

A variety of procedures are available to compose a surgical plan for the correction of muscle imbalance in patients with cerebral palsy. Apart from the paramount importance of (1) critical patient selection and (2) identification of an attainable functional goal, our group focuses on (3) the optimal combination of individually tailored tendon/muscle procedures in one operative session. This paper offers a concise review of the parameters that affect a surgical algorithm in cerebral palsy:

*1. Critical appraisal of the biomechanics of tendon transfer and its effect on the kinematics of the upper limb.* The biomechanical concept of tendon transfer in general, and when employed to correct complex movement patterns of the upper limb in cerebral palsy in particular, appears to be much more enigmatic than classically assumed.

*2. Identification of distinctive surgical steps during tendon transfer that might serve as tailoring tools for the functional outcome of the procedure.* Classic parameters like donor selection, route of transfer and acceptor site are well known. Less well known is that tenotomy and the degree of muscle dissection not only alters the biomechanical properties of the donor muscle, but also the pathways of force transmission of the neighbouring muscles. And finally, tendon tensioning is regarded as the ultimate challenge to achieve an agreement between the optimal length-force profile and the desired operating range of the target joint.

*3. Combining different procedures by their tailored effect on the kinematics of the upper limb in an optimal surgical plan.* Balancing the forces around a rotation axis is not simply a matter of subtracting function on one side, and adding it to the other side. All muscles around the same axis will be inhibited or facilitated in this new equilibrium. The movement pattern will adapt to a new equilibrium, and this may involve alteration of the muscle balance around concomitant deformities. That way, different surgical procedures will affect each other's results. Although these phenomena complicate matters substantially, they also initiate the challenge to understand what we are actually changing in the balance of forces by performing a tendon transfer.