The Safety, Effects, and Implementation of Olympic Weightlifting in Adolescents

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*Introduction*

 As sports in America continue to grow in popularity so does the level of competition. With the increase in competition so increases the level of work that it takes to be successful at the selected sport. What this means for the average athlete is that he/she must work harder and smarter in order to win in their sport. One type of training that today’s athletes are using to gain the ever elusive performance edge are Olympic Movements to improve speed and power. Olympic weightlifting is best seen in three types of exercises the snatch, clean, and jerk. All three lifts require the generation of force against the ground to first accelerate the barbell upward, then use force against the inertia of the barbell to accelerate the athlete downward and into position to receive the bar (Everett, 2008). Mastery of these lifts requires many years of effort and practice. Speaking for myself, I have spent nearly ten years working toward the mastery of these lifts and there still remains plenty of room for growth. While Olympic weightlifting has been proven effective in increasing overall explosiveness in adults, I feel it important to know whether or not it can be safe and effective in adolescents. With this paper I hope to address the four issues of safety, why Olympic, effects, and implementation strategies.

*Is it Safe*

 For many years the use of resistance training to increase muscular and endurance in prepubescent and adolescent boys and girls was highly controversial. The main reason for this controversy was the idea that lifting weights would stunt the growth of a child. Another reason for controversy was that scientist speculated that lifting would have no effect on the muscles of the adolescent (Wilmore, Costill, and Kennedy, 2008). Fortunately through research and experience science has proven these controversial ideals to be ill thought. The Canadian Society for Exercise Physiology position paper on resistance training in children and adolescents confirms that there is no minimum age for weight training for children. However, strongly recommending that training and instruction must be appropriate for children and adolescents, involving a proper warm-up, cool-down, and appropriate choice of exercise. Behm and colleagues also go on to say that when a child has reached a more advanced stage of lifting Olympic style lifts are appropriate. The article concludes that resistance training can produce lead to functional muscular strength, endurance, power, balance, co-ordination, and health benefits (Behm et al, 2008). An example of age appropriate resistance training would look like the following,

14-15 years, progress to more advanced youth programs in resistance exercise; add sport specific components; emphasize exercise technique. 16 years or older, move child to entry level adult programs after all background knowledge has been mastered and a basic level of training experience has been gained (Wilmore, Costill, and Kennedy, 2008).

Not only is resistance training safe and effective for adolescents it has also been shown to reduce the likely of injury in a youth sporting event. In 2004 Faigenbaum & Schram looked at five different studies conducted to find out what type of training would best reduce the rate of injury in youth sports. The first study consisted of 42 members of an intervention group and 258 members of the control group. The intervention group participated in weight training, plyometrics, and sport specific conditioning. The intervention group showed a significant decrease in injuries, 14.7% controlled versus 33.7% intervention, (Faigenbaum & Schram, 2004). As with other studies this one also strongly recommends that professionals who work with children should pay close attention to exercises that are prescribed. As we will see later in the paper Olympic lifting can take care of all of the safety aspects.

*Why Olympic*

Before we can look at the effects of Olympic Weight Lifting we must understand why it is so different from traditional methods of weight training. A major lift in when it comes to traditional weightlifting is the squat. In fact Arnold Schwarzenegger calls the squat the king of all lifts. The lift engages nine different muscles the gluteus maximus, semimembranosus, vastus laterus etc... It is performed by placing the bar on ones back and squatting down until the lifters thighs are just below parallel to the floor (Schwarzenegger, 2009). Once the lifter has reached proper depth he or she will return to the starting position by simply standing up. While the majority of coaches will agree that the squat is indeed the king of all lifts it does lack one very important aspect, speed and explosiveness. This is where Olympic weightlifting comes into play. As mentioned above the three major Olympic lifts are the clean, jerk, and snatch. Today I will cover the power clean. The power clean also involves a number of different muscles 11 to be exact. The clean involves five different phases of the lift. The first pull, transition, second pull, catch, and downward movement phase. The lifter will pull the bar from the ground and progress through the stages at the end of the lift bar should be resting on the shoulders of the lifter. Unlike the squat this lift must be perform with an extreme use of explosiveness. This is important to athletics because of what is called the triple extension. The triple extension is the extension of the ankles, knees, and hips to produce really any given athletic movement (Frounfelter, 2009). When one thinks about it there is nothing in athletics that doesn’t involve the triple extension. Therefore in order to be explosive and fast one must train with more attention given to athletic movements instead of the traditional down and up way of doing things.

*Effects*

 A recent study took 27 male student athletes from rural high school football programs and divided them into an Olympic training group, a traditional lifting group, and a control group. The goal of the authors was to compare the effects of Olympic lifting on the vertical jump versus traditional weight lifting. After eight weeks of training researchers found that there was no significant mean difference in the Olympic training group and the traditional group (Crannell & Barfield, 2008). However, the authors concluded that Olympic lifts coupled with traditional lifts will increase vertical jump and that Olympic lifting does indeed hold a slight advantage over the traditional lifts. Another similar study from Hoffman et al, 2004 took twenty division three football players and trained them for fifteen weeks in the same groups as the other study Olympic and traditional. At the end of the fifteen weeks the athletes were tested in the bench, squat, forty yard dash, agility, and vertical jump. After the end of the fifteen week training sessions there were significant improvements in the squat by both groups. One interesting find was that there was an 18% greater improvement in squat and a twofold greater improvement in forty yard dash in the Olympic training group. I believe there is a great quote that can summarize the effects of Olympic weightlifting,

“Olympic weight training uses exercises that combine high force and high velocity movements and is likely better suited for developing strength, power, and speed.”(Hoffman et al, 2004)

*Implementation for Adolescents*

 As mentioned above at the age of 14 and above, which are ages that I work with, they should be beginning to be taught the advanced techniques of resistance training. This would be a excellent time to introduce Olympic weight lifting to an adolescent. Duba et al, 2007 created an article with a 6 step progression model for teaching the hang power clean. It is this method of progression that I use personally to teach Olympic lift to my high school athletes. This 6 step model starts by teaching the adolescents how to start the lift and how the lift should end. The model then progresses into the middle parts of the lift by teaching the power shrug, power shrug + row, power shrug + row + catch, power shrug + catch, and lastly the entire power clean. Because of the technical aspects of this lift it is essential to teach it in parts. The article emphasizes the importance of teaching these lifts with only the bar and no weight to ensure that the athlete learns the lift properly.

*Conclusion*

I believe that has been well established that Olympic lifting plays a vital role in developing an explosive athlete. When an athlete is introduced to Olympic weight training in their adolescents they are far more likely to develop the fundamental athletic movements that will produce a successful athletic career. I would like to caution that Olympic weight lifting is extremely technical and should be taught only by a qualified professional. Adolescents should only attempt Olympic lifts once they have achieved a high level fitness so that their body is strong enough to handle the stresses that Olympic weight lifting can place on the body.

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