

Supplementary material 1

Experimental treatment with edaravone in a mouse model of spinocerebellar ataxia 1

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List of gait parameters measured using CatWalk and their correlations with individual principal components

parameter	PC1_cor	PC2_cor	PC3_cor
Run_Average_Speed_.cm.s._SD	0.26720526	0.60957083	0.3561662
RF_Stand_.s._SD	-0.66255785	0.6548039	0.1116333
RF_Swing_.s._SD	-0.49709533	0.53232037	0.43794282
RF_SwingSpeed_.cm.s._SD	0.23037277	0.89155116	0.19116483
RF_StrideLength_.cm._SD	-0.15811374	0.82132665	0.28118085
RH_Stand_.s._SD	-0.54951051	0.66373573	0.00133735
RH_Swing_.s._SD	-0.51641705	0.6159595	0.26493293
RH_SwingSpeed_.cm.s._SD	0.23792743	0.8582441	0.22342281
RH_StrideLength_.cm._SD	-0.19447082	0.79456065	0.32712622
LF_Stand_.s._SD	-0.63423721	0.65170184	0.09383499
LF_Swing_.s._SD	-0.41881815	0.50598317	0.54513679
LF_SwingSpeed_.cm.s._SD	0.16134897	0.89802044	0.11371896
LF_StrideLength_.cm._SD	-0.21036484	0.79786821	0.31770065
LH_Stand_.s._SD	-0.65821079	0.64967842	-0.04572535
LH_Swing_.s._SD	-0.33231261	0.61487139	0.4479048
LH_SwingSpeed_.cm.s._SD	0.25079384	0.83935708	0.01267181
LH_StrideLength_.cm._SD	-0.06519101	0.76099798	0.41682949
Run_Average_Speed_.cm.s._Mean	0.90046665	0.3414745	0.11160787
RF_Stand_.s._Mean	-0.91101901	-0.19019594	0.06457946
RF_Swing_.s._Mean	-0.52144672	-0.63901763	0.49541723
RF_SwingSpeed_.cm.s._Mean	0.77082407	0.5397599	-0.13038967

RF_StrideLength_.cm._Mean	0.76667792	-0.21545431	0.39559474
RH_Stand_.s._Mean	-0.78814353	-0.10538516	-0.06624606
RH_Swing_.s._Mean	-0.62180958	-0.47586455	0.44383715
RH_SwingSpeed_.cm.s._Mean	0.80664971	0.46208233	-0.10702563
RH_StrideLength_.cm._Mean	0.75761824	-0.19966309	0.38667162
LF_Stand_.s._Mean	-0.92494273	-0.17885193	0.01824987
LF_Swing_.s._Mean	-0.43846819	-0.64592334	0.52764768
LF_SwingSpeed_.cm.s._Mean	0.74611727	0.56098591	-0.21074806
LF_StrideLength_.cm._Mean	0.76536008	-0.23107944	0.38922101
LH_Stand_.s._Mean	-0.83526832	-0.06066793	-0.13199098
LH_Swing_.s._Mean	-0.526899	-0.50883567	0.50570041
LH_SwingSpeed_.cm.s._Mean	0.77750971	0.47749092	-0.22670858
LH_StrideLength_.cm._Mean	0.75335253	-0.18332915	0.41482328
StepSequence_CA_...	0.09919692	-0.13189927	0.2078292
StepSequence_CB_...	0.33638221	-0.11497161	0.35631705
StepSequence_AA_...	0.21048245	-0.28998671	0.47695188
StepSequence_AB_...	-0.35907902	0.26827741	-0.54316253
Support_Zero_...	0.28297711	0.01447983	0.59979063
Support_Single_...	0.24024121	-0.25212956	0.75957177
Support_Diagonal_...	0.41589721	-0.51172749	-0.27136233
Support_Girdle_...	-0.29420924	0.1913824	-0.10875253
Support_Lateral_...	0.07903371	0.1132	0.43847247
Support_Three_...	-0.52246936	0.48563105	-0.58243565
Support_Four_...	-0.48673268	0.54405294	-0.38237203
BOS_FrontPaws_Mean_.cm.	-0.05164101	0.08715502	-0.07380463
BOS_HindPaws_Mean_.cm.	-0.09575868	-0.50283072	0.19404336
PrintPositions_RightPaws_Mean_.cm.	-0.68048196	-0.22469934	0.17451762
PrintPositions_LeftPaws_Mean_.cm.	-0.65135246	-0.23440303	0.17844716

Supplementary material 2

Experimental treatment with edaravone in a mouse model of spinocerebellar ataxia 1

