

674 **Additional information**

675 **Participant's information**

Baseline				Exposed						
Age	Height (cm)	Weight (kg)	Gender	Age	Height (cm)	Weight (kg)	Gender	Arm's Torque (Nm)	Support Level	Relief (%)
24	170	55	F	24	165	54	F	5.56	SS, L4	87.03
22	162	63	F	27	167	63	F	6.57	SS, L5	82.4
22	169	69	F	23	167	61	F	6.36	SS, L4	76.12
26	165	61	F	23	168	64	F	6.71	SS, L5	80.63
22	170	60	F	20	166	61	F	6.32	SS, L4	76.58
23	160	58	F	21	188	88	M	10.33	DS, L2	75.48
23	185	78	M	29	170	60	M	6.37	SS, L4	76.02
26	178	61	M	21	190	73	M	8.66	DS, L1	71.99
25	187	66	M	21	173	80	M	8.64	DS, L1	72.14
22	171	83	M	26	183	64	M	7.31	DS, L1	85.25

Table 2. Subjects' anthropometric values, estimated arm gravitational torque, and percentage of antigravitational relief. Average values are reported as mean $\pm$ standard deviation. The arm gravitational torque and the percentage of antigravitational relief are estimated with both shoulder and elbow flexed at 90 degrees. (Abbreviations: SS = Single Spring, DS = Double Spring, L = Level)

676 **Antagonist muscles analysis**

677 Antagonist muscles were weakly activated during this task, as the movement primarily required arm elevation. Therefore, their
 678 average activation values were low. However, these results can help to explain variations in the co-activation index (Figures 6c
 679 and 6d). Figure 7a shows a slight increase in posterior deltoid activation in the *Exposed* group, which may have contributed to
 680 the increase in the shoulder co-activation index. For the biceps/triceps pair in the *Baseline* group, average biceps activation
 681 decreased, whereas average triceps activation increased slightly (Figure 7b), resulting in a slight increase in elbow co-activation.
 682 In the *Exposed* group, mean biceps activation increased and mean triceps activation also tended to increase, whereas the
 683 co-activation index remained similar to the pre-exposure value. These results suggest an increase in activation amplitude, but a
 684 potential reduction in activation duration.

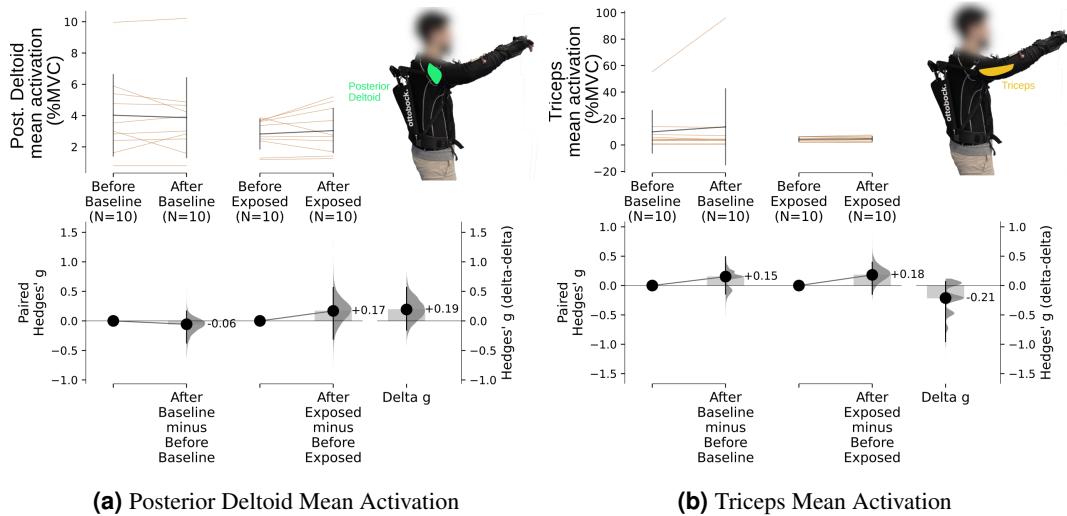


Figure 7. Evolution of the average activation of antagonist muscles for the *Exposed* and *Baseline* groups *Before* and *After* Exposure