Abstract
Title Gait Analysis in Adolescents with Idiopathic Scoliosis: A Systematic Review.

Aim The role of spine is vital as a gait stabilizer. Gait analysis may provide a more holistic view of how the body behaves to idiopathic scoliosis among adolescents. The aim of this thesis is to review the effectiveness and validity of gait analysis in examining AIS, and secondly to assess how the gait of AIS patients differ from adolescents without scoliosis.

Method A systematic review of the topic was conducted. Information was gathered from six e-databases, and seventeen articles were selected, of which seven focusing solely on AIS subjects (i.e. non-comparative) and ten were focusing on AIS in relation to control subjects (i.e. comparative).

Results Spatio-temporal (STP), kinematic, kinetic and EMG parameters show significant changes in AIS subjects during walking. But variations between results, lack of data for certain parameters and no significant relationship between gait parameters and scoliosis was also seen. Furthermore, AIS subjects differ in performance compared to non-scoliosis adolescents in at least one gait parameter across all studies. This includes abnormalities in muscle activity, less economical use of the body, poorer performance in kinematic parameters and differences in STP such as step length and step initiation.

Conclusion It is clear that gait analysis is a valid method for exploring the consequences of AIS during walking. The evidence base is nonetheless diverse, inconclusive and limited. Also, although AIS individuals show a different gait pattern than non-AIS individuals, the ability to generalize these findings is low. Future research should try more replications of the same methodologies applied in the literature on gait and AIS, but in new settings.

Keywords adolescent idiopathic scoliosis, AIS, gait, gait analysis, walking, locomotion, spatio-temporal, kinematic, kinetic, asymmetry and posture.