Novel EEG-based BCIs for Elderly Rehabilitation Enhancement
Additional materials

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January 2022

1 Additional materials

Notice that this document refers to the publication *Novel EEG-based BCIs for Elderly Rehabilitation Enhancement* authored by Aurora Saibene, Francesca Gasparini, and Jordi Solé-Casals. The paper is (or will be available) as part of the Proceedings Volume *AIxIA 2021 - Advances in Artificial Intelligence - XXth International Conference of the Italian Association for Artificial Intelligence, Virtual Event, December 1-3, Revised Selected Papers*, edited by Stefania Bandini, Francesca Gasparini, Viviana Mascardi, Matteo Palmonari, Giuseppe Vizzari.

This document reports the tables presenting the detailed results obtained

1. (Table) on the data taken from 106 subjects of the *EEG Motor Movement/Imagery Dataset*
    - after being bandpass (0.5 - 100Hz) and notch (50Hz) filtered;
    - after power spectral density extraction through Morlet wavelet convolution on channels $C\{1, 2, 3, 4, z\}$, considering α (8 - 13Hz) and β (14 - 30Hz) rhythms and $3 - 7$ cycles;
    - after Linear Discriminant Analysis (LDA) and Support Vector Machine (SVM) classification for 100 repetitions with a 5-fold cross validation
2. (Table) on 48 subjects of the *EEG Motor Movement/Imagery Dataset*, after having verified that only 24 subjects can be considered good motor imagery performers and after having selected other 24 subjects that seem to have some difficulty in performing the required tasks.
    - The data have been augmented through the strategy described in the previously cited paper.

- The same features reported in point 1 have been extracted from the augmented data.
- LDA was applied to the 100 realizations of data augmentation.

Table 1: Mean, median and standard deviation of the error rates (%) obtained by LDA and SVM application for 100 repetitions on the MT dataset, LH and RH motor imagery tasks.

