

# Prescribing Exercise for Obese Youth in the Primary Care Setting

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## Introduction

The current epidemic of childhood obesity bears grave implications for the present and future health of today's youth.<sup>1</sup> Indeed, one hardly risks hyperbole in predicting that this dramatic rise in body fat early in life looms like a tsunami on a future of cardiovascular, orthopedic, and metabolic complications when these overweight youth reach adulthood over the next several decades. During the pediatric years obese children and adolescents already demonstrate increased risk factors for future disease, with adverse serum lipid profiles, systemic hypertension, type 2 diabetes, insulin resistance, and vascular endothelial dysfunction.<sup>2</sup> Moreover, it can be expected that the frequency of adverse health outcomes of significant obesity during the growing years—psychosocial disturbances, asthma, orthopedic abnormalities, sleep apnea—will increase as well.

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The seriousness of this trend has created a growing immediacy for preventing and managing childhood obesity. Both goals, however, have proven elusive. While principles of thermodynamics implicate an imbalance of

energy in (dietary intake) and energy out (particularly habitual physical activity), specific causal factors for the current increase in obesity remain clouded in uncertainty.<sup>3,4</sup> Similarly, effective means of treating obese youth by either case-focused or population-wide strategies remain to be clarified. As Reilly has emphasized, “Clinical management and public health strategies to combat the problem of pediatric obesity have been overtaken by the speed and scale of the epidemic... [resulting in] a mismatch between the scale of the problem and our comparatively weak and belated strategies for dealing with it.”<sup>5</sup>

Lacking proven intervention strategies, long-term success in managing the obese child by physicians in the primary care setting has been limited. Survey studies indicate this has not been from lack of effort, because pediatric health providers have generally embraced their role in dealing with overweight patients.<sup>6</sup> However, at the same time, physicians have voiced a lack of confidence in both their interventional techniques and the extent of success from their efforts in achieving long-term weight loss in their patients.<sup>7</sup> The principal obstacles have been identified as lack of identified effective strategies and uncertain means of inspiring motivation in young obese patients (and families) to follow their counsel.

It is generally accepted that the best chance for successful obesity management lies with a multifaceted approach of diet, exercise, and behavioral modification in a family-oriented program. Of these components, increasing daily energy expenditure by improving exercise habits has



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been perhaps the least well formalized. Reviews of published obesity management programs indicates a variety of strategies of type, frequency, intensity, and duration of exercise recommendations, and there exist no evidence-based, off-the-shelf programs of proven efficacy that the physician can utilize in the office setting.<sup>8-10</sup>

Caloric expenditure by improving daily activities is relatively small but accumulative, and small but habitual amounts of exercise, combined with diet interventions, can effect at least short-term weight reduction. In this regard, a limited number of studies have indicated that exercise plus diet can be more effective in weight loss than diet alone.<sup>11</sup> In addition, regular exercise bears other importance for the obese child, including increases in lean body mass, blood pressure reduction, and improved psychological health.

Recent reports have provided new insights into aspects of exercise that are particularly relevant to the obese child.<sup>12,13</sup> These provide information that may prove valuable in formulating more standardized recommendations for improving energy expenditure in obese patients in the primary care setting. It is the purpose of this review to examine these data and, based on this information, to suggest means of creating an appropriate, office-based exercise prescription that can be part of a comprehensive treatment program for overweight children and adolescents.

## Keys to Success

It is apparent that any exercise intervention for childhood obesity is unlikely to bear success unless the activity expends significant calories and the stress of the exercise is acceptable to the overweight patient. Attention to these factors is thus critical in devising effective treatment interventions in the office setting.

- Obesity treatment programs have traditionally involved aerobic forms of exercise (walking, running, sustained games). Such activities, it has been reasoned, “burn” calories at a high rate and may have the added benefit of improving cardiovascular fitness. On the other hand, recent attention has been drawn to the disadvantages of aerobic exercise for obese youth: most of these activities are weight-bearing and are often poorly tolerated by overweight patients.<sup>12</sup> Obese children generally perceive exercise with greater feelings of discomfort than their nonobese peers, and their inferior motor skills and coordination may contribute to their failure to enjoy sustained exercise. Such fatigue can diminish patient motivation, and may result in a compensatory reduction in out-of-program physical activity.

