

Physical Training in Child Development

John Dougherty, D.O.
Sports Medicine Fellow – UHS-COM/MCI
Team Physician – Missouri Southern State University

Headlines

- Kids today are overweight and out of shape
- Schools Physical Education budgets are being cut
- Children average 25 hours a week watching TV or playing video games

- Physicians recommend exercise but many children are not physically prepared

Headlines

- Popular sports press feature the trend of children feeling it necessary to focus on a single sport early

Retirement Plan!!!!

- Parents are pushing children at younger and younger ages to be the next superstar

Why Do I Need To Know This?

- Patients gather most of the “Expert Advice” from the gym or other parents
- Children and parents are seeking ways to have a physical edge in their area of competition

- Physicians need to be well informed with accurate, current information to fill the void

Why Do I Need To Know This?

- Strength Training is common practice in sports like football
- It can benefit preteens who have focused interest in a particular sport

Strength Training Defined

- A wide range of modalities and equipment using progressive resistant methods to increase the athletes ability to exert or resist a force

Recommendations

- Strength Training is endorsed by the AAP, ACSM, AOSSM and the NSCA when appropriate supervision and design is in place

Clarification

- Strength Training is sometimes confused with Weight Lifting, Power Lifting or Body Building
- Weight and Power Lifting are considered competitive sports that contest maximum lifting ability

- Body Building is an esthetic sport that depends on weight training

Not Recommended

- Olympic Style Lifting
 - Weight lifting
 - Power lifting
- Body Building
- Plyometrics

Goals of Physical Training

- The primary objective is to increase physical endurance and protect muscle and joints from injury
- Secondary gains:
 - Help improve performance
 - Improves self-esteem
 - Instills good fitness habits for life

Misconception

- Myth: Prepubescent athletes are unable to increase strength due to inadequate androgens and they must have Tanner Stage III development to see any gains from strength training
- Fact: Several studies limited to prepubescent all show gains in strength with strength training due to an increased number of motor neurons firing with each muscle contraction

When can they start?

- Strength can be enhanced through training in a very young age
- 5-6 year of age
 - Not necessary to be lifting weights
 - Focus on body control, balance and movement skills such as push ups, sit ups and bike riding

When can they start?

- Coach-ability and emotional maturity are achieved at a different age in all children
- Generally at 7- 8 years of age if a child can follow instruction, they may begin strength training

Pre-participation physical

- Performed prior to formal program
- Discuss realistic goals and expectations with child and parents
- Review risks involved
- Point out the danger of anabolic steroids and other body building supplements
- AAP recommends if indicated, a referral to sports medicine physician familiar with training methods is appropriate

Training Guidelines

- Basic Guidelines
 - Individually Tailored
 - Properly Supervised
 - Proper Technique
 - Safe Facilities
 - Organized Program

- Practice sports skills regularly and never replace skill training with strength training

Training Guidelines

- Provide constant, experienced adult supervision
- Ensure well lit, ventilated, hazard free workout area
- Start with calisthenics and stretches before activity
- 90 minute workout schedule
 - Warm up
 - 30 minutes of weights
 - 20-30 minutes of running
 - 20-30 minutes of sport specific activity
 - Cool down

Training Guidelines

- Learn proper technique with no load, add weight only after mastery of technique
- Exercise muscles through a full, controlled range of motion

- Progress from low resistance and high reps to higher resistance and fewer reps
- Increase resistance 5% or less once maximum reps are performed with good form

Training Guidelines

- Train all major muscle groups
- Provide equal emphasis for antagonistic muscle groups

- Exercise the muscles from largest to smallest - smaller muscles fatigue first and are used to assist larger muscle groups
- Sample routine
 - Leg press:20-25 reps
 - Leg Curl:15-20 reps
 - Leg extension:15-20 reps
 - Calf Raises:15-20 reps
 - Dips:10-15 reps
 - Chin Up:10-15 reps
 - Upright Row:10-15 reps
 - Sit Up: 10-15 reps
 - Back Extensions:15-20 reps

Training Guidelines

- Use workout cards to record performance
- Cool down and perform flexibility exercises after training
- Restrict strength training to three times per week on non consecutive days
- Minimum of 48 hours between workouts to allow muscles to fully recover

Training Guidelines

- Avoid using negative-only exercise (i.e., lowering very heavy weights)
- Refrain from Olympic-style movements or explosive reps
- Neck muscle training is not recommended in prepubescent

- Maintain adequate hydration and nutrition
- Recognize pain as a warning sign
- Failure to allow for adequate recovery contributes to overtraining

Injury Concerns

- Overuse injuries are predisposed by poor flexibility or muscle weakness.
- Most commonly experienced are muscle strains (40-70%) frequently in the lumbar region (50%)

- Stress fractures are the least common

Injury Concerns

- Reports of epiphyseal fracture in young weight lifters are all in poorly performed overhead lifts.
- There are no reports of fracture in strength training
- No adverse effects on linear growth
- Current studies suggest strength training actually increases bone strength
- Anecdotal reports of increased Osteochondritis Dissecans with distance running

Injury Concerns

- Scientific evidence does not show that improved strength enhances speed or jumping ability
- Strength Training does decrease sport related injury
- However there is no reduction in catastrophic injury

Conclusion

- Physical Training of prepubescent athletes is efficacious and safe when performed with appropriate technique and safety precautions

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