Patients attending the Pediatric MS and Demyelinating Disorders Clinic at the Hospital for Sick Children in Toronto, Canada were enrolled consecutively between September 1, 2013, and October 31, 2015. Patients were evaluated at baseline and at follow-up within 6-12 months.

56 patients (27 MS, 29 monoADS) fulfilling the following eligibility criteria were included in this study:

- Age ≥18 years at baseline visit
- Baseline visit within 5 years of clinical onset of disease

None of the patients fulfilled criteria for MS according to Canadian Consensus Criteria in Pediatric MS (CPCCS) (2008). All patients were evaluated at baseline and at follow-up (Fig. 1). Data were analyzed with SPSS Statistics version 22.0. The authors thank the Pediatric MS and Demyelinating Disorders Program team at The Hospital for Sick Children, as well as the patients and family members who generously participated in this research.

The relationship between fatigue or depression scores at follow-up and changes in physical activity in the MS cohort was evaluated with Spearman correlation analysis. Statistical analyses were performed with SPSS Statistics version 22.0.

**Conclusions**

- Fatigue and depression are common in pediatric MS. Depression in this population may be more frequent and may fluctuate over brief periods of follow-up (<12 months).
- Children with MS may be less likely than those with monoADS to participate in regular physical activity.
- An increase in physical activity (particularly strenuous physical activity) is associated with lower self-reported fatigue and depression in children with MS.
- Limitations of this study include the small sample size and its observational design. Future randomized, controlled studies may clarify the putative causal relationship between changes in physical activity and fatigue or depression in this population.
- Physical activity represents a modifiable behaviour that may potentially ameliorate fatigue and depression in pediatric MS.

**Acknowledgements & Disclosures**

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The authors do not have any conflicts of interest to disclose.

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**References**


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**Table 1. Cohort characteristics.**

<table>
<thead>
<tr>
<th></th>
<th>MS (n=27)</th>
<th>Mono-ADS (n=29)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Female, n (%)</td>
<td>20 (74.1)</td>
<td>13 (44.8)</td>
<td>0.033</td>
</tr>
<tr>
<td>**Age at onset, mean years (IQR)</td>
<td>13.7 (2.4)</td>
<td>10.2 (1.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>**Age at baseline, mean years (IQR)</td>
<td>15.6 (2.6)</td>
<td>13.0 (4.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>**Disease duration, mean years (IQR)</td>
<td>2.0 (1.8)</td>
<td>2.0 (1.2)</td>
<td>0.501</td>
</tr>
<tr>
<td>**Baseline to follow-up interval, median days (IQR)</td>
<td>243 (84)</td>
<td>334 (144)</td>
<td>0.034</td>
</tr>
<tr>
<td>**EDSS, median (IQR)</td>
<td>1.5 (1.0)</td>
<td>1.0 (2.0)</td>
<td>0.238</td>
</tr>
<tr>
<td>**Internal relapse, median (IQR)</td>
<td>0.95 (0.95)</td>
<td>0.95 (0.95)</td>
<td>0.95</td>
</tr>
</tbody>
</table>

**PHYSICAL ACTIVITY**

- Mean total, strenuous, moderate, and mild GLTEQ physical activity scores and Health Contribution Score (HCS) at baseline (T1) and follow-up (T2) (*p*≤0.05):
  - MS patients reported lower total and mild physical activity, as well as HCS at baseline, and lower strenuous physical activity at follow-up (Fig. 1).

- Proportion of patients with interval increase in fatigue score.
  - The MS cohort reported significantly higher baseline and follow-up depression scores compared to the mono-ADS cohort (Fig. 3A).
  - A greater proportion of MS patients reported interval worsening in depression score compared to the mono-ADS cohort (Fig. 3B).
  - A greater proportion of MS patients fulfilled criteria for significant depression compared to mono-ADS patients at baseline (Fig. 3C).

**DEPRESSION**

- Median CES-D depression scores at baseline (T1) and follow-up (T2). Proportion of patients with (B) interval increase in depression score and (C) depression scores meeting criteria for significant depressive symptoms at baseline (T1) and follow-up (T2) (*p*≤0.05):
  - The MS cohort reported significantly higher baseline and follow-up depression scores compared to the mono-ADS cohort (Fig. 3A).