

## **Strength Training for Youth**

By Peter Twist

Who will be the next generation Sidney Crosby, Justin Morneau, Cindy Klassen or Hayley Wickenheiser? Ask any parent and they will tell you it could be their child with just the right amount of training, coaching and parental perseverance. There is a certain mystique about talented athletes whether they are amateur Olympians or professionals because of their sports mastery. It is not an easy path to sports success and though many pursue the dream, few excel to the highest level. Many parents eye athletic scholarships to finance valuable but expensive post secondary education and are ready to invest in "extra" training to help meet these goals. The bottom line is that a tiny percentage of athletes advance to the university varsity level or higher. Still, the other 99% will enjoy and stay in sport for life if they can improve their skills and enjoy a positive experience. For many a positive experience means excelling in multiple sports, remaining injury free and enjoying the physical outcomes that sport participation provides. At a time in their life where self esteem is challenged and peer influence is great, a well designed strength training program can help all youth athletes be successful in sport and in life.

### **Reward not Risk**

Many parents and sport coaches believe that strength training is not recommended for youth yet these same athletes compete at very high intensities in collision and impact sports. Research shows that the benefits of strength training for youth far outweigh the risks.

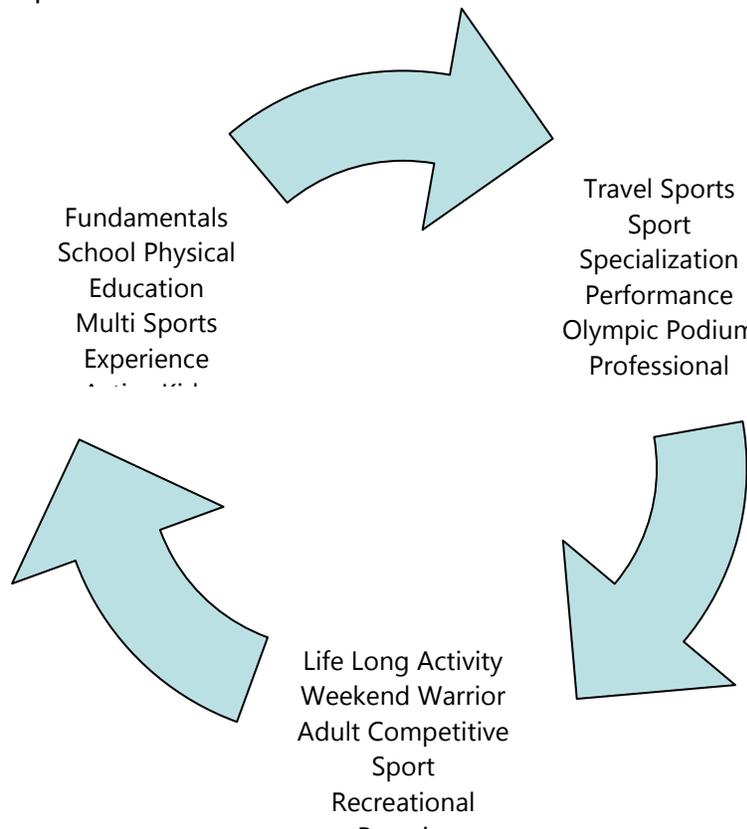
#### The Benefits of Strength Training for Youth

- Stronger muscles
- Stronger bones
- Stronger tendons
- Stronger ligaments
- More muscle
- Less fat
- Higher metabolism
- Greater physical capacity
- Greater self-confidence
- Lower injury risk

(Dr. Wayne Wescott + Dr. Avery Faigenbaum)

Interesting to note - there has never been an injury in youth strength training research studies, and the ACSM cites that over 50% of youth sport injuries could be prevented through better youth strength and conditioning programs. Provided strength training program design is age appropriate, not only does it help athletes stay injury – free, it helps them enhance many physical attributes that promote sport success and physical confidence as they navigate significant life and growth challenges.

**The Athlete Development Cycle.** The focus for Sport Conditioning Coaches is to give young children the fundamental skills to improve sports success. Youth can achieve varied level of specialized sports success (from performance to podium to professional) with focused coaching and all athletes will progress to life long sport pursuits.



**Growth and Development Considerations**

In general there are no major developmental differences between boys and girls before the age of 10. At the onset of puberty (average girls age 11, boys age 12.5 yrs) children experience a rapid transformation that lasts for approximately 4 years (+ / – 1.5 yrs) creating major differences in both males and females by sex and by age. Understanding major growth and development milestones can

provide great insight into creating effective training programs for athletes and reduce the chance of injury during the vulnerable transition.

### Neurological Development

From birth, the brain and nervous system is constantly changing and adapting based on experiences creating information pathways between the mind and the muscles. Peak changes in this system occur between birth and 8 yrs where children develop gross and fine motor patterns that become the foundation of sports skills and recreational activities. The neurological system is very pliable as it readily accepts and absorbs new movements during this stage of development.

