ABSTRACT

Title: *Kinematic of cervical thoracic spine in the context of whole body posture*

Problematics: This work describes the kinematics of upper thoracic spine during specific movement of the shoulder girdle. The kinematic changes are evaluated with the relationship of the whole body posture.

Aim: To develop the objective evaluation of the posture and the amount of the segmental spinal movement of cervical thoracic spine. To describe the relationship between the specific movement of arm – adduction and external humeral rotation - and the posture using 3D kinematic analysis. To objectify this tested movement as a diagnostic tool or a therapy for forward head posture.

Methods: The theoretical part of this work summarizes the current knowledge of poor posture and there is defined the upright posture. The experimental part describes the measurement of the movement of shoulder girdle and its response to the axial system using 3D kinematic analysis.

Result: The results of kinematic 3D motion analysis show that the external humeral rotation with adduction of the shoulder leads to the upright posture if there is the horizontal position of the thorax and pelvis. The posture was divided due to the physiological or pathological response with this simple movement.

Conclusion: A new model for evaluation of the posture was developed. The kinematics of the cervical thoracic spine was described. The tested movement changes poor posture into upright posture which can be diagnostically and therapeutically used to correct poor posture, forward head posture and protracted shoulder. The kinematic analysis is an effective tool for determining the posture and amount of segmental spinal movement.

Key words: kinematic analysis, electromyography, posture, spine, thorax, pelvis