Abstract

The main goal of this study is to discuss the impact of unilateral load on violinists‘ and violists‘ posture. Moreover, we intended to describe physical problems amongst musicians.

Methods: Subjects were recruited through email communication with orchestras and an advert posted on social media. The subjects were divided into two groups. The first group, called the musicians (H), included 30 violinists (21) and violists (9) in total. The second group was composed of healthy university students who were not exposed to unilateral loads.

The process of data collection was split into two parts. Firstly, the subject was acquainted with the goal of the study and with the process of data collection, also the permissions form was signed. In the first part, Moire topography method was used. Both groups were tested in the standing position. The group of musicians was also tested in the playing position with the instrument in standing. Moreover, a specific form was filled focusing on pain, playing habits and ergonomics.

Results:

The comparison of the standing position between the musicians and control group observed on DIERS formetric 4D did not show any significant divergence within sagittal imbalance, coronal imbalance, kyphotic angle, lorodotic angle and scoliotic angle. Futhermore, the standing position and the playing position of the musician were compared. The result showed a significant difference within sagittal imbalance, lordotic angle and scoliotic angle. In the playing position, the musician`s trunk was tilted

backwards, deeper lordosis was found and greater rotation within vertebras marked with the scoliosis angle.
Comparison in standing and playing position using Moire topography method did not reveal any significant difference between violists and violinists.

According to the form, the areas of the body most likely to develop pain are the head, nape and neck followed by the right shoulder and right shoulder blade area. A high presence of pain was revealed. Moreover, 63% of the musicians stated a presence of pain after playing; in addition, 50% reported presence of pain during their playing. The form also revealed that the musicians suffer with the back pain more than control group ($p<0,05$).

Conclusion: No significant difference between the group of musicians and the control group using DIERS Formetric 4D was found. Unilateral load was found to be the cause of the high pain rate, and may create more functional than structural changes. These functional changes might be the cause of pain.

Key words
Musicians, violinists, violists, unilateral load, playing position, posture, back pain, Moire topography, ergonomics.