# Children and Marathoning

## How Young is Too Young?

By Stephen Rice, MD
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*References available upon request, contact* ***webmaster@runningtimes.com****.*

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In recent years, the world has witnessed, with accelerated speed, the erosion of children experiencing and enjoying childhood and adolescence. been a drive to have children grow up quickly and become immersed in the adult world-where they will spend most of their years. This is done in every phase of their young lives, often by caring parents and communities, without a true understanding of the developmental and emotional nee childhood and adolescence.

Justification for such thinking comes from the notion that Life is competitive, life is `a race.' We must start early on that path to ultimate success. E such misconceptions, myths, and inappropriate expectations begin almost from birth, progress through infancy and early childhood, and culminat adolescence. They are seen in areas of learning, eating, and physical activity. And so it is with the notion that running a marathon race of 26.2 mi sensible and appropriate activity for youngsters less than 18 years of age.

Children are not small adults. Their anatomy and physiology are developing and not fully mature. Despite these concepts, which are intuitively un the broadest sense, in practice, and especially in athletic pursuits, these distinctions are forgotten or ignored.

The focus of discussion for some may be exclusively about whether participating in marathon events is detrimental physically to participants. This however, reviews the medical literature also in regard to whether there are emotional and developmental issues that should play a major role in d the policy regarding young athletes running in full-length marathons.

**BACKGROUND**

The American Academy of Pediatrics (AAP) Committee on Sports Medicine and Fitness has published various statements in recent years regard reasonable guidelines for youth participation in physical activity. One statement published by the AAP in May 2000 addressed the benefits of phy and activity in schools. [1] The key point of this statement is that positive health-related behaviors acquired in childhood are more likely to be car adulthood. [1-3] Aerobic distance running for fitness as a child clearly can be beneficial to one's health as an adult. [1,4] Such fitness can be attai however, without ever approaching the rigors of training and distance covered in preparing for and running in marathons. [5]

In another statement in June 2001 titled Organized Sports for Children and Preadolescents, the AAP committee outlined clear recommendations involvement in organized sports. [6] The overall suggestion is to set reasonable goals for the child, including acquire basic motor skills, increase p activity levels, learn social skills to work as a team, learn good sportsmanship, and have fun. One could contend that marathon participation coul of these goals. In this same statement, however, the AAP committee implied that sporting activity should be geared to meet the developmental le children and adolescents in regard to their physical abilities, cognitive capacities, initiative, and interest. [6,7] This is not possible for a child marat Emotional burnout is a real phenomenon that can have the exact opposite effect of that intended by participation. Children may develop feelings frustration when the physical and cognitive demands exceed their internal resources.

In their statement on triathlon participation by children in 1996, the AAP Committee on Sports Medicine and Fitness recognized that children your 18 years require shorter distances of competition and specific guidelines to protect them from harm in competitions designed for adults. [10] The statement clearly delineated safety precautions to be followed in designing such a competition. Their recommendations stated that triathlons for c adolescents, similar to all other activities, should be specifically designed to meet their needs and provide safety, fun and fitness rather than com distances for each of the three events are significantly less than those used by adults; further, there are distance categories for children aged 7-1 15-19. The AAP statement outlined safety guidelines, including: tapering events in accordance with weather conditions, requiring a pre-event swi requiring an appropriate number of lifeguards for the swim, holding the swim in pools of appropriate temperature water rather than in open waters the bicycle course to motor vehicles, mandating bicycle helmet use, providing adequate fluids during and after competition, preparing to handle m problems or emergencies, and screening all athletes before competition. [10] These recommendations underscore the concept that it is appropria necessary to provide clear guidelines and modifications for participation by a child in an adult event.

A clear-cut physical barrier to marathon running in children is the decreased ability to withstand climatic heat stress by the exercising child or ado 13] Children have a greater body surface area-to-body mass ratio than adults [11,14]; children gain more radiant heat on a hot day and lose more surrounding environment on a cool day compared with adults. Children also produce more metabolic heat per unit of body mass and have a lowe capacity, resulting in a decreased ability to dissipate metabolic heat. [12,15,16] A child takes longer to acclimatize to heat than an adult. [11] Fina capacity to convey body heat by blood from the body core to the skin is reduced in the exercising child. Children are subject to a greater increase temperature during endurance activities than are adults.

**OVERUSE INJURIES**

Long distance running places high mechanical loads on the skeleton from ground reactive forces associated with gravity and from muscle contra walking, an individual is confronted with a ground reactive force equal to his or her body weight. While running, however, these gravitational force between three and six times body weight, depending on whether one runs on flat surfaces or hilly terrain and on the length of one's stride (especi going downhill). A runner lands on each leg between 500 and 1000 times per mile, again depending on stride length.
Most injuries experienced by marathon runners are overuse injuries. [17-19] It is well established that overuse injuries are of multifactorial etiolog of these common risk factors for overuse injuries exist among children and adults.

