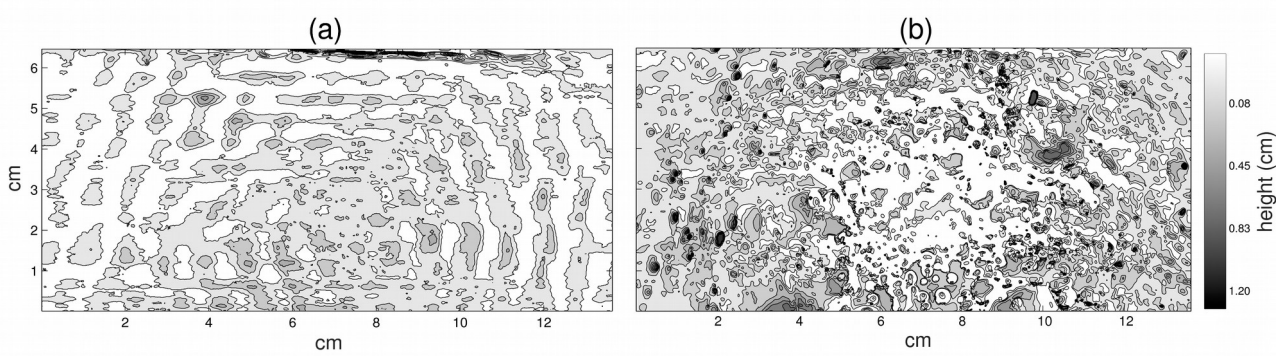


Figure S1. Representative contour plots of instantaneous heights for wave-dominated (A) and bubble-dominated (B) surfaces. Height was derived from values of greyscale using measurements of maximal and minimal surface heights obtained from a lateral video recording (height = -0.007483299 × [greyscale value] + 1.57429) .

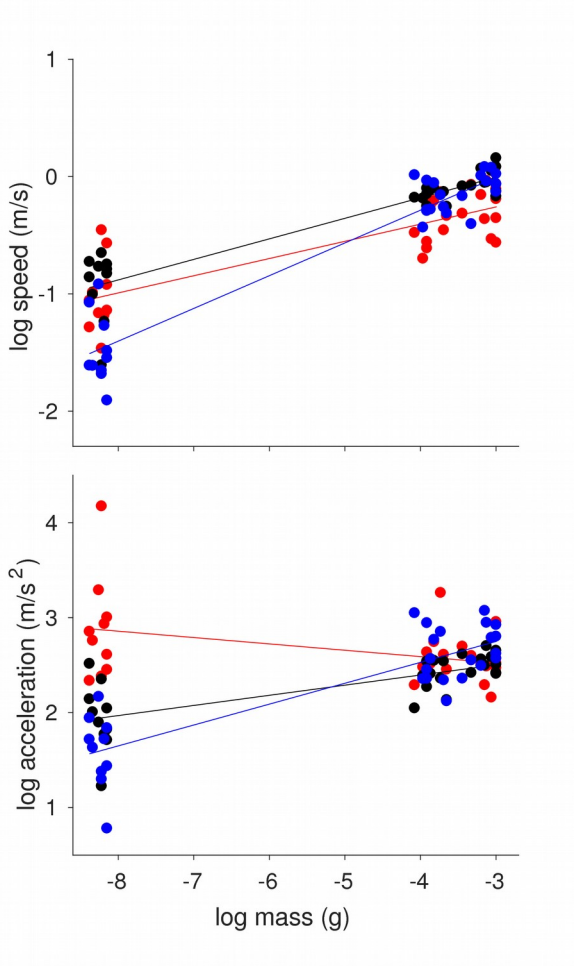
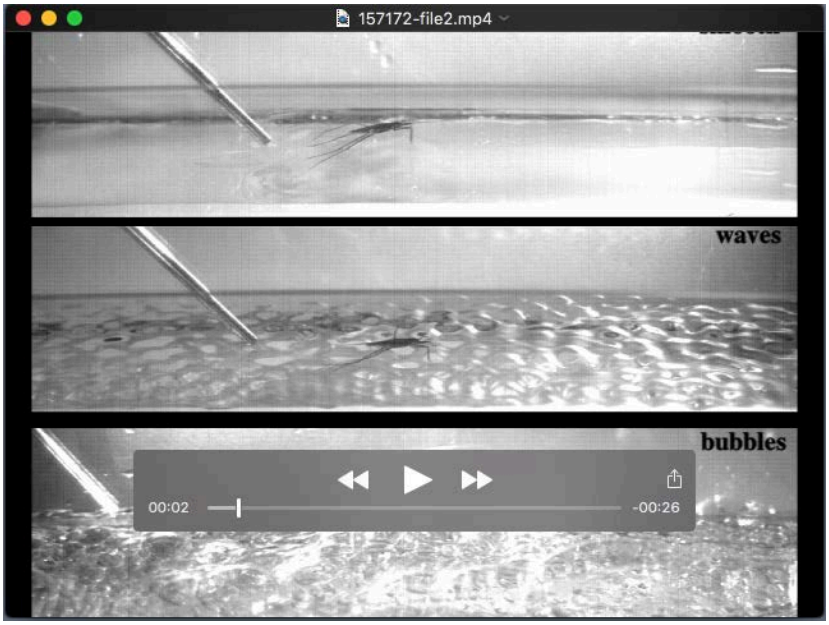


