

ASK THE DOCTOR (from Powerlifting USA Magazine 4/07)

Dear Doc Mauro: I have a 12-year-old son who has been competing for two years. There's been a concern over weight lifting at his age and the potential for stunting of growth. Can you shed some light on this? I've revised his plan so that he would deadlift only 2 months away from a meet and not year round. Other exercises I've added are the seated bench press machine, lat pulldowns, cable curls, seated leg curl, seated leg extension, chinning, lat pulldowns and seated cable rows. All of these exercises start out with warm-up sets of 20 and 30 and go to around to 50 lb. area for the work out.

He started box squatting, and after beginning with the 20 lb. bar he's now worked his way up to doing 2 reps at 85. Benches started this past fall; beginning with the 20lb. bar and on his best day he has done 2 reps at 60 lb. He works his upper body one night a week, and one a week for legs. That's it for right now. I'm willing to leave him time to be a kid. If for some reason my approach has been more hell bent for leather than I'd expect, tell me. I know that sports medical science is a growing field and if there are old myths to debunk, please do so. Thanks for your answer and the time it took you to read all this.

...A concerned father, John M

Hi John:

Let me assure you that the way you're training your son is not only safe, but also competent and commendable. I've always found it a bit perverse when sports like power lifting are singled out as being both inappropriate and dangerous for pre-pubertal and peri-pubertal children. In my four decades of being involved with weight training in general and powerlifting in particular, I've yet to see any serious injuries in properly supervised kids using weights. It's people like you that makes the program safe for children making sure they know how to do the lifts correctly, always staying in control, not overdoing it and keeping within their limits. And, most of all, supervising them while they're lifting. On the other hand I don't see a lot of naysayers to kids being involved in competitive sports where the chance of injury is much higher. In fact, as reported by the Consumer Products Safety Commission, roughly 4 million kids between the ages 6 and 16 end up in hospital emergency rooms for sport-related injuries each year. Eight million more are treated for various medical problems caused by their sports such as shin splints, ligament, joint and tendon injuries, and stress fractures.

The short answers to your questions are: Does weight training affect your linear growth? No. Is weight training dangerous? Not if done properly. Are health professionals knowledgeable about weight training in children? – They should be, but most aren't. Now let me back up what I'm saying.

The authors of a paper published in 1987 (Am J Sports Med. 1987 Sep-Oct 15 (5) :483-9. Strength training for prepubescent males: is it safe? Rians CB, Weltman A, Cahill BR, Janney CA, Tippet SR, Katch FL.) stated: *This study examined the safety of one type of strength training for prepubescent males. Eighteen males (average age, 8.3 +/- 1.2 years) participated in a 45 min/session, three session/week, 14 week supervised strength-training program with an attendance rate of 91.5%. Concentric work was done almost exclusively. KinCom analysis show significant strength gain in his group (P less than 0.05), while an age, sex, and activity matched control group did not gain strength. Safety was evaluated by injury surveillance, blood pressure and heart rate monitoring, scintigraphy, and creatine phosphokinase measurement. Effects on growth and development, flexibility, and motor performance were also investigated, as these are factors with an impact on sports injury occurrence. Results showed that in the short term, supervised concentric strength training results in a low injury rate and does not adversely affect bone, muscle, or epiphyses; nor does it adversely affect growth, development, flexibility or motor performance.*

A review paper in 1993 (Pediatr Nurs.1993 Jul-Aug: 19(4): 325-32. Strength training and the immature athlete: an overview. Metcalf JA, Roberts SO.) stated: *The developing musculoskeletal structures of the immature athlete are uniquely susceptible to injury, particularly at the physes [growth plates]. These growth plates are present in arm and leg bones, and some may not close until the late teen years. Early literature suggested that weight training might be inappropriate for these athletes. However, recent evidence suggests that properly done strength/resistance training may not only be safe, it may also help reduce the risk of injury for the young athletes.*

In 2003 a paper (Pediatr Endocrinol Rev. 2003 Dec; 1(2): 120-7. Resistance training, skeletal muscle and growth. Falk B, Eiakim A.) stated: *Resistance training in youth and its effectiveness, possible effect on growth and safety consideration, has received considerable public and scientific attention in recent years. Although few early studies questioned the usefulness of resistance training in children, numerous recent studies has demonstrated its effectiveness in both children and adolescents. Nevertheless, the optimal intensity and volume of training of youth of different ages requires further study. The increase in strength following resistance training in youths, especially in perpubertal children, is believed to be due mainly to neural adaptations and only minimally, if at all, to muscle hypertrophy. Few studies have examined the long-term effect of resistance training on growth. The few which have, found that, contrary to the common misconception that resistance training may retard growth. Scientific evidence indicates that resistance training results in increase serum IGF-I and there is no detrimental effect on linear growth. Finally, numerous studies have demonstrated that with appropriate supervision and precautions, resistance training can be safe and effective for children and adolescents.*

In November of 2006 an evidence based review paper (Clin J Sport Med. 2006 Nov; 16(6): 478-87. Weight training in youth growth, maturation, and safety: an evidence –based review. Malina RM) concluded: *Experimental training protocols with weights and resistance machines and with supervision and low instructor/participant ratios are relatively safe and do not negatively impact growth and maturation of pre-and early-pubertal youth.*

There was another study published in 2006 (J Sports Sci. 2006 Sep; 24(9): 987-97. The effect of a complex training and detraining program on selected strength and power variables in early pubertal boys. Ingle L, Sleaf M, Tolfrey K.) in which the authors conclude: *In pre- and early pubertal boys, upper and lower body complex training (a combination of resistance training and plyometrics) is a time-effective and safe training modality that confer small improvements in anaerobic power and jumping, throwing and sprinting performance, and marked improvements in dynamic strength.*

The bottom line is that with intelligent guidance and supervision so that the movements are done safely, moderately, in proper form and with complete control, powerlifting is safe and healthy for all kids. And for anyone looking for my “rules of engagement” here they are:

- . The young power lifter should be mentally and emotionally mature. There’s no room fooling around while you’re lifting.
- . The first several weeks should consist of basic physical, conditioning and learning techniques.
- . Don’t let them attempt weight that they can’t perform comfortably and with complete control.
- . Training intensity and volume should be in line with what the kid can cope with easily and safely.
- . Emphasize correct technique and gradual progression. **Stress that success should be measured in technique perfection first and performance after.**
- . **Repetitions should only be performed with weights that allow the last rep to be rather easily executed.**
- . Never overtrain and thus avoid overuse injuries and illness. Training three or four times a week is more than enough. And most importantly, have a Dad who really cares.

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