# Pediatric Pain Syndromes and Noninflammatory Musculoskeletal Pain

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**KEYWORDS**

• Musculoskeletal pain • Pain amplification syndrome
• Juvenile fibromyalgia syndrome • Hypermobility syndrome • Overuse syndromes

**KEY POINTS**

- Noninflammatory musculoskeletal pain is common in children and adolescents.
- Chronic musculoskeletal pain (CMP) can have a negative impact on physical, social, and psychological functioning.
- The most common noninflammatory CMP includes amplified musculoskeletal pain, benign limb pain of childhood, hypermobility, overuse syndromes, and back pain.
- A multidisciplinary approach to treatment is necessary to return the child to a functional state.

## INTRODUCTION

Noninflammatory musculoskeletal (MSK) pain in children and adolescents is a common reason for pediatric rheumatology referral. Chronic musculoskeletal pain (CMP) is defined as ongoing pain in the bones, joints, and tissues of the body that persists longer than 3 months.[1,2] CMP is the third most prevalent recurrent and persistent kind of pain, behind headaches and abdominal pain.[3] The most common forms of nonarthritic CMP in children include[4]:

- Amplified MSK pain syndromes (AMPS)
- Benign limb pain of childhood (also known as growing pains, benign nocturnal limb pain of childhood)
- Benign joint hypermobility syndromes

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- Overuse syndromes
- Skeletal defects
- Back pain

It is essential that primary and acute care clinicians understand how to recognize and treat these conditions. This article provides an overview of the epidemiology, assessment, and management of the most common nonarthritic CMPs. CMP associated with rheumatic conditions is discussed in Kathleen A. Haines' article, "The Approach to the Child with Joint Complaints," in this issue.

CMP can negatively affect physical, social, academic, and psychological aspects of health-related quality of life (HRQL). In addition, CMP may have a negative effect on families and has a high cost to the health care system (US$19.5 billion/y).[5–10] From 5% to 8% of children with recurrent and persistent pain develop significant pain-related disability.[11] Pain prevalence rates increase with age, and girls report more MSK pain than boys.[11,12] Psychosocial variables affecting pain prevalence include anxiety, depression, low self-esteem, other chronic health conditions, and low socio-economic status.[3] CMP in children is therefore best understood within a context of a biopsychosocial framework.[1,5]

## GENERAL APPROACH TO PATIENTS WITH NONARTHRITIC CHRONIC MUSCULOSKELETAL PAIN

A detailed history and physical examination, including joint inspection, palpation, range of motion (ROM), and strength testing, is critical to the effective diagnosis and management of CMP. Kathleen A. Haines's article, "The Approach to the Child with Joint Complaints," in this issue, discusses factors to consider in the evaluation of children with CMP that can help identify those with inflammatory and other serious causes. Although most patients with nonarthritic CMP do not require imaging or other evaluation, it is important to identify those who may have a disorder requiring orthopedic or other management, to minimize their risk for serious complications. Features that suggest more evaluation is needed include persistent limp, neurologic signs, systemic signs (ie, fever, weight loss, severe fatigue), and worsening focal pain.

An important part of the evaluation is the assessment of the patient's pain, daily functioning, and HRQL (**Fig. 1**, **Table 1**). When assessing pain, it is critical to consider pain as a multidimensional experience that comprises sensory, affective, and evaluative components.[8] Sensory components include the quality, intensity, location, and duration of pain, whereas affective components reflect the emotional impact of pain. Evaluative components address pain interference with physical, psychological, and social functioning.

The main approaches to measuring pain intensity in children are self-report and observation. For children 3 to 7 years of age, a simple pain word self-report scale should be used (ie, no pain, a little pain, a medium amount of pain, a lot of pain). For children 5 to 12 years of age there are several well-validated face pain scales (Faces Pain Scale Revised and the Wong Baker Faces Pain Scale) that are scored on a common metric of 10. For children more than 7 years of age a numerical rating scale (0 = no pain to 10 = worst pain possible) should be used. Observational (behavioral) pain tools should be used with children and adolescents with CMP who are (1) less than 4 years of age; (2) too distressed to self-report their pain; (3) communicatively or cognitively impaired; or (4) providing self-report ratings considered to be exaggerated, minimized, or unrealistic.[13] The Revised FLACC (facial expression, leg movement, activity, cry, and consolability) is a behavioral tool that uses the indicators listed in the acronym to assess pain.[14,15]