

## 25 - THE INFLUENCE OF WEIGHT AND SENDETARY PARENTS IN OVERWEIGHT ADOLESCENTS: WHAT IS THE ROLE OF PHYSICAL ACTIVITY?

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### INTRODUCTION

Obesity has been considered a global epidemic and has grown in recent decades. The problem has reached alarming levels, affecting developed and developing countries, regardless of socioeconomic level. To Ogden et al. (2006), cultural changes and modifications in lifestyle, this prevalence had increased suddenly, and today, the United States, it is estimated that there are 18.2% of children and adolescents were overweight.

In Brazil, even with socio-economic inequalities among its regions, the statistics also are similar to other countries. In 1997, Abrantes et al. (2002) found prevalence among adolescents of 10.4% for overweight and obesity from 4.2% in the Southeast and 6.6% and 4.2% in the Northeast. More recently, Terres et al. (2006) investigated adolescents between 15 and 18 years, the urban area of Pelotas, Rio Grande do Sul, Brazil, and found a prevalence of 20.9% overweight and 5% for obesity.

Depending on the problems of obesity in adulthood, the attention of many research and health agencies have been geared toward children and adolescents. Evidence from longitudinal studies of Power et al. (1997) and more recently by Baker et al. (2007) indicate that children and adolescents can become obese adults, with reduced life expectancy due to increased morbidity and mortality provided by excess weight.

The rise in obesity in this population is a problem faced by governments and society due to the growth of chronic diseases and associated financial costs. The research by Kavey et al. (2003) and Reeves et al. (2007) evidence that even obese children can have formation of coronary arteries and aorta calcification, resulting also in dyslipidemia, increased blood pressure and more likely to develop diabetes mellitus type II, and several types of cancer.

Identification of factors that promote overweight and risk of overweight permits the development of strategies for prevention and treatment, minimizing the harm to stricken by the disease and reducing spending on public health.

### PHYSICAL INACTIVITY AND SEDENTARY LIFESTYLES AS CAUSES OF OVERWEIGHT

According to the American College of Sports Medicine (2003), physical activity refers to any bodily movement produced by skeletal muscles that results in energy expenditure. Thus, physical activity includes both occupational and leisure hours. In contrast, exercise, considered a subclass of physical activity, is defined as bodily movement planned, structured and repetitive, performed for the purpose of improving or maintaining one or more components of physical fitness. The little body movement through physical activity or exercise has rebounded the health of populations in recent years, according to Mokdad et al. (2004), and this fact has been indicated as a major cause of death in adults.

There is evidence in the studies of Lee e Skerrett (2001) of the relationship between volume of physical activity practiced by the people and the reduction of mortality rates. Thus, the physical activities that promote energy expenditure of at least 1000 kcal per week can reduce 20 to 30% all causes of death, and the higher energy expenditure during physical activity, the lower the risks of death.

In the 90s, Lazzoli et al. (1998) recommended that children and teens participate in light physical educational activities, in pleasant and enjoyable way, focusing on growth and body development, but always respecting their physiological limitations. However, with the increase in obesity in this population, Barlow (2007), currently advises the practice of at least 60 minutes per day of moderate activity. Even with that statement, it is not what has happened, according to the study of Lake et al. (1997), with increasing age, there was a decrease in physical activity, especially in adolescence and adulthood.

Butte et al. (2007) investigated levels of physical activity in children and adolescents aged 4 to 19 years and its relation to body weight. The level of physical activity was reduced as the age increased, being negligible in age from 12 to 19 years, and practiced more by males. Among participants of the study, those who were more active usually exhibited healthy body weight than those who were inactive. Similar results were found by Sanchez et al. (2007), in a group of teenagers aged between 11 and 15 years old. In both sexes, the amount of physical activity was insufficient and 55% did not attain the minimum daily amount of at least 30 minutes per day to maintain health. So, this little body movement is directly responsible in BMI (above the 85th percentile) of 45.7% of individuals.

The consensual and central issue of the function of physical activity on body weight is that it has the ability to cause a negative energy balance and therefore reduce it. However, although some studies evidence the benefits of physical activity to reduce body fat in adolescents, it was found by other researchers Hallal et al. (2006) and Silveira et al. (2005), overweight adolescents who presented physical activity level that equals or exceeds those who have healthy weight.

