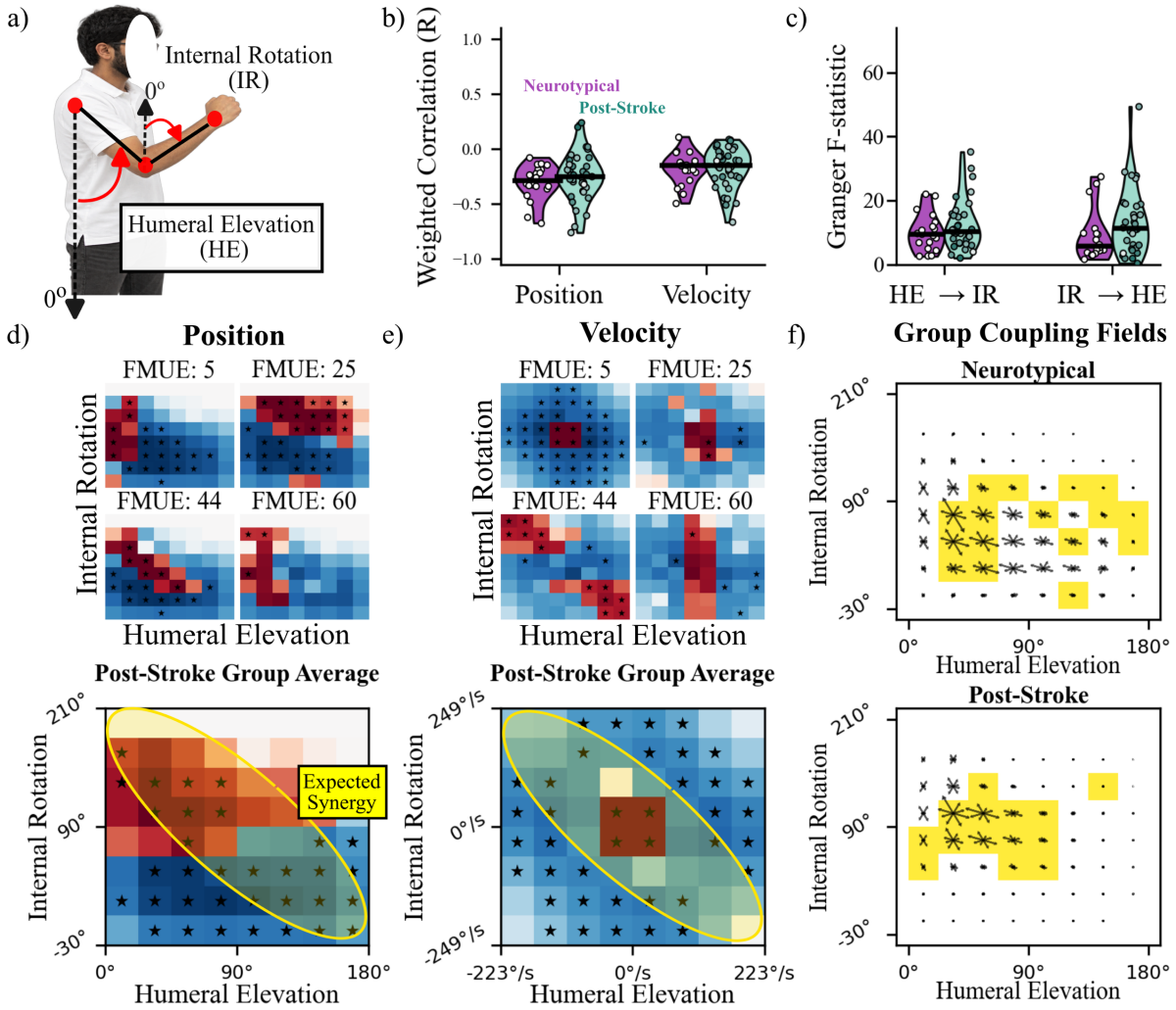
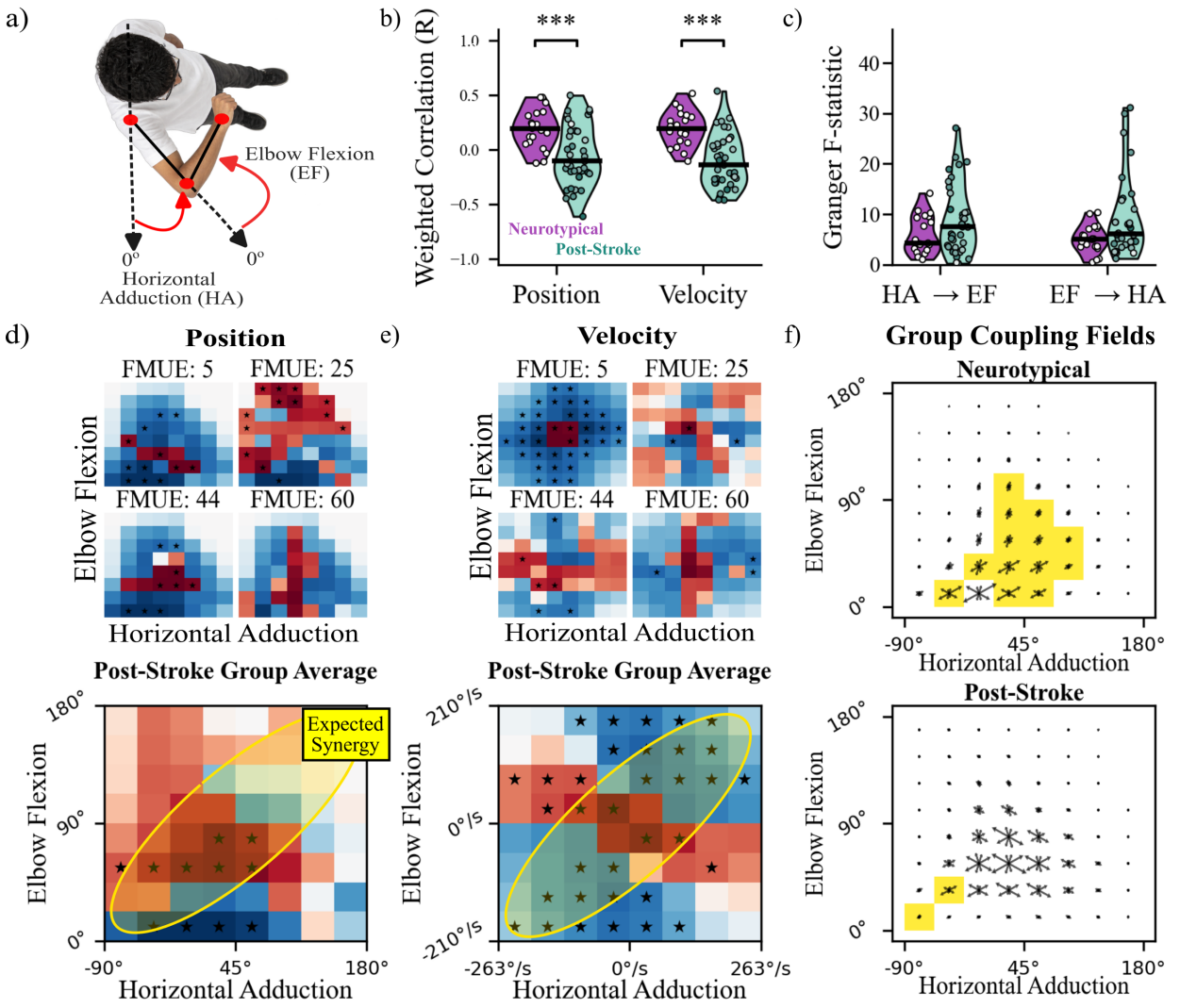
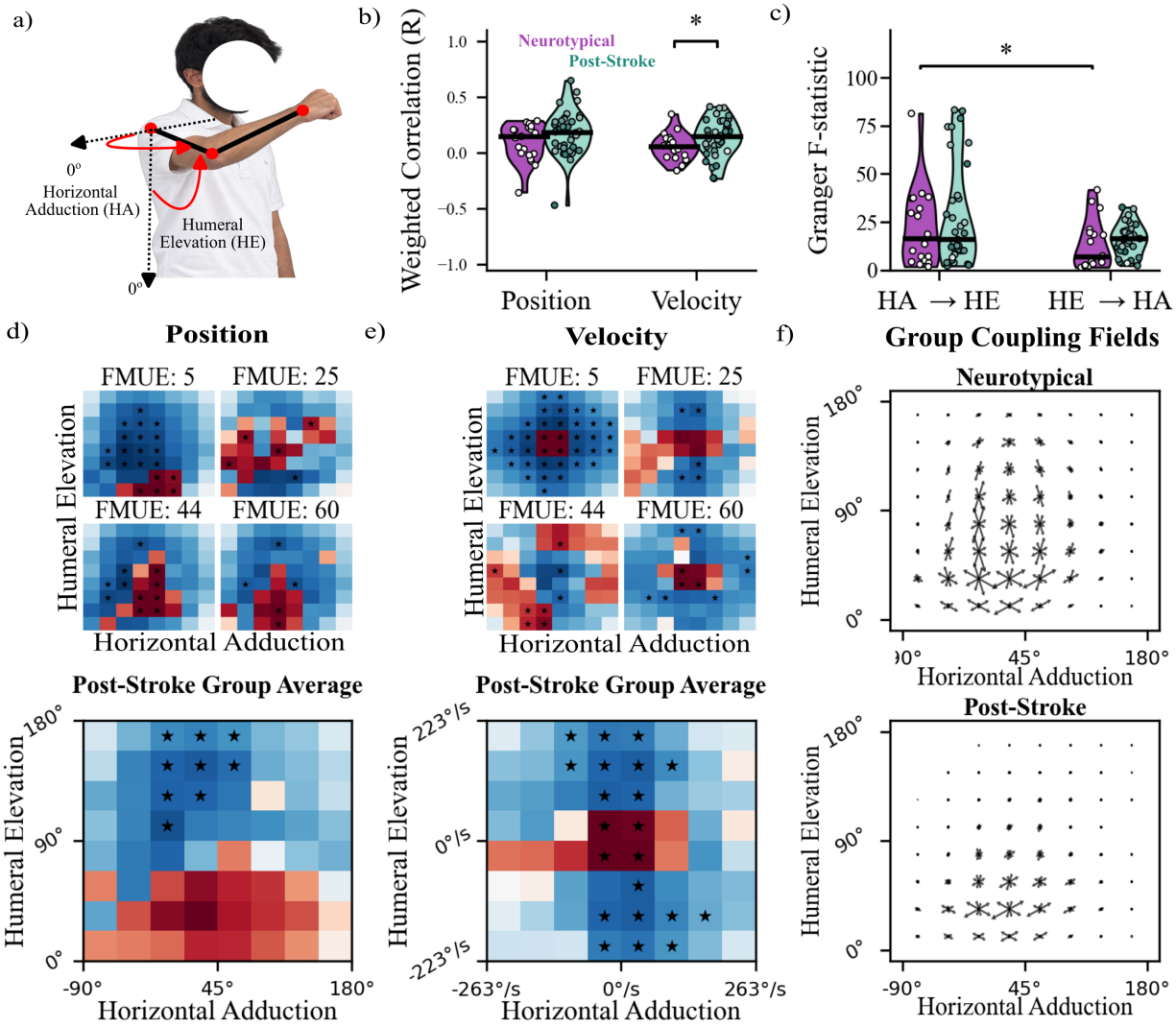


Supplementary Figure 1: a) **Humeral elevation (HE) and internal rotation (IR) coupling.** b) Weighted correlations between paired joint-angle and angular-velocity distributions for neurotypical (NT; magenta) and individuals with a history of stroke (IwHS; teal). Dot darkness indicates impairment severity based on FMUE scores. c) Granger F-statistics for predicting internal rotation angular velocity from humeral elevation angular velocity and vice versa. d-e) Four IwHS with FMUE scores spanning 5-60, following the post-stroke average group differences in joint-angle (d) and angular-velocity (e) distributions, with red and blue indicating over- and underrepresentation, respectively, relative to NT. The color scale is consistent with Figure 1. Yellow shading indicates the hypothesized synergy pattern. Stars indicate significant differences. f) Coupling fields for the groups, showing angular-velocity direction vectors at each joint