A growing number of boys and girls are now participating in resistance training programs in order to improve their health, enhance their sports performance, and develop good feelings about themselves. The popularity of youth resistance training is evidenced by the increasing number of physical educators and youth sport coaches who now include some form of resistance training in their conditioning programs. Despite preconceived concerns associated with youth resistance training, an expanding body of evidence indicates that resistance training can be a safe and effective method of conditioning for children, provided that appropriate training guidelines are followed and qualified supervision is present (1, 2). Yet there remains concern among some parents, teachers, and health care providers that the performance of lifts contested in the sport of weightlifting (i.e., the snatch and the clean and jerk) is inappropriate or even unsafe for children.

The snatch and the clean and jerk are sometimes referred to as Olympic-style lifts because they are performed at the Olympic games. In the snatch lift, the barbell is lifted from the platform to arms length overhead in a single continuous movement, whereas in the clean and jerk, the barbell is lifted from the platform to the shoulders and then to the overhead position to complete the 2-part lift. Both of these lifting movements are performed very rapidly and require a high degree of technical skill. Since these lifts are not typically performed in health-club settings and are not often taught in adult fitness classes, the public’s perception of these lifts is most likely influenced by television images of competitive weightlifters attempting to press 2 to 3 times their body weight overhead. These images, combined with case-study reports of youngsters who were injured because they trained without competent supervision, have resulted in the belief among some people that Olympic-style weightlifting is potentially dangerous for children.

However, the belief that weightlifting is riskier than other sports and activities in which youth participate is not only inconsistent with current research findings, but also creates a difficult environment for experienced coaches and teachers who want to introduce youngsters to more advanced training techniques and to the sport of weightlifting. In one study, it was reported that weightlifting was markedly safer than many other sports in which teenagers regularly participated (4). Although this finding may be surprising to some, it must be noted that the snatch and the clean and jerk are complex and require knowledgeable coaching and close supervision. Further, unlike other exercises such as the bench press, which can initially be performed with a moderate to heavy load, lifts such as the snatch and the clean and jerk can only be learned by using a light weight or even a wooden stick at first. In some countries, children learn the form and technique on these lifts as early as age 8, but weight is not added to the bar until they have...
developed the neuromuscular coordination and skill technique to perform the lifts correctly.

Ironically, it seems that the forces to which children are exposed in sports and recreational activities may be greater in both duration and magnitude than the forces generated during the performance of the snatch or the clean and jerk. Thus, the argument that the sport of weightlifting is dangerous for children because it involves the performance of a single maximal exertion appears suspect, because children regularly perform maximal efforts in other sports (e.g., football) and recreational activities (e.g., kickball) as they jump, tackle, throw, and kick. Even when children use submaximal loads on strength-building exercises, the last repetition of a set is often a maximum effort.

Since youngsters are forced to learn the snatch and the clean and jerk with a light weight under the watchful eye of an experienced coach, these lifts may actually be safer than other exercises commonly performed. For example, during a 1-year period, 11 adults died of asphyxia caused by barbell compression of their neck as they performed heavy benches at home without a spotter (7), and a 9-year-old boy had a similar accident (3). To our knowledge, catastrophic accidents such as these have not occurred during the performance of the snatch or the clean and jerk. Nevertheless, these accidents underscore the importance of close supervision, an appropriate progression of training loads, and safe exercise equipment when training with free weights.

The snatch and the clean and jerk, in addition to modified cleans, pulls, and presses, may be incorporated into a youngster’s training program, provided that the child is eager to learn these lifts and that qualified coaching is available (e.g., a Certified Strength and Conditioning Specialist or a USWF Club Coach). Children who have mastered the performance of introductory exercises and who comprehend sound training guidelines and safety procedures may enjoy learning the proper form and technique for these exercises. Although this level of training may not be appropriate for all children, a child who wants to learn these lifts under the supervision of a qualified coach may benefit from this type of training, provided that the focus remains on form and technique and that appropriate loads are used. In all cases, coaches must be aware of the considerable amount of time that is required to effectively teach these lifts to children and must understand the importance of gradually progressing from the basic exercises (e.g., front squat and press behind neck) to the skill transfer exercises (e.g., overhead squat.

**Figure 1.** Racking the barbell during the receiving position of the clean. Children are using 5-lb technique plates and a lightweight training bar.

**Figure 2.** Completion of the leg drive of the clean and jerk with legs in a split position.

**Figure 3.** Class of children in the starting position.
and snatch balance) and finally to the competitive lifts.

When working with children, it is important to keep in mind that they are not miniature adults. No matter how big or strong a child is, coaches and teachers need to remember that children are less mature than adults and are often experiencing new sports and activities for the very first time. Although there is no minimum age requirement for performing the snatch and the clean and jerk, we believe that children should have the emotional maturity to accept and follow directions and to adhere to safety considerations. Children should be aware of the potential for injury and should understand that they can get hurt if they do not pay close attention to coaching instructions.

During the initial learning period, children should start with a broom handle or a long piece of PVC piping and should adhere to the progression sequence described in the United States Weightlifting Federation Club Coach Manual (5). Depending upon individual needs and concerns, weights can be added to the bar, provided that the child can perform the lifts with ease while maintaining proper form (Figures 1 and 2). The foundation for maximal success in the future is the technical mastery acquired during the early years of training. Although children are in fact capable of learning complex motor movements early in life (6), the use of high training intensities during this developmental period may adversely affect the outcome of the program. Moderate training intensities (less than 75% of 1 repetition maximum) are appropriate for most young weightlifters.

A 1-hour training program performed 2 to 3 days per week is more than adequate for the young weightlifter. Each session should include a warm-up period followed by several sets of basic exercises, skill transfer exercises, or competitive lifts, depending upon each child’s training age. Our experience has indicated that children tend to learn the snatch and the clean and jerk best when they perform several sets of 3 to 5 repetitions (Figures 3 and 4). On the other hand, children should perform several sets of 5 to 10 repetitions for strength lifts such as the squat. The program can conclude with abdominal exercises, medicine ball training, and sprinting for an overall conditioning effect.

With competent instruction and a safe training environment, children can master the performance of the snatch and the clean and jerk and feel good about their accomplishments. The risks associated with advanced multijoint exercises are not greater than the risks of other sports and activities in which children regularly participate, provided that age-specific training guidelines are followed. Teachers and coaches need to appreciate the time it takes to teach children these lifts and the need to focus on the technical mastery of each lift before heavy loads are used. If boys and girls are given the opportunity to learn these lifts properly during their developmental years, they will be more likely to reach their genetic potential in musculoskeletal strength and power during adulthood. ▲

References

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