In Canada, Koezuka et al. (2006) investigated the level of physical activity in adolescents 12 to 19 years and 50.3% males and 67.8% females were considered inactive, according to the criterion adopted for 60 minutes per day to maintain health. At the age of 19, the teenagers had 2.6 times greater chance of being inactive compared to those of 12 years old. Males had 1.5 times higher risk of physical inactivity compared to females. Nevertheless, the body weight showed no statistical association with physical activity levels for both sexes, what was also evidenced in studies by Silveira et al. (2005), in Brazil.

The research that proposes to elucidate the relationship between energy expenditure and the development of overweight is still not able to explain the mechanisms of weight gain, because the analysis between expenditure and energy intake may be different during critical periods of development such as childhood and adolescence. For Goran (2001), the etiology of obesity may vary in different population groups and still have the interference of the continuous change in body composition, it is difficult to quantify physical activity and obesity relate to the moment measures are collected.

Although there are conflicting results, Delmas et al. (2007) suggest a positive association between BMI and other measures of body fat with the act of watching television and using new computer technology, especially the computer, but not the video game possibly because adolescents use the electronic games in less time compared to television and computer.

The harmful consequences for health in adulthood as a function of exposure to the use of electronic entertainment has been shown recently by Hancox et al. (2004), in people aged 26, so it is therefore a predictor of high BMI.

### BODY WEIGHT OF PARENTS AS A FACTOR IN DETERMINING THE BODY FAT OF THEIR CHILDREN

Genetics, during the 90's, added a further mechanism to improve understanding of the problem. Zhang et al. (1994) proposed a metabolic model that is accepted even today. It is a mutation of a gene called OB or leptin, which affects the hormonal signals that regulate energy balance, causing an accumulation of body fat. This study provided the researchers to take on obesity as a disease. The Survey of Farooqi et al. (2002) using subcutaneous leptin in humans has been shown beneficial in reducing weight, body fat and normalizing the appetite. However, the rapid and steady increase in the prevalence of obesity in children and teenagers have no mutation in the leptin rise, but environmental and behavioral factors, as shown by studies by Rennie et al. (2005).

Klesges et al. (1991), have pointed to the diet of the parents as an important environmental factor in the etiology of overweight in children and adolescents, since dietary habits are formed in childhood and likely persist into adulthood.

To examine the eating habits of parents and their children to compare, Yanez et al. (2007) investigated the diet of mothers and teenage daughters from 12 to 18 years and concluded that girls were three times more likely to have inadequate nutrition if their mothers also had non-standard healthy diet.

These results indicate that parents should plan together family life and ways of living, otherwise the child may have complications in sequential phases of his life due to the lifestyle of the family. The effects of family habits were investigated by Silveira et al. (2005), in adolescents in public schools in São Paulo. The study compared adolescents with healthy weight and overweight, linking them to their lifestyles and their parents' lifestyle, adolescent offspring of parents with overweight had twice the risk of being overweight compared to children of parents with healthy weight. The survey also confirmed that overweight individual during childhood had almost four times more chances of being overweight in adolescence. In another survey of public school children, Ribeiro et al. (2003) compared the weight of parents with their children. Children who had parents with BMI > 30 had a chance two and a half times greater for overweight compared to children of normal weight.

Even with studies indicating that there are associations between the BMI of parents with children's BMI, Novaes et al. (2007) investigated the relation of anthropometric and lipid profile among children 6-8 years old with overweight and healthy weight, finding a significant relationship of overweight child only with the BMI of their mothers. The hypothesis for this finding is that mothers spend most of their time at home raising children, interfering directly in food habits and ways of living.

Francis et al. (2007) followed 197 girls for a period of eight years and found that BMI was associated with their father and mother. They were separated into groups: those whose mother and father were not overweight, those who had just overweight mother, only father overweight or both parents overweight. Those who had both parents overweight had the most rapid increases in weight, with eight times greater chance of being overweight at age 13, compared to the other girls.

The studies by Suñé et al. (2007) concluded that adolescents who have at least one parent overweight may have about 50% risk of overweight, and those with both parents overweight have twice the risk of overweight.