- Recent information indicates that true cardiovascular fitness (*i.e.*, cardiac functional capacity) is no different in the obese than nonobese subject, and the diminished endurance performance of overweight subjects is principally due to their excessive fat load.<sup>14</sup> Thus, treatment programs for the obese do not need to involve aerobic forms of exercise performed with the high intensity and frequency necessary to improve cardiovascular fitness (which would be expected to be poorly accepted by obese youth). Consequently (and fortunately), these exercise programs can be focused on energy expenditure alone.
- Two forms of physical activities—resistance training and aquatic exercise—may be particularly acceptable to overweight youth and have gained attention

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for their usefulness in obesity treatment. While not generally regarded as expending a high caloric rate, supervised resistance exercise has been demonstrated to be effective in weight loss programs in children and adolescents.<sup>15</sup> Being non-weight-bearing, resistance exercise is particularly palatable to obese subjects, who often demonstrate good muscular strength. Similarly, their increased buoyancy and thermal insulation improves tolerance and enjoyment of swimming and other activities in the water.

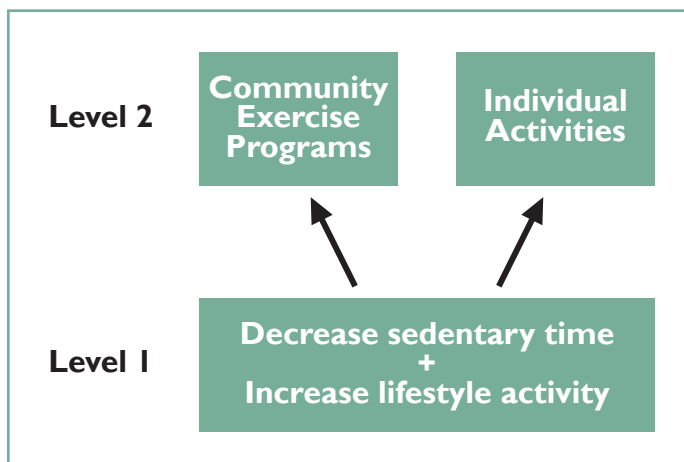
- Work by Epstein and colleagues<sup>16</sup> has indicated that emphasizing an increase in normal daily physical activities (household chores, walking to school, using stairs) can be at least as effective as aerobic exercise programs in effecting weight loss in obese youth. This approach may prove less intimidating than structured activity programs for the obese, and involving multiple low “doses” of exercise is particularly attractive in avoiding unpleasant, fatiguing activities that could dampen motivation.

- Epidemiologic evidence for a causal effect of time spent watching television and computer screens in the etiology of childhood obesity has proven conflicting. Still, reports indicate that reducing sedentary screen time in obese youth can be successful in achieving weight loss.<sup>17,18</sup> Diminishing sedentary time—a concrete and more easily modifiable behavior change compared to diet and exercise—has thus become a staple in the management of childhood obesity.
- Ideally, exercise programs for obese youth might be created in accordance with recognized psychosocial models of optimizing motivation.<sup>13</sup> While such an approach might be useful for the older adolescent, the applicability of these models for younger children is as yet unproven. Aspects that appear to be particularly important for compliance to exercise programs in these youngsters are enjoyment, success, lack of embarrassment, and social support.

Successful office-based interventions must therefore incorporate these factors, as well as an organized plan for follow-up assessment and support.

