Commentary on “Muscle Strength, Joint Range of Motion, and Gait in Children and Adolescents With Osteogenesis Imperfecta”

“How should I apply this information?”

Osteogenesis imperfecta (OI) is a disorder that produces highly variable clinical and functional characteristics. The authors of this study simplified the variability by examining the association of clinical and functional characteristics to the 4 types of OI (types I-IV) proposed by Sillence et al.1 A strong association was found among early fracture, 10 or more fractures, bone deformity, delayed onset of gait, and level of ambulation. These characteristics were found less frequently in types I and IV and most frequently in type III. Children with fewer fractures and deformities walked earlier, needed less assistance, and were more likely to be able to demonstrate community ambulation.

Clinically, these data provide indicators of the possible severity of functional gait impairment based on type of OI. As initial fractures often occur in types III and IV at birth or in the first 6 months after birth, intervention, parent education, and parent support should begin early to minimize the number of fractures and maximize the long-term functional ambulation outcome. Results from this study, combined with the quantitative subclassifications of Aglan et al., may provide a foundation for the development of a function-based classification system to guide our care plans.

“What should I be mindful about in applying this information?”

Clinicians should be mindful that Sillence’s OI types I to IV are not ordered by severity. Children with type I are typically less involved and type III is more debilitating than type IV. Early morbidity explains the noticeable absence of children in this study with type II. Osteogenesis imperfecta types V through VIII have been recently identified. Though genetically and radiologically distinct, the clinical and functional characteristics still are best classified by Sillence’s I to IV types.2 Types V to VII are clinically and functionally similar to type IV, whereas type VIII is similar to type II or type III.3,4

Although an association was demonstrated among range of motion, strength, gait development, and level of ambulation, causality cannot be assumed.

REFERENCES