angle configuration, with arrow lengths proportional to probability. Yellow shading highlights significant asymmetries aligned with the hypothesized diagonal.



Supplementary Figure 2: a) **Horizontal adduction (HA) and elbow flexion (EF) coupling**. b) Weighted correlations between paired joint-angle and angular-velocity distributions for neurotypical (NT; magenta) and individuals with a history of stroke (IwHS; teal). Dot darkness indicates impairment severity based on FMUE scores. c) Granger F-statistics for predicting elbow flexion angular velocity from horizontal adduction angular velocity and vice versa. d-e) Four IwHS' differences in joint-angle (d) and angular-velocity (e) distributions, with red and blue indicating over- and underrepresentation, respectively, relative to NT. Post-stroke average differences are also pictured with yellow shading indicates the hypothesized synergy pattern. Stars indicate significant differences. f) Coupling fields for the groups, showing angular-velocity direction vectors at each joint angle configuration, with arrow lengths proportional to probability. Yellow shading highlights significant asymmetries aligned with the hypothesized diagonal.



Supplementary Figure 3: a) **Horizontal adduction (HA) and humeral elevation (HE) coupling**. b) Weighted correlations between paired joint-angle and angular-velocity distributions for neurotypical (NT; magenta) and individuals with a history of stroke (IwHS; teal). Dot darkness indicates impairment severity based on FMUE scores. c) Granger F-statistics for predicting humeral elevation angular velocity from horizontal adduction angular velocity and vice versa. d-e) Four IwHS' differences in joint-angle (d) and angular-velocity (e) distributions, with red and blue indicating over- and underrepresentation, respectively, relative to NT. The color scale matches that of Figure 1. Post-stroke group differences are also depicted. Stars indicate significant differences. f) Coupling fields for the groups, showing angular-velocity direction vectors at each joint angle configuration, with arrow lengths proportional to probability.