

Editor's Notes

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"The Horse Is Dead; Let's Dismount"

(with apologies to whoever said it first)

Ordinarily, its arrival at my doorstep is not anticipated with the excitement of, say, the *Sunday Times*. But November's issue of the *Physical Activity and Fitness Research Digest*, a publication of the President's Council on Physical Fitness and Sports, contained a rather startling article with profound implications regarding how we view exercise and health outcomes in children. Indeed, in this article, entitled "Toward an Understanding of Appropriate Physical Activity Levels for Youth," authors Charles Corbin, Robert Pangrazi, and Greg Welk suggest a radical departure from the traditional concepts surrounding fitness and health in children (3). Moreover, their message has broad ramifications for strategies to improve health through exercise in the pediatric years.

Corbin et al. describe a "new strategy" for reducing health risks through a lifestyle of regular physical activity (a lifetime physical activity model [LPAM]) rather than by the traditional approach of improving cardiovascular fitness (i.e., $\text{VO}_{2\text{max}}$) with a scheduled exercise program of specific frequency, duration, and relatively high intensity (the exercise prescription model, or EPM). According to LPAM standards, favorable health outcomes are associated with maintaining "moderate daily lifetime exercise," suggested to be an energy expenditure of 3 to 4 $\text{kcal}\cdot\text{kg}^{-1}\cdot\text{day}^{-1}$ in adults. For children the amount is at least that of adults and probably higher. "The LPAM focuses on the amount of physical activity necessary to produce health benefits as associated with reduced morbidity and mortality *rather than fitness and performance benefits* [italics mine]" (p. 3) state the authors. "The LPAM acknowledges that some activity is better than none at all, and that up to a point, progressively increasing amounts of physical activity provide added health benefits" (p. 4). In other words, this concept emphasizes the importance of physical activity for promotion of health rather than fitness performance.

Although a departure from the traditional fitness-health concept, this message is not new. Indeed, there has been a growing awareness that improving activity habits rather than increasing cardiovascular fitness is the most appropriate preventive health strategy—both for children and adults.

Blair et al. (2) coined the term *lifestyle exercise model* in expressing the importance of regular activity rather than improved fitness in adults. The statement of the American College of Sports Medicine and the Centers for Disease Prevention and Control (12) stressed the need for a lifestyle of regular physical activity (walking up stairs, gardening, raking leaves) in health promotion. The recent International Consensus Conference on Physical Activity Guidelines for Adolescents recommended that "all adolescents should be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and

community activities'' (9, p. 307). Others have stressed the importance of improving levels of physical activity, as opposed to enhancing physical fitness, in the pediatric population (1, 4, 8).

At least two observations are responsible for this trend of thinking away from the traditional exercise prescription model to that emphasizing regular daily physical activity. First, most desirable health outcomes appear to be influenced more by daily caloric expenditure rather than fitness performance. The most clear-cut example is the management of obesity, in which one literally "burns off" excess adipose tissue by increasing energy expenditure through physical activity. Decreased risk from other chronic illnesses as coronary artery disease, osteoporosis, emotional disorders, and Type 2 diabetes mellitus, also seem to be more linked to daily activity level rather than cardiovascular fitness. Some health issues may be influenced by both activity and fitness (e.g., systemic hypertension, since increased aerobic fitness may diminish sympathetic tone), while others may be more related to fitness (such as muscular strength preventing chronic back disease or athletic injuries). This distinction between physical activity and fitness as the critical factor in health outcomes is particularly pertinent in children. Although it might be assumed that active children are more fit (and vice versa), the research data are equivocal on this point. As an example, only about half of studies have shown a significant relationship between level of habitual physical activity and $\text{VO}_{2\text{max}}$ in young subjects (7).

Secondly, a shift in promoting physical activity rather than highly intense exercise schedules is more likely to be acceptable to the general public, particularly to those who are sedentary or poorly fit. As noted by Corbin et al. (3), "the LPAM is better suited for children than the EPM. Like many adults, children do not respond well to high intense physical activity" (p. 6). It might be added, too, that although the exercise prescription model is safe in children, prepubertal subjects appear to have a limited capacity for improving cardiovascular fitness with such regimens compared to adults (typically a 5–10% improvement in $\text{VO}_{2\text{max}}$) (7).

The importance of the article by Corbin et al. (3) lies in its emphasis on translating the concept of the lifestyle physical activity model to our strategies for health promotion in children. The authors recommended that activities in children should focus on "active play," as well as on involving physical tasks at home and school. The implication is that in all venues of health advocacy—school, home, and physician's office—the most appropriate goal is establishing a physically active lifestyle in children. The challenge, of course, is determining the most effective means of "turning children on" to physical activity.

There is, however, a more revolutionary shift of position that is suggested between the lines of this article. And that is what makes it "startling." Specifically, what is the impact of the lifestyle physical activity model on the role of field exercise testing of school children? Although the validity of such testing has always been controversial (5, 11), standard "health fitness" testing of children has received widespread acceptance, and in some states is mandated by law. Every year thousands of youngsters perform the mile run, sit-and-reach, sit-ups for time, and other such tests, all considered performance markers of fitness that are related to health outcomes. The premise of these tests has been that (a) physical fitness (flexibility, strength, cardiovascular functional capacity) is linked to good health, (b) field test results reflect these markers of fitness,

(c) children at health risk can be identified by their performance on such tests, and (d) remedial training programs can be developed to correct deficient performance.

There is a growing awareness that serious flaws exist in all these assumptions. As noted above, the link of performance fitness with health outcomes (as opposed to physical activity) is weak. The validity and reliability of each test component is not strong, and factors influencing test results (body composition, motivation) are numerous. As Safrit (10) noted, "It is probably fair to state that no reputable test service in the country would publish any one of the existing fitness tests without additional evidence of the validity and reliability of the test battery [and] criterion referenced standards test bias, accuracy of national norms, and so forth" (p. 25).

A shift from a fitness to physical activity promotion model as expressed by Corbin et al. (3), however, would serve as the best argument for abandoning the routine field testing of children as archaic and inconsistent with our current understanding of the exercise-health connection. That is, it makes no sense to determine how fast a 10-year-old girl can run a mile if her future health relates more to level of habitual physical activity than to VO_2max . It follows that there is no sound rationale for routine field testing of children in the schools under the lifetime physical activity model. It is of interest, too, that such an article reflecting current opinion by proposing such a model would appear as a publication of the President's Council, long an advocate of exercise testing of children.

It has been suggested by its advocates that there exists an educational value of exercise testing, which can "contribute to the development of positive attitudes toward fitness" (6, p. 13). It might be equally argued, however, that current programs of field testing of school children are actually antithetical to the goal of promoting physical activity in children. Such tests are demeaning, embarrassing, and uncomfortable to those particular children we are most concerned about—the sedentary lower 10%. Such tests only rereinforce to these at-risk children that exercise is competitive and unpleasant—a negative experience that will turn such youngsters "off" rather than "on" to physical activities. Exercise testing may be "reinforcing"—but only to those who do well.

The article by Corbin et al. is thought-provoking, and its message deserves careful attention. Based on our current understanding of the exercise-health link, is the "horse" of exercise testing in the schools dead? If so, perhaps we should "dismount."

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Editor

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