	LDA						*SVM*					
	mean		*median*		*std*		*mean*		*median*		*std*	
Subject	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*
S001	32.91	48.74	34.09	47.83	7.73	6.00	24.95	46.78	22.73	47.83	7.90	4.06
S002	34.45	30.87	36.36	30.43	5.89	6.55	31.00	22.96	31.82	21.74	6.57	6.39
S003	53.27	44.30	54.55	43.48	7.05	6.90	58.86	44.39	59.09	45.65	7.29	7.47
S004	28.05	26.70	27.27	26.09	4.14	6.71	30.36	27.61	31.82	26.09	4.38	5.54
S005	30.63	37.52	29.17	38.10	6.55	7.67	36.88	38.43	37.50	38.10	8.87	7.69
S006	72.33	57.88	71.43	58.33	7.59	8.48	85.33	40.13	85.71	37.50	6.86	10.32
S007	19.68	11.35	18.18	13.04	4.79	3.75	14.95	13.00	13.64	13.04	4.67	3.41
S008	37.26	47.32	39.13	45.45	7.40	8.25	32.83	47.82	30.43	45.45	7.45	6.08
S009	49.57	40.96	47.62	41.67	9.13	7.03	46.57	41.29	47.62	41.67	8.58	5.46
S010	38.90	22.58	38.10	20.83	5.33	6.38	33.81	23.58	33.33	20.83	5.35	6.60
S011	43.91	39.78	45.45	39.13	4.58	6.22	48.09	40.39	50.00	39.13	6.10	8.66
S012	30.38	42.14	29.17	42.86	6.08	7.05	33.54	40.48	33.33	38.10	5.93	6.37
S013	33.18	27.35	31.82	26.09	5.69	5.33	36.36	24.74	36.36	21.74	6.26	7.61
S014	56.91	55.82	56.52	54.55	7.89	9.56	53.09	42.82	52.17	45.45	7.82	8.93
S015	32.09	34.57	31.82	34.78	6.16	5.91	30.27	32.22	31.82	30.43	5.89	5.28
S016	50.00	57.00	47.83	56.82	7.43	9.28	49.91	53.77	50.00	54.55	7.45	9.16
S017	49.82	43.13	50.00	43.48	8.57	8.82	54.14	47.04	54.55	47.83	8.69	8.35
S018	57.91	53.23	56.52	54.55	8.20	7.84	52.57	67.64	52.17	68.18	10.08	9.26
S019	44.36	47.30	45.45	47.83	8.02	5.94	49.41	46.70	50.00	47.83	10.39	7.53
S020	55.64	59.39	54.55	60.87	7.45	7.97	50.18	60.04	50.00	60.87	8.97	7.78
S021	43.10	30.79	42.86	29.17	8.33	5.83	45.67	35.54	47.62	33.33	6.53	4.60
S022	45.87	48.18	47.83	45.45	7.65	7.86	41.04	49.50	39.13	50.00	7.53	7.50
S023	44.35	36.59	43.48	36.36	5.73	6.79	48.13	26.73	47.83	27.27	5.29	5.97
S024	42.30	50.45	43.48	50.00	5.83	6.67	39.13	69.64	39.13	68.18	9.41	7.61
S025	32.43	35.14	30.43	36.36	6.40	6.95	44.61	27.45	43.48	27.27	5.72	6.77
S026	49.00	45.21	47.62	45.83	8.49	5.41	51.86	43.33	52.38	43.75	7.35	7.99
S027	47.09	38.91	47.73	39.13	7.06	6.81	51.73	39.57	50.00	39.13	6.22	6.92
S028	58.52	61.77	56.52	59.09	7.30	7.81	54.48	68.27	56.52	68.18	8.84	7.75
S029	6.55	4.13	4.55	4.35	2.77	2.99	5.73	4.39	4.55	4.35	2.38	0.43
S030	59.05	46.04	61.90	45.83	8.88	7.71	69.57	43.63	71.43	45.83	9.18	8.77
S031	26.43	33.05	26.09	31.82	8.58	5.99	35.57	30.91	34.78	31.82	5.78	7.17
S032	34.67	24.81	33.33	23.81	5.98	6.74	33.54	31.81	33.33	33.33	6.22	6.66
S033	31.09	29.52	31.82	30.43	6.61	6.75	29.05	39.26	27.27	39.13	7.31	6.35
S034	8.04	16.81	8.33	14.29	4.32	3.74	3.21	6.24	0.00	4.76	4.47	3.36
S035	39.61	34.55	39.13	36.36	7.31	6.68	43.57	46.64	43.48	47.73	7.39	9.31
S036	41.82	45.04	40.91	43.48	7.45	6.61	47.27	50.74	45.45	52.17	8.27	7.67
S037	49.14	48.48	50.00	47.83	6.55	7.14	57.09	51.35	54.55	52.17	8.72	7.86
S038	55.95	56.43	54.55	56.52	8.22	7.15	68.82	48.04	68.18	47.83	8.76	9.62
S039	38.91	39.83	40.91	39.13	8.43	5.72	39.91	43.78	40.91	43.48	7.77	6.00
S040	49.63	57.33	50.00	57.14	6.49	7.89	49.29	60.38	50.00	61.90	6.93	8.23
S041	45.43	38.38	47.62	37.50	6.61	8.04	57.38	26.33	57.14	25.00	6.75	5.80
S042	24.57	16.86	26.09	18.18	5.11	5.49	12.87	11.41	13.04	9.09	4.05	3.51
S043	23.82	23.39	22.73	21.74	4.66	5.13	27.00	18.70	27.27	17.39	6.29	6.10

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Table 1 – continued from previous page

