Supplementary material

	Hyperparameter	**Setting**
Actor network	Layer sizes	320
	Learning rate	3e-4
Critic Network	Layer sizes	320
	Activation	Elu
	Discount Factor	0.99
Encoder network	Layer sizes	300
	Activation	Elu
	Learning rate	3e-4
Training	Total training steps	6e6
	Batch size	64 x 8
	Replay buffer size	2.5e5 x 8
	LAP: α	0.4
Exploration	Warmup steps	25e3
	Action exploration noise	N(0, 0.1)
	Target policy noise	N(0, 0.2)
Exoskeleton	Max actuator force (3, 4, 5, 6, 7)	40 N
	Max actuator force (1,2)	20 N

Table 1: The neural network structures of the agent and the simulation parameters. In this table the max shoulder actuator force refers to actuators impacting the shoulder joint: actuator 3,4,5,6,7. The max elbow actuation force refers to actuators effecting the elbow joint: actuators 1,2.

Joint name	**Maximum position (deg)**	**Minimum Position (deg)**
EFE	150	-2
FPS	80	-87.7
SAA	0	-151.5
SFE	160.5	-40
SEIR	20	-58.8

Table 2: The human-exoskeleton physical simulation joint angle properties [1], [2].

Name	Frequency (Hz)	Amplitude (dB)
First harmonic	4 - 6	-5 - 0
Second harmonic	8 - 10	-10 - -5

Table 3: The characteristics of the used sine waves approximating Parkinson's tremors.

Joint name	Maximum torque values (Nm)
EFE	25
FPS	50
SAA	50
SFE	80
SEIR	40

Table 4: The maximum joint torques for the dynamic movements for each joint axis [3], [4].

Parameter	Value
Weight	81.5 kg
Humerus Length	0.4 m
Forearm Length	0.4 m
Humerus Radius	0.05 m
Forearm Radius	0.05 m
Hand Length	0.05 m

Table 5: Human anatomical parameters used in the simulation. The upper and lower arm weights are calculated using the ratios defined in [5].

Joint name	theta	d	a	alpha
$q1$	q_1	0	0	$\pi/2$
$q2$	q_2	0	0	$\pi/2$
$q3$	q_3	l_u	0	$-\pi/2$
$q4$	q_4	0	0	$\pi/2$
$q5$	q_5	l_f	0	$\pi/2$
$q6$	q_6	0	0	$\pi/2$
$q7$	q_7	0	0	$\pi/2$

Table 6: The Denavit and Hartenberg parameters used for the end effector point calculations. Where l_u is the length of the humerus and l_f is the length of the forearm [6]:

Inertia (kg m^2)							
	SFE	SAA	SIER	EFE	FPS	WFE	WRUD
SFE	0.269	0	0	0.076	0	0	-0.014
SAA	0	0.196	0.083	0	-0.002	0.009	0
SIER	0	0.083	0.079	0	0	0.011	0
EFE	0.076	0	0	0.076	0	0	-0.012
FPS	0	-0.002	0	0	0.002	0	0
WFE	0	0.009	0.011	0	0	0.003	0
WRUD	-0.014	0	0	-0.012	0	0	0.003
Damping (Nms/rad)							
	SFE	SAA	SIER	EFE	FPS	WFE	WRUD
SFE	0.756	0.184	0.020	0.187	0	0	0
SAA	0.184	0.383	0.267	0	0	0	0
SIER	0.020	0.267	0.524	0	0	0	0
EFE	0.187	0	0	0.607	0	0	0
FPS	0	0	0	0	0.021	0.001	0.008
WFE	0	0	0	0	0.001	0.028	-0.003
WRUD	0	0	0	0	0.008	-0.003	0.082
Stiffness (Nm/rad)							
	SFE	SAA	SIER	EFE	FPS	WFE	WRUD
SFE	10.80	2.626	0.279	2.670	0	0	0
SAA	2.626	5.468	3.821	0	0	0	0
SIER	0.279	3.821	7.486	0	0	0	0
EFE	2.670	0	0	8.670	0	0	0
FPS	0	0	0	0	0.756	0.018	0.291
WFE	0	0	0	0	0.018	0.992	-0.099
WRUD	0	0	0	0	0.291	-0.099	2.920

Table 7: Tremor propagation parameters used in the joint axes angle calculations [7].

