CHILDHOOD OBESITY: CLASSIFICATION AS AN IDEA DISABILITY

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Abstract

The objective of this article is to provide rationale for recognizing and evaluating children who are obese with low physical fitness or deficiencies in gross motor skills, as having a disability and able to receive appropriate programming. Childhood obesity can be a disabling in itself, and it should be considered a disability under the Individuals with Disabilities Education Act (IDEA) of 2004 as an *Other Health Impairment*. This discussion of the literature will cover a variety of topics, including childhood obesity, federal mandates, particularly IDEA, and assessment and eligibility criteria for placement as a disability. Finally, a service delivery model, entitled Childhood Obesity Prevention and Intervention, is proposed to include childhood obesity as a component of the *Other Health Impairment* category. Childhood obesity is a major problem in the United States affecting 17% of children and adolescents between 2 and 19 years of age (Ogden, Carroll, Kit, & Flegal, 2014). The most effective programs involve the collaboration between the child, parents, school personnel, medical experts, and community agencies. Special education services provide the means for such collaboration. While physical activity is a critical component in most obesity prevention and intervention programs, the role of evidenced-based physical education curriculum is often ignored as part of the collaborative approach. Adapted physical education services through the application of the Response-to-Intervention (RTI) model could be an answer to this issue. It is recommended that children who are obese with significant low physical fitness or gross motor skill levels, impacting academic and functional performance, be eligible for accommodations in schools and/or alternative physical education services.

Keywords: *disability, childhood obesity, physical education, adapted physical education, response to intervention, physical fitness, nutrition education, and behavior change*

Introduction

"Obesity prevention and treatment must be understood as part of a shared responsibility of the state, parents, and other citizens to better protect 'developing' citizens" (Purcell, 2010)

Childhood obesity has been an international problem for the past three decades (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Infants and children up to age 5 years who are overweight increased dramatically globally from 31 million in 1990 to 42 million in 2013. Without interventions, the trend will continue to increase to a projected 70 million by 2025 (World Health Organization, WHO, 2014). Besides being a major contributor to 18% of deaths between 1986 and 2006 among adults (Masters et al., 2013), it is the second leading cause of preventable death in the United States (Allison et al., 2008). These facts are especially pertinent to children, as the current generation may be the first to have a shorter lifespan than their parents (Davis, Patte, Curtis, & Reid, 2008). Action must be immediate and radical to impact this generation, because of the many physical, psychosocial, and school performance conditions that are associated with obesity (Table 1). Students who are obese are generally physically unfit (Taylor et al., 2006) with poor gross motor skills (D'Hondt, Deforche, De Bourdeaudhji, & Lenior, 2009), have on average lower academic scores on standardized tests (Castelli, Hilliman, Buck, & Erwin, 2007; Chomitz et al., 2008), have more school absences (Geier et al., 2007), are prone to behavior outbursts (Shore et al., 2008), have fewer friendships (Puhl & Brownell, 2001), low self-esteem, and quality of life (Schwimmer, Burwinkle, & Varni, 2003) when compared to same age peers with healthy weight and more physically fit (Table 1). Obesity in itself would not qualify a child or youth to be recognized as disabled under the Individuals with Disabilities Education Act (IDEA) *Other Health Impairment* category or allow for special education services to be received. However, if a child or youth was obese and also demonstrated deficits in physical fitness, psycho-social

development, and school performance, then the child could potentially qualify as disabled.

