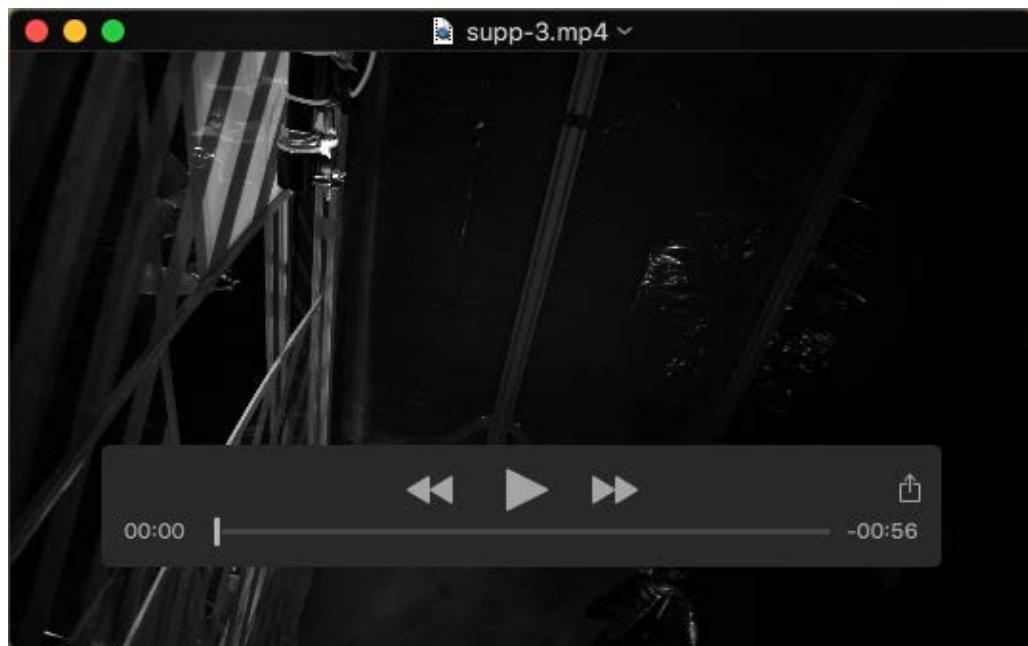


Movie 1: Unperturbed flight movie. Bat flying through the partition window without the perturbation jet.



Movie 2: Body perturbation movie. Lateral view of bat experiencing and recovering from a pitch-inducing body perturbation.



Movie 3: Wing perturbation movie. Head-on view of a bat experiencing and recovering from a roll-inducing wing perturbation.

Figure S1: Gust perturbation characterization. Force profiles of gust perturbation at 5 cm (black), 7.5 cm (dark grey), and 10 cm (light grey). First two graphs show lateral forces (F_x and F_y); rightmost panel shows vertical force (F_z). Force is approximately 4.5 Newtons, more than twice the bodyweight of our study species, *Carollia perspicillata* (~ 18 g).

