

Position Statement and Literature Review: Youth Weightlifting

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Position Statement

The number of organized youth sports groups and associated competitions is steadily on the rise worldwide. The popularity of weight training and the sport of weightlifting for children are also increasing despite anecdotal reports and conjecture regarding injury. There are still those who insist that training with weights and particularly the sport of weightlifting should be avoided until a person is fully developed.

The lack of data is the issue; the alarmist negative response by well-meaning physicians and scientists has done an immeasurable disservice to the sport of weightlifting. The sport is actually safer than is generally believed, especially if training and competition are appropriate for the age group and properly supervised (Pierce, Byrd, & Stone, 1999; Byrd, Pierce, Reilly, & Brady, 2003).

LITERATURE REVIEW

Considerable controversy and lack of understanding surrounds children and weight training and especially the sport of weightlifting. The American Academy of Pediatrics (1983) produced a position statement that has had serious negative impact for two decades. The paper concluded that weightlifting has a high injury rate and should be avoided by preadolescents. Sewall and Micheli (1986) concurred with the American Academy of Pediatrics, recommending that any resistive training for preadolescents should be controlled and slow and that weightlifting competition should not take place until after skeletal maturity is achieved. In contrast, Micheli (1988) admitted later that there was little scientific evidence regarding injury potential of preadolescents in resistive training and that "...potential for growth plate injury may actually be less in the prepubescent than in the pubescent, however, because the growth plate is actually much stronger and more resistant to sheer stress in younger children than in adolescents." Furthermore, Faigenbaum, Wescott, Micheli, Outerbridge, Long, LaRosa-Loud, and Zaichkowsky (1996) in a study of 7-12-year-old boys and girls, Tanner Stages 1 and 2, reported large and significant increases in strength from resistive training, with no injuries.

A second position paper by the American Academy of Pediatrics (1990) recommended, "Unless good data become available that demonstrate safety, children and adolescents should avoid the practice of weight lifting, power lifting, and body building..." (p. 802). This same notion was again stated in a third position

stance by the American Academy of Pediatrics (2001). A position paper by the American College of Sports Medicine was in support of weight training, but not with maximal weights (Faigenbaum & Micheli, 1998). This by implication would constitute a position against traditional competitive weightlifting for children. An exhaustive literature review and position paper by the National Strength and Conditioning Association (Faigenbaum, Kraemer, Cahill et al., 1996) supported children's resistive training if programs are appropriate and supervised by trained professionals. However, they fail to specifically address weightlifting, but do recommend against "interindividual competition, effectively precluding involvement in the sport.

The sport of weightlifting and the ballistic movements associated with it have been criticized as producing excessive injuries (Brzycki, 1994), however, there is little objective evidence substantiating this claim. Reviews and studies of injury type and injury rates associated with weightlifting indicate that rates of injury are not excessive and the incidence of injury is less than those associated with sports such as American football, basketball gymnastics, soccer or rugby (Hamill, 1994; Stone, Fry, Ritchie, Stoessel Ross, & Marsit, 1994). Injuries that may occur are generally the result of poor technique, excessive loading, fatigued training, poorly designed equipment, ready access to the equipment, or above all, lack of qualified supervision.

The controversial aspects of weightlifting and lack of understanding are exacerbated when dealing with children. This controversy exists even though little information is available indicating that,



