Evaluation of the Human Activity Profile on patients with multiple sclerosis

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OBJECTIVE

- To investigate the reliability, validity and responsiveness to change of the Human Activity Profile (HAP), a self-report questionnaire measuring physical activity, in patients with multiple sclerosis (MS).
- HAP allows to assess various activities, from daily living as well as recreational and sport activities. It consists of 94 questions, where each successive question represents a slightly higher estimated metabolic equivalent (MET) level and the result provides an assessment of patient's activity level and function.

METHODS

- Group of 25 patients with MS completed the following self-report questionnaires: HAP, Modified Fatigue Impact Scale (MFIS), Multiple Sclerosis Quality of Life-54 (MSQOL54). EDSS disability level was determined and walking speed assessed by 10-Meter Walking test (10MWT).
- Responses on the HAP resulted in 2 scores: maximum activity score (MAS) and adjusted activity score (AAS). These scores were statistically correlated with the other tests and examined for test- retest reliability.
- A subset of patients (12) participated in a 12-week supervised aerobic exercise programme, while others served as control. Same measures were repeated at end of 12 weeks.

Table 1: Baseline characteristics

Age (mean ± SD; years)	41.04 ± 6.02
Sex (female/male)	20/5
Disease duration (mean ± SD; years)	11.72 ± 6.13
Median EDSS (range)	3.00 (1.0 – 6.5)
Median 10MWT (range; seconds)	5.41 (3.98 – 11.42)
MFIS (mean ± SD)	43.56 ± 14.82
MFIS-PS (mean ± SD)	18.08 ± 6.76
MSQOL-54 PCHS (mean ± SD)	66.16 ± 13.66
MSQOL-54 MHCS (mean ± SD)	77.06 ± 15.29

SD= Standard Deviation; EDSS = Expanded Disability Status Scale; 10MWT = 10-Meter Walking Test; MFIS= Modified Fatigue Impact Scale; MFIS-PS = MFIS Physical Subscale; MSQOL-54 = Multiple Sclerosis Quality of Life-54; MSQOL-54 PHCS = MSQOL-54 Physical Health Composite Score; MSQOL-54 MHCS = MSQOL-54 Mental Health Composite Score

Table 3: Effect size for self-report questionnaires (n = 12)

Self-report questionnaire	Baseline mean ± SD	Mean change ± SE of change	Effect size
HAP			
MAS	81.93 ± 4.56	-1.00 ± 1.91	0.21
AAS	71.21 ± 13.99	0.58 ± 1.56	0.04
MFIS	31.93 ± 14.38	-2.33 ± 3.33	0.17
MSQOL-54 PHCS	67.70 ± 14.36	0.67 ± 2.32	0.05
MSQOL-54 MHCS	76.17 ± 19.74	-0.87 ± 3.17	0.05

SD= Standard Deviation; SE = Standard Error; MFIS= Modified Fatigue Impact Scale; MFIS-PS = MFIS Physical Subscale; MSQOL-54 = Multiple Sclerosis Quality of Life-54; MSQOL-54 PHCS = MSQOL-54 Physical Health Composite Score; MSQOL-54 MHCS = MSQOL-54 Mental Health Composite Score

Table 2: Spearman's rho correlations of HAP scores with physical performance tests and other self-report questionnaires

	MAS	AAS
EDSS	-0.47*	-0.63*
Pyramidal FSS	-0.56*	-0.68*
10MWT	-0.67*	-0.82*
MFIS (total score)	-0.58*	-0.67*
MFIS-PS	-0.67*	-0.70*
MSQOL-54 PHCS	0.41	0.55*
MSQOL-54 PS	0.60*	0.73*
MSQOL-54 MHCS	0.32	0.39

HAP= Human Activity Profile; MAS = Maximum Activity Score; AAS = Adjusted Activity Score; EDSS = Expanded Disability Status Scale; Pyramidal FSS = Pyramidal Functional System Score; 10MWT = 10-Meter Walking Test; MFIS= Modified Fatigue Impact Scale; MFIS-PS = MFIS Physical Subscale; MSQOL-54 = Multiple Sclerosis Quality of Life-54; MSQOL-54 PHCS = MSQOL-54 Physical Health Composite Score; MSQOL-54 PS = MSQOL-54 Physical Health subscale, MSQOL-54 MHCS = MSQOL-54 Mental Health Composite Score

* P ≤ 0,05.

RESULTS

- Intraclass correlation coefficient (ICC), calculated on control group, was 0.97 and 0.95 for MAS and AAS, respectively, higher than for any of the other measures.
- Significant correlations were found between HAP scores and total MFIS score, physical function subscale scores from MFIS and MSQOL54, EDSS and 10MWT (Table 2).
- After 12 weeks of exercise, a decrease of physical fatigue, as measured by Physical Subscale of MFIS (MFIS-PS), was found, although not statistically significant (p=0.054). A statistically significant increase in Energy subscale of MSQOL54 (MSQOL54-E; p=0.022) was reported by control group. No significant correlation between MFIS-PS and MSQOL54-E was found. In both groups, no statistically significant change was observed in HAP, EDSS and 10MWT.
- In response to 12 weeks of exercise, the effect sizes for MAS and AAS were 0.21 and 0.04, respectively, similar to that of the MFIS and MSQOL54 (Table 3).

CONCLUSION

- The correlations between HAP and physical function subscale scores from MFIS and MSQOL54, EDSS and 10MWT demonstrate that HAP is a valid and, as demonstrated by high values of ICCs, also a reliable measure of physical function in patients with MS.
- After 12 weeks of exercise, no major change in physical functioning was detected by any of the measures.
- HAP displays a similar sensitivity to change as the other self-report questionnaires.
- Along with simplicity of use, HAP could be a valuable assessment tool for patients with MS.

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