

DOES BMI IMPACT ACTIVITY LEVEL?

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Research has found that obese and overweight boys and girls are prone to less physical activity. In this study, we reinvestigate the relationship between physical activity and obesity among children. We examined the differences in physical activity between overweight and normal weight children. One-hundred and twenty six Hawaii school-system children participated in this study. The children were measured for height and weight, and answered questions about their activity level. Activity level was assessed by participation in physical education, active play during recess and lunch, and other activities during the past week. Children were divided into obese, overweight and normal weight based on their age and body mass index (BMI). Age-adapted BMI was used as overweight and obesity indicator. The hypothesis for this project is that physical activity will be greater with normal weight boys and overweight girls than it is with overweight boys and normal weight girls.

INTRODUCTION

Body mass index (BMI) is commonly used to calculate a person's body fat. It has been a commonly used indicator of body fatness for most children, teens and adults. According to the Centers for Disease Control and Prevention, BMI for children is a screening tool used to identify possible weight problems. Overweight children are prone to, or at risk for, health problems when they reach their teen and adult years. Children and teenagers are more likely to have risk factors associated with cardiovascular disease, type 2 diabetes, high blood pressure, and high cholesterol.¹ One reason for overweight is the imbalance between physical activity and calories consumed. Regular physical activity for children may lower the risk of many diseases.² It is recommended that children and adolescents participate in at least 60 minutes of moderate intensity physical activity most days of the week, preferably daily.³

A study at the Kinesiology and Exercise Sciences laboratory at the University of Hawaii at Hilo is currently looking at health risks for diabetes in Hawaiian school children. The study involves measuring children's body size, and asking questions about health, physical activity, and normal dietary intake of the child. The child's physical fitness is determined by collection of data on respiratory exchange ratio and heart rate. Glucose and cholesterol levels are tested through blood samples for health risks and genetic traits that may be associated with these health risks are tested through saliva samples.

Our project tested whether the weight of a child affects his or her level of physical activity. The information was gathered from the first year of the research project which

included 126 Hawaiian school children: 66 males.

METHODS

We studied a multiethnic sample of children in kindergarten and third grade from schools in East Hawaii using a cohort design. ($N=126$; male $n=66$; kindergarten students $n=59$; third grade students $n=67$).

Participants underwent an anthropometric series for height and weight measurements and answered questionnaires about their activity level. Their activity level was assessed by scoring the Physical Activity Questionnaire for Children (PAQ-C). The PAQ-C is a guided self-administered 7-day recall measure designed to assess general physical activity levels during the school year for children.

BMI data were collected from each participant. Of this group, BMI was distributed among grade and activity level. Grades, BMI, and activity level will be correlated in one test. Sex, BMI, and activity level will be correlated in a second, third and fourth test.

RESULTS

There was an extremely low relationship between activity level and BMI. We used the Pearson-product correlation coefficient, finding a 0.008 Pearson-product correlation coefficient. This correlation indicates that the level of physical activity has no relationship to BMI. The second test done on BMI and activity level between the sexes reported a correlation of $r=0.101$. These findings indicate that there is no difference of activity level and BMI between the sexes. The third test done on BMI and activity

level between the females reported a correlation of $r=0.152$. These findings indicate that there is no difference of activity level and BMI between the females. The fourth test done on BMI and activity level between the males reported a correlation of $r=-0.062$. These findings indicate that there is no difference of activity level and BMI between the males.

DISCUSSION

In a sample of 126 Hawaiian school-system children, a Pearson r correlation of 0.008 was found between BMI and physical activity level. This finding indicates that there is an extremely low relationship between BMI and physical activity. According to the results, kindergarteners and third graders average about the same BMI and activity

level. In the second test done between males and females, a 0.101 correlation was found. This indicates an extremely low relationship between physical activity and BMI. According to the results young females and males average about the same BMI and activity level. In the third test done between overweight females and normal weight females, a 0.152 correlation was found. The results from this test show support for the stated hypothesis, young females with high level of activity levels are not a good indicator of low body mass index. According to the results females with a high BMI have about the same level of physical activity as females with a low BMI. In the fourth test done between overweight males and normal weight males, a -0.062 correlation was found. The results from this test does not show support for the stated hypothesis, young males with high BMIs are not a good

indicator of low activity levels. This study shows that BMI may not play a role in the level of physical activity a child may have.

REFERENCES

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