

Difficulty of violin vibrato in novice players: Fingerboard reaction force analysis

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The aim of this study was to investigate the difference in the nature of shaking (the longitudinal and lateral components) and press (the vertical component) forces during the production of a vibrato tone by 10 novice players as compared with 10 expert players of the violin. A violin installed with a 3-D force transducer was used for the measurement of the force while performing a successive A (open) and D (vibrato and force measurement) tone production task for 30 s at 4.5 Hz vibrato rate at *mf* (75-77 dB). The index, middle, ring, and little fingers were used for the measurement. The average, amplitude, and peak-to-peak time of shaking and press forces were evaluated for each trial data. The results indicated that the intra-individual variability of the amplitude of shaking force and its peak-to-peak time for all fingers was significantly larger for the novices than the experts. The novices had smaller mean values of shaking and press forces than the experts, and this group difference was larger for the index and little fingers than for the other fingers. Novices have been believed to use a grip too firm to shake the hand. The present data suggest that it is the opposite.

Keywords: violin; vibrato; finger force; novice; finger difference

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