Generated tremor	SFE	SAA	SEIR	EFE	FPS	WFE	WRUD	Total	Occurrence
EFE	54.88 ± 0.53	24.39 ± 0.39	29.55 ± 0.39	74.16 ± 0.46	41.79 ± 0.39	33.94 ± 0.37	77.94 ± 0.47	80.14 ± 0.44	65.41 ± 0.63
SEIR	0.09 ± 0.05	13.26 ± 0.31	28.82 ± 0.48	0.18 ± 0.06	10.63 ± 0.34	49.03 ± 0.50	0.66 ± 0.10	34.63 ± 1.05	9.57 ± 0.38
SEIR EFE	31.35 ± 0.60	10.93 ± 0.25	17.05 ± 0.35	66.70 ± 0.60	18.98 ± 0.34	27.47 ± 0.52	73.78 ± 0.54	50.46 ± 0.80	49.05 ± 1.01
SAA	2.25 ± 0.18	33.08 ± 0.50	16.62 ± 0.34	0.23 ± 0.07	29.59 ± 0.46	8.92 ± 0.25	0.43 ± 0.09	31.70 ± 1.00	19.49 ± 0.49
SAA EFE	58.80 ± 0.59	33.46 ± 0.53	19.05 ± 0.36	80.31 ± 0.40	27.65 ± 0.64	14.67 ± 0.31	81.14 ± 0.45	58.51 ± 0.70	88.05 ± 0.46
SAA SEIR	0.20 ± 0.08	28.09 ± 1.19	26.44 ± 1.02	0.11 ± 0.05	11.94 ± 0.67	49.28 ± 0.85	0.80 ± 0.15	30.21 ± 4.58	1.66 ± 0.39
SAA SEIR EFE	34.87 ± 0.79	30.47 ± 1.18	26.01 ± 0.98	64.71 ± 0.50	14.18 ± 1.29	47.78 ± 0.99	66.87 ± 0.51	62.44 ± 0.67	65.64 ± 0.78
SFE	24.34 ± 0.54	1.03 ± 0.11	0.23 ± 0.06	10.35 ± 0.36	0.76 ± 0.14	0.38 ± 0.09	9.93 ± 0.32	32.76 ± 1.35	11.46 ± 0.43
SFE EFE	46.83 ± 0.72	0.33 ± 0.09	3.94 ± 0.55	72.09 ± 1.28	17.69 ± 0.36	14.22 ± 0.30	82.37 ± 0.41	57.37 ± 0.61	58.44 ± 0.54
SFE SEIR	28.62 ± 0.53	4.14 ± 0.28	12.01 ± 0.49	18.44 ± 0.45	5.41 ± 0.31	24.28 ± 0.64	16.71 ± 0.44	36.75 ± 1.16	15.75 ± 0.56
SFE SEIR EFE	30.32 ± 0.68	2.85 ± 0.18	8.21 ± 0.35	55.56 ± 1.28	11.06 ± 0.31	21.66 ± 0.55	74.53 ± 0.52	46.28 ± 0.67	51.43 ± 0.82
SFE SAA	25.23 ± 0.53	31.80 ± 0.52	25.01 ± 0.41	14.38 ± 0.41	28.34 ± 0.63	22.02 ± 0.41	11.57 ± 0.39	40.75 ± 0.87	40.86 ± 0.72
SFE SAA EFE	16.48 ± 0.65	32.24 ± 0.52	25.32 ± 0.50	55.33 ± 1.61	21.80 ± 0.52	20.36 ± 0.43	74.29 ± 0.39	55.24 ± 0.54	87.83 ± 0.51
SFE SAA SEIR	33.69 ± 0.61	4.05 ± 0.34	3.11 ± 0.33	15.30 ± 0.54	3.64 ± 0.37	7.16 ± 0.46	13.47 ± 0.49	38.13 ± 1.30	16.48 ± 0.50
SFE SAA SEIR EFE	15.51 ± 0.79	14.18 ± 0.60	13.86 ± 0.69	45.60 ± 1.12	4.56 ± 0.98	26.62 ± 0.52	52.00 ± 0.52	47.50 ± 0.64	59.38 ± 0.84

Table 8: **Average tremor amplitude suppression percentage values.** The amplitude suppression values are listed in degrees with the total amplitude reduction listing the amplitude reduction percentage in cm. The occurrence column displays the percentage of time-steps where the tremor suppression resulted in reduction of tremor amplitude.

Generated tremor	**SFE**	**SAA**	**SEIR**	**EFE**	**All axis**	**Any axis**
EFE	-	-	-	90.546	99.494 ± 0.156	99.494 ± 0.156
SEIR	-	-	73.360 ± 16.602	-	83.267 ± 0.427	83.267 ± 0.427
SEIR EFE	-	-	67.595 ± 15.520	83.415 ± 4.362	90.561 ± 0.305	99.452 ± 0.161
SAA	-	50.026 ± 5.749	-	-	57.002 ± 0.625	57.002 ± 0.625
SAA EFE	-	45.853 ± 4.880	-	86.215 ± 4.416	77.276 ± 0.371	99.364 ± 0.195
SAA SEIR	-	41.151 ± 8.169	57.626 ± 13.616	-	66.938 ± 0.512	87.184 ± 0.378
SAA SEIR EFE	-	41.155 ± 6.143	55.828 ± 10.348	72.879 ± 4.264	77.034 ± 0.398	99.201 ± 0.201
SFE	61.124 ± 7.195	-	-	-	79.089 ± 0.417	79.089 ± 0.417
SFE EFE	58.284 ± 7.198	-	-	83.844 ± 5.110	88.548 ± 0.263	99.613 ± 0.165
SFE SEIR	39.671 ± 2.293	-	57.087 ± 9.035	-	72.618 ± 0.435	82.993 ± 0.376
SFE SEIR EFE	37.950 ± 3.130	-	56.583 ± 11.080	75.673 ± 5.236	80.165 ± 0.362	99.389 ± 0.153
SFE SAA	26.479 ± 9.343	45.270 ± 5.316	-	-	67.663 ± 0.471	84.004 ± 0.375
SFE SAA EFE	26.879 ± 6.381	43.395 ± 5.584	-	76.689 ± 3.905	76.791 ± 0.380	99.398 ± 0.183
SFE SAA SEIR	62.174 ± 7.672	8.368 ± 7.782	9.783 ± 8.799	-	38.864 ± 0.409	82.671 ± 0.389
SFE SAA SEIR EFE	21.186 ± 7.305	33.558 ± 6.015	42.314 ± 9.839	58.660 ± 3.843	71.363 ± 0.482	98.816 ± 0.245

Table 9: **Average tremor torque suppression values.** All axes presents the suppression of all generated tremor axes in an episode. Any axis represents the suppression of at least one generated joint axis. The highlighted joint axis represents the combination of generated tremor axes.

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