

Children and Resistance Training

The word "children" refers to the age group 1 yrs old through about 11-13 yrs old (before puberty), and typically this range may be divided into early childhood/preschool and elementary children (Lloyd et al., 2014; Kenney, Wilmore, & Costill, 2012). Age-appropriate exercise including the controversial resistance training is beneficial for children to help them develop/refine motor skills, good movement patterns, and coordination that will prepare them for the activities of adolescence and adult life (Bukowsky, Faigenbaum, & Myer, 2014; Faigenbaum, Lloyd, & Myer, 2013; Faigenbaum et al., 2014, Lloyd et al., 2014; Malina, 2006). Exercise for children will also help them with social development such as team work, communication, self-image, confidence, and leadership to name a few (Lloyd et al., 2014). Faigenbaum et al. (2013) noted that lack of exercise and lack of nurturing motor skills development may lead to a certain "underdevelopment" and less physical preparedness, especially for sports and social physical activities as children grow older. This leads to some "awkwardness" in those children that may influence them to be more sedentary or not pursue sports and physical activities due to negative reinforcement (Faigenbaum et al., 2013).

Faigenbaum et al. (2013), Kenney et al. (2012), and Malina (2006), noted that strength changes in children may mostly be attributed to development and improvement of motor skills, coordination, increased motor unit activation, and neurological adaptations. Better movement patterns and movement efficiency of the child's integrated neuromuscular system should be nurtured at this age (Bukowsky et al., 2014; Faigenbaum et al., 2014; Kenney et al., 2012; Lloyd et al., 2014). Faigenbaum et al. (2014) noted the importance of integrative neuromuscular training and creating a rich motor-learning experience for children to develop competency in fundamental movement skills or FMS (locomotion, object control, stability, etc.).

Age-appropriate exercise/resistance training program design is important. Children need to be able to follow directions, and have appropriate levels of balance and postural control with respect to their age and activity (Lloyd et al., 2014). Good exercise form, correct execution and techniques should be emphasized and highly encouraged as well as being creative with exercise and having fun as children are very capable of grasping these concepts with proper positive reinforcement and motivation (Lloyd et al., 2014; Bukowsky et al., 2014). Make exercise fun, stimulating, and engaging so as to encourage and empower children to participate actively (Bukowsky et al., 2014).

Malina (2006) and Lloyd et al. (2014) suggested incorporating resistance training two to three times (on non-consecutive days) per week into children's physical education program. Generally, international health recommendations are for 60 minutes of overall exercise or physical activity per day, not necessarily implicating that children should spend the entire 60 minutes on resistance training (Bukowsky et al., 2014; Faigenbaum et al., 2014). Faigenbaum et al. (2014) found that incorporating 15 minutes of integrated neuromuscular training 2 times per week for 8 weeks into a standard physical education program (PE) resulted in positive gains in health and skills development of children.

Lloyd et al. (2014) noted that while research indicates that testing for a child's (or adolescent's) 1 repetition maximum (1RM) is generally safe when conducted by a qualified

professional, it is often unrealistic to do so in a classroom setting (or when there is not a qualified professional present) and when children fatigue, there are usually observable signs such as loss of focus and poor form. For the untrained child, a general starting prescription is for low volume (1-2 sets), fewer repetitions (to start maybe only 1-3 depending on the child's ability), low to moderate intensity (again depending on the child), and lots of feedback from the coach/instructor (Lloyd et al., 2014). These variables may be progressed as needed, but not by sacrificing correct form and techniques (Lloyd et al., 2014). Children work better in "spurts". Lloyd et al. (2014) noted that children generally recover quickly between sets, but the rest period should reflect the child's intensity of work and difficulty of the exercise (1 min may or may not be adequate). Faigenbaum et al. (2013) suggested changing the variables from time to time and rotating high and low intensity days--keep things interesting, stimulating, but not random/unpredictable.

Integrated, whole body (or multijoint) exercises that develop motor skills, coordination, balance, and good fundamental movement patterns (e.g. squatting, throwing/tossing, catching, lunging, pressing, pulling, rotational skills, jumping, running, skipping, lateral shuffling, change of direction etc.) are more important than focusing only on muscular hypertrophy (Bukowsky et al., 2014; Faigenbaum et al., 2014; Lloyd et al., 2014). Equipment should be appropriate for the size of the child (e.g. child sized weights, balls, ropes, etc.) (Lloyd et al., 2014). Bodyweight exercises, medicine balls, child-sized "sandbags", battling ropes, BOSU, and exercise tubing/bands are some examples of appropriate modalities (Bukowsky et al., 2014; Lloyd et al., 2014).

Bukowsky et al. (2014) introduced a program called FUNdamental Integrative Training (FIT) for physical education that combined health-related exercise (e.g. cardiovascular fitness, muscular strength, flexibility) and skills-related exercise (e.g. agility, balance, coordination, speed, power, reaction time). A FIT session starts with dynamic warm-up (about 5 minutes) with medicine balls, followed by locomotor drills such as skipping, jogging, agility ladders, squats, and lunges (Bukowsky et al., 2014). Then warm-up is followed by setting up stations of different functional exercises that students rotate through (e.g. circuit).

My approach to training children would be energetic, incredibly positive, hugely fun and engaging. I would try to make a game of exercise, use circuits or "courses", and use bodyweight exercises, medicine balls, and tubing bands. I would incorporate pilates and yoga as well--adapted for the appropriate age and skill level of course. I would also teach body awareness, accountability and responsibility by having the children record their lessons/progress in a journal. Depending on the child's age, I would try to infuse the lesson with some "why we are doing this" type of factoid/interesting trivia.

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My personal thoughts about exercise and resistance training for children are that creating a positive, fun, engaging, stimulating atmosphere that later on the child can associate with exercise is vitally important. Building self-esteem and confidence should not be overlooked--it is something that growing up, I never received in recess or physical education classes and I was "that fat kid outlier". PE was terror and full of bullying all the way up through high school. I think children need to feel good on the inside and know that trying new things, and failing or succeeding is perfectly ok. It is perfectly ok to be imperfect so long as one perseveres and is respectful of his/her own limitations as well as those of others. I feel that "everything else" (e.g. hypertrophy, competition, etc.) will fall into place later. I think at the age of children, moving well and moving often is more important. I'm speaking of the general population and not the child prodigy. I want to empower children, and people of all ages. The psychological and motivational techniques are really not that different. One has to come from an honest, genuine, and sincere place. I think children do pick up on that.

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References

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