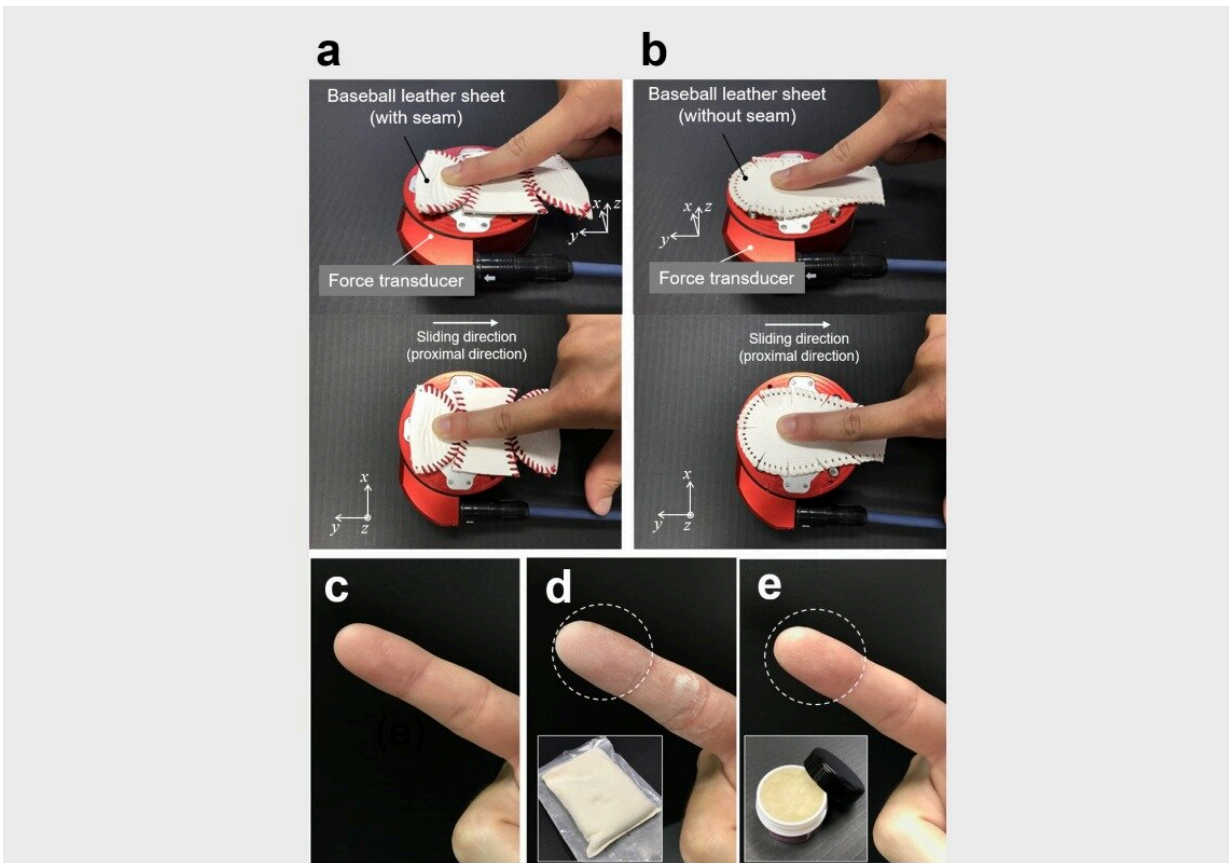


Rosin powder can help maintain more constant friction when pitching a baseball

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An experimental setup of sliding friction test for MLB ball leather sheet with seam (a) and MLB ball leather sheet without seam (b). c-e Finger conditions: no application (c), rosin application (d), and sticky-substance application (e). Credit: Takeshi Yamaguchi

In baseball, even the smallest detail can tip the scales in favor of the batter or the pitcher. A recent publication has highlighted how rosin powder helps maintain a more constant friction when pitching, something that could bring about a fairer playing field in Major League Baseball.

Applying either rosin powder made from pine resin or a wax-like sticky substance to a [baseball](#) significantly alters the [friction](#) between the pitcher's fingertips and the ball surface, which can in turn influence the rate at which the ball spins.

These findings are published in *Communications Materials*.

During pitching in baseball, the friction between the fingertips and the ball at the time of release can significantly influence both ball spin and ball control. More friction tends to increase the rate of ball spin, which can put batters at a disadvantage.

Takeshi Yamaguchi and colleagues assessed the effects of different substances on the friction between the index fingertip of nine [male participants](#) and a baseball leather sheet (which represented a baseball).

The authors report that the application of rosin powder increased friction between the fingertip and the leather surface by more than 20%. Rosin powder also reduced the variation in friction both between different participants and among different pitches by the same participant. Additionally, applying a wax-like sticky substance increased friction by more than 50% compared to when no substance was applied.

The authors calculated that applying a sticky substance would therefore increase the rate at which the ball spun compared to when applying no substance or rosin powder.

The authors also identified that baseballs used by the Nippon Professional Baseball Organization in Japan were less slippery than those used by the MLB in the U.S. They suggest that the friction of MLB balls could be increased for more ball control, perhaps by changing the materials used.

However, the authors do caution that the flat leather sheet of baseball material may not fully correspond to the curved surface of an actual baseball.

More information: Takeshi Yamaguchi et al, Effect of grip-enhancing agents on sliding friction between a fingertip and a baseball, *Communications Materials* (2022). [DOI: 10.1038/s43246-022-00317-4](https://doi.org/10.1038/s43246-022-00317-4)

Provided by Tohoku University

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