	LDA						*SVM*					
	mean		*median*		*std*		*mean*		*median*		*std*	
Subject	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*
S044	38.70	55.36	39.13	54.55	7.03	7.84	31.00	60.82	30.43	59.09	6.62	6.68
S045	48.59	56.57	50.00	56.52	8.44	7.38	43.45	53.87	45.45	56.52	7.65	5.56
S046	45.32	40.57	45.45	39.13	5.27	5.86	47.59	39.74	45.45	39.13	6.79	7.69
S047	42.76	37.58	42.86	37.50	7.69	6.10	43.52	33.46	42.86	33.33	6.05	7.09
S048	24.43	29.45	23.91	27.27	6.65	6.76	25.00	42.64	26.09	40.91	7.97	5.70
S049	25.50	20.65	27.27	21.74	4.74	5.84	26.68	29.43	27.27	30.43	5.03	6.24
S050	48.77	51.48	50.00	52.17	7.01	7.86	45.41	47.09	45.45	47.83	5.76	8.01
S051	55.38	43.25	57.14	41.67	5.36	7.39	55.71	43.00	57.14	41.67	6.37	7.23
S052	34.43	35.63	33.33	33.33	6.34	7.31	33.90	30.96	33.33	29.17	6.85	4.96
S053	32.48	46.50	30.43	45.45	6.44	6.02	25.83	49.91	26.09	50.00	6.96	4.79
S054	30.00	10.52	31.82	8.70	5.41	5.29	23.27	4.61	22.73	4.35	1.74	1.04
S055	37.64	33.26	36.36	34.78	7.28	6.55	27.00	26.09	27.27	26.09	5.04	6.54
S056	27.57	33.14	26.09	31.82	7.00	6.60	31.00	35.18	30.43	36.36	7.20	5.35
S057	61.43	42.63	61.90	41.67	8.14	7.76	66.38	40.33	66.67	39.58	7.56	7.44
S058	63.81	43.96	64.29	45.83	8.61	7.48	71.29	39.13	71.43	41.67	8.81	7.39
S059	52.14	50.92	52.38	52.08	7.64	7.96	53.76	50.58	52.38	50.00	7.04	8.62
S060	18.55	24.13	18.18	26.09	5.80	3.41	10.95	19.65	9.09	21.74	6.10	2.43
S061	43.04	36.91	43.48	36.36	5.65	8.31	51.96	34.82	52.17	36.36	6.58	9.10
S062	12.95	17.13	13.64	17.39	4.59	4.62	11.23	12.78	9.09	13.04	4.81	3.49
S063	47.52	49.64	47.83	50.00	7.99	7.64	49.43	44.45	47.83	45.45	7.09	9.13
S064	27.32	33.87	27.27	34.78	5.83	5.25	24.73	42.91	22.73	43.48	6.82	5.30
S065	50.43	44.58	52.38	45.83	9.76	8.91	60.90	30.29	61.90	29.17	7.11	9.21
S066	26.17	31.73	26.09	31.82	5.56	5.85	31.35	36.86	30.43	36.36	6.75	6.86
S067	45.96	58.68	43.48	59.09	8.70	8.15	52.35	74.27	52.17	72.73	10.67	7.40
S068	46.65	50.18	47.83	50.00	7.41	9.88	56.61	56.82	56.52	54.55	7.26	9.62
S069	30.62	31.42	28.57	29.17	7.23	5.11	50.14	33.13	52.38	33.33	7.46	5.90
S070	20.43	30.95	21.74	31.82	4.52	5.43	24.70	29.91	26.09	29.55	6.02	5.96
S071	15.70	21.73	13.04	22.73	3.38	4.01	14.17	19.91	13.04	18.18	4.26	5.04
S072	19.04	6.64	17.39	4.55	5.62	3.19	12.09	0.45	8.70	0.00	4.81	1.37
S073	36.64	30.43	36.36	30.43	5.59	6.68	49.09	31.65	50.00	30.43	6.23	6.45
S074	75.57	49.29	76.19	50.00	7.97	10.14	77.86	22.71	76.19	20.83	6.78	6.14
S075	29.13	41.77	30.43	40.91	6.07	5.28	24.57	47.82	21.74	50.00	7.85	4.59
S076	54.23	41.78	54.55	41.30	7.08	8.89	51.50	33.04	50.00	34.78	6.36	6.51
S077	62.29	66.33	62.50	66.67	8.45	9.70	49.29	65.38	50.00	66.67	9.33	8.69
S078	65.95	53.52	65.91	52.17	8.51	8.64	80.95	35.65	81.82	34.78	7.41	9.83
S079	40.13	38.68	39.13	40.91	6.24	4.98	43.87	35.59	43.48	36.36	6.97	6.56
S080	45.45	47.04	45.45	47.83	8.45	7.00	47.73	48.78	45.45	47.83	9.01	7.12
S081	52.43	60.41	52.17	61.36	7.20	7.89	42.57	62.36	43.48	63.64	9.52	6.43
S082	32.91	30.09	31.82	30.43	6.56	6.82	38.41	22.65	36.36	21.74	6.38	7.82
S083	35.70	28.68	34.78	27.27	7.95	5.55	30.39	29.27	30.43	29.55	5.51	4.98
S084	42.27	33.17	40.91	34.78	6.11	7.83	49.27	12.87	50.00	13.04	3.70	5.96
S085	11.32	16.35	13.64	17.39	5.61	5.63	7.68	14.74	9.09	13.04	6.15	5.56
S086	27.13	32.36	26.09	31.82	5.87	6.07	31.30	57.55	30.43	56.82	8.34	8.98
S087	44.43	50.91	43.48	50.00	6.59	7.25	40.00	61.86	39.13	61.36	7.42	7.72
S089	31.05	29.04	33.33	29.17	5.72	4.64	37.14	35.88	38.10	37.50	7.95	6.29
S090	33.74	43.45	34.78	43.18	7.39	8.33	32.96	50.36	34.78	50.00	7.02	8.01
S091	54.91	51.77	54.35	52.27	6.95	8.40	66.17	54.23	65.22	54.55	8.46	10.87
S093	19.18	19.13	18.18	17.39	5.73	5.21	15.73	15.13	13.64	13.04	4.16	4.21
S094	23.22	22.18	21.74	22.73	5.50	5.34	22.61	21.55	21.74	22.73	3.86	4.46
S095	38.73	30.61	36.36	30.43	5.87	7.39	40.50	27.78	40.91	26.09	7.92	5.05
S096	51.73	60.48	50.00	60.87	8.47	6.42	30.45	69.35	31.82	69.57	8.03	6.64
S097	64.23	51.70	63.64	52.17	7.01	8.29	70.77	43.09	72.73	43.48	6.78	9.54