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Median values of individual gait parameters measured using CatWalk

parameter	WT_0, N = 20 ¹	WT_E, N = 20 ¹	SCA1_0, N = 20 ¹	SCA1_E, N = 20 ¹	p-value ²	q-value ³
Run_Average_Speed_.cm.s._SD	7.4 (3.7, 10.9)	8.0 (4.6, 10.2)	4.9 (2.6, 7.4)	5.8 (4.4, 8.0)	0.4	0.5
RF_Stand_.s._SD	0.036 (0.027, 0.045)	0.042 (0.027, 0.047)	0.044 (0.034, 0.061)	0.037 (0.032, 0.052)	0.3	0.4
RF_Swing_.s._SD	0.026 (0.018, 0.033)	0.028 (0.024, 0.036)	0.028 (0.022, 0.035)	0.026 (0.021, 0.030)	0.8	0.8
RF_SwingSpeed_.cm.s._SD	16 (8, 22)	18 (12, 29)	20 (16, 23)	22 (18, 28)	0.13	0.2
RF_StrideLength_.cm._SD	0.76 (0.61, 1.09)	0.87 (0.65, 1.14)	0.88 (0.60, 1.37)	0.99 (0.76, 1.18)	0.7	0.8
RH_Stand_.s._SD	0.04 (0.03, 0.04)	0.04 (0.03, 0.05)	0.04 (0.03, 0.07)	0.03 (0.03, 0.06)	0.3	0.4
RH_Swing_.s._SD	0.029 (0.025, 0.042)	0.036 (0.026, 0.043)	0.042 (0.028, 0.054)	0.039 (0.025, 0.059)	0.4	0.5
RH_SwingSpeed_.cm.s._SD	13 (7, 18)	14 (10, 21)	14 (14, 18)	16 (11, 20)	0.6	0.7
RH_StrideLength_.cm._SD	0.80 (0.68, 1.19)	1.02 (0.75, 1.11)	0.94 (0.71, 1.31)	1.00 (0.75, 1.32)	0.6	0.7
LF_Stand_.s._SD	0.03 (0.02, 0.05)	0.04 (0.03, 0.05)	0.04 (0.03, 0.07)	0.04 (0.03, 0.06)	0.3	0.4
LF_Swing_.s._SD	0.025 (0.019, 0.036)	0.029 (0.022, 0.033)	0.027 (0.022, 0.034)	0.025 (0.021, 0.032)	0.9	0.9
LF_SwingSpeed_.cm.s._SD	17 (8, 23)	20 (14, 25)	21 (16, 24)	24 (16, 28)	0.2	0.3
LF_StrideLength_.cm._SD	0.73 (0.61, 1.14)	0.86 (0.73, 1.14)	0.86 (0.67, 1.27)	1.01 (0.71, 1.29)	0.6	0.7
LH_Stand_.s._SD	0.032 (0.026, 0.042)	0.039 (0.026, 0.046)	0.038 (0.032, 0.072)	0.040 (0.033, 0.063)	0.2	0.3
LH_Swing_.s._SD	0.028 (0.024, 0.046)	0.032 (0.026, 0.045)	0.038 (0.029, 0.050)	0.036 (0.028, 0.052)	0.4	0.5
LH_SwingSpeed_.cm.s._SD	13 (7, 17)	13, (10, 16)	14 (10, 18)	18 (11, 22)	0.2	0.4

