Introduction

• Muscle weakness is an important motor impairment in children with cerebral palsy (CP)
• Strength training reveals conflicting results
• Which muscles should be targeted for training?

Aim

To determine the association between isometric strength, walking ability and gross motor tasks in children with CP

Methods

Subjects (n=109), age 6-13 yrs

• 62 children with CP; GMFCS levels I (n=32), II (n=20), III (n=10); unilateral: n=20
• 47 children with typically development (TD)

Walking ability

• 1-min walk test: covered distance
• 10-m walk test: preferred walking speed

Gross motor tasks

• Sit-to-stand: # reps in 30s
• Lateral step-up test: # reps in 30s

Isometric muscle strength (MicroFet, Biometrics, NL)

• ‘Make’ method, 3 trial average
• Knee extensors (KE), knee flexors (KF), hip abductors (HA), hip flexors (HF), ankle plantar flexors (APF) (most affected side only)

Results

Isometric strength is reduced in children with CP compared to TD:

• KE: 57-69% KF: 39-69%
• HF: 66-82% HA: 46-76%
• APF: 9-54%

Discussion & Conclusion

• Lower isometric muscle strength in children with CP
• When adjusted for age and height, isometric strength was stronger associated with motor tasks in children with CP than in TD
• Knee flexor and hip abductor strength are associated with walking ability in children with CP, but not in TD children
• Further research should indicate whether training of these muscles leads to improved walking ability, and future research should include hip extension strength and bilateral strength assessments

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