

## Physical activity level and performance in the six-minute walk test in children and adolescents with sickle cell anemia

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**Background:** Sickle cell anemia is the most frequent monogenic hereditary disease in Brazil. The main characteristic is the inheritance of the beta-globin gene S (gene  $\beta$ s), which is responsible for a mutant hemoglobin, the hemoglobin S (HbS). **Objective:** To establish determinants of the maximum walking distance of 6-minute walk test (6MWT) in children and adolescents with sickle cell anemia (SCA); to compare the physical activity level (PAL) and 6MWT performance between patients with SCA and healthy controls. **Methods:** We carried out a cross-sectional study in which patients and controls answered the Physical Activity Questionnaire for Older Children and Adolescents, and 6MWT was conducted. We also analyzed the patients' hemolysis markers. **Results:** We studied 57 patients and 58 controls. Among patients group, by univariate analysis, age ( $p < 0.0001$ ) and indirect bilirubin ( $p = 0.008$ ) were associated with maximum walking distance in 6MWT (6MWD). By multivariate analysis *backward stepwise*, age was associated directly ( $p < 0.0001$ ; beta: 0.75), while BMI was associated inversely with 6MWD ( $p = 0.047$ ; beta: -0.32). The following equation was derived from the multivariate analysis: maximum 6MWD =  $487.7 (\text{age} \times 18.3) - (12 \times \text{BMI})$ . Patients reported lower PAL compared to healthy controls, however, there was no difference in the average 6MWD between patients ( $500.6 \pm 88.7$  meters) and controls ( $536.3 \pm 94$  meters). **Conclusion:** The determinants for the 6MWD in children and adolescents with SCA were age (direct relationship) and BMI (inverse relationship). It was observed that the patients had lower PAL compared to healthy controls.

**Palavras-chave:** sickle cell anemia, exercise, physical activity.