1. **Energy cost of walking, symptomatic fatigue and perceived exertion in persons with multiple sclerosis**

   Chung L.H., Angelo J., van Emmerik R.E.A., Kent J.A.


   **Abstract**

   A higher energy cost of walking (Cw) is sometimes observed in MS, and could contribute to fatigue. The purpose of this study was to compare Cw at three speeds in MS and controls, and determine the effects of walking speed on fatigue and perceived exertion. We hypothesized that MS would have higher Cw, fatigue and exertion during walking than controls. Ten persons with MS and 14 controls of similar age and physical activity levels were studied. Oxygen consumption (VO\textsubscript{2}) was obtained at rest and during treadmill walking at 0.6 and 1.4 m s\textsuperscript{-1}, and preferred speed. Cw was calculated as net VO\textsubscript{2} velocity. Fatigue and exertion were assessed using the visual analog fatigue and modified Borg scales, respectively. Preferred treadmill speed was not different between groups. Cw was higher in MS than controls across walking speeds (p = 0.003), with a group-by-speed interaction indicating higher Cw in MS at 0.6 m s\textsuperscript{-1} (p = 0.001), but not at preferred speed or 1.4 m s\textsuperscript{-1}. MS reported greater fatigue (p = 0.001) and exertion (p = 0.004) at all speeds. Despite similar preferred speeds, and Cw at preferred and fast speeds, MS exhibited higher fatigue and exertion at all walking speeds. These results suggest that increased energy demands in MS are most notable at low speeds such as those used in everyday activities, which may contribute to fatigue over the day.

2. **The MSFC in the Prospective Employment Status of Rehabilitants with Multiple Sclerosis**

   Leniger T., Brandes I., Heling A.


   **Abstract**

   Background and Intention: The increased number of early retirement due to Multiple Sclerosis (MS) may not be caused by physical disability only. The valid assessment Multiple Sclerosis Functional Composite (MSFC) measures the MS-related physical as well as cognitive impact. Aim of this study was to determine the utility of the MSFC as a measurement of clinical course during inpatient medical rehabilitation and its suitability as a predictor of prospective employment status. Material and Methods: In a retrospective, unicenter longitudinal study the MSFC-results of 77 rehabilitants routinely collected at the beginning (t0) and at the end (t1) of the inpatient rehabilitation were correlated: the MSFC (t0) with the employment status at admission, the MSFC as a measurement of clinical course (t0, t1) according to the employment status at admission, and the MSFC (t1) with the prospective employment status at discharge. Results: No correlation was found between a negative/positive employment status and demographic or disease characteristics (course or duration of MS). At admission employed rehabilitants exhibited a significant higher MSFC (z-Score - 0.26±0.73 SD) compared to those unemployed (- 0.68±0.96 SD; p=0.05). Non-significant improvement in the MSFC (z-Score) was seen in the group of unemployed rehabilitants (- 0.68±0.96 SD (t0) to - 0.57±0.95 SD (t1)) as well as in the group of employed (- 0.26±0.73 SD (t0) to - 0.06±0.89 SD (t1); p=0.278). The significant group difference remained (p=0.002). The MSFC (t1) was significantly higher in the rehabilitants with a positive prospective employment status (+ 0.08±0.91 SD) compared to those with a negative prospective employment status (- 0.66±0.86 SD; p=0.001). Regardless of the employment status at admission all rehabilitants with a positive prospective employment status at discharge showed a positive z-Score (0.03±0.95 SD or 0.35±0.69 SD) in the MSFC (t1). Conclusion: The MSFC proves to be a helpful assessment in the inpatient medical rehabilitation of MS with a significant correlation to the employment status at admission and the prospective employment status at discharge. A positive MSFC-Score seems to be associated with a positive prospective employment status at discharge. Improvement in the MSFC-Score was seen in both groups, the employed and unemployed rehabilitants, during the rehabilitation.
3. **Multiple Sclerosis Questionnaire for Job Difficulties (MSQ-Job): definition of the cut-off score**

Schiavolin S., Giovannetti A.M., Leonardi M., Brenna G., Brambilla L., Confalonieri P., Frangiamore R., Mantegazza R., Moscatelli M., Clerici V.T., Cortese F., Covelli V., Ponzio M., Zaratin P., Raggi A.
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**Abstract**