Table 1
Conditions Associated with Childhood Obesity

Physical	High blood pressure and hypertension (Stein & Colditz, 2004)	Type II diabetes (Puhl & Brownell, 2001)
	Asthma (Sutherland, 2008)	Inner thigh chaffing (Jansma & French, 1994)
	Difficulty in self-monitoring heart rate, leads to discomfort during excessive activity (Arnold, 1984)	Bone and joint problems (Taylor et al., 2006 Tingstrom, 2015)
	Tire easily during activity, as muscles work harder due to amount of adipose tissue (Arnold, 1984)	Chronic lack of activity can negatively impact breathing, circulation, and digestion (Arnold, 1984; Freedman et al., 2007)
	Increased risk for hypertension, coronary heart disease, and stroke (Freedman et al., 2007)	Low physical fitness (Taylor et al., 2006) and motor skill deficiencies (D'Hond et al., 2009)
	Gallstones (Frisen & Roberts, 1989)	Sleep apnea (Arens & Muzumdar, 2010)
Psychosocial	Body image disorder which could potentially lead to increased anxiety, tension, and frustration (Greenleaf et al., 2010; Puhl, 2009)	Discriminated by teachers, peers, and parents (Puhl & Brownell, 2001; Tingstrom, 2015) and threatened by peers (Storch et al., 2007)
	Lack motivation to perform activity (Wallace & Ray, 2009) and excluded from physical activities (Li & Rukavina, 2008)	Depression (Storch et al., 2007) and suicidal thoughts (Eisenberg et al., 2003; Puhl, 2009)
	Quality of life comparable to recently diagnosed cancer patients (Schwimmer et al., 2003)	Shunned, ignored (Bell & Morgan, 2000), and ostracized by peers (Puhl, 2009)
	Bullied and teased (Lumeng et al., 2010; Storch et al., 2007)	"Fewer and less reciprocal friendships"(Strauss & Pollack, 2003, p.752)
	More prone to behavior problems (Shore et al., 2008)	Lacks confidence in social situations (Arens & Muzumdar, 2010; Taras, 2005)
School Performance	May have future psychological health problems (Judge & Jahns, 2007)	Greater school absenteeism (Geier et al., 2007; Shore et al., 2008)
	Decrease in performance during physical education, intramurals, and athletics (Chomitz et al., 2008; Tingstrom, 2015; Wittberg et al., 2009)	Physical fitness levels may be positively related to academic scores (Castelli et al., 2007; Chomitz et al., 2008; Siegel, 2006)
	Overweight/obesity associated with poor gross motor skill development (D'Hondt et al., 2009; Graf et al., 2004)	Inverse relationship between IQ and obesity level (Yu et al., 2010)

The purpose of this paper is to provide rationale for the identification of obesity as a disability within IDEA (2004) under the category *Other Health Impairment*. Obesity negatively impacts all areas of a child's educational performance such that specialized services may be provided through the department of special education in conjunction with modifications to the physical education environment. By encouraging school systems to recognize obesity as a disability, these students will have access to specialized services that have the potential to make a lasting impact on their overall health. The following sections of this article use related literature to build the case for recognizing obesity as a disability. Sections will include explanations about (a) how obesity relates to children's psychosocial development and school performance (i.e., academic and physical education), (b) why schools are a logical setting for implementing prevention and intervention programs aimed at managing childhood obesity (Brown & Summerbell, 2009), (c) relevant legislation, (d) assessment criteria, and (e) a prevention and intervention service delivery model.

Obesity and Psychosocial Development

Children and youth who are obese in the United States have a lower health-related quality of life compared to their same-aged peers and even to those diagnosed with cancer (Schwimmer, Burwinkle, & Varni, 2003). In short, children and youth who are obese have a similar psychosocial well-being compared to children who have been diagnosed with a life-threatening disease. Children and youth who are obese experience discrimination and prejudice because of their weight at a higher rate than those who experience bias due to race, age, or gender (Davis, 2002).

Another concern is the potential stigmatization of "labeling" a child as obese rather than overweight. Children as young as three years can present weight bias, while at age four, children can connect their biased attitude with a person's weight (Arnold, 1984). Thus, students are already being silently labeled by their peers as early as preschool because of their appearance and societal norms. Although labeling a child as disabled could have a negative connotation, the disability still exists. At least with this formal label (e.g., disabled) specialized programming can be provided with the ultimate goal of removing the formal label once improvement has been documented. The following statements illustrate how being obese can negatively impact the lives of individuals, and the inevitable silent labels placed on obese children by their peers. None have been labeled disabled, but the silent label from peers is inevitable:

1. Adolescent females who are obese reported that they are victimized by peers. They feel depressed and isolated, experience low self-confidence, and have anxiety related to abuse, violence, and peer victimization. They also have a higher incidence of suicide compared to their peers who are average weight (Griffiths & Page, 2008).
2. Individuals who are obese are socially ostracized, teased, and discouraged by their peers from the time they begin nursery school (Jenson, Cushing, & Elledge, 2014; Puhl, 2009).

