

* This handout will discuss benefits and risks of strength training for children with disabilities*

WHAT IS STRENGTH TRAINING?

Strength training is defined as “the use of Progressive Resistive Exercise methods to increase one's ability to exert or resist force (Blimpkie, 1992) in a controlled manner, throughout the range of motion (Giuliani, 1995)”

Strength training can be done through different types of exercises:

Isometric strength training - During isometric exercises, muscles contract. However, there is no motion in the affected joints. This kind of training can provide a relatively quick and convenient method for overloading and strengthening muscles without any special equipment and with little chance of injury. Pushing your arms together while keeping them still is one example.

Isotonic Strength training – Isotonic exercise differs from isometric exercise in that there is movement of a joint during the muscle contraction. Examples of this type of exercise are weight lifting and calisthenics.

Isokinetic strength training –In isokinetic exercises, the targeted muscles are fully stressed throughout the entire range of motion. Examples of this type of exercise are aquatic therapy and nautilus machines.

While there are many different ways to strengthen muscles, the optimal method of strength training for children is not yet known.

WHY WOULD CHILDREN WITH DISABILITIES NEED STRENGTH TRAINING?

Children with cerebral palsy, Down syndrome, spina bifida, muscular dystrophy, and other conditions have weak muscles that limit their function, endurance, and independence.

Many interventions they receive (Including muscle-tendon lengthening, neurosurgical operations like selective dorsal rhizotomy, medicines for tone management and the use of braces) may lead to more weakness.

Strength training is useful as an additional way to help improve motor function.

continued

WHAT ARE THE BENEFITS OF STRENGTH TRAINING?

- Children with disabilities can increase strength and improve range of motion through weight training.
- Increased strength can lead to improvements in motor functions, such as walking, transferring, and pushing a wheelchair.
- Strength training can help to maintain cardiopulmonary function, prevent muscle atrophy, promote bone strength, help control or lose weight, reduce stress, and enhance general feelings of well-being.
- Exercise programs in the community and/or group activities can also provide important opportunities for social interaction.

WHAT ARE THE RISKS OF STRENGTH TRAINING?

Some, but not all, risks include:

- Muscle breakdown for children with muscular dystrophy or myositis who work out too hard and don't drink enough water.
- Autonomic dysreflexia (a sudden and dangerous rise in blood pressure) in children with spinal cord injuries at or above the T-6 level.
- Low blood pressure/dizziness in children with spinal cord injury, spina bifida, muscular dystrophy, and other conditions.
- High body temperatures in children with spina bifida and spinal cord injury.
- Risk of fractures if weak bones are asked to support too great a weight.
- Injury from doing exercises incorrectly or excessively.

Always consult a physician and/or physical therapist before beginning any strength training programs in order to determine how best to help each child participate safely.

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RESOURCES AND REFERENCES:

National Center on Physical Activity and Disability
<http://www.ncpad.org>

Researching Strengthening for Children with Cerebral Palsy (
http://www.advanceforpt.com/previous/oct16_00cover.html

Conditioning With Physical Disabilities

by [Kevin F. Lockette](#), [Ann M. Keyes](#)

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