LH_StrideLength_.cm._SD	0.90 (0.70, 1.19)	0.88 (0.71, 1.23)	0.96 (0.65, 1.25)	1.10 (0.72, 1.29)	0.8	0.9
Run_Average_Speed_.cm.s._Mean	26 (23, 28)	28 (22, 31)	23 (18, 27)	27 (23, 32)	0.11	0.2
RF_Stand_.s._Mean	0.15 (0.14, 0.16)	0.14 (0.13, 0.15)	0.14 (0.13, 0.15)	0.15 (0.12, 0.16)	0.048	0.12
RF_Swing_.s._Mean	0.128 (0.118, 0.138)	0.114 (0.109, 0.131)	0.112 (0.094, 0.139)	0.093 (0.082, 0.123)	0.006	0.04
RF_SwingSpeed_.cm.s._Mean	55 (51, 62)	65 (55, 71)	59 (48, 73)	70 (59, 82)	0.04	0.12
RF_StrideLength_.cm._Mean	6.67 (6.34, 7.02)	6.95 (6.31, 7.30)	6.31 (5.91, 6.62)	6.35 (6.18, 6.75)	0.017	0.074
RH_Stand_.s._Mean	0.119 (0.108, 0.126)	0.112 (0.103, 0.120)	0.129 (0.111, 0.160)	0.108 (0.086, 0.118)	0.048	0.12
RH_Swing_.s._Mean	0.16 (0.15, 0.18)	0.15 (0.13, 0.17)	0.15 (0.14, 0.19)	0.14 (0.11, 0.18)	0.4	0.5
RH_SwingSpeed_.cm.s._Mean	44 (40, 51)	51 (43, 58)	43 (34, 52)	51 (40, 62)	0.3	0.4
RH_StrideLength_.cm._Mean	6.63 (6.25, 7.01)	6.92 (6.32, 7.38)	6.31 (5.96, 6.59)	6.37 (6.14, 6.90)	0.022	0.091
LF_Stand_.s._Mean	0.15 (0.13, 0.16)	0.14 (0.13, 0.15)	0.17 (0.14, 0.19)	0.15 (0.12, 0.16)	0.066	0.14
LF_Swing_.s._Mean	0.127 (0.118, 0.141)	0.118 (0.109, 0.128)	0.106 (0.092, 0.142)	0.099 (0.084, 0.117)	0.003	0.025
LF_SwingSpeed_.cm.s._Mean	55 (51, 64)	65 (53, 70)	59 (47, 71)	70 (61, 85)	0.04	0.12
LF_StrideLength_.cm._Mean	6.65 (6.25, 7.07)	6.88 (6.38, 7.34)	6.33 (5.91, 6.58)	6.37 (6.14, 6.77)	0.012	0.06
LH_Stand_.s._Mean	0.120 (0.107, 0.138)	0.113 (0.095, 0.122)	0.125 (0.110, 0.149)	0.106 (0.094, 0.120)	0.061	0.14
LH_Swing_.s._Mean	0.15 (0.15, 0.18)	0.15 (0.14, 0.17)	0.14 (0.13, 0.19)	0.14 (0.11, 0.16)	0.3	0.4
LH_SwingSpeed_.cm.s._Mean	45 (40, 50)	48 (43, 57)	44 (34, 54)	52 (41, 62)	0.3	0.4
LH_StrideLength_.cm._Mean	6.61 (6.30, 7.04)	6.98 (6.36, 7.29)	6.25 (5.99, 6.58)	6.34 (6.10, 6.89)	0.011	0.06
StepSequence_CA_...	23 (14, 35)	23 (13, 35)	10 (8, 19)	13 (7, 19)	0.025	0.1
StepSequence_CB_...	22 (12, 28)	22 (13, 34)	21 (7, 26)	14 (8, 23)	0.4	0.5
StepSequence_AA_...	12 (5, 22)	11 (8, 14)	1 (0, 5)	1 (0, 6)	<0.001	<0.001
StepSequence_AB_...	38 (20, 57)	34 (25, 48)	63 (53, 74)	65 (54, 78)	<0.001	<0.001

Support_Zero_...	0.06 (0.00, 0.64)	0.19 (0.00, 0.49)	0.11 (0.00, 0.17)	0.00 (0.00, 0.12)	0.13	0.2
Support_Single_...	13 (9, 18)	16 (11, 18)	9 (5, 15)	8 (6, 14)	0.055	0.13
Support_Diagonal_...	74 (71, 78)	72 (69, 74)	69 (62, 73)	64 (61, 74)	0.01	0.06
Support_Girdle_...	3.20 (2.43, 5.02)	3.71 (3.07, 5.22)	5.86 (4.49, 7.14)	6.80 (4.64, 8.98)	<0.001	0.006
Support_Lateral_...	2.16 (1.47, 3.06)	2.52 (1.61, 3.53)	1.23 (0.76, 1.96)	1.70 (1.33, 2.40)	0.047	0.12
Support_Three_...	7 (5, 8)	4 (4, 6)	11 (7, 19)	12 (9, 15)	<0.001	<0.001
Support_Four_...	0.31 (0.10, 0.62)	0.07 (0.00, 0.35)	0.93 (0.18, 3.25)	0.39 (0.11, 1.53)	0.031	0.11
BOS_FrontPaws_Mean_.cm.	1.23 (1.15, 1.31)	1.17 (1.12, 1.26)	1.12 (1.07, 1.24)	1.12 (1.04, 1.16)	0.049	0.12
BOS_HindPaws_Mean_.cm.	2.22 (2.09, 2.36)	2.21 (2.12, 2.28)	2.21 (2.00, 2.46)	2.16 (2.06, 2.28)	0.7	0.8
PrintPositions_RightPaws_Mean_.cm.	0.72 (0.47, 0.95)	0.52 (0.32, 0.63)	0.58 (0.26, 0.85)	0.43 (0.26, 0.57)	0.12	0.2
PrintPositions_LeftPaws_Mean_.cm.	0.69 (0.56, 0.92)	0.49 (0.37, 0.63)	0.54 (0.40, 0.85)	0.33 (0.18, 0.48)	0.004	0.035

¹ Median (Q1, Q3)

² Kruskal-Wallis rank sum test

³ False discovery rate correction for multiple testing