3. Children and youth who are obese in their physical education classes at school are generally chosen on teams later or next to last (Solovay, 2000).
4. Dressing and showering in the physical education locker rooms cannot only be humiliating but even dangerous or lead to being bullied for children and youth who are obese. This humiliation extends to wearing specific types of required uniforms in physical education (Solovay, 2000).
5. Children who are overweight in junior high school are stereotyped as lazy by their school-aged peers (Rukavina & Li, 2011).
6. Obesity has been considered vulgar and contraindicative to attractiveness (Carr & Friedman, 2005).

Children who are overweight in junior high can be stereotyped as lazy.

Obesity and School Performance

Academics. The experiences of children who are overweight or obese in the public school setting can be very different from those at a healthy weight. These children have a significantly greaster probability of developing not only academic but also physical fitness or motor performance problems that have the potential to negatively impact their overall school performance (Gable, Krull, & Chang, 2012). Specifically related to academic performance of students who were overweight or obese, students who are overweight scored almost a half letter grade and 11% lower than the national percentile of reading scores compared to their peers who were not overweight or obese (Shore, Sachs, Lidicker, Brett, Wright, & Libonati, 2012). It is interesting to note that these students had significantly worse school attendance, more detentions and tardiness, with less sport participation (Shore et al., 2008). These factors negatively impact school performance (D'Hondt et al., 2009), including grades. In addition, overweight and obese children had significantly lower math and reading scores compared to their third grade peers who were not overweight (Judge & Jahns, 2007). The significant differences became nonsignificant when socioeconomic status and maternal education were controlled. Further, girls who were obese were more likely to exhibit acting out behaviors (i.e., arguing and fighting) and inappropriate internal behaviors (i.e., loneliness or sadness) compared to girls who were not overweight even when the variables of socioeconomic status and maternal education were considered (Judge & Jahns, 2007). Along with the negative impact that being obese can play related to the social settings of schools, physical fitness levels and regular moderate to vigorous physical activity have been positively associated with increased academic scores (Castelli et al., 2007; Chomitz et al., 2008; Pellegrini & Smith, 1998; Shephard, 1996; 1997; Sibley & Etnier, 2003).

Physical education. Children who are obese demonstrate lower levels of physical fitness and deficiencies in gross motor skills compared to their age-related peers of average weight (Cliff, Okely, & Magarey, 2011; D'Hondt et al., 2009; Ortega, Ruiz, Castillo, & Sjostrom, 2008). These deficiencies could be potentially detrimental to the physical education experience. Often the first detrimental experience occurs during elementary instruction when the focus is primarily on skill acquisition. Exhibiting gross motor skill deficiencies can prevent a child or youth from reaching their full potential in physical education class (D'Hondt et al., 2009; Sherrill, 2004), which can often single them out or provide a catalyst for psychosocial issues as previously discussed. A majority of skills that are taught and games that are introduced during physical education classes require use of object control (e.g., kicking, throwing, catching) and locomotor (e.g., running, skipping, leaping) skills. Then in secondary physical education, obese children without the prerequisite physical and motor skills will have a difficult transition to group games that require them to perform in teams or in front of the class. Associations have been made between obesity with an inability to run for long distances or demonstrate mastery performing age-appropriate motor patterns while running, jumping, throwing, or catching (Budd & Volpe, 2006; Cliff et al., 2011).

Although evidence to date cannot explicitly predict whether excess weight among children causes these fitness and motor skill deficits or whether being physically unfit with poor motor skills contribute to development of obesity, strong associations between the two factors are evident. Regardless of which comes first, the ultimate outcomes are negative social, academic, physical, and motor influences. Children who do not learn and acquire the correct skills are more likely to be inactive and overweight adults. Also, having low physical fitness levels compared to peers predisposes them to becoming a physically unfit adult (Dwyer et.al., 2009).

