Abstract

This thesis deals with the evaluation of neurovisual functions in patients with Adolescent Idiopathic Scoliosis (AIS), which is a relatively under-researched topic. The study focuses on comparing selected oculomotor functions using the RightEye device between AIS patients and a healthy control group. The theoretical part introduces the etiology of this spinal deformity, mentioning potential changes in sensory systems that might contribute to the development of AIS. The treatment of this condition is briefly described as well. This section also discusses the possibilities of examining oculomotor functions using eye tracking methods, particularly the RightEye device.

Methodology: In the practical section, the results of measurements on the RightEye device were compared between a group of 17 AIS patients and 17 healthy individuals. Both groups underwent device-based measurements, crossed eye-hand lateralization assessment, and hidden strabismus testing. The study assessed saccadic eye movements (targeting vs. overshooting, movement speed) and eye-hand reaction times, with the expectation of better results for the healthy control group.

Results: Statistically significant results ($p < 0.05$) were found in the evaluation of the number of repeated vertical and horizontal saccadic movements within a certain time unit and in the assessment of the ability to target horizontal saccadic movement, where AIS patients demonstrated worse results than the healthy group. Although the RightEye device measurements did not confirm statistical significance in eye-hand reaction time parameters ($p > 0.05$), the average parameter values for the AIS group were worse. In the overall Brain Overall Score, AIS patients had poorer results than the control group ($p < 0.05$). The evaluation of crossed laterality did not show statistical significance in the AIS group ($p > 0.05$).

Discussion: Changes in neurovisual functions among AIS patients have not been extensively discussed in the literature yet. Testing revealed that AIS patients exhibit poorer results in some tasks when measured using the RightEye device compared to healthy individuals. In the future, it would be appropriate to continue with the research.