What causes contractures in CP?
Using the Neuroflexor®, we measured the resistance to passive wrist extension both at slow (5°/s), and fast (236°/s) speed.

We could thereby objectively quantify neural (spastic), elastic and viscous force components of the passive resistance of the wrist flexor muscles.

This was correlated to the cross sectional area of a wrist flexor, flexor carpi radialis.

The neural component (NC) = spasticity and the cross sectional area of the FCR (Flexor carpi radialis muscle) did not correlate in CP, \( r_s = 0.0, p=1.0 \), but correlated moderately in typically developed subjects \( r_s=0.549, p = 0.052 \).

The elastic component (EC) and the FCR did not correlate in typically developed children, \( r_s=0.192, p=0.529 \), but correlated negatively in CP, \( r_s=-1.000, p<0.01 \).

The smaller the muscle, the higher the elasticity.

The viscous component (VC) and FCR did not correlate in CP \( r_s=0.0, p=1.00 \), but correlated in typically developed children \( r_s=0.637, p=0.019^* \).

Conclusion:
• Children with more severe CP have smaller muscles, and yet the elastic component is higher.
• The smaller the cross sectional area was, the higher was the elasticity component.
• This suggests that spastic wrist flexors have different cellular and extra cellular matrix properties compared to control.

SP41
The elastic component of resistance during wrist flexor stretch is inversely related to the cross sectional area of a wrist flexor muscle in children with CP
Eva Pontén MD PhD, Johanna Friberg medical student, Björn Evertsson medical student, Johan Gäverth PT PhD


Eva Pontén MD PhD
Orthopaedic Surgeon, Hand Surgeon
Dept of Pediatric Orthopaedic Surgery
Astrid Lindgren Children’s Hospital
Karolinska University Hospital
171 76 Stockholm Sweden
E-mail: Eva.Ponten@ki.se
Telephone: +46 8 517 77 671
Johan Gäverth PT PhD
Post doc Fellow, Dalhousie University, School of Physiotherapy
Department of Women’s and Children’s Health
Karolinska Institutet
171 76 Stockholm | Astrid Lindgrens Bamskjukhus Q2:07
+46 8 517 780 74 | +46 70 207 13 64
johan.gaverth@ki.se | ki.se