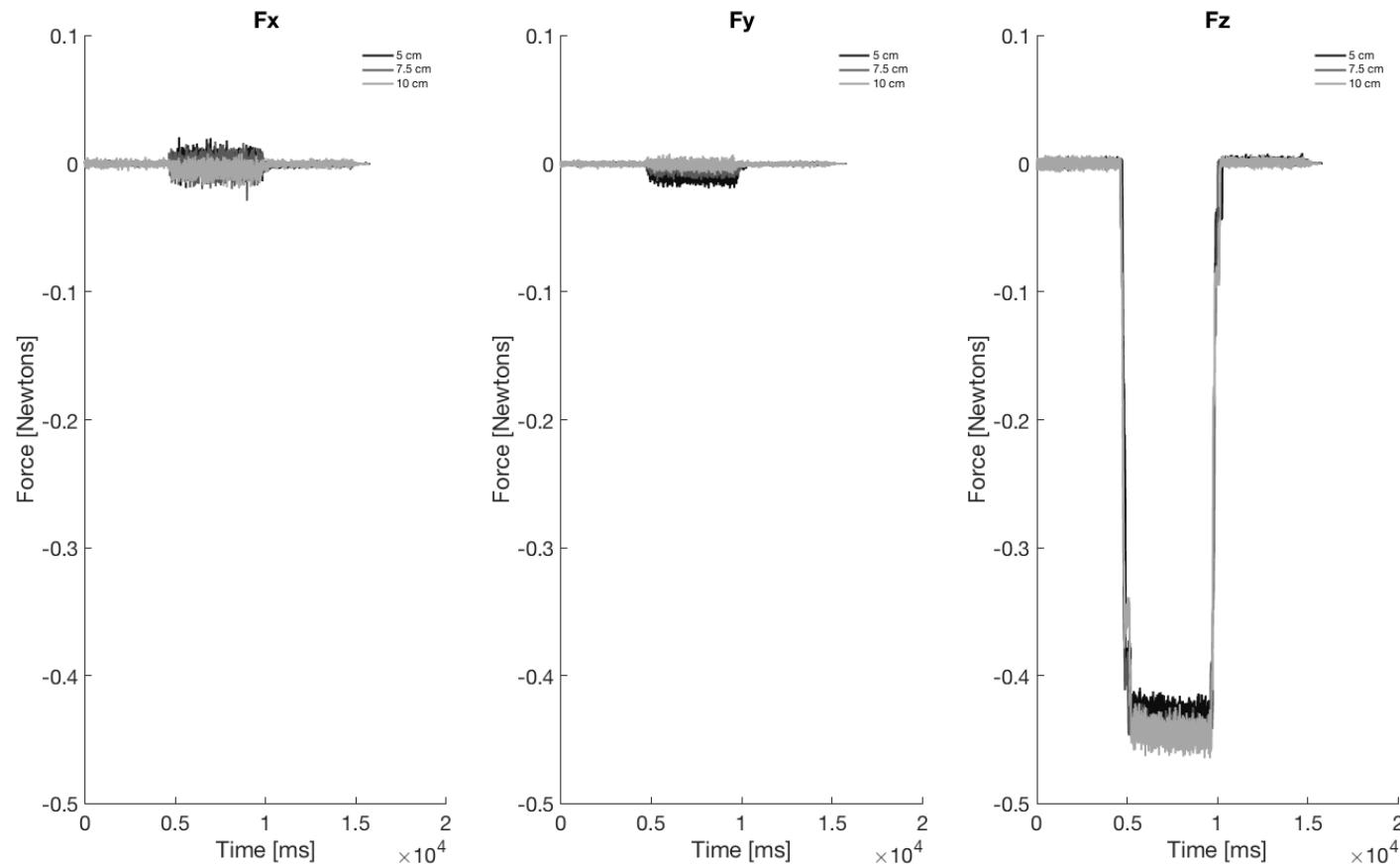


Figure S2: Unperturbed kinematics (left panels) and left right asymmetry (right panels) for each individual trial.

