

## **Small keys, big changes – adaptation of piano students to ergonomically scaled piano keyboards**

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### **Background**

Pianists' hand spans vary widely, but the size of the piano keyboard has remained unchanged since the 1880s, with the octave measuring 6.5 inches ( $\triangleq 16.5$  cm). This standardization has negative consequences for pianists with smaller hands, who have a higher risk of developing playing-related musculoskeletal disorders than those with larger hands when playing advanced repertoire. There is growing interest in ergonomically scaled keyboards (ESPKs), with narrower keys that allow smaller-handed pianists to play more comfortably. Pianists report rapid adaptation between keyboard sizes and greater ease on ESPKs, but no study has systematically examined the adaptation rate. The current study aims to address this question, and we hypothesize that pianists will fully adapt quickly to ESPKs.

### **Methods**

Within one session, piano students practiced a short sequence for 15 minutes on a 6.5-inch digital keyboard. They then performed five 20-second trials on this keyboard (trials 1–5), followed by ten trials on an otherwise-identical 6.0-inch keyboard (trials 6–15), and finally five trials on the 6.5-inch keyboard (trials 16–20). MIDI data were collected, and performance was measured by the number of correctly played notes.

### **Results**

In a pilot study of 6 pianists, we observed a drop in performance after switching to the smaller keyboard (trial 6), followed by an improvement in performance due to successful adaptation over the course of trials 6-15. This could also be seen during re-adaptation to the 6.5 in. keyboard in trials 16-20.

### **Conclusion**

Preliminary results suggest that pianists can adapt rapidly between standard keyboards and ESPKs.