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Table 1 – continued from previous page

	LDA						*SVM*					
	mean		*median*		*std*		*mean*		*median*		*std*	
Subject	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*
S098	43.09	39.22	45.45	39.13	6.18	6.99	51.73	46.09	50.00	43.48	7.88	8.18
S099	58.91	63.50	56.52	63.64	7.95	7.46	47.57	59.64	47.83	59.09	8.54	8.60
S101	51.17	57.14	52.17	59.09	8.71	9.61	52.96	72.00	52.17	72.73	10.60	8.27
S102	30.78	27.59	30.43	27.27	6.82	5.82	28.48	24.86	26.09	22.73	5.68	5.38
S103	35.78	38.55	34.78	40.91	5.76	7.03	40.87	45.14	39.13	45.45	6.77	7.06
S104	56.00	52.59	57.14	54.55	7.87	9.19	51.33	42.05	50.00	40.91	7.18	7.38
S105	49.27	36.87	50.00	34.78	9.11	7.66	47.41	36.70	45.45	34.78	7.49	5.84
S106	61.48	39.46	61.90	37.50	7.45	6.53	48.81	30.04	52.38	29.17	9.06	5.24
S107	41.38	38.13	42.86	37.50	9.10	9.48	50.62	48.42	47.62	50.00	9.22	9.00
S108	19.70	25.05	17.39	27.27	5.51	5.54	28.78	24.59	30.43	22.73	5.20	5.45
S109	57.32	56.39	54.55	56.52	7.56	9.74	58.55	54.65	59.09	52.17	7.23	8.68

Table 2: Median error rates (%) obtained by applying 100 times the data augmentation and the linear discriminant analysis classifier on the right (RH) and left hand (LH) motor imagery.

