

## Children and Running: At What Distance Safe?

### To the Editor:

"Children and Marathonizing: How Young is Too Young" by Rice and Waniewski outlines the theoretical concerns surrounding the issue of children and adolescents participating in marathon runs.<sup>3</sup> There is little evidence to support the suggested ban on youth participating in marathons and the manuscript offers little advice other than "just say no." When I look at injury in youth sports, I find it difficult to single out long distance running even at the marathon level as a significant risk to long term health and well being compared with baseball, ice hockey, soccer, gymnastics, figure skating, and football, or the extreme sports that children and adolescents choose to escape adult supervision.<sup>2</sup> The injury incidence cited for both boys' and girls' cross country running is most likely due to ill advised training programs that encourage excessive summer running in the 300 to 500 mile range to prepare for the 5 k and 4-5 k competitions, respectively, during the high school season. In some states 11-year-old students are eligible to participate in varsity level high school cross country racing.

Although cases and anecdotes do not constitute an evidence base to guarantee the safety of children who choose to run a marathon, my experience with young runners who have entered and completed the Twin Cities Marathon over the past 22 years has not demonstrated any adverse injury patterns.<sup>4</sup> In the mid 80's we were faced with our first 10-year-old to enter the marathon. We were not sure how to proceed and a literature search provided no defensible course of action. In my role as medical director, I called the father who related the following story. His 10-year-old son had been running shorter distances with the father over the past couple of years and both looked forward to the time together. The father chose to up his running to the marathon level and told his

son that he could not run with him at that distance. The father increased his training volume while the son continued to run on his own. One day in the early summer the child asked his father how many times around the block was the same as a marathon. The father thought his son was asking for help solving a math problem and together they calculated the distance at 56 times around the block. He was surprised a few weeks later when his son approached him and stated that he was ready to enter the marathon as he had just finished running around the block 56 times. It had taken him several weeks to build up to the distance. The father was leery but entered the child to run with him. They finished together in the 4-5 hour range. The child stopped by the medical tent after the race at my request. He was fine and looked better than many of the adults in the finish area. To date, none of the under 18 entrants have required care in the medical tent at the marathon finish line.<sup>4</sup>

So what is the point? We have no objective evidence to either restrict or promote running the marathon or other distances above 5 k in children and adolescents. We are also faced with gross inactivity in our young population. Even though the "no participation" expert opinion is well intentioned, given no guidelines people do what they please and often make preventable errors. While I would not encourage children and adolescents to run marathons, the data is not there to prove it any more risky than many of the sports that are promoted for today's youth. The area of greatest concern may not be the race itself, but rather the volume of training required to adequately prepare to run the race as a child or as an adult. I would make the following suggestions for children (and their parents) and road race officials regarding marathon and longer distance road race participation:

- Races that choose not to allow competitors from the child and adolescent age categories should state the decision is an administrative choice and not couch the decision in a "medical" opinion statement.
- Marathons and other long distance races should **not encourage** child and adolescent participation.

- Marathons and other distance races should **not keep youth age group records** below age 18 years and should not publicize the participation of child or adolescent runners.
- **Self motivated** children and adolescents should be allowed to participate, race administration rules permitting, as long as:
  - They follow an acceptable supervised training program with emphasis on fun and participation, not records and fast times.
  - They have no injury or pain during training.
  - They maintain normal growth in height and weight during training.
  - They remain healthy with good nutritional intake and good sleep patterns.
  - They maintain good social interaction and academic performance during training.
  - Girls maintain normal menstrual function.
  - Children should run the race with an adult and should consider not participating in very large events where it is easy to "get lost in the crowd."
  - Children should not enter a marathon that does not start shortly after sunrise to avoid the hottest part of the day.
  - Children should not start a marathon if the ambient temperature is above an arbitrary level of 55°F based on odds ratios of adult medical encounters.<sup>1</sup>
  - Children who choose to train for a marathon should be monitored by a physician who can explain the risks to the child and parents, and who can monitor the physiologic and psychologic parameters.

While the concerns outlined by Rice and Waniewski are legitimate and should be discussed with parents and child/adolescent runners, they do not preclude this age group from participation in marathon running.<sup>3</sup> There is no guaranteed safe running distance and any distance race can be injurious for children and adolescents if training is not judicious and the races are run for the wrong reasons. While the exceptional cases do not make the rule, the suggested guidelines for youth participation in long distance running should make the practice safer and give parents some counsel for the rare youth who choose to

participate. Races that do allow children and adolescents to enter should consider tracking them for injury and well being. If we, as a running community, can monitor the activity, we may be able to develop evidence based recommendations that reflect data and not supposition.

