Scoring Methods of Cognitive Fatigability in people with Multiple Sclerosis

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Introduction and Purpose

- 75-90% of the people with MS report fatigue[1]
- Cognitive fatigability (CF) is the measurable change in the performance of cognitive tasks due to fatigue (figure 1)[2]
- Currently CF is measured using neuropsychological testings (e.g.: Symbol Digit Modalities Test – SDMT; Paced Auditory Serial Addition Test – PASAT)

Aim: The aim is to explore different scoring methods of CF with use of the SDMT and the PASAT to support clinical practicioners in search for the optimal scoring method reflecting CF in people with MS

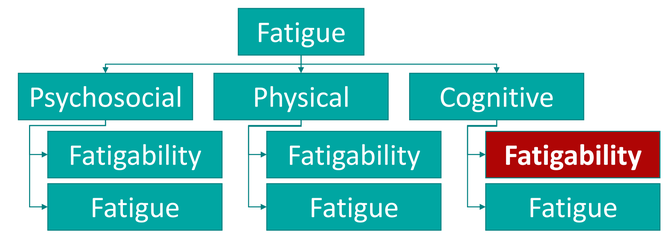


Figure 1: a taxonomy of fatigue based on Linnhoff[2]

Methods

- Design: Observational study
- Recruitment: Healthy Controls (HC)-group: convenience sampling, MS-group: NMSC Melsbroek
- Testprotocol provided in figure 2: online administration of SDMT and PASAT
- Neuropsychological testings:
  SDMT: linking numbers to symbols in 90s (e.g. in figure 3)
  PASAT3 & PASAT2: adding up 61 numbers heard in an audiotape with 3 or 2 seconds interstimuli interval (eg figure 4)
- Scoring methods: correct score= amount of correct responses; dyad score=amount of two or more consecutive correct responses controlling for chunking of responses[3]

Figure2: Researchprotocol

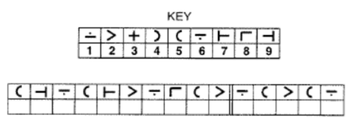


Figure3: SDMT

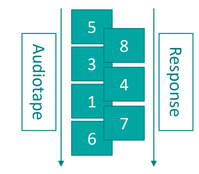
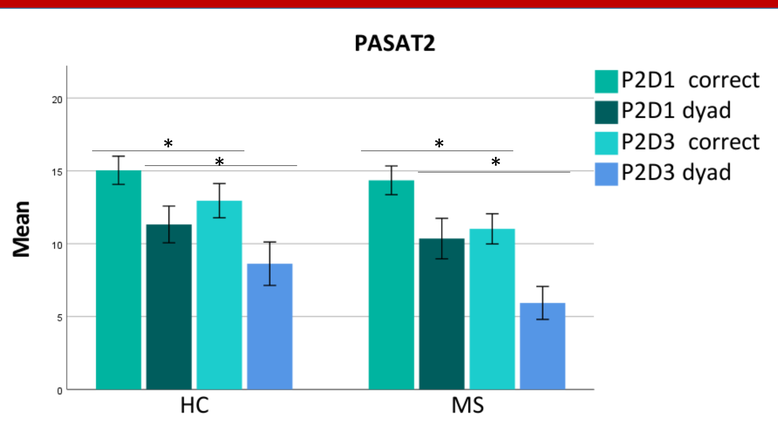


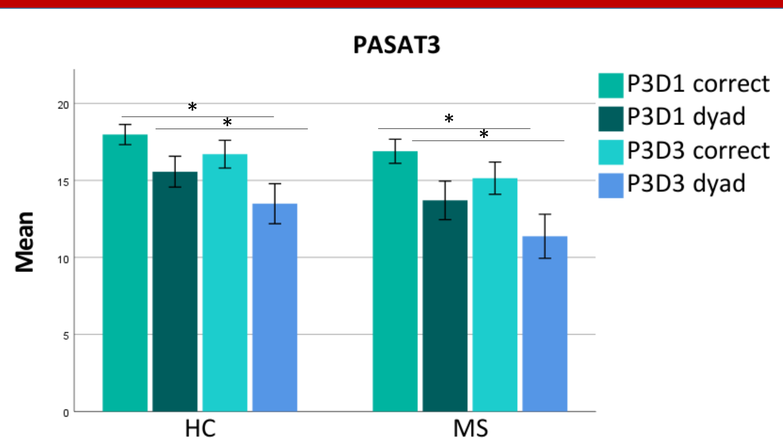
Figure4: PASAT

Results

Table1: sample characteristics

	MS (n=48)	HC (n=51)
Age (mean±SD)	43.81±11.71	41.39±13.63
Sex m/f	12/36	23/28
EDSS (mean, min-max)	2.66(.0-6.5)	.
Education (mean±SD, years)	15.21±1.79	15.82±2.68





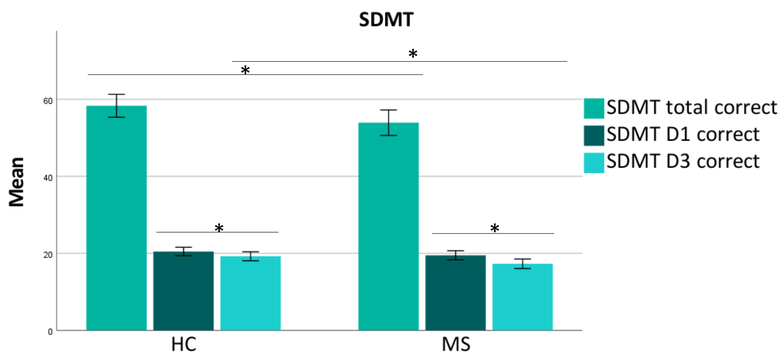


Table2: SDMT-scores

	MS (n=48)	HC (n=49)	p
Total	53.94±11.37	58.33±10.36	.048
SDMT D1	19.50±4.07	20.47±3.86	.063
SDMT D3	17.29±4.25	19.24±4.04	.030

Table3: PASAT2

	MS (n=48)	HC (n=49)	p
P2D1 correct	14.35±3.39	15.04±3.26	.300
P2D1 dyad	10.35±4.79	11.33±4.24	.363
P2D3 correct	11.02±3.57	12.96±3.96	.013
P2D3 dyad	5.94±3.89	8.63±5.03	.005

Table4: PASAT3

	MS (n=48)	HC (n=49)	p
P3D1 correct	16.90±2.69	17.98±2.33	.021
P3D1 dyad	13.71±4.3	15.57±3.56	.020
P3D3 correct	15.15±3.6	16.71±3.21	.019
P3D3 dyad	11.38±4.92	13.49±4.62	.038

Discussion

- Effects of CF are reflected by decreased scores in the last part compared to the first part of the SDMT, PASAT3 and -2.
- CF is seen in all tests in both groups.
- CF is mostly present in the PASAT2 compared to the PASAT3 and SDMT.
- Dyad scores show also effects of CF, but controlled for the effect of chunking. Effects are seen in both groups, but are most expressed in the MS-group when comparing last part to the first part.
- Further analysis on this dataset will involve omissions and errors.

Conclusion

Results suggest that PASAT2 is a feasible method to quantify cognitive fatigability in people with MS and healthy controls. Effects of CF are most pronounced in the dyad scores of the PASAT2.

References

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Disclosure: None of the authors has anything to disclose

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