Lake et al. (1997) showed that the mean BMI collected at 7, 11, 16, 23 and 33 years increased in the same proportion that increased fat parents. At age seven, children who had both parents obese had an average of 9.7% of greater BMI than those who had parents with normal BMI, this difference increased to 20% at 33 years, with about eight times more likely to be overweight when their parents were also overweight than those who had parents with healthy weight.

Jarosz et al. (2007) indicate the family as the best place to learn a healthy lifestyle and parents are the best example for their children. To the extent that children have no support or parents are not involved in the educational process, the risk of incidence of overweight increases. Gray et al (2007) attribute determining the weight of households to the culture and ways of living of its members, including the preparation of food, physical activity, income or people who cares about children and adolescents.

### CONCLUSION AND RECOMMENDATIONS

Naturally, teens spontaneity for games and sports directly affects health and, consequently, reduces the chances of developing overweight because of the energy expenditure of physical activities through proportionate by the physical activities. It is important that schools increase the workload of the course physical education throughout the week and encourage them to practice sports at school, so that good habits are cultivated and carried throughout life.

Considering the increasing rates of overweight in the world, especially among teenagers, the outcome of this problem and reduced life expectancy, it is necessary an understanding of the factors that contribute to overweight in adolescents, what will serve as support for families and schools along with the entire society and the State to carry out prevention and treatment in order to reduce its prevalence. Parents, in turn, can provide their children with leisure time involving physical activity such as walking, cycling or playing in parks, and more recently, some schools have done with leisure time physical activity in which parents do gymnastics with their children, called matrogymnastic.

Physical activity exerts a beneficial effect on people, proven in epidemiological studies, but the literature presents inconclusive regarding quantity, frequency and duration of activity. Even so, it is essential reducing sedentary time in children and adolescents and increasing daily physical activity not only to reduce the chances of developing overweight, but also to allow for a complete physical and mental development, so that adult diseases can be minimized.

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## THE INFLUENCE OF WEIGHT AND SEDENTARY PARENTS IN OVERWEIGHT ADOLESCENTS: WHAT IS THE ROLE OF PHYSICAL ACTIVITY?

### ABSTRACT

The determinant environmental vectors of overweight in adolescents include sedentary lifestyle through the reduction of physical activity and increased information technology with the use of computers and television, excess energy from carbohydrates and lipids, the use of motorized transport and reduction or exclusion of physical education classes in the school curriculum. However, it seems paradoxical, but there is the relationship between obesity and malnutrition and the contribution of genetics. Given this reality, the factors that contribute to increased body weight in adolescents has aroused the interest of researchers in the health area, because there are still gaps in our understanding of the forms of interaction between these factors and it is difficult to draw accurate conclusions about the disease. In this study, we performed a literature review between 1991 and 2007 on the relationship of physical activity, weight and influence of parents in overweight adolescents and the role of physical activity to help young people with good health. The recommendation is that all adolescents should perform at least 60 minutes per day of moderate physical activity and reduce the daily time spent with television and computer. Special attention must be paid to children of overweight parents, because these youngsters are more likely to develop overweight and therefore diseases associated with excessive weight.

**KEYWORDS:** Overweight, physical activity, adolescents.

## L'INFLUENCE DU SÉDENTARISME ET DU POIDS DES PARENTS DANS LE SURPOIDS DES ADOLESCENTS: QUEL EST LE RÔLE DE L'ACTIVITÉ PHYSIQUE ?

### RÉSUMÉ

Les vecteurs environnementaux déterminants du surpoids chez les adolescentes incluent l'hygiène de vie sédentaire, à travers de la réduction de l'activité physique et l'augmentation des technologies de l'information avec l'usage de l'ordinateur et de la télévision, l'excès d'énergie provenant de lipides et glucides, l'usage de transports motorisés et la réduction ou l'arrêt des cours d'éducation physique du programme scolaire. Néanmoins, cela semble paradoxal mais il existe encore une relation entre l'obésité et la dénutrition infantile et la contribution de la génétique. Face à cette réalité, les facteurs qui contribuent à l'augmentation de