Schools as a Logical Setting

Schools have been considered a logical and attractive setting to target and reach children who are overweight or obese through programming and intervention, as most children and youth spend 6 to 8 hours a day, approximately 180 days a year in this setting (Anderson, Aycock, Mihalic, Kozlowski, & Detschner, 2012; Pringle & Pringle, 2012). Further, 95% of children and youth in the United States attend

schools (Wechsler, McKenna, Lee, & Dietz, 2004). Schools have as much and probably more continuous and intensive contact with these children and youth during 5 to 18 years of their life except for their parents (Katz et al., 2005). Further, schools generally have the appropriate facilities and equipment to promote high-intensity activities through evidence-based physical education programs (Brown & Summerbell, 2009). This evidence provides support for why the school environment is a logical obesity prevention and intervention environment. The optimal environment for effective obesity prevention and intervention programs should include collaboration between the child, family, public school day care, and health care providers and be individualized to the child (Daniels et al., 2005; Quitério, 2013).

Individuals with Disabilities Education Act (IDEA)

The legislation that dictates qualification for a disability in public schools in United States is the IDEA of 2004. There are 13 categories of disabilities recognized within the IDEA (2004), including *Other Health Impairment*. Students with certain acute or chronic health conditions are eligible to receive special education services within the category *Other Health Impairment* if the condition meets two criteria. The first criterion is that the student must have ". . . limited strength, vitality, or alertness as related to the educational environment" (IDEA, 2004; Part 300, A, Section 300.8, c, 9). The second criterion is that the condition must adversely affect the student's educational performance (IDEA, 2004). The list provided by IDEA that describes eligible conditions is not an exhaustive or exclusive list of chronic or acute health problems. The list does not include or negate the general condition of childhood obesity; however, the conditions of asthma, diabetes, and morbid obesity are explicitly recognized (U.S. Department of Education, 2009).

With the increasing evidence that academic scores are positively correlated with physical fitness levels (Singh & McMahan, 2006) and negatively associated with obesity levels (Shore et al., 2008), the focus of educational legislation to more closely monitor the progress of all students would provide more support to consider obesity as a disability. Educational reform posits to hold schools accountable for student accomplishments; grading or accountability in physical education specifically should not exclude related to prevention and intervention of childhood obesity and low physical fitness (Cortiella, 2006). Many states and school systems are already requiring school-wide physical fitness testing (California Law, 2003); however, the importance of accountability and passing scores for tests related to physical fitness achievement are not held to the same standards as academic test scores (i.e., students who earn a failing grade on a physical fitness test do not fail physical education).

In IDEA, all children should be educated in their least restrictive environment, which can also be described as their appropriate learning environment (IDEA, 2004). Further, the strength, vitality, and alertness criteria that are being used to evaluate children and determine eligibility for special education services under the *Other Health Impairment* category should include all areas of education (e.g., academic and physical education classes). Five questions can be asked to determine if a child should qualify for services in Special Education, within the category *Other Health Impairment* (Grice, 2002). Questions and answers related to children who are obese are provided in Table 2. Students who are obese and have a significant low level of physical fitness and gross motor skill deficiencies could qualify as being disabled within the category of *Other Health Impairment* (Sherrill, 2004).

Table 2
Five Questions School Officials Should Ask When Deciding Whether a Child May Qualify as a Disability Under the IDEA Other Health Impairments category (Grice, 2002, p. 12).

