

# Tracking Your Pediatric Patient's Posture

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non-invasive.

We also know that quantitative measurements of the musculoskeletal state of our young patients are often very difficult because children do not tolerate instrumentation well and are easily distracted. Postural measurement protocols, consequently, must be easy to use, rapid, and easily tolerated by young children. This combined with the non-invasive component puts incredible demands on any system or tool designed for quantitative assessment of pediatric postural deviations.

We all know that biomechanical models are used to characterize postural state. Such models are vitally important when determining, for example, compression forces acting on cervical and lumbar vertebrae related to deviant posture. What might not be widely known is that virtually all of the current models of biomechanical function are based on cadaver studies in older adult males. Clearly, as illustrated in Figure 2, body segment proportions change significantly during growth and development. For example, the head represents a greater proportion of body mass in the young as contrasted to the older child and adult. Using parameters developed for adults may cause significant errors in the calculation of such crucial aspects of posture as compression forces and center of gravity. Fortunately, the scientific community has recognized the need for modified calculations for children and a mass of theoretical knowledge is currently being generated for appropriate biomechanical parameters for children. Such information must be integrated into any assessment protocol if accurate measures are to be provided.

Once we detect postural deviations in our pediatric patients and determine that they are abnormal for the appropriate development age, how do we treat them? Although a complete answer to this question is way beyond the scope of this brief article, we all recognize the importance of exercise as an adjunct to chiropractic care for the correction and prevention of postural asymmetries. Providing exercise prescription in the pediatric patient, however, poses some unique challenges. The exercises must be tailored to the safety and compliance needs of the young patient. Developing children are in a process of rapid neurological and orthopedic growth, and the frequency, intensity, and exercise progression must be adapted for different developmental ages. Major exercise and sports associations have provided detailed guidelines for appropriate exercises in children, and in general, it is recommended that strength-training exercises be performed no more than two times per week with one to two sets

of 8-12 repetitions of each exercise. Weight loads should be adapted to allow for the completion of eight or more repetitions per set, as heavy resistance can cause injury to developing joints and skeletal structure. Because postural deviations may be due to mechanical imbalances around specific joints, corrective exercises must also be joint specific to restore muscular balance around affected areas. Finally, exercises must be easy to understand and well illustrated to encourage adoption in the young patient.

Although it is clear that the primary goal in the pediatric patient is to treat subluxations, an additional important dimension is communicating the necessity of early intervention with children to their parents. It is, after all, the responsibility of the parents to bring their children to the clinic for treatment. Photographic images of the children combined with quantitative assessments of normal and disordered

posture provide a valuable learning tool for parents. Such parameters and the ability to provide repeated measurements over time may also provide strong motivators for children to follow appropriate treatment directives.

In conclusion, appropriate treatment of pediatric patients involves precise, rapid, and repeatable, non-invasive measures of normal and disordered posture. We must keep in mind that postural patterns change normally during growth and development and that exercise must be specifically adapted to the developing needs of the pediatric patient. This all places incredible demands on any postural assessment tool as well as intervention strategies. Our young charges and their future health and well being deserve our special efforts in overcoming these challenges and providing the best possible chiropractic care.