
Musikphysiologie und Musikermedizin in anderen Publikationen

Englischsprachige Abstracts

Analysis of High-Density Surface EMG and Finger Pressure in the Left Forearm of Violin Players: A Feasibility Study

Catarello P, Merletti R, Petracca F
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Abstract: Wrist and finger flexor muscles of the left hand were evaluated using high-density surface EMG (HDsEMG) in 17 violin players. Pressure sensors also were mounted below the second string of the violin to evaluate, simultaneously, finger pressure. Electrode grid size was 110x70 mm (12x8 electrodes with interelectrode distance=10 mm and Ø=3 mm). The study objective was to observe the activation patterns of these muscles while the violinists sequentially played four notes--SI (B), DO# (C#), RE (D), MI (E)--at 2 bows/s (one bow up in 0.5 s and one down in 0.5 s) and 4 bows/s on the second string, while producing a constant (CONST) or ramp (RMP) sound volume. HDsEMG images obtained while playing the notes were compared with those obtained during isometric radial or ulnar flexion of the wrist or fingers. Two image descriptors provided information on image differences. Results showed that the technique was reliable and provided reliable signals, and that recognizably different sEMG images could be associated with the four notes tested, despite the variability within and between subjects playing the same note. sEMG activity of the left hand muscles and pressure on the string in the RMP task were strongly affected in some individuals by the sound volume (controlled by the right hand) and much less in other individuals. These findings question whether there is an individual or generally optimal way of pressing violin strings with the left hand. The answer to this question might substantially modify the teaching of string instruments.

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Effect of Arm Position on Width of the Subacromial Space of Upper String Musicians

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Abstract: **OBJECTIVE:** Musicians often end their musical career due to musculoskeletal injury. A leading source of shoulder pain in upper string musicians is rotator cuff disease (RCD). Multiple factors contribute to its development. Compressive overload of the soft tissues of the subacromial space resulting from a decrease in the width of the subacromial space has been identified as an extrinsic factor contributing to RCD development. The purpose of this study was to characterize the width of the subacromial space by measuring acromial-humeral distance (AHD) of upper string musicians, while their arms are in standard playing positions. **METHODS:** Experienced musicians (n=23) were recruited from local communities. Shoulder ultrasound