Q1: Does the student have a chronic or acute health condition?	**A1:** Obesity is considered a chronic and acute health condition, it has even been termed a medical disease (Wallace & Ray, 2009).
Q2: Does the student have limited strength, vitality, or alertness? If not, does he or she have heightened alertness to general environmental stimuli?	**A2:** Obesity has been highly associated with decreased levels of physical strength during physical activities and tire more easily in physical education class (Arnold, 1985). Related to vitality and alertness in the classroom, children who are obese have a shorter attention span and lower scores on standardized tests compared to their peers who are at a healthy weight (Castelli et al., 2007; Chomitz et al., 2008).
Q3: If so, does the student's limited strength, vitality, or alertness reduce his or her alertness in the educational environment? Or does the child's heightened alertness to the surrounding environment limit his or her alertness to the educational environment? If so, is the limited, or heightened, alertness due to a chronic or acute health problem?	**A3:** Obesity has been highly associated with decreased strength and overall energy level among children (Chomitz et al., 2008; Wittberg et al., 2009). The limitations in strength and alertness which have been directly related to level of obesity can have a significant impact on the student's educational capacity.
Q4: If so, is the student's educational performance adversely affected by the limited alertness?	**A4:** Behaviors that can adversely affect educational performance which are directly associated with obesity include; inattention, behavior problems (Shore et al., 2008), lower standardized test scores (Castelli et al., 2007; Chomitz et al., 2009), school absenteeism (Geier et al., 2007) and lack of motivation (Wallace & Ray, 2009).
Q5: Finally, if so, does the disability create a need for special education services?	**A5:** It is the opinion of the authors that based on the aforementioned evidence that obesity should be recognized on a case-by-case basis as an educational disability within the OHI category, and student's who qualify should receive special education services as needed (e.g., Adapted Physical Education).

Services within Special Education provide this element of collaboration.

Childhood Obesity Prevention and Treatment Program

If children who are obese are recognized as disabled, there must be a comprehensive evidence-based strategy in which

the physical education programs play an integral role. "Educational reform in physical education is a necessity" (Prusak et al., 2011, p. 39). No matter what program is implemented, for it to succeed in a traditional physical education program it must be (a) replaced or modified with high intensity and duration physical and motor activities that are motivating and enjoyable, (b) include behavioral and nutritional components, and (c) be evidence-based (Khambalia, Dickinson, Handy, & Bair, 2011). Key features of the behavioral and nutrition components of an obesity prevention program must include all individuals in the child's life who impact the child's choices: parents and other family members, teachers, school nurse, physicians, physical education instructors, etc. Nutritional behaviors that must be addressed may include, but are not limited to, types of food, quality of food, economics, portion sizes, access to food in the home, food preparation, etc. Behavioral components have much to do with the child's and the family's relationship with food but may also include topics such as time management, use of food as a reward, time spent cooking and sharing meals, choosing food when dining outside of the home and at school, etc. An obesity prevention program developed by the researchers combines all three components and has been used effectively in lower socio-economic populations (Huettig et al., 2006). Once recognized as a disability, children who are obese can receive individualized, specialized services targeting their needs. Within this strategy, a continuum of services can be provided to prevent and to provide interventions for not only group but individual student needs. We are proposing a Childhood Obesity Prevention and Treatment Program that is based on a four-tiered Response to Intervention model.

The Response-to-Intervention (RTI) model has been described as a united plan between general educators and special educators. The National Association of State Directors of Special Education (NASDSE) had defined RTI as "the practice of providing high-quality instruction and interventions matched to student need, monitoring progress frequently to make decisions about changes in instruction or goals, and applying child response data on important education decisions" (Batsche et al., 2005, p. 1). The basic purpose of the RTI model is to accelerate learning for all physical educators to make critical instructional decisions based on data

Table 3
Comprehensive Assessment of Childhood Obesity Using the Four Tiers of Response to Intervention.

Tier	Testing	BMI* (% ile)	Fitness**	Program	Setting	Personnel	*Other*
1	Beginning fall and end spring	Healthy 5th–84th	Healthy Fitness Zone	Prevention, focus on health education, physical activity, related knowledge, and enjoyment; staff training; parent education	School and general physical education and health education class	Physical Educator, School Nurse, Health Educator	Medical clearance: BMI below 5th
2	Tier 1 plus beginning Spring	At-risk for overweight 85th–95th	Healthy Fitness Zone or below	Tier 1 plus dietitian/ nutritionist (RDN***) and adapted physical education consultant to the program	Same as Tier 1	Tier 1 plus adapted physical educator, RDN, and community service volunteers	Consider the use of long term homework and peer tutors; develop bike riding and jogging clubs after school or weekends
3	Tier 2 plus nutritional and physician evaluation; laboratory assessments as needed	Obese 95th–140th	Healthy Fitness Zone or below	Tier 2 plus Medical Nutrition Therapy program	Tier 2 plus additional individualized instruction before or after school by qualified personnel	Tier 2 plus Dietitian Nutritionist (RDN)	Consider medical clearance for participation in Tier 1 or 2
4	Tier 3 plus medical assessment; provide an alternative physical fitness testing related to the medical margin of safety. These results would be included in the student's Individualized Education Program	Morbidly Obese >140	Below Healthy Fitness Zone	Tier 3 plus Pediatric Weight Management Program determined by physician with a clear transition to part or all of the adapted physical education program	Tier 3 plus primary care physician's office	Physician, school administrator, special education teacher, general and adapted physical educator, physical and occupational therapist, school psychologist, school nurse, social worker, school dietitian/ nutritionist, parent(s), and possibly the student	Medical clearance for participation in Tier 1, 2 and/ or 3