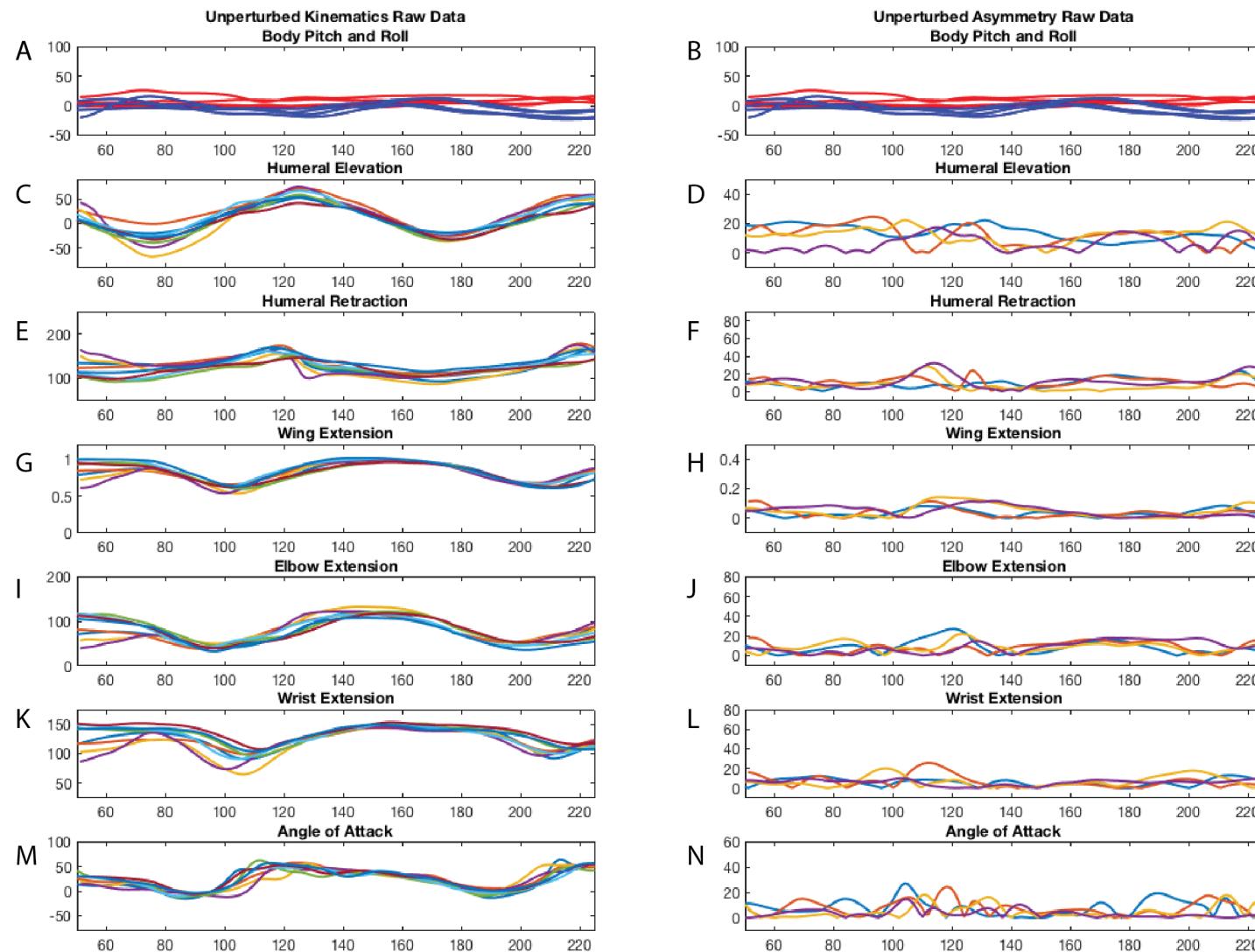


Figure S3: Body perturbation kinematics (left panels) and left right asymmetry (right panels) for each individual trial.

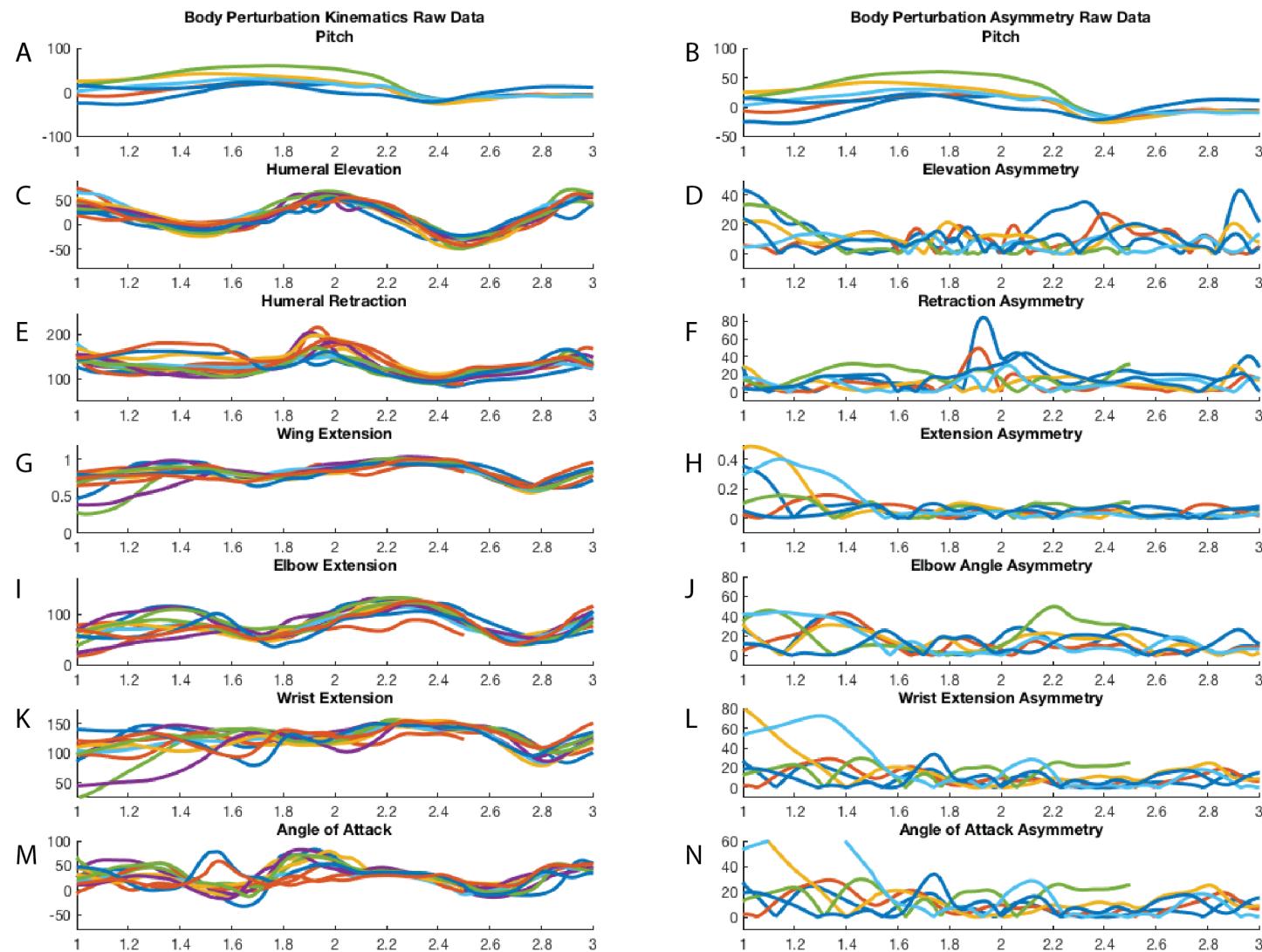


Figure S4: Wing perturbation kinematics (left panels) and left right asymmetry (right panels) for each individual trial.