under proper supervision, these activities are less injurious to children or adolescents than are other sports. In addition, the weightlifting injury rate appears to be even lower than other forms of resistance training (Hamill, 1994). Pierce, Byrd, and Stone (1999) reported no days of training lost from injuries incurred in weightlifting over a period of a year's competition and training by 70 female and male children ranging in age from 7 to 16 years. The young lifters were allowed to perform maximal and near-maximal lifts in competition as long as correct technique was maintained. Both the males and females increased strength as measured by weightlifting performance. A more detailed study of 3 females (13.7 ± 1.2 y) and 8 males (12.5 ± 1.6 y) across a year's competition (534 competition lifts) produced similar results. Both boys and girls showed marked weightlifting performance improvement and no injuries requiring medical attention or loss of training time (Byrd, Pierce, Reilly, & Brady, 2003). The conclusion drawn from these observations was that weightlifting is safer than is generally believed, especially if training and competition are appropriate for the age group and are well supervised. The authors of these papers (Pierce, Byrd, & Stone, 1999; Byrd, Pierce, Reilly, & Brady, 2003) emphasized that these results must be viewed in light of the scientific approach to training and competition with these children. Only under these conditions do the authors' suggest that resistive training or weightlifting is appropriate for children, a factor that should be true for all sports. Inappropriate training programs and competition format for any sport may increase the potential for injury.

According to Balyi and Hamilton (2004) developmental factors are absolutely essential considerations when training children/

adolescents. They propose that eight to twelve years of training is necessary for a talented athlete to reach elite levels. This is obvious in football and basketball with three years participation in middle school, four years in high school, and generally four to five years in college before playing professional sports. We often try to hurry this process in weightlifting (and many other sports).

In the book, *Weightlifting: Fitness for all Sports*, authors Dr. Tamás Aján, President of the International Weightlifting Federation and Member of the International Olympic Committee, and Lazar Baroga (1988) propose the "initial stage of training" for weightlifting should take place between the ages of 11 to 16. Starting at the ages of 11 to 12, they suggest, however, the aim of training should focus on general physical preparation and that specialized training that should not comprise more than 40% of the total training plan. This plan includes a variety of dynamic exercises and exercises to assist in the development of movement habits necessary for sport development. Participation in activities associated with track and field and basic gymnastics along with sporting games such as basketball, volleyball, and swimming are recommended as part of the training at this age, along with exercises with the barbell. The authors go on to suggest that the aims and objectives in the second year of training (ages 12-13) should be on general physical development (50%) and stress "correct habits of execution" when learning the technique of the competition exercises. More specialized training should be added gradually in successive years, remembering that for the greatest results over the long-term, each phase of training should be built on the previous phase.

The starting age for weightlifting training in Bulgaria decreased an average of 2 years from 1983 to 1993. The recommended age to begin training, in this small country that has been highly successful in weightlifting, is ten (Dimitrov, 1993). The training plan for these young athletes was well integrated with their physical development and each phase of training was built on the previous phase. A considerable amount of time was spent on general physical development in earlier years with specialized training added gradually in successive years. It must be remembered that many and likely most of the athletes participating in Eastern European weightlifting programs were selected, based primarily on genetic potential, through a comprehensive talent identification search. The emphasis for children starting at these recommended ages needs to be on general physical development that is compatible with sports specific fitness early on for at least two to three years (Aján & Baroga, 1988; Nádori, 1989). For example: weightlifting developmental fitness for children would include considerable training dealing with general body strengthening (e.g. weight-training, gymnastics, tumbling), endurance factors and enhancing cardio-respiratory ability, mobility and flexibility. However, any emphasis on cardiovascular endurance that includes primary

aerobic exercise (e.g. long distance running, swimming, cycling, etc.) should be avoided. Typical aerobic exercise has been shown to limit adaptation to strength and high power training.

SUMMARY

As with any sport, weightlifting competition and weightlifting training should be carried out with reasonable safety measures in place. In normal supervised environments the potential for injury is remarkably low. It is clear that the potential for injury is an issue that requires ongoing scientific study. The need to clarify anecdotal reports and conjecture regarding injury is essential. There is no doubt that competitive weightlifting can be appropriate for children who are supervised in training and competition by well-qualified professionals. Well qualified implies an understanding of the sport sciences, especially those related to developmental stages, with the ability and drive to apply this knowledge. Finally, in support of weightlifting for children, as with other sports, motivation would be minimal without some form of competition.

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