Note. *World Health Organization Criteria (1995); **Fitnessgram/Activitygram Program (Meredith & Welk, 2015) *** Registered Dietitian Nutritionist

(Dauenhauer, 2012). It is not a specific program but includes guidelines where evidence-based programming can be easily infused into a physical education program. In addition it provides a systematic approach to use various class accommodations, support, and personnel (i.e., parent, adapted physical educator, classroom teacher, dietitian nutritionist, social worker). Usually RTI practices are illustrated by tiers to various instructional patterns to meet the differing educational needs of the students. The tiers reflect an increase in the instructional intensity which is evidence-based.

Since obesity involves numerous complex factors, weight status cannot be the sole criteria for placement of a student into an intensive adapted physical education program with the exception of morbid obesity (Americans with Disabilities Act, 1990; 2008). Specifically related to a disability, weight status is a red flag. The level of physical fitness would be the minimal criterion. Being obese does not guarantee that a child will have low levels of physical fitness; however, there is a significant negative correlation between these two variables. Secondary criteria would be the results of a gross motor skill assessment, as well as a psychosocial assessment if it is deemed that the physical education environment would be a negative experience for the student.

Individuals who are obese can be socially ostracized, teased, and discouraged by their peers from the time they begin nursery school.

The initial assessments to determine what tier a student qualifies for will be based on level of obesity and physical fitness level. Both criteria are generally evaluated on the annual physical fitness tests completed during most physical education classes. The FITNESSGRAM/ACTIVTYGRAM Program is a comprehensive fitness assessment used in many states and assesses students in grades 4 through 12 (Meredith & Welk, 2015). Weight status for children will be based on the most practical form of measurement, Body Mass Index (BMI; weight(kg)/height(m2). For assessment purposes, classifying students using BMI will be based on the international standards outlined by the World Health Organization (1995). While BMI does not provide body composition assessment or fat distribution, measurements are easy to obtain. Further, BMI can be a reliable measurement with appropriate training and calibrated equipment (Bryant et al., 2014). Since all programming in physical education must be within the medical margin of safety, a physician's report related to indicated and contraindicated activities may also be warranted (Nihiser et al., 2007). Without question, a physician's clearance would be required for children and youth who are morbidly obese.

The infusion of a RTI model into the general physical education environment cannot just be an increase in the responsibilities of the physical educator. Unless there is collaboration from others (i.e., administration, dietitians nutritionists, special educators, health educators) this model will not be executed properly (Buchanan, Hinton, & Rudisill, 2013; Mahdavi & Beebe-Frankenberger, 2009; Quitério, 2013). In addition, the physical educator must feel professionally comfortable about providing the appropriate assessments and activities. For more information regarding applying RTI system in physical education, the reader is referred to articles by Davenhauer (2012) and Stephens, Silliman-French, Kinnison, and French (2010).

For example, using a Tier 4 RTI Model related to interventions to prevent or reduce childhood obesity could be designed and implemented in the following manner. Clearly, Tier 1 is the basic tier. The other tiers reflect an increase in intensity in the amount of assessment, increased duration of the type of interventions, and increased use of special education services. This RTI model is designed to be infused into traditional physical education classes. It is not meant to replace the traditional class. This model can be applied also to motor skill acquisition in the physical education classes, as well as, implemented in the classroom related to behavior and academic performance. Further, to increase the probability of success, a school-wide teacher and student committee could be developed to implement many of the following strategies suggested to meet the school or district's needs to prevent or reduce the level of obesity (Stephens, et al, 2010).

