



Classifying Cerebral Palsy

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Each year, the Journal of Pediatric Orthopaedics publishes more papers dealing with orthopaedic issues of children with cerebral palsy (CP) than any other medical journal. However, it can sometimes be difficult for the reader to understand the defining features of the study population. Different authors use different terms, and the definitions of the terms are imprecise. CP is traditionally classified by motor type and topographical distribution. A classification based on motor type might include the terms spastic, dyskinetic, ataxic, hypotonic, and mixed. The most commonly used terms in classifications of topographical distribution are hemiplegia, diplegia, and quadriplegia, but the terms monoplegia, paraplegia, triplegia, double hemiplegia and tetraplegia are also used. The terms vary considerably, but more importantly classifications by motor type and topography are known to be unreliable.⁴

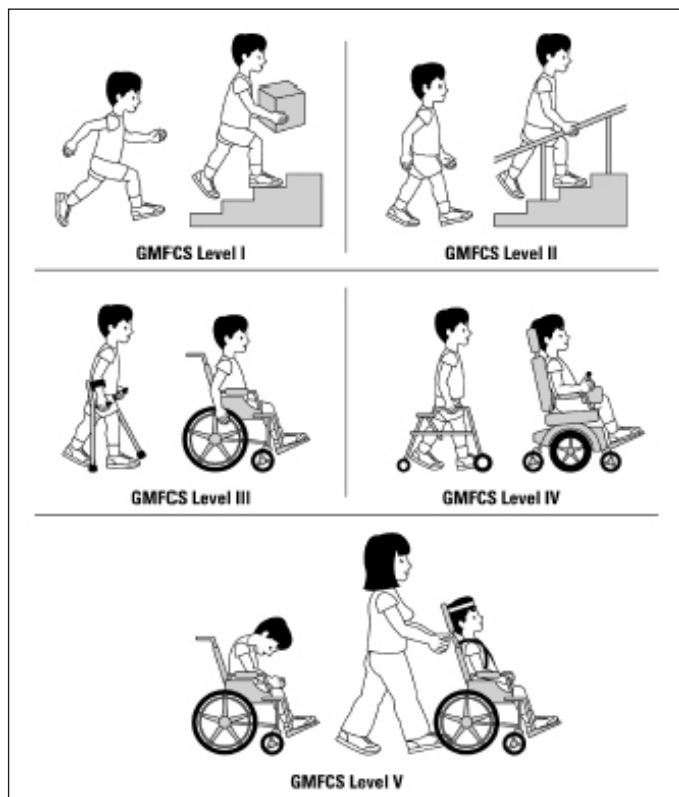
What can contributors to JPO do to improve communication? The answer is to add a simple, valid, and reliable classification of gross motor function in their clinical research. For some time, orthopaedic surgeons have recognized that the incidence of certain musculoskeletal problems and the success rate of reconstructive surgery in CP are related to severity. For example, many studies suggest that the incidence of spastic hip disease is directly related to functional severity.² Other studies report that the failure rate after reconstructive surgery of the foot and ankle is closely related to functional severity.¹

Until recently, the severity of CP was described in subjective terms such as mild, moderate, and severe. The Gross Motor Function Classification System (GMFCS) for the first time provides orthopaedic surgeons, therapists, and pediatricians with a common language to describe children with CP.³ The GMFCS is a simple five-level, ordinal grading system to describe gross motor function in children with CP. It is reliable, valid, and stable over time. It is easy to learn and can be worked out for a specific child in about 5 minutes. It does not require excessive time or special training. It covers the spectrum from children with near-normal gross motor function (level I) to children who lack head control and are dependent for all aspects of their care (level V). It is not, however, responsive to change after intervention.

The GMFCS has an emphasis on self-initiated movement, ability to sit and walk, and need for assistive devices and mobility aids (Fig. 1). I suggest that all contributors to JPO should describe their CP study population in three domains: motor type, topographical distribution, and gross motor function, according to the GMFCS. Surgeons may choose to list the classification of motor types and topography that is used in their institution or has been assigned by their colleagues in pediatric medicine or neurology, recognizing these classifications' limited reliability. The use of a common language to describe gross motor function in children with CP will immediately improve communication and understanding for all readers of JPO. It matters little whether one child with CP and hip subluxation is described as having severe spastic diplegia and another as having mild spastic quadriplegia, but it matters a great deal if one child is GMFCS level II and another is GMFCS level IV.



FIGURE 1. The Gross Motor Function Classification System (GMFCS) for children aged 6 to 12 years. GMFCS level I: Children walk indoors and outdoors and climb stairs without limitation. Children perform gross motor skills including running and jumping, but speed, balance, and co-ordination are impaired. GMFCS level II: Children walk indoors and outdoors and climb stairs holding onto a railing but experience limitations walking on uneven surfaces and inclines and walking in crowds or confined spaces. Children have at best only minimal ability to perform gross motor skills such as running and jumping. GMFCS level III: Children walk indoors or outdoors on a level surface with an assistive mobility device. Children may climb stairs holding onto a railing. Children may propel a wheelchair manually or are transported when traveling for long distances or outdoors on uneven terrain. GMFCS level IV: Children may continue to walk for short distances on a walker or rely more on wheeled mobility at home and school and in the community. Children may achieve self-mobility using a power wheelchair. GMFCS level V: Physical impairments restrict voluntary control of movement and the ability to maintain antigravity head and trunk postures. All areas of motor function are limited. Children have no means of independent mobility and are transported.



REFERENCES

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