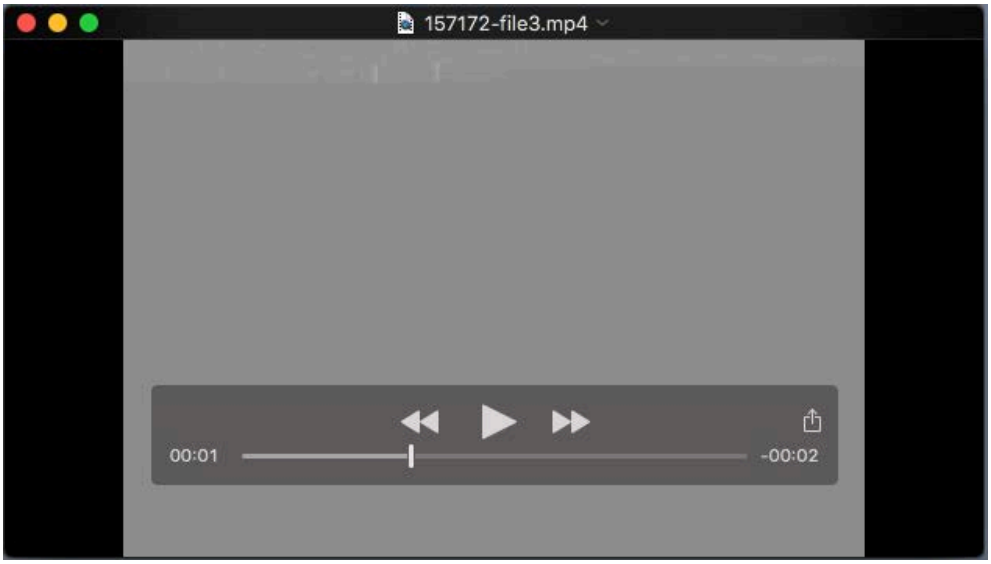
Figure S2. Log-log plot of peak jumping speed (A) and average acceleration (B) versus body mass for three age-classes of water striders jumping from smooth (black), wave-dominated (blue) and bubble-dominated (red) conditions. Units of speed, acceleration, and mass are in m/s, m/s^2, and grams, respectively. Results of linear regressions as follows: speed on smooth surface, Y=0.175X+0.519, r-squared=0.838, F(1,28)=144.9, p<0.001; acceleration on smooth surface, Y=0.107X+2.8, r-squared=0.52, F(1,28)=30.7 p<0.001; speed on wave-dominated surface, Y=0.279X+0.830, r-

squared=0.91, F(1,28)=267.4 p<0.001; acceleration on wave-dominated surface, Y=0.220X+3.41, r-squared=0.73, F(1,28)=74.9 p<0.001; speed on wave-dominated surface, Y=0.147X+0.181, r-squared=0.69, F(1,28)=61.6 p<0.001; acceleration on bubble-dominated surface, Y= -0.067X+2.323, r-squared=0.15, F(1,28)=5.1 p=0.03). Data represents the mean±s.e.m. The sample size *n* for each condition was 10. Each individual was exposed once to each experimental condition.

Movies



Movie 1. (Three age-classes of water strider jumping from a smooth [top panel], wave-dominated [middle panel] and bubble-dominated [bottom panel] water surface.)



Movie 2. (Styrofoam ball ejected by a bursting bubble)

Movie 3. (Juvenile water strider submerging beneath a bubble-dominated water surface)

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