## The Exercise Prescription

Factors that might be critical to successful obesity management have generally been developed in highly staffed, focused research settings, and their applicability to the real world of the physician’s office has yet to be studied. In fact, published reports of experience with primary care interventions for childhood obesity are extremely meager,<sup>19–21</sup> as most have described school- or community-based management programs. Nonetheless, pediatric health providers, given their high credibility and patient exposure, are in an ideal position to counsel obese patients, particularly in respect to physical exercise.<sup>22,23</sup>



**Figure 1.** Strategies for improving daily physical activity in overweight youth.

### Table 1. Possible recommendations for improving lifestyle physical activities in obese youth.

- Perform household chores (cleaning, mowing, washing dishes, taking out trash)
- Take stairs instead of elevators or escalators.
- Avoid sitting; stand when talking on the telephone.
- Walk to school instead of being driven.
- Use a rocking chair when watching television.
- Play outside.
- Don’t stand still: walk back and forth when waiting.
- Wash the family car.
- When doing homework, stop every 15–30 minutes for brief walking.

In recommending increases in habitual physical activity, the pediatric healthcare provider has several options, not all of which may be applicable to obese patients.<sup>24</sup> In addition, many factors influence how exercise might be prescribed for the overweight patient in the office setting, including age, gender, degree of obesity, subject motivation, geographical location and season of the year, accessibility to recreational facilities, level of parental and peer support. Thus, it is unlikely that any single exercise prescription will fit all patients. However, two elements—increasing lifestyle physical activities and limiting sedentary time—are largely independent of these variables and may be utilized as a starting point in obesity management (Figure 1).

#### *Increasing lifestyle activities*

The goal of this strategy is to increase daily energy expenditure through “increasing animation” in the child’s daily activities.<sup>25</sup> The patient and healthcare provider can collaborate on creating a list of specific means of accomplishing this (Table 1). As they are performed, these tasks can be checked off and signed by the parents, with a reward (sports event tickets, T-shirt) for a certain total.

Pedometers—small, inexpensive devices that measure step counts—can be useful as a motivating tool in this strategy. A reasonable goal might be set for increasing daily step count by 1000 per day each week, with a target of 14,000 steps daily.

#### *Limiting sedentary time*

A statement from the American Academy of Pediatrics recommended limiting screen time to 2 hours daily.<sup>26</sup> This

would include television, computers, and video games as well as talking on the telephone but excludes time spent in doing homework, reading, or sedentary hobbies (art, playing a musical instrument). It may be useful to have the child sign a contract with the parents regarding permitted screen time, and, again, appropriate rewards may serve as motivating factors. This strategy needs to be combined with opportunities for increasing physical activity to avoid the child simply shifting time in one sedentary pursuit to another.

Decreasing sedentary time and augmenting lifestyle activities can serve as an initial intervention for most obese youth. However, it may be appropriate to further increase exercise habits in those who are more motivated or who have specific interests in certain community-based or individual forms of physical activity (Figure 1). The patient's input into the successful exercise prescription is thus clearly important.

### Community exercise programs

The child may elect to participate in community recreational programs such as those provided by the YMCA or Boys & Girls Clubs or team sports. These provide more social interaction and the fun of group participation that may be attractive to certain patients. Aquatic programs, as noted above, may be particularly attractive to overweight youth, as are resistance exercise programs, both of which

most commonly walking or cycling. This has the advantages of requiring no special equipment or transportation to a recreational facility. Family-based hikes or trips through museums or zoos can make this approach entertaining as well. The prescription can call for limited initial exercise (10 minutes a day of walking, for instance) with progression as tolerated.

Providing an effective exercise prescription in the primary setting may place significant time and energy demands on an already pressed healthcare team. Assessment of the individual child's motivations and preferences, patient and family education, and supportive follow-up—in combination with dietary counseling—are all key elements to success. These efforts may be facilitated by dedicating a particular nurse or other non-physician health professional to provide this support. Follow-up with the child via electronic communication may also help to ease the care burden as well as improve program adherence. ■

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require adult supervision. The obese patient with a special interest (such as rowing or dancing) can be referred to a local club. For this approach to be effective, the physician needs to maintain information regarding area recreational facilities and opportunities.

### Individual exercise

Some obese youth may be motivated toward the traditional adult-oriented model of regular aerobic exercise,

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