Multiple Sclerosis (MS) mainly affects people of working age. The Multiple Sclerosis Questionnaire for Job Difficulties (MSQ-Job) was designed to measure difficulties in work-related tasks. Our aim is to define cut-off score of MSQ-Job to identify potential critical situations that might require specific attention. A sample of patients with MS completed the MSQ-Job, WHODAS 2.0 and MSQOL-54 respectively for work difficulties, disability and health-related quality of life (HRQoL) evaluation. K-means Cluster Analysis was used to divide the sample in three groups on the basis of HRQoL and disability. ANOVA test was performed to compare the response pattern between these groups. The cut-off score was defined using the receiver operating characteristic (ROC) curve analyses for MSQ-Job total and count of MSQ-Job items scores $\geq 3$: a score value corresponding to the maximum of the sensitivity-to-specificity ratio was chosen as the cut-off. Out of 180 patients enrolled, twenty were clustered in the higher severity group. The area under the ROC curve was 0.845 for the MSQ-Job total and 0.859 for the count of MSQ-Job items scores $\geq 3$ while the cut-off score was 15.8 for MSQ-Job total and 8 for count of items scored $\geq 3$. We recommend the use of MSQ-Job with this calculation as cut-off for identifying critical situations, e.g. in vocational rehabilitation services, where work-related difficulties have a significant impact in terms of lower quality of life and higher disability.

4. **Demographic, socioeconomic and clinical correlates of self-management in multiple sclerosis**

Wilski M., Tasiemski T., Kocur P.

**Abstract**

PURPOSE: Our aim was to identify demographic, clinical and socioeconomic predictors of self-management in multiple sclerosis (MS). METHODS: The study was performed on a group of 283 patients with multiple sclerosis who completed Multiple Sclerosis Self-Management Scale - Revised (MSSM-R), Multiple Sclerosis Impact Scale (MSIS-29), Actually Received Support Scale (part of Berlin Social Support Scale), Expanded Disability Status Scale (EDSS) and Socioeconomic resources scale. Patients were recruited through cooperation with Multiple Sclerosis Rehabilitation Centre in Borne Sulinowo and Polish Society of Multiple Sclerosis. Demographic and illness-related problems were determined with self-report survey. RESULTS: The group consisted of 185 women and 98 men, with a mean age of 48 years. The level of disability and disease severity varied, mean time elapsed since MS diagnosis was 13 years. The final predictive model of self-management in MS was based on two main predictors: received support and available socioeconomic resources. Patients with MS who received adequate support from the closest relatives ($R(2) = 0.07, F(1, 279) = 21.84, p \leq 0.01$) and had larger available socioeconomic resources ($R(2) = 0.11, F(2, 278) = 17.06, p \leq 0.01$), turned out to be the most effective in self-management. Moreover, a relationship between self-management in MS and gender as well as monthly income attributable to one family member was documented. CONCLUSION: We identified a group of MS patients who are at an increased risk of poor self-management and therefore require more attention from medical staff. This group includes patients with low level of received support, low socioeconomic resources and to a lesser degree men, and also persons receiving low monthly income. Implications for Rehabilitation Self-management of chronic illness is a key component of active participation in rehabilitation process. Low self-management in multiple sclerosis (MS) is considered to be one of the most important factors contributing to low rehabilitation efficacy, more severe long-term complications and increase in healthcare costs. Knowledge on predictors of self-management should be used in clinical practice when providing treatment, support, education and rehabilitation for patients with MS. Increasing support and improving social conditions are potentially important targets for interventions aimed at optimization of self-management, and thereby reduction of health care costs and improvement of health.
5. The needs of multiple sclerosis patients and the availability of rehabilitation in Poland
Potrzeby i możliwości rehabilitacji chorych na stwardnienie rozsiane w Polsce
Potemkowski A., Opara J.
Aktual. Neurol. 2015 15:2 (74-79)
Embase

Abstract
The nature of multiple sclerosis makes the rehabilitation of patients suffering from the disease one of the most challenging tasks neurologic rehabilitation is faced with. The numerous multiple sclerosis symptoms considerably impair the quality of life of the approx. 40,000 Polish multiple sclerosis patients. Even though rehabilitation does not significantly affect the relapse frequency, or prevent the progression of the disease, still, when adequately carried out, making use of contemporarily available options, it manages to improve not only the objective indicators, but also the patients' subjective sense of well-being and self-esteem, resulting with patients' more positive self-image. The needs of Polish patients are huge, yet the availability of rehabilitation options remains scarce. Therefore, it is crucial to optimize the quality of rehabilitation regime the patients follow independently on at-home basis. Hence, the patient's knowledge concerning the impact of rehabilitation on their disease and the available forms of therapy, as well as their awareness of the potential outcome of neglecting this aspect of treatment, become of utmost importance. Multiple sclerosis, regardless of its form, leads to impaired function/disability and affects very adversely the quality of patients' life, limiting one's independence, putting them at risk of losing employment, and making daily life activities increasingly more difficult. The role of therapeutic rehabilitation teams, ones including neurology and rehabilitation specialist as well as physiotherapists, is therefore crucial, and these should be found at every single outpatient centre specialising in multiple sclerosis-related diagnostics and treatment. The effects that the disease's progression has on patients' lives could be curbed with such teams available to patients to establish the extent of the sustained loss of function, and determine the therapy objectives and a detailed therapy plan.