Tier 1. Tier 1 occurs in the general physical education class, where there is usually a standardized physical fitness assessment that includes all students, such as the Fitnessgram (Meredith & Welk, 2015). Body mass index data could be assessed by the school nurse, health education class, or within the physical fitness testing. This assessment should be conducted at the beginning and end of the school year. Students identified as being borderline "at risk" should be monitored at each grading period. The goal is for students to have at least a BMI score between the 5th and the 84th per-

centile and a fitness level within the Healthy Fitness Zone. It is estimated that 80% of the students will fall within this Tier 1.

The physical education class should be designed to provide moderately to very physical activity at least 50% of class time based on national standards (Fakhouri et al., 2014) and taught by highly qualified physical educators. The results of the testing should be used to determine individual student baseline data to identify struggling students who may be considered "at-risk." These students should be provided additional support services within general physical education. A few strategies that would be appropriate for all students would be the following:

1. Design enjoyable fitness circuits that provide socialization that are individually designed for a student based on his or her scores in the physical education classes.
2. Send out monthly newsletters to parents of all students addressing the availability of school and community based physical activity programs for students.
3. Collaborate with the health educator in the school to develop cooperative projects that focus on the prevention and weight reduction strategies.
4. Focus on weight management at school parent/guardian night.
5. Develop interclass competitions that are based on the percentage of improvement of the students in class.
6. Post on the bulletin boards motivating pictures and sayings about the importance of a physically active lifestyle.
7. Collaborate with the school or district staff providing food and drinks to provide calorie counts or a color code system related to the healthy snacks, meals and beverages. Signs could also be posted of appropriate sports figures or actors with their photograph and quote.

These approaches maybe all that is needed for weight management or a "child growing into his/her height." If there are students who are not showing significant progress in Tier 1, a meeting should occur with the parent and the appropriate school personnel to discuss moving the child to Tier 2. It has been suggested that approximately 20% of the students may need additional assistance (Stephens et al., 2010).

Tier 2. This level serves students who are not making adequate progress and are provided more intensive, targeted activities that are based on the data that has been continually collected and reviewed. The students continue in their general physical education classes but receive additional support from an adapted physical educator and a dietitian/nutritionist, Registered Dietitian Nutritionist (RDN). A few examples are included below:

1. Implement an optional physical fitness class that meets three times a week during lunch or right after school. The physical education teacher could request assistance from athletes, cheerleaders, and other students who are well respected. Parents and grandparents could be considered who have the skills to provide support. Another pool of assistants are employees at different businesses who partner with schools or allocate paid hours to participate in community service, such as Brothers Big Sisters or Retired and Senior Volunteer Programs, and volunteers in service to America VISTA. Implement an individualized long-term homework program that would involve the student's parents and siblings.
2. Within the class, peer tutors could be partners during the physical activity stations to provide instructional and motivational support. These peers could also collect performance data on these students.
3. Consider developing a bicycle riding club with PTA sponsorship. This club could be offered on weekends or even riding to school and calculating distance travelled to reach a personal or class goal.
4. Teachers could model being active by jogging part of lunch time. Teachers could implement a friendly competition and complete with other teachers related to the number of laps they have walked-jogged or steps they have taken each month during school time. The teacher wins a trophy that is kept in his/her classroom until the end of the next competition. Students are invited to walk or walk jog with the teachers.
5. Perhaps a nutritional consultant could be used.
6. Consider the use of college students majoring in a kinesiology to assist with the at-risk students within small groups as part of a required internship.
7. Contact the student's parents/guardians to determine the appropriate instructional decisions related to their child.
8. Collaborate with the adapted physical educator to determine if there is a need to modify the test items or even use a different test to accommodate for the student's functional level and the need for activity modifications.
9. Consult with the school psychologist to develop individual and group motivational strategies for the students.

Behavioral components have much to do with the child's and the family's relationship with food.