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## Children and Marathoning

#### To the Editor:

I am writing regarding the published manuscript "Children and Marathon-ing: How Young is Too Young?" (*Clin J Sport Med.* 2003;13:369-373). I read this article with great interest as I was recently asked to provide a young runner with some advice regarding running a marathon. I purposely tried to find some evidence upon which to base my advice. I was concerned about the lack of evidence to support whether or not marathon running was a good thing for children.

I read this article and upon reviewing the position statement of the International Marathon Medical Directors Association, I would say that they have not cited any specific evidence either. They state that "Positive health related behaviors acquired in childhood are more likely to be carried into adulthood". They also cite the importance of

fitness related to children but that this can be attained without approaching the rigors of running a marathon. There was no evidence to state that running a marathon is good or bad for children. They also cite the argument regarding children being involved in organized sports from The American Academy of Pediatrics and make the statement "This is not possible for a child marathoner. Emotional burnout is a real phenomenon that can have the exact opposite effect of that intended by participation. Children may develop feelings of failure and frustration when the physical and cognitive demands exceed their internal resources." While these statements may be true, the authors site no evidence to support these statements. The same argument is applied to intensive training and sport specialization in young athletes. They cite references that early specialization leads to less consistent performance, more injuries, and shortened sports careers that in athletes who specialize after puberty. While, again, this statement is true, and it is referenced, it does not necessarily apply to children running marathons or at least there is no direct evidence to associate the two. These arguments in the position paper have also been advanced from the standpoint of overuse injury, psychological considerations, the female athlete triad, and the author's cite anecdotal experiences from other organizations such as The United States of America Tennis Federation. Again, none of these arguments are based on evidence.

We are all concerned about the excessive participation of young immature athletes in a variety of sports. The obvious example of which would be gymnastics. The same could be said of swimming or tennis or many other sports where kids are expected to compete at a high level and win at all costs. I do not see any evidence to suggest that running a marathon is any different. There is no strong evidence one way or the other, only our well intentioned concerns for our children's health.

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## Response to the Letters to the Editor by William O. Roberts, MD, MS and Nick Mohtadi, MD, FRCSC, MSc., Dip. Sport Med

#### Response:

The authors of the letters to the editor see the recommendation to not permit those under 18 to compete in marathons (in the face of the lack of hard harmful clinical evidence proving marathon running is unsafe) as being a "just say no" approach, but our response is "why say yes?" Neither letter writer has demonstrated what harm would be inflicted on an adolescent denied the opportunity to run in a full 26.2 mile marathon.

The letter writers and we are looking at the same issue from opposite sides - a glass half full or a glass half empty. This is an ADVISORY STATEMENT - a "position paper" if you will. One can choose to accept or reject the advice.

Distance running is an excellent form of aerobic exercise. It will permit our youth to obtain fitness and certainly decrease the likelihood of obesity among children and adolescents. These achievements and gains can readily be done in distances well below a full marathon. As Dr. Kenneth Cooper stated so simply and eloquently about twenty years ago, "Anyone running more than three miles five times per week is running for something other than fitness."<sup>1</sup> This comment was not intended to be a judgmental remark nor to discourage participation in longer distance running and racing, but to remind runners that high quality fitness can be achieved with modest amounts of running. The risk benefit ratio swings toward higher risks of injury as weekly mileage builds, especially past 40 miles per week. Those devoted to marathon running appreciate these risks and accept them. We raise the issue of

This response was reviewed and approved by the  
IMMDA board.

whether exposing those under eighteen to such risks without benefits of significantly better fitness is appropriate.

If one sets a lesser distance for those under eighteen as acceptable such as a half marathon or 10 mile race, there would ample opportunity for high quality fitness and appropriate challenge - building up to the day when as an 18-year-old adult, one can run all the marathons they wish unfettered from anyone's concerns.

This statement was commissioned for and unanimously approved by the international marathon medical directors from around the world with a vast amount of varied experiences collectively. These race directors sought guidance on this issue. The size of some of these marathons goes up to 40,000 - much larger than the Twin Cities. While it might be possible to cater to the "exception to the rule" in the Twin Cities with a caring and conscientious race director, such a policy becomes impractical as the race size enlarges.

IMMDA members do not feel that their marathons are the place to study whether children and adolescents running marathons is physiologically and psychologically damaging to young people or not.

The prior physiological evidence presented in the AAP position statements plus an article by Nudel et al in 1989<sup>2</sup> that makes reference to psychologic effects is sufficient to allow IMMDA to provide this advisory statement. The IMMDA advisory statement points out both the notion that physiological ability to complete a marathon is not the only parameter to examine - and further, everyone agrees that "exceptions to the rule" exist - and that these exceptions pose a dilemma.

Dr. Roberts lays out a nine-point program for how to manage "the exception to the rule" - the person who can meet every objection one might have. How can a race director be sure that every one of these is carried out precisely - to ensure safety? And further, why should this responsibility fall to the race director (unless they willingly embrace it)?

