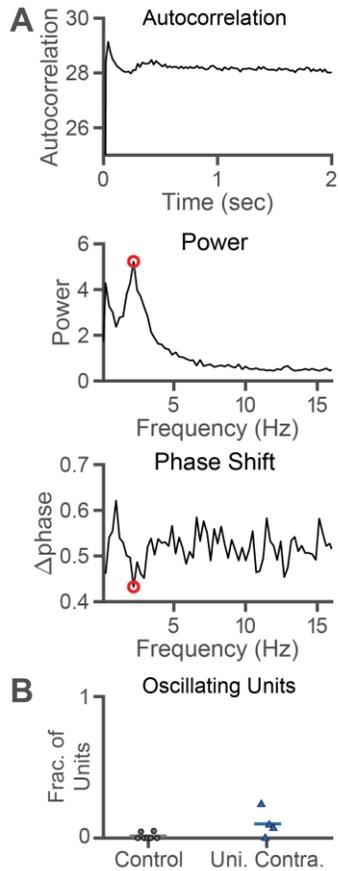


Delta Oscillations Are a Robust Biomarker of Dopamine Depletion Severity and Motor Dysfunction in Awake Mice

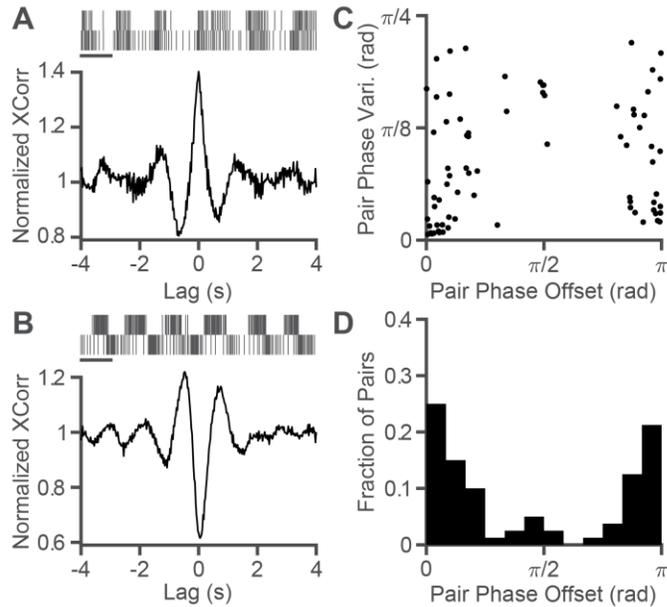
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Supplemental Information



Supplemental Figure 1: Unilaterally depleted animals exhibit a small number of delta oscillating units in the SNr of their dopamine intact hemisphere.

a. Example autocorrelation (top), PSD (middle) and phase shift (bottom) for an example SNr unit exhibiting a delta oscillation in the intact hemisphere of a unilaterally depleted animal. **b.** Fraction of oscillating units in SNr for each control animal (black circle, $n = 7$) and in the intact hemisphere of unilaterally depleted animals (dark blue triangle, $n = 4$). The difference between these conditions is not significant at the $\alpha = 0.05$ level ($p = 0.1138$, two-sample t-test).



Supplemental Figure 2: Pairwise phase relationships corroborate the existence of two populations of oscillating units in dopamine depleted SNr.

a. Top: Spike rasters from a pair of simultaneously recorded SNr units, scale bar = 1 s. Bottom: Normalized cross correlations (see Neural Measures section of Methods) of the above pairs demonstrating an in-phase relationship. **b.** Same as **a** for a near anti-phase relationship. **c.** Scatterplot of all pairs of oscillating units. The horizontal axis measures their mean phase offset (0 indicating in phase, π indicating antiphase), and the vertical axis measures circular variance of phase offset computed across time windows. **d.** Histogram collapsing the above scatterplot to show counts of pairs based on their phase difference.