

Risks in Distance Running for Children

In recent years, there has been a surge in the participation of children in distance running. It is not unusual for an aspiring prepubescent athlete to run 10 to 15 miles daily and to participate in distance races, including marathons (26.2 miles).

Although running is a natural activity that can maintain and improve aerobic fitness, racing and particularly training for long distances have their risks. Distance running may induce musculoskeletal, endocrine, hematologic, thermoregulatory, and psychosocial damage. Most reports on such potential damage have not been evaluated with proper epidemiologic scrutiny. It is unknown whether the risk is greater for children than for adults. Nevertheless, the American Academy of Pediatrics wishes to alert the physician to the presence of such risks. Even without established guidelines and extensive documentation, physicians can give children, parents, and coaches advice that fosters healthy physical and psychosocial growth.

The most common musculoskeletal problems in the young runner are overuse injuries (ie, those that result from a mechanical stress repeated during a long period). These include epiphyseal plate injuries, stress fractures, patellofemoral syndrome, and chronic tendonitis.¹⁻⁴ The incidence of such injuries seems to be related to the total distance covered in training and competition.⁴ Such overuse injuries may lead to a chronic disability (eg, chronic arthritis and growth deformity). Therefore, early medical intervention is important.

Female distance runners often experience delayed menarche.⁵ Its etiology and relevance to health have yet to be established. In most cases, menarche will occur several months after cessation or reduction in volume of training. When a female athlete displays a delayed menarche, a medical

etiology should be considered—rather than assuming causation by exercise.⁶

Although studies have not been performed in prepubertal children, iron depletion, manifested by low serum ferritin concentration, even with a normal hemoglobin concentration, is not uncommon among adolescent runners of both sexes.⁷ An iron-poor diet is probably a main contributor to this disorder. Hemolysis is an often-cited cause of iron loss in runners and is manifested by low serum haptoglobin levels.⁸ One possible mechanism is repetitive foot strike (previously known as “march hemoglobinuria”). Hematuria and mild occult gastrointestinal bleeding have been observed and may contribute to iron depletion.

A child's ability to maintain thermal homeostasis during prolonged running is less efficient than that of an adult, particularly when the climate is very hot or very cold.⁹ This deficiency may result in heat- or cold-related disorders, including heatstroke or hypothermia. Of particular concern is the dehydration that accompanies prolonged running, even if the child is given fluid *ad libitum*.¹⁰ In addition, children take longer than adults to acclimatize to hot, humid climates, which further increases their risk for heat-related disorders.⁹

Psychologic and social problems for the child runner can result from spending long hours in training and setting unrealistic goals. This is similar to the effects of participation in other competitive sports, in which the child may be submitted to inappropriate pressures. A prepubertal child should be allowed to participate for the enjoyment of running, without fear of parental or peer rejection or pressure.

Total mileage (and number of hours) covered by the child during training rather than the distance run on the day of competition may entail the greatest risk to the child's well-being and health. Therefore, suggestions cannot be made for specific maximal racing distances for children. It is important to recognize, however, that heat-related disorders are particularly pronounced in races that exceed 30 minutes in duration.

Until further data are available concerning the

The recommendations in this statement do not indicate an exclusive course of treatment to be followed. Variations, taking into account individual circumstances, may be appropriate.

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relative risk of endurance running at different ages, the American Academy of Pediatrics recommends that, if children enjoy the activity and are asymptomatic, there is no reason to preclude them from training for and participating in such events. The risks discussed in this statement should be considered by pediatricians when counseling families about the advisability of their children participating in distance running.

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