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ASSESSMENT OF GRIP STRENGTH, BODY COMPOSITION AND PHYSICAL PERFORMANCE OF PATIENTS WITH JUVENILE IDIOPATHIC ARTHRITIS: COULD SARCOPENIA BE POSSIBLE?

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Introduction: Sarcopenia is described by the loss of skeletal muscle mass and reduced muscle strength or physical performance (1). Historically, sarcopenia was primarily linked with older adults; however, a decrease in muscle mass, strength, and function associated with chronic diseases has also been observed in pediatric populations (2). Juvenile idiopathic arthritis (JIA) is the most common chronic rheumatic disease of childhood, which can cause a decrease in muscle strength and physical performance, and may be associated with sarcopenia (3).

Objectives: The aim of this study was to evaluate grip strength, body composition, and physical performance in adolescents with JIA to identify possible sarcopenia and to compare them with healthy controls.

Methods: Twenty-one adolescents with JIA and 16 healthy controls aged between 12 to 17 years old were included in the study. The grip strength of the patients was assessed with the hand-held dynamometer (Kinvent Physio K-Grip), in terms of peak force (PF), mean force (MF), mean RFD, time to peak force (TPF), and fatigue parameters. Grip measurements were repeated three times for both hands. The body composition was analyzed using the Bioelectrical Impedance Analysis Device (Tanita SC240MA), and for each participant, appendicular skeletal muscle mass (ASM)/weight and muscle-to-fat ratio (MTF) were calculated. The physical performance was evaluated through the 6 Minute Walk Test (6MWT) and walking speed.

Results: The mean age of the children and adolescents diagnosed with JIA and healthy controls included in the study was 14.71±1.79 and 15.43±0.96 years, respectively. When compared with healthy controls, grip strength measured for three repetitions for both hands in adolescents with JIA was significantly lower in terms of PF, MF, and mean RFD ($p<0.05$), while there was no difference in terms of TPF and fatigue ($p>0.05$). When body composition and physical performance results were compared, ASM/weight and MTF ratios, 6MWT and walking speed of adolescents with JIA were significantly lower compared to healthy peers ($p<0.05$).

Conclusion: The results of this study indicate that grip strength, muscle mass, and physical performance are significantly affected in adolescents with JIA compared to their healthy peers. We believe that the observed decrease in grip strength, muscle mass, and physical performance in children with JIA may suggest the potential development of sarcopenia. Therefore, we recommend a detailed evaluation of these parameters in adolescents with JIA before planning physical activity and exercise programs. Given these findings, we believe that sarcopenia in adolescents with Juvenile Idiopathic Arthritis emerges not merely as a possibility but as a critical condition that necessitates proactive, targeted interventions to mitigate its progression and optimize health outcomes. This study was supported by TÜBİTAK 1001-Scientific and Technological Research Projects Support Program with project number 121E690.

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