### Skeletal Development

Children grow in height gradually until age 10 where a major growth spurt creates a high velocity height change until age 14 as the long bones grow creating gangly arms and legs most characteristic of teenagers. During this time there are minimal changes in the muscular system creating a scenario of long levers without adequate muscle size to control them creating an opportunity for injury along with a disconnect between mind and body.

### Muscular Development

Gradual change in the muscular system is evident until age 14 where circulating hormones directly linked to puberty are activated creating a surge of muscle growth from age 14 to 18 yrs. The volume of muscle growth is higher for males than females, but both sexes experience increases that help to provide strength and control for adult size bodies. By age 20 the major physical growth has reached a plateau.

## **Build Smart Muscle™**

As young athletes experience skeletal growth, body awareness and coordination are continually challenged. Long levers with minimal muscle development creates a prime opportunity for greater force production, but when combined with less muscle to absorb force, decreased body control and proprioception, young athletes are exposed to great injury risks. The use of a neurologically focused training style not only provides young athletes with a performance edge, it keeps them safe from injury and allows them to excel at a time when team

mates and competitors stumble and experience a performance decline or plateau.

Using a blend of dynamic balance challenges, multi directional movement skills and whole body strength exercises, the mind to muscle communication system is constantly challenged to build coordinated, strong and confident young athletes. This training style creates a maximum metabolic cost that burns more calories by recruiting various muscles from prime movers, to synergists and stabilizers to handle coordinated whole body, purposeful movement sequentially from toe to fingertip. Adding to the Olympic motto, the outcome is a body that is bigger, faster, stronger *and smarter*, where muscles comply with the mind's commands.

### Exercise Recommendations

Athlete Age + Approach	Growth considerations	Training Implications		
		Movement	Balance	Strength
Pubertal Adolescent (12 – 14 years)  Athleticism	Neuromuscular Plateau Peak Skeletal Minimal Muscular Injury Uncoordinated Focus on body control	Fundamental Patterns Deceleration mechanics Focus force reduction	Body awareness Core control Neural complexity Foundation for next level training	Integrated Whole Body Increase lift complexity Moderate resistance and Rep range Neural focus Controlled tempos
Post Pubertal Young Adult (15 yrs+)  Competitive	Gradual skeletal Peak Muscular Body Control Strength	Sport Specific mechanics Aggressive deceleration Read and react Unpredictable	Body awareness Core control Increase complexity Integrate with movement and strength	Integrated Whole body Multi planar Multi ROM Progressive resistance Introduce power

### Sample Exercises:

#### SlingShot Lateral Bound

This exercise integrates movement (powerful lateral bounds) with a balance challenge (single leg finish / slingshot side resistance) and strength (slingshot

side resistance). The challenge is to maintain body control with movement precision against resistance.



### **BOSU Lunge to Dumbbell Single Arm Raise / Single Leg Balance**

This exercise integrates movement (lunge to a lift) with balance (single leg balance on the BOSU balance trainer + single arm lift) with multi joint whole body strength to a single leg / single arm finish (contra-lateral opposite arm to leg). The challenge is to maintain body control with a cross body balance and single arm resistance requirement.



### **Single Arm Partner Towel Rows**

This exercise integrates a lower body isometric contraction with core rotation and upper body row with unpredictable partner manual resistance. The challenge is to overcome the partner resistance with strong legs, core and single arm upper body strength production.



### **Olympic Bar Single Arm Squat to Press**

This exercise integrates whole body movement, balance and strength, where the force to overcome the weight of the Olympic bar is initiated from the legs, transferred through the core and expressed by the single arm press. The challenge is to create force through the correct sequence from toe to fingertip to finish with a powerful push of the bar.



### **TRX Single Rotary Core**

This exercise integrates a whole body balance challenge (instability created from the lateral position using the TRX) with a controlled core rotation to teach movement precision, core rotation and core stabilization.



### **The Athletes are the Machines**

The challenge for young athletes is to learn to master their personal physical attributes and to maximize their athletic gifts. Traditional machines isolate single joints and muscles and teach individual contraction mechanics and neurological messaging. Using a Smart Muscle™ training approach the athletes are the machines. They are progressively challenged to complete complex whole body exercises that require the matching of mental focus with physical effort with every inch of every repetition. The outcome is multi joint strength and power that can be directly transferred to the sport environment resulting in muscles that work sequentially like a championship team. Personal satisfaction is gained by accomplishing every challenging exercise and physical confidence gives these young athletes the power to perform through what could normally be a very difficult phase in their growth from young to adult athlete. This personal success carries them well into their active adults years allowing them to enjoy a lifetime of sport, recreation and wellbeing.

**Peter Twist, MSc BPE CSCS TSCC-Gold PTS** is President of Twist Conditioning's 3 divisions: franchised Sport Conditioning Centers, product wholesale and the Twist Smart Muscle™ Coach Education program. To learn more about the Twist training methodologies, education and equipment available in Canada contact [www.twistconditioning.com](http://www.twistconditioning.com)