If a student is not demonstrating improved performance based on the results of the continuous evaluations after the district's grading period, transferring the student to Tier 3 may be considered. It has been estimate that three percent of the students in a traditional class may be recommended for placement in Tier 3. These students are classified as Obese with a BMI between the 95 to 140 percentiles with a physical fitness level that is considered within the Health Fitness Zone or below.

Tier 3. The intervention strategies in Tier 3 become more intense and are provided for a longer duration to meet the individual needs of the student that were presented in Tier 2. The interventions are also implemented in much smaller groups (e.g., two students to one instructor or 1 student to one instructor. Programs should include medical nutrition therapy along with appropriate nutritional and laboratory assessments. Illustrations of possible additional strategies at Tier 3 are as follows:

1. Student may receive up to 60 minutes a week of individualized instruction during the school day or after school from a qualified faculty or staff member. This is an addition to the general physical education class instruction.
2. An adapted physical educator consultation to review all the past evaluations to begin the process to request some type of formal adapted physical education placement. Parental written consent will be required for this type of evaluation.

If after 12 weeks there is no improvement in the student's BMI and level of physical fitness, the student is declared nonresponsive and enters Tier 4.

Tier 4. In Tier 4 there is a clear transition for the dominant role of general physical education to adapted physical education in assessment and programming the student in conjunction with a physician's prescription and medical clearance. It is estimated that approximately two percent of the traditional class will be placed in Tier 4. This involves a referral for formal evaluation, which includes a review of all the evaluations in the four tiers, as well as the input from the Individual Education Program Team to determine the appropriateness for special education services, specifically regarding some form of adapted physical education instructional delivery service. This team could be comprised of a school administrator, special education teacher, general and adapted physical educator, physical and occupational therapist, school psychologist, school nurse, social worker, school dietitian/nutritionist, parent(s), and possibly the student. In the case of a student who has been classified as morbidly obese, a physician should become part of the team.

A student with this classification has a BMI percentile that is greater than 140 and a level of physical fitness that is Below the Healthy Fitness Zone. If it is determined that special education services are required, this placement will be based on continual evaluation until the student graduates or masters the adapted physical education goals and objectives identified on her or her Individual Education Program. If the goals and objectives are mastered and within the medical margin of safety, the student will be transferred to Tier 3 where the students' progress will be closely monitored.

The overall goal of the comprehensive school program would be to have each child continue to participate in general physical education programs but *move in and out* of additional programs based on individual needs. "The most critical missing factor in physical education today is that there is little or no accountability for physical educators to create and sustain quality programs" (Prusak et al., 2011, p. 44). The proposed Response to Intervention approach to Childhood Obesity Prevention and Treatment has the potential to increase accountability and provide physical educators with the knowledge and skills they need to teach all students (e.g., those who are at a healthy weight and those who are obese) to be successful according the individual needs.

Conclusion

Childhood obesity is an international health problem that needs to be addressed immediately through evidence-based prevention and intervention programs. It is not only a health issue but a social justice and inclusionary issue (Cardinal, Whitney, Narimatsu, Hubert, & Souza, 2014). Schools must be more proactive in managing and reducing obesity in children and youth and in becoming an integral educational component of comprehensive community-based programs to prevent and reduce childhood obesity. Students who are obese whose condition adversely impacts their educational performance, should be eligible for special education services. If a student is obese and has a significant physical fitness or motor skill deficiency, they have the potential to meet the minimum criteria for obesity as a disability under the IDEA as an *Other Health Impairment* category. Specific evidence-based assessment and eligibility criteria for placement are needed. Eligibility for appropriate small group or special education services (i.e., adapted physical education consultation, nutritional guidance) to reduce or eliminate the condition of obesity could improve the educational performance and the overall quality of life for these students. In many cases, this will generally require significant changes in the traditional physical education environment particularly the areas of continuous monitoring (Jakicic, Davis, Garcia, Verba, & Pelligrini, 2010) and curriculum (Cawley, Meyerhoefer, & Newhouse, 2006). The Childhood Obesity Prevention and Intervention based upon the Response to Intervention approach provides just one model that was suggested in this article that includes continuous monitoring and can be infused into most physical education curriculums. Preservice and inservice preparation of physical educators and other faculty and staff will also be required.

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