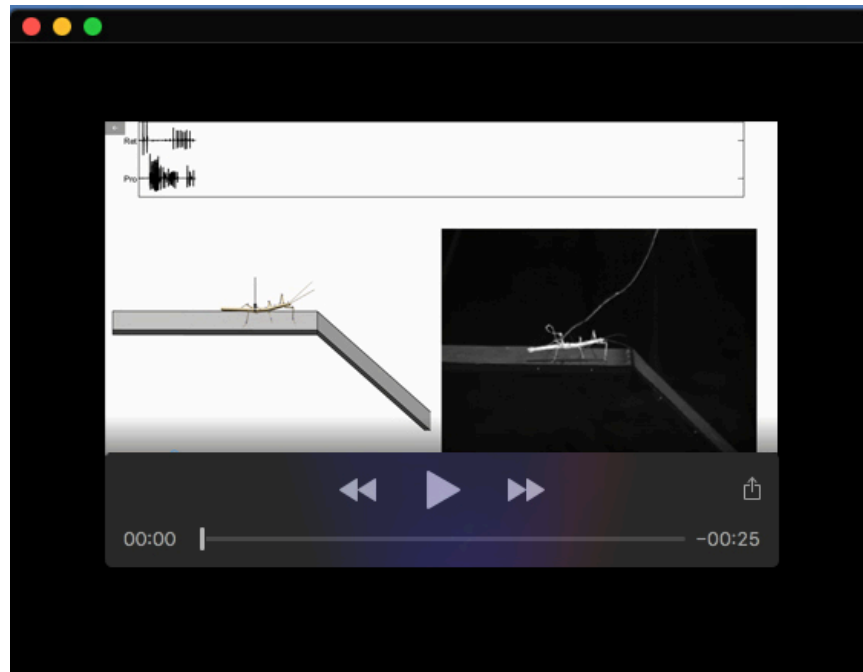


Movie 1. Illustration of the combined measurements of whole-body kinematics and muscle activity for the transition to upward walking. **(Top row)** Raw EMG recordings from antagonistic hind leg muscles retractor (Ret) and protractor (Pro). **(Left panel)** 3D motion-capture-based schematic animation of a stick insect walking freely along a walkway with a step-change in slope from level to +45° upward walking. **(Right panel)** Complementary, synchronized side-view video used for visual validation and movement annotation.



Movie 2. Illustration of the combined measurements of whole-body kinematics and muscle activity for the transition to downward walking. **(Top row)** Raw EMG recordings from antagonistic hind leg muscles retractor (Ret) and protractor (Pro). **(Left panel)** 3D motion-capture-based schematic animation of a stick insect walking freely along a walkway with a step-change in slope from level to -45° downward walking. **(Right panel)** Complementary, synchronized side-view video used for visual validation and movement annotation.