



Division of Sports Medicine

Clinics in Sports Medicine and Dance Medicine

319 Longwood Avenue

Boston, Massachusetts 02115

Phone: 617-355-3501

Fax: 617-730-0175

www.childrenshospital.org/sportsmed

STRENGTH TRAINING FOR YOUNG ATHLETES

For years strength training was shunned by athletes. They believed that developing muscle strength with weights would make them “muscle-bound” and decrease the range of motion of the joints. This is incorrect. Properly performed strength training doesn't *decrease* a joint's range of motion, but actually can *increase* it because the surrounding structures are lengthened. In this sense, strength training perfectly complements flexibility training.

Proper strength training can reduce a child's risk of minor muscular injuries because stronger muscles are better able to resist the normal stresses of sports. In addition to strengthening soft tissues (muscle, tendons, and ligaments), training can also strengthen the child's bones and joints, thereby increasing their resistance to damage and helping combat degenerative diseases like osteoporosis. In that respect it is true preventive medicine. A strength training program will also enhance the young athlete's performance in any sport.

Strength Training for Pre-Pubescent Children

Strength training for children has been a controversial subject for many years. There are two main arguments against children participating in such programs. First, critics say that because children lack adult or even adolescent levels of male sex hormones (*androgens*), training with weights cannot produce gains in muscle strength or size, so there is no point in encouraging a child to go into such a program. Second, they assert that strength training for children poses the threat of injury, especially to their growth plates.

However, several important studies have shown that children in an organized strength training program can become stronger. The first of these groundbreaking studies was done at Children's Hospital Boston by Dr. Lyle Micheli and his colleague, Dr. Les Sewell. In properly supervised programs, no injuries have been reported. When injuries do occur, they occur for the same reasons they do in adults - as a result of poor technique and lifting too much weight. In 1985 the National Strength and Conditioning Association stated that there had been no reports of growth plate fractures or injuries in supervised strength training.

With proper supervision and appropriate program design, strength training can be a safe, effective and enjoyable activity for all young athletes, before and after puberty.

STRENGTH TRAINING (CONTINUED)

In 1985 the American Orthopedic Society for Sports Medicine sponsored a conference attended by delegations from the American Academy of Pediatrics, the American College of Sports Medicine, the National Athletic Trainers Association, the President's Council on Fitness and Sports, the U.S. Olympic Committee and the Society of Pediatric Orthopedics. The participants stated in the published proceedings that strength training for children was "beneficial as well as safe" under the following circumstances:

- The child has a medical examination.
- The exercise environment is safe.
- The child has the emotional maturity to accept and follow instructions.
- The program and its supervisor take into consideration the physical and psychological uniqueness of the child.
- A warm-up and cool-down is included in the program.
- Proper exercise technique is demonstrated, including full range of motion on each exercise.
- Resistance is increased gradually, as strength increases.
- No maximal lifts are attempted.
- Strength training is encouraged as part of an overall conditioning program.

Strength training should be taught and supervised by a qualified adult, preferably one certified by the National Strength and Conditioning Association. Parents without training who wish to instruct their children should take a strength training course. The YMCA is one place to take such a course. Other sources of qualified strength training instruction are certified physical therapists and exercise physiologists. The person supervising the exercises should give the child plenty of encouragement. This makes learning easy and fun.

The Sports Medicine Bible for Young Athletes (SourceBooks, 2002) by Dr. Lyle Micheli is a book filled with important information about how to make a young athlete's sports experience as safe and successful as possible. Visit www.lylemichelimd.com.

This fact sheet was created by Dr. Lyle Micheli and the faculty of the Division of Sports Medicine at Children's Hospital Boston.