	Number of trials per condition																	
	0		*0 - rec*		*3*		*6*		*9*		*12*		*15*		*18*		*21*	
Subject	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*	*RH*	*LH*
S001	34.09	47.83	31.82	47.83	32.00	46.15	32.14	44.83	29.03	43.75	26.47	42.86	24.32	42.11	25.00	41.46	23.26	40.91
S002	36.36	30.43	36.36	32.61	36.00	30.77	35.71	31.03	35.48	31.25	35.29	31.43	35.14	28.95	32.50	26.83	30.23	27.27
S004	27.27	26.09	27.27	26.09	24.00	23.08	21.43	20.69	19.35	21.88	17.65	20.00	16.22	19.74	15.00	19.51	13.95	18.18
S007	18.18	13.04	18.18	13.04	16.00	11.54	14.29	8.62	16.13	6.25	11.76	5.71	13.51	5.26	12.50	4.88	11.63	6.82
S010	38.10	20.83	38.10	20.83	35.42	18.52	37.04	16.67	30.00	18.18	30.30	16.67	30.56	15.38	28.21	14.29	28.57	14.44
S011	45.45	39.13	43.18	39.13	44.00	38.46	42.86	37.93	41.94	37.50	41.18	37.14	37.84	34.21	40.00	36.59	37.21	34.09
S012	29.17	42.86	31.25	42.86	31.48	39.58	31.67	37.04	30.30	35.00	27.78	33.33	28.21	33.33	26.19	30.77	24.44	30.95
S013	31.82	26.09	31.82	26.09	32.00	26.92	28.57	24.14	25.81	25.00	26.47	21.43	24.32	21.05	25.00	21.95	23.26	20.45
S014	56.52	54.55	56.52	54.55	53.85	52.00	55.17	50.00	53.13	46.77	52.86	47.06	52.63	43.24	48.78	42.50	48.86	39.53
S015	31.82	34.78	36.36	34.78	30.00	30.77	28.57	27.59	25.81	26.56	23.53	25.71	21.62	23.68	22.50	21.95	20.93	20.45
S016	47.83	56.82	52.17	56.82	46.15	52.00	44.83	50.00	40.63	48.39	40.00	47.06	39.47	45.95	35.37	45.00	36.36	41.86
S017	50.00	43.48	50.00	43.48	44.00	42.31	39.29	39.66	35.48	40.63	35.29	37.14	32.43	36.84	30.00	39.02	27.91	36.36
S018	56.52	54.55	56.52	50.00	53.85	48.00	51.72	46.43	50.00	45.16	48.57	44.12	47.37	43.24	48.78	42.50	45.45	41.86
S019	45.45	47.83	45.45	47.83	44.00	46.15	39.29	41.38	38.71	40.63	38.24	37.14	35.14	36.84	35.00	34.15	32.56	34.09
S020	54.55	60.87	54.55	56.52	52.00	57.69	50.00	55.17	45.16	53.13	44.12	51.43	44.59	50.00	40.00	48.78	39.53	47.73
S021	42.86	29.17	38.10	29.17	41.67	29.63	40.74	30.00	40.00	30.30	39.39	30.56	38.89	28.21	38.46	28.57	35.71	28.89
S022	47.83	45.45	43.48	45.45	46.15	48.00	41.38	46.43	43.75	45.16	40.00	44.12	39.47	41.89	39.02	42.50	38.64	41.86
S023	43.48	36.36	43.48	36.36	46.15	36.00	44.83	32.14	43.75	29.03	42.86	29.41	42.11	29.73	41.46	27.50	40.91	27.91
S024	43.48	50.00	39.13	50.00	42.31	48.00	41.38	46.43	40.63	45.16	40.00	44.12	39.47	43.24	39.02	41.25	38.64	39.53
S025	30.43	36.36	30.43	36.36	30.77	32.00	27.59	32.14	28.13	29.03	28.57	26.47	28.95	24.32	26.83	23.75	27.27	23.26
S026	47.62	45.83	52.38	45.83	45.83	44.44	48.15	40.00	43.33	42.42	42.42	38.89	41.67	38.46	41.03	38.10	40.48	37.78
S027	47.73	39.13	50.00	39.13	48.00	38.46	46.43	37.93	41.94	37.50	41.18	34.29	40.54	34.21	37.50	31.71	37.21	31.82
S029	4.55	4.35	4.55	4.35	4.00	3.85	3.57	3.45	3.23	3.13	2.94	2.86	2.70	2.63	2.50	0.00	2.33	2.27
