IS MY SON OR DAUGHTER READY FOR A STRENGTH AND CONDITIONING PROGRAM LIKE TD1?

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The safety of resistance training and comprehensive strength and conditioning programs for adolescent athletes has been a popular concern among parents and for good reason. This article will take a scientific approach to explain some of the common concerns highlighted regarding young athletes performing resistance training.

Youth Resistance Training and Injuries

For years, weight lifting and resistance training activities were considered to be dangerous for preadolescent and adolescent athletes. These initial reports were largely due to inappropriate training techniques, poor progression or excessive loading, poorly suited equipment and poor supervision while resistance training activities were completed and not the activity itself. This is not to say that no risk is evident, but a number of published reports, however, indicate that when properly progressed and supervised, the documented injury rates which occur are much less than other sports. For example, when sports-related injuries in youth were documented over a one year period, 0.7% of the 1,576 document injuries were from resistance training. In comparison, injury rates of 19, 15 and 2% for football, basketball and soccer, respectively, were reported (Zaricznyj 1980). Resistance training related injuries appear to mostly involve an aggressive progression of training loads or improper exercise technique; two aspects of the TD1 program which are emphasized to a great degree. As can be seen when compared to other common sporting activities the documented injury rates of resistance training are much lower.

Another important aspect to highlight regarding safety is the prevalence of injuries while completing plyometric style training. In this regard, a number of studies have found that youth participation in plyometric type activities can enhance biomechanics, improve functional abilities and decrease sports-related injuries (Hewett 1999; Heidt 2000; Lephart 2005; Mandelbaum 2005; Myer 2005).

Resistance Training and Bone Injuries

It is commonly suggested that heavy resistance training can damage the growth plates of bones. This damage could lead to complications with normal growth and development of a young athlete's bones. It's important, however, for athletes, coaches and parents to realize that this information is anecdotal or "secondhand" information that has not been supported by science. In this respect, multiple scientific reports have indicated that no evidence exists to suggest that regular participation in a resistance training program will negatively impact growth and maturation during childhood and adolescence (Falk 2003; Malina 2006; Faigenbaum 2009).

Youth Athletes and Heavy Resistance Testing

Briefly, another commonly highlighted concern is the notion that using heavy loads for determination of strength is inherently dangerous. Again the scientific literature reveals that several published studies have employed various types of testing protocols where youth athletes were asked to perform repetitions with loads as high as 100% of their maximum. In these studies and other it is consistently reported that no abnormal responses or injuries were reported by the adolescent athletes completing exercises with these loads (Faigenbaum 2009).

Science-Based Position Statement

The National Strength and Conditioning Association (http://www.nsca-lift.org) is one of the largest professional organizations in the exercise and fitness industry. With over 30,000 members all across the world, the NSCA actively works to fund strength and conditioning research, promote new findings and reinforce and develop necessary educational materials. In 2009, a scientific panel for the NSCA published a position statement devoted to the topic of youth resistance training. In this review document which contained 258 scientific references, the authors concluded that properly designed and supervised resistance training in youth should be viewed in the following manner:

1) It is relatively safe for youth to participate
2) It can help the development of muscular strength and power of youth.
3) It can help improve the cardiovascular risk profile of youth
4) It can improve motor skill and sport performance
5) It can help prevent sports-related injuries
6) It can help improve the psychosocial well-being of youth
7) It can help promote and develop positive, effective and healthful exercise habits early in life

Strength Adaptations Seen in Children

A compelling and extensive body of literature is available which indicates that adolescent athletes experience improved strength beyond normal growth and development. For perspective, Faigenbaum and colleagues in their 2009 position statement on youth resistance training (Faigenbaum 2009) cited 31 published research studies which provide experimentally controlled scientific support that resistance training performed by youth results in greater development of strength. Specifically, strength gains around 30% are commonly reported in youth athletes performing resistance training over 8 – 20 week periods and interestingly these increases are consistent across preadolescence to adolescent (Westcott 1979; Nielsen 1980; Pfeiffer 1986; Lillegard 1997).

Other Benefits of Resistance Training

An overwhelming majority of interest with resistance training lies with the development of strength and power. It's important to highlight that other positive adaptations have been shown to occur which include improvements in heart health, weight control, bone strength, psychological parameters such as self-esteem and well-being, motor performance and an increased resistance to sports-related injuries (Faigenbaum 2009). Other scientifically supported position statements from other professional organizations support these conclusions as well. These recommendations result in an overall strong consensus that participation in a regular resistance training program is more likely to improve various aspects of health and well-being in adolescent and child participants (Stratton 2004; Behm 2008; Mountjoy 2008; Roberts 2008). Moreover and a point that may have greater importance for the remainder of the young athlete's life, a number of studies suggest that the development of healthy habits from participation in a regular resistance training may carry over into more healthy adults life (Malina 2001; Trudeau 2004; Telama 2005; Rowland 2007).

Summary/Conclusions

Any exercise or activity for children, adolescent and adults has inherent risks and benefits. While initial reports in the 1970's created a popular mindset that resistance training was dangerous and not appropriate for adolescent athletes, more recent scientific evidence suggests different interpretations should be considered. In this respect, the scientific evidence suggests clearly that the risk of injury while resistance training and participating in intense strength and conditioning activities can be minimized by qualified supervision, appropriate program design, sensible and realistic progression and careful selection of exercises and equipment (Faigenbaum 2009). The authors from the position statement on Youth Resistance Training published by the National

Strength and Conditioning Association in 2009 nicely concluded these concerns by stating that, “the risk of injury associated with resistance training in similar for youth as it is for adults and no justifiable safety reasons exist which preclude adolescent from participating in such programs” (Faigenbaum 2009).

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