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Multi-objective control in human walking: insight gained through simultaneous degradation of energetic and motor regulation systems

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Table S1 Confirmation of eigenvector directionality. The angle (°) between a unit vector tangential to the goal equivalent manifold (GEM), and the strongly and weakly stable eigenvectors.

		Mean (°)		Standard Deviation (°)		Median (°)		95% Confidence Interval, Lower Bound (°)		95% Confidence Interval, Upper Bound (°)	
	Speed ($m \cdot s^{-1}$)	Normal	Perturbed	Normal	Perturbed	Normal	Perturbed	Normal	Perturbed	Normal	Perturbed
Strongly Stable	0.6	94.5769	77.4433	18.1701	22.1383	91.7912	76.4468	86.8054	67.9746	102.3484	86.9120
	0.9	72.4177	66.1914	13.6966	16.9071	72.5143	61.1714	66.5596	58.9601	78.2759	73.4227
	1.2	63.1467	60.7102	14.9140	18.1029	58.8362	58.0381	56.7679	52.9675	69.5255	68.4530
	1.5	57.5146	52.3849	11.5720	10.5301	55.1541	52.3961	52.5652	47.8811	62.4640	56.8887
	1.8	48.3659	46.3416	9.0725	13.9119	46.2862	41.9436	44.4856	40.3913	52.2463	52.2918
	PWS	63.9659	59.8992	10.5767	12.3007	67.0257	58.5074	59.4422	54.6381	68.4897	65.1603
Weakly Stable	0.6	0.0053	0.0131	0.0044	0.0122	0.0046	0.0097	0.0034	0.0079	0.0072	0.0183
	0.9	0.0051	0.0072	0.0046	0.0057	0.0045	0.0065	0.0031	0.0048	0.0071	0.0097
	1.2	0.0034	0.0052	0.0024	0.0035	0.0024	0.0042	0.0023	0.0037	0.0044	0.0067
	1.5	0.0017	0.0042	0.0013	0.0032	0.0013	0.0032	0.0012	0.0028	0.0023	0.0056
	1.8	0.0029	0.0030	0.0033	0.0026	0.0020	0.0026	0.0014	0.0019	0.0043	0.0041
	PWS	0.0034	0.0058	0.0034	0.0050	0.0026	0.0040	0.0019	0.0037	0.0048	0.0079

Table S2 Metabolic cost of transport and error regulation (as quantified by the strongly stable eigenvalue of inter-stride fluctuations) for normal and perturbed walking.

		0.6 m·s^{-1}		**0.9 m·s^{-1}**		**1.2 m·s^{-1}**		**1.5 m·s^{-1}**		**1.8 m·s^{-1}**		**Preferred walking speed (m·s^{-1})**	
		Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Cost of Transport (ml O_2·kg^{-1}· m^{-1})	**Normal**	0.242	0.031	0.191	0.026	0.178	0.020	0.176	0.020	0.193	0.021	0.174	0.021
	Perturbed	**0.339***	0.057	**0.268***	0.030	**0.237***	0.035	**0.240***	0.028	**0.261***	0.029	**0.248***	0.031
	Cohen's d Effect Size	-1.872		-2.804		-1.994		-2.748		-3.109		-2.870	
Strongly Stable Eigenvalue	**Normal**	-0.1806	0.1318	-0.1834	0.1282	-0.1401	0.1535	-0.1384	0.1816	-0.1053	0.2059	-0.1159	0.1338
	Perturbed	**-0.3307***	0.1108	**-0.3199***	0.1121	**-0.2480***	0.1089	**-0.2398***	0.1732	-0.2540	0.1380	**-0.3009***	0.1121
	Cohen's d Effect Size	1.352		0.921		0.784		0.881		0.542		1.349	

*Significantly different than the normal condition