Danes aged 11-13. *BMC Musculoskelet Disord*. 2014 May 29;;15:187.
3. O'Sullivan PB, Beales DJ, Smith AJ, Straker LM. Low back pain in 17 year olds has substantial impact and represents an important public health disorder: a cross-sectional study. *BMC Public Health*. 2012 Feb 05;;12:100.
4. Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, et al. What low back pain is and why we need to pay attention. *Lancet*. 2018 06 09;;391(10137):2356-67.
5. Kamper SJ, Yamato TP, Williams CM. The prevalence, risk factors, prognosis and treatment for back pain in children and adolescents: An overview of systematic reviews. *Best Pract Res Clin Rheumatol*. 2016 12;30(6):1021-36.
6. Fuglkjær S, Vach W, Hartvigsen J, Dissing KB, Junge T, Hestbæk L. Musculoskeletal pain distribution in 1,000 Danish schoolchildren aged 8-16 years. *Chiropr Man Therap*. 2020 08 04;;28(1):45.
7. Henschke N, Harrison C, McKay D, Broderick C, Latimer J, Britt H, et al. Musculoskeletal conditions in children and adolescents managed in Australian primary care. *BMC musculoskeletal disorders*. 2014 May 20;;15(1):164.
8. Tan A, Strauss VY, Protheroe J, Dunn KM. Epidemiology of paediatric presentations with musculoskeletal problems in primary care. *BMC Musculoskelet Disord*. 2018 02 06;;19(1):40.
9. Dario AB, Kamper SJ, O'Keefe M, Zadro J, Lee H, Wolfenden L, et al. Family history of pain and risk of musculoskeletal pain in children and adolescents: a systematic review and meta-analysis. *Pain*. 2019 11;160(11):2430-9.
10. O'Sullivan PB, Smith AJ, Beales DJ, Straker LM. Association of biopsychosocial factors with degree of slump in sitting posture and self-report of back pain in adolescents: a cross-sectional study. *Phys Ther*. 2011 Apr;91(4):470-83.
11. Astfalck RG, O'Sullivan PB, Straker LM, Smith AJ. A detailed characterisation of pain, disability, physical and psychological features of a small group of adolescents with non-specific chronic low back pain. *Man Ther*. 2010 Jun;15(3):240-7.
12. Astfalck RG, O'Sullivan PB, Straker LM, Smith AJ, Burnett A, Caneiro JP, et al. Sitting postures and trunk muscle activity in adolescents with and without nonspecific chronic low back pain: an analysis based on subclassification. *Spine (Phila Pa 1976)*. 2010 Jun 15;;35(14):1387-95.
13. Kamper SJ, Michaleff ZA, Campbell P, Dunn KM, Yamato TP, Hodder RK, et al. Back pain, mental health and substance use are associated in adolescents. *J Public Health (Oxf)*. 2019 /09/30;41(3):487-93.

14. Yamato TP, Maher CG, Traeger AC, Williams CM, Kamper SJ. Do schoolbags cause back pain in children and adolescents? A systematic review. *Br J Sports Med.* 2018 Oct;52(19):1241-5.
15. Oliveira CB, Maher CG, Pinto RZ, Traeger AC, Lin CC, Chenot J, et al. Clinical practice guidelines for the management of non-specific low back pain in primary care: an updated overview. *Eur Spine J.* 2018 11;27(11):2791-803.
16. Vlaeyen JWS, Maher CG, Wiech K, Van Zundert J, Meloto CB, Diatchenko L, et al. Low back pain. *Nat Rev Dis Primers.* 2018 12 13;4(1):52.
17. Feldtkeller E, Khan MA, van der Heijde D, van der Linden S, Braun J. Age at disease onset and diagnosis delay in HLA-B27 negative vs. positive patients with ankylosing spondylitis. *Rheumatol Int.* 2003 Mar;23(2):61-6.
18. Tse SML, Laxer RM. New advances in juvenile spondyloarthritis. *Nat Rev Rheumatol.* 2012 Apr 10;8(5):269-79.
19. Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. *Lancet.* 2018 06 09;391(10137):2368-83.
20. Higgins KS, Birnie KA, Chambers CT, Wilson AC, Caes L, Clark AJ, et al. Offspring of parents with chronic pain: a systematic review and meta-analysis of pain, health, psychological, and family outcomes. *Pain.* 2015 Nov;156(11):2256-66.
21. Smith A, Beales D, O'Sullivan P, Bear N, Straker L. Low Back Pain With Impact at 17 Years of Age Is Predicted by Early Adolescent Risk Factors From Multiple Domains: Analysis of the Western Australian Pregnancy Cohort (Raine) Study. *J Orthop Sports Phys Ther.* 2017 Oct;47(10):752-62.

## AUTHORS

Michael Skovdal Rathleff  
Department for Health Science and Technology  
Center for General Practice  
Aalborg University, Denmark

Kate M Dunn  
School of Medicine  
Keele University, United Kingdom

Steven Kamper  
University of Sydney & Nepean Blue Mountains Local Health District  
Sydney, Australia

Kieran O'Sullivan  
School of Allied Health  
University of Limerick, Ireland

Christian Lund Straszek  
Department for Health Science and Technology  
Center for General Practice  
Aalborg University, Denmark

Department of Physiotherapy  
University College of Northern Denmark

Thorvaldur Palsson  
Department for Health Science and Technology  
Aalborg University, Denmark

©Copyright 2021 International Association for the Study of Pain. All rights reserved.  
IASP brings together scientists, clinicians, healthcare providers, and policymakers to stimulate and support the study of pain and translate that knowledge into improved pain relief worldwide.



Lise Hestbæk  
Department of Sports Science and Clinical Biomechanics  
University of Southern Denmark

## REVIEWERS

Tonya Palermo, PhD  
Professor  
Seattle Children's Research Institute  
Seattle, Washington, USA

Leon Straker, PhD  
John Curtin Distinguished Professor  
School of Physiotherapy and Exercise Science  
Curtin University, Australia

©Copyright 2021 International Association for the Study of Pain. All rights reserved.  
IASP brings together scientists, clinicians, healthcare providers, and policymakers to stimulate and support the study of pain and translate that knowledge into improved pain relief worldwide.