Risk factors unique to the growing child are numerous. It is well known that stress fractures, a distinct overuse injury, are a function of the numbe repetitions and amount of applied force per repetition. [17] A child with shorter stride length subjects himself or herself to more repetitions of impa the same distance as an adult. Immature articular cartilage is more susceptible to shear force than adult cartilage and predisposes children to ost dissecans. [20,21] It also has been shown that injuries to the growth plate from repetitive trauma are possible etiologic factors in adult-onset arthr [20,22,23] Children are also prone to injury at apophyses, such as the tibial tubercle, resulting in Osgood-Schlatter disease, and the calcaneus, re Sever's disease. [20,24] A final characteristic of children that predisposes them to overuse injury is the asynchrony of bone growth and muscle-te

elongation. During periods of rapid growth, bone growth occurs first with delayed muscle tendon elongation and resultant decreased flexibility. [20

For the safety of young runners, it is imperative that the training program and its progression be followed closely and monitored carefully. From in surveillance data conducted on high school athletes in Seattle, Washington, over a 15-year period, the activity with the highest rate of injuries wa country; this injury rate was statistically significantly higher than the other known high-risk sports of football, wrestling, and gymnastics. [26-29] Bo country also had a surprisingly high rate of injuries, placing fifth overall (behind girls' cross-country, football, wrestling, and girls' soccer). Distance among adolescent boys and girls is associated with a relatively high rate of injury. For these athletes, the competitive distance is no more than 3 Training to run in a marathon, which is more than eight times the usual cross-country competitive racing distance, is an inappropriate activity for c adolescents.

Newspaper articles about injuries in cross-country running appeared after the Seattle high school injury surveillance study was publicized in the la Several of these articles featured stories about injuries to young promising cross-country runners, whose careers were cut short because of recu significant overuse injuries. Some orthopaedic surgeons have expressed concern that athletes encouraged to do intensive running before skeleta may be predisposed to degenerative diseases of the joints and cartilage as adults. [30]

Among young athletes, preparing for a marathon is ill advised. In this population, more is not better; there is ample time to increase one's mileage personal goals when athletes begin college competition at approximately age 18.

**PSYCHOLOGICAL CONSIDERATIONS**

Many athletes involved in intensive athletic endeavors (which by its very nature marathon participation is) experience emotional burnout and loss esteem, losing interest in the very activity that dominated their childhood and early adolescent years. Much attention has been given to the issue psychological effects of marathon running on child participants in the lay press. NBC Nightly News profiled a family during a summer 1988 broad five children (ages 6-16 years), all of whom participated in distance running, with training that included running 7 days per week. This family has b used in the lay press in arguments for and against youth participation in marathons. [32,33] Reports of this family and other families claim that the regimen is the child's idea and that each child truly enjoys this activity. Society accepts the concept, however, that below certain ages a child is in giving true consent. Heretofore, races have been sanctioning these activities by allowing children to compete in marathons, providing an avenue encouragement for this behavior. The fact that marathon record times for children in age groups younger than 10 and between 10 and 13 exist or fuel the desire to compete and better that record. Marathon running is a serious activity, one that generally is recognized as stressful to all who en Subjecting children to the stresses of marathon running and training is not healthful.

**FEMALE ATHLETE TRIAD**

Participation in certain sports predisposes female athletes to developing the female athlete triad. [34] This triad consists of three interrelated conc disordered eating, amenorrhea, and osteoporosis-and is directly associated with intense athletic training. [35-37] Sports that place athletes at hig developing this condition include those in which (1) thinness is emphasized, such as gymnastics, figure skating, diving, synchronized swimming, those in which leanness is believed to improve performance, such as long distance running, swimming, and cross-country skiing; and (3) those in weight classification exists, such as wrestling, martial arts, and rowing. [34] Marathon participation clearly is an activity that can lead to the female

**APPROACHES OF OTHER ORGANIZATIONS**

The sport of tennis confronted similar issues during the mid-1990s regarding the age at which athletes should be allowed to compete in tourname regulations were initiated because of the burnout problems of Jennifer Capriati and the impending rise of Venus and Serena Williams. The USAT ages and number of tournaments the participants could engage in. The results have been positive. Jennifer Capriati personally shook off her lost return to championship form, and the Williams sisters, forced to conform to restricted opportunities as children, are now the dominant forces in th tennis game today. The actions of the USATF were implemented after seeking expert medical opinions regarding the physical, mental, and devel nature of potential problems associated with unrestricted competition by girls.

**CONCLUSION**

Adults and parents are often called on in society to set limits and guidelines for precocious and demanding children. It is in the overall best interes to make participation in a full marathon an adult activity, reserved only for those 18 years old and older. Ample opportunities exist after 18 years c participate in the exhilarating experience of marathon running.

Although it is conceivable that given proper biomechanics and anatomy, a quality progressive training program, and appropriate maturity and cog long distance runner can have a positive experience from participating in marathons before 18 years of age, this special individual would be the e not the rule. Examples of such individuals do exist but serve to demonstrate that decisions rendered regarding participation are not designed with exception to the rule as the critical parameter.