

## Criteria Used to Select Patients for Selective Dorsal Rhizotomy at RJAH

A summary of the criteria used to select suitable patients is shown in the table below. These criteria should be carefully considered by the child's clinical team prior to a decision to refer for consideration of SDR. Clinicians who wish to discuss a child's case prior to referral are advised to contact Sarah Jarvis, Senior Physiotherapist, on 01691 404530 or Mr Andrew Roberts via his secretary on 01691 404236.

History	Examination	Investigation
(1) Age range 5-10	(1) Diagnosis spastic diplegia	(1) No hip dysplasia
(2) Absence of chronic conditions, e.g. BPD, refractory epilepsy, severe visual impairment, scoliosis	(2) Spasticity moderate to severe	(2) No scoliosis
(3) Cognitive ability – IQ 70 or above	(3) Adequate lower limb extensor power >3 on MRC scale	(3) No basal ganglia change on MRI
(4) Well motivated, emotionally robust	(4) Movement control at least moderate	
(5) No previous multilevel surgery	(5) Balance at least moderate	
(6) Good family/social support	(6) Absence of severe fixed joint deformity	
	(7) No involuntary movements or dystonia	
	(8) Weight not disproportionately greater than height.	
	(9) Good control of spinal posture	

**Spasticity** is assessed using the Ashworth scale, the Duncan Ely test (for spasticity in the rectus femoris), the quality of the deep tendon reflexes and also the presence or absence of sustained clonus. These latter two measures while not direct measures are usually associated findings in severe spasticity. Spasticity is categorised as mild, moderate or severe; patients need a moderate or severe score to be considered for SDR.

**Lower limb power** is assessed using the MRC scale (0–5). A score of 3 indicates moderate weakness and a score of 4 or above indicates mild weakness. Patients with mild weakness are considered appropriate for SDR.

**Movement control** is assessed by noting the degree of synergy in muscles in the ipsilateral and contralateral legs during knee extension and flexion against resistance. Control impairment is mild if it involves movement in the knee and only one other joint in one leg, moderate if the whole leg is involved and severe if the contralateral leg is also involved. Children with mild or moderate impairment are considered suitable for SDR. Formal measures of selective motor control consist of the SCALE assessment<sup>1</sup> where we would expect the child to achieve a score of at least 5/10 in each lower limb. **Spinal posture** is assessed with the method of Butler et al<sup>2</sup>

A patient unable to achieve and maintain high kneeling for 5 seconds is considered to have severely impaired **balance**. Maintaining high kneeling for 5 seconds or more indicates moderately good balance and maintaining high kneeling for more than 5 seconds with perturbation demonstrated good balance. Moderate or good balance is required for SDR.

From our early cases it was clear to us that all children gained weight following SDR. We thus include a somewhat arbitrary criterion of excluding children whose **weight** is significantly disproportionate to height (ie, BMI > 90thc for age).

- 1 Fowler, E. G.; Staudt, L. A.; Greenberg, M. B. & Oppenheim, W. L. Selective Control Assessment of the Lower Extremity (SCALE): development, validation, and interrater reliability of a clinical tool for patients with cerebral palsy. *Dev Med Child Neurol, Department of Orthopaedic Surgery, UCLA/Orthopaedic Hospital Center for Cerebral Palsy, David Geffen School of Medicine at UCLA, Los Angeles, CA 90095-1795, USA., 2009, 51, 607-614*
- 2 Butler, P. B.; Saavedra, S.; Sofranac, M.; Jarvis, S. E. & Woollacott, M. H. Refinement, reliability, and validity of the segmental assessment of trunk control. *Pediatr Phys Ther, The Movement Centre, Robert Jones and Agnes Hunt Hospital, Oswestry, Shropshire, UK. pennybutler@the-movement-centre.co.uk, 2010, 22, 246-257*