poids corporel chez la population adolescente ont éveillé l'intérêt des chercheurs du domaine de la santé, par le fait qu'il existe encore des lacunes dans la compréhension des formes d'interaction entre de tels facteurs et étant difficile d'établir des conclusions précises sur la maladie. Dans ce travail, une révision de la littérature entre les années 1991 et 2007 a été réalisée, à propos du sédentarisme, du poids des parents et de l'influence du surpoids des adolescents, et du rôle de l'activité physique pour aider les jeunes avec une bonne santé. La recommandation est que tous les adolescents pratiquent au moins 60 minutes par jour d'activité physique modérée et réduisent le temps journalier dépensé avec la télévision et l'ordinateur. On se doit d'avoir une attention particulière pour les enfants de parents en surpoids, car ces jeunes ont plus de chances de développer un surpoids, et par conséquent des maladies associées à l'excès de poids.

**MOTS-CLÉS :** surpoids, activité physique, adolescents

#### **LA INFLUENCIA DEL SEDENTARISMO Y DE LOS PADRES EN ADOLESCENTES CON SOBREPESO: ¿CUÁLES EL PAPEL DE LA ACTIVIDAD FÍSICA?**

##### **RESUMEN**

Los vectores ambientales determinantes del sobrepeso en los adolescentes incluyen el estilo de vida sedentario, a través de la reducción de la actividad física y el aumento de la tecnología de información con el uso de ordenadores y televisión, exceso de energía de los carbohidratos y los lípidos, el uso de transporte motorizado y la reducción o exclusión de las clases de educación física en el currículo escolar. Sin embargo, parece paradójico, pero aun existe la relación entre la obesidad y la desnutrición infantil y la contribución genética. Ante esta realidad, los factores que contribuyen al aumento del peso corporal en los adolescentes ha despertado el interés de los investigadores en el campo de la salud, porque todavía hay lagunas en nuestra comprensión de las formas de interacción entre estos factores y es difícil sacar conclusiones precisas sobre la enfermedad. En este estudio, se realizó una revisión de la literatura entre 1991 y 2007, sobre la relación del sedentarismo, peso de los padres y la influencia de los adolescentes con sobrepeso y el papel de la actividad física para ayudar a los jóvenes con buena salud. La recomendación es que todos los adolescentes realizar al menos 60 minutos diarios de actividad física moderada y reducir el tiempo diario dedicado a la televisión y el ordenador. Se debe prestar especial atención a los niños de padres con sobrepeso, ya que estos jóvenes son más propensos a desarrollar enfermedades asociadas con sobrepeso y por lo tanto con un peso excesivo.

**PALABRAS CLAVES:** El sobrepeso, la actividad física, los adolescentes.

#### **A INFLUÊNCIA DO SEDENTARISMO E PESO DOS PAIS NO SOBREPESO DOS ADOLESCENTES: QUAL O PAPEL DA ATIVIDADE FÍSICA?**

##### **RESUMO**

Os vetores ambientais determinantes do sobrepeso nos adolescentes incluem o estilo de vida sedentário, através da redução da atividade física e o aumento da tecnologia da informação com o uso de computadores e televisão, excesso de energia provenientes de lipídios e carboidratos, o uso de transportes motorizados e a redução ou exclusão das aulas de educação física do currículo escolar. Contudo, parece paradoxal, mas ainda existe a relação da obesidade com desnutrição infantil e a contribuição da genética. Diante dessa realidade, os fatores que contribuem para o aumento de peso corporal na população adolescente têm despertado o interesse dos pesquisadores da área da saúde, pelo fato de ainda existir lacunas na compreensão das formas de interação entre tais fatores e sendo difícil estabelecer conclusões precisas sobre a doença. No presente trabalho, foi realizada uma revisão da literatura entre os anos de 1991 e 2007, sobre a relação do sedentarismo, peso dos pais e a influência no sobrepeso dos adolescentes e o papel da atividade física para ajudar os jovens com a boa saúde. A recomendação é que todos os adolescentes pratiquem pelo menos 60 minutos por dia de atividade física moderada e reduzam o tempo diário gasto com televisão e computador. Uma especial atenção deve ter os filhos de pais com sobrepeso, pois esses jovens têm mais chances de desenvolver o sobrepeso e consequentemente doenças associadas ao peso excessivo.

**PALAVRAS-CHAVE:** Sobrepeso, atividade física, adolescentes.