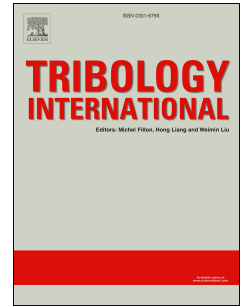


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Correlation between tactile perception and tribological and dynamical properties for human finger under different sliding speeds

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Abstract

This work focused on the underlying mechanism of how sliding speed affected the tactile perception through analysing tribological and dynamical properties of the right index finger. The test was performed on identifying surface roughness through the finger sliding against sandpapers. Parameters such as the sliding speed, the roughness of sandpaper, or the contact area were each varied while others were kept constant. The test showed that the magnitude of vibration acceleration increased with the increase of sliding speed. The stick-slip phenomenon occurred at the lower speed, and high-frequency stick-slip was observed in the fingertip contact. It was found that a higher vibration magnitude benefited the recognition of samples, while the occurrence of stick-slip phenomenon interfered the perception.

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