S031	26.09	31.82	21.74	31.82	26.92	36.00	27.59	32.14	25.00	32.26	28.57	32.35	26.32	29.73	26.83	30.00	27.27	30.23
S042	26.09	18.18	26.09	13.64	23.08	12.00	20.69	10.71	18.75	12.90	17.14	11.76	15.79	10.81	12.20	10.00	13.64	9.30
S043	22.73	21.74	22.73	26.09	20.00	19.23	17.86	20.69	17.74	18.75	17.65	17.14	16.22	18.42	15.00	15.85	13.95	15.91
S048	23.91	27.27	26.09	27.27	23.08	28.00	24.14	28.57	21.88	25.81	20.00	23.53	21.05	24.32	19.51	22.50	18.18	22.09
S049	27.27	21.74	27.27	21.74	24.00	19.23	21.43	17.24	19.35	18.75	17.65	17.14	16.22	15.79	15.00	17.07	13.95	15.91
S054	31.82	8.70	31.82	8.70	28.00	11.54	28.57	10.34	25.81	9.38	23.53	11.43	24.32	10.53	22.50	9.76	23.26	9.09
S055	36.36	34.78	36.36	34.78	32.00	30.77	28.57	31.03	25.81	28.13	26.47	28.57	27.03	28.95	22.50	26.83	24.42	26.14
S060	18.18	26.09	18.18	21.74	16.00	19.23	14.29	17.24	9.68	18.75	8.82	17.14	8.11	15.79	8.75	14.63	6.98	13.64
S062	13.64	17.39	13.64	17.39	12.00	11.54	7.14	10.34	9.68	9.38	8.82	8.57	8.11	7.89	7.50	7.32	6.98	6.82
S066	26.09	31.82	26.09	36.36	23.08	28.00	20.69	25.00	18.75	25.81	18.57	23.53	18.42	21.62	17.07	22.50	15.91	20.93
S070	21.74	31.82	17.39	29.55	19.23	28.00	17.24	28.57	18.75	25.81	17.14	26.47	15.79	24.32	17.07	25.00	15.91	23.26
S071	13.04	22.73	17.39	22.73	19.23	20.00	17.24	17.86	18.75	16.13	14.29	14.71	15.79	13.51	14.63	12.50	13.64	11.63
S083	34.78	27.27	34.78	27.27	34.62	28.00	31.03	28.57	28.13	25.81	27.14	26.47	28.95	27.03	26.83	25.00	26.14	25.58
S085	13.64	17.39	13.64	15.22	8.00	13.46	10.71	10.34	6.45	9.38	5.88	8.57	5.41	7.89	7.50	9.76	6.98	6.82
S086	26.09	31.82	26.09	31.82	26.92	32.00	24.14	28.57	25.00	25.81	22.86	23.53	23.68	24.32	24.39	22.50	22.73	23.26
S089	33.33	29.17	33.33	29.17	29.17	29.63	29.63	30.00	30.00	30.30	30.30	33.33	33.33	33.33	30.77	30.95	30.95	31.11
S093	18.18	17.39	18.18	17.39	16.00	15.38	17.86	13.79	16.13	12.50	14.71	11.43	16.22	10.53	15.00	9.76	16.28	9.09
S094	21.74	22.73	21.74	22.73	23.08	20.00	20.69	21.43	21.88	19.35	20.00	17.65	21.05	18.92	19.51	17.50	18.18	18.60
S101	52.17	59.09	52.17	59.09	50.00	56.00	48.28	53.57	46.88	51.61	45.71	47.06	47.37	48.65	46.34	47.50	45.45	46.51
S103	34.78	40.91	34.78	40.91	34.62	36.00	34.48	35.71	31.25	35.48	31.43	32.35	28.95	32.43	29.27	30.00	27.27	30.23
S105	50.00	34.78	50.00	34.78	40.00	34.62	42.86	31.03	38.71	31.25	38.24	28.57	35.14	28.95	33.75	29.27	34.88	29.55
S106	61.90	37.50	61.90	37.50	54.17	37.04	51.85	33.33	46.67	33.33	45.45	30.56	44.44	28.21	41.03	28.57	40.48	28.89
S107	42.86	37.50	40.48	37.50	41.67	37.04	40.74	40.00	40.00	39.39	39.39	38.89	38.89	41.03	38.46	40.48	35.71	40.00
S108	17.39	27.27	17.39	27.27	15.38	24.00	13.79	21.43	12.50	19.35	11.43	20.59	10.53	18.92	9.76	17.50	9.09	16.28
S109	54.55	56.52	54.55	56.52	56.00	50.00	53.57	50.00	51.61	48.44	50.00	48.57	48.65	46.05	50.00	46.34	46.51	45.45