How does society deal with those exceptions? What about a precocious intelligent seventeen year-old who believes he should be able to fight for his country by joining the military, or vote in our elections because he is well informed and deeply concerned about our country's governance, or who be-

lieves he is old enough to decide whether he should smoke cigarettes or drink alcohol?

To appreciate the impact and implications of adopting Dr. Roberts' approach, what would happen if his position and requirements were the norm? Who could be certain that every adolescent and child remains healthy, had good nutritional intake and good sleep patterns? Who will ensure that their growth in height and weight are accurate, that they had no injury or pain during training, that females maintained normal menstrual function, that all marathoners had good social interactions and academic performance?

Who will determine what the cutoff for start time is ("shortly after sunrise") - and who will pull out the under age runners if the mercury rises above 55°F just prior to race time?

However, given the current state of knowledge, the physical and psychologic implications cited in the literature, IMMDA, as an advisory arm to AIMS, must advise on the cautious side. As physicians, we must be guided by our most basic of tenets: "First, do no harm"....

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## Preparticipation Examination: The Israeli Perspective

### To the Editor:

We very much welcome the fact that you devoted a whole thematic issue, written in as a comprehensive review, to preparticipation evaluation (*Clin J Sport*

*Med*. 2004;14:107-187), which is a very controversial subject. As you have given the US, Canadian, and UK perspectives, we thought you might like to hear about the Israeli perspective on this topic.

Israel, along with such countries as Italy, Hungary, Slovenia, and Cyprus, is one of the few countries in the world that has a Sports Law requiring medical checkups for anyone participating in competitive sports. As the authors in your issue mentioned, there are major questions regarding preparticipation evaluation. Does it prevent sudden death? Does it affect morbidity and mortality? Is it cost-effective?

The aim of the Israeli law was to devise a standardized process with a pre-set format of where, how, and by whom preparticipation evaluation should be conducted. The law was passed in 1988, but regulations on medical checkups went into effect only in 1997 due to numerous discussions and disagreements regarding the content of the regulations. The law resulted in a compromise between the International Federation of Sports Medicine recommendations on the one hand and financial considerations and organizational problems on the other hand.

The regulations require every athlete participating in a competition organized by any sports association to be cleared first by a medical checkup.<sup>1</sup> The examination and clearance can be given only by certified sports medicine stations accredited by Israel's Health Ministry. All examining physicians in the station must meet ministry requirements.

There are 3 kinds of examinations:

1. Standardized medical questionnaire only
2. Standardized medical questionnaire inclusive of a full physical examination covering all aspects (orthopedic, cardiovascular, and so forth) and resting ECG
3. All the above, including a stress test to the maximal heart rate

Sportsmen (and women) must undergo the full physical examination every 2 years up to the age of 34 and yearly from the age of 35. The medical questionnaire must be filled in every other year, while the stress test is carried out at the ages of 17, 23, 27, 32, and 34, and yearly from the age of 35. Regulations do not differ for different sports. Since the law was implemented, hundreds of thousands of Israeli sportsmen of all ages and

from all fields of sports have been examined.

Unfortunately, Israel lacks a computerized national data collection system containing the results of the preparticipation evaluation process: how many applicants were cleared, how many failed to pass the physical examinations, how many required further diagnosis and treatment, and whether the intervention prevented morbidity and mortality. However, then-director of the sports medicine and research center, Dr. Naama Constantini at the Wingate Institute for Physical Education near Netanya, did conduct a relatively small survey of 10,000 athletes 4 years ago.<sup>2</sup> The findings were that about 10% had a medical problem (from orthopedic and menstrual to cardiovascular) that required additional investigation. Most of the athletes who were rechecked after investigation received clearance to compete, and less than 0.5% were rejected. Some of the athletes underwent procedures such as ablation (for WPW and other arrhythmias).

Another problem with existing regulations in Israel is that they are not sports-specific (athletes in all fields are

required to undergo them). An additional problem is that most testing is performed by private companies, and the Ministry of Health has major difficulties in quality control.

The fees for preparticipation evaluation are relatively inexpensive in Israel, so our calculations of cost-effectiveness may be different than in the countries you surveyed. The medical questionnaire, including full physical examination and resting ECG, costs about US\$10 to US\$20, and US\$20 to US\$40 when including the stress test. This would probably make the examination more cost-effective than in other Western countries.

Our impression of the last 7 years is somewhat similar to that expressed in the journal. We feel that the cardiovascular aspects are overemphasized because of the high communication profile of a catastrophic event of sudden death, while the far more cost-beneficial aspects concerning diseases and other health problems with a much higher prevalence in the population are poorly screened for or are not required by law. Among these, orthopedic problems (such as unstable

knees or ankles), asthma, eating disorders, blood count, and iron reserves should be mentioned. All these should probably be introduced, as their screening cost is low, and the practical benefit to overall athlete health is far higher than the cardiovascular evaluation.

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