

Abstract Submitted
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Water walking - an evolution of water surface skipping RANDY HURD, Utah State University, JESSE BELDEN, MICHAEL JANDRON, Naval Undersea Warfare Center, ALLAN BOWER, Brown University, SEAN HOLEKAMP, Naval Undersea Warfare Center, TADD TRUSCOTT, Utah State University — Previous work has shown that elastomeric spheres skip more easily than disk-shaped stones. This is due to increased lift stemming from sphere deformation, which provides an increased cross-sectional area and favorable attack angle upon impact. We extend lift models developed for individual impacts to long-range multiple impact events and compare the estimates to experimental results, which show good agreement. Additionally, a surprising new mode of skipping is observed that resembles water-walking, wherein a quickly rotating sphere produces small successive impacts allowing it to move parallel to the water surface. The dynamics of this new multiple skip behavior are rationalized analytically and tested experimentally.

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