Efficacy of an internet-based program (MS Intakt) to promote physical activity after inpatient rehabilitation in persons with multiple sclerosis – a randomized controlled study

Anna-Karolina Bures[1], Sarah Kuld[2], Ann-Christin Weiland[1], Alexander Tallner[3], Klaus Gusowski[1], Klaus Pfeifer[3] and Peter Flachenecker[1]

[1]Neurological Rehabilitation Center Quellenhof Bad Wildbad, Sana Kliniken AG, Germany;
[2]University of Bayreuth, Germany; [3]Institute of Sport Science and Sport, University of Erlangen-Nuremberg, Germany

Background

Multimodal rehabilitation improves symptoms in persons with multiple sclerosis (PwMS), but these effects diminish with time, despite the well-known positive impact of exercise on fatigue and mobility.

We evaluated the efficacy of a 3-month, internet-based e-training program ("MS Intakt")[1] on fatigue, quality of life and mobility in PwMS after inpatient rehabilitation.

Methods

Inclusion criteria:

- PwMS admitted to inpatient rehabilitation
- No relapse / steroid therapy within the last 30 days
- Fatigue (WEIMuS score ≥ 32)
- Age ≥ 18 years
- EDSS ≤ 6.0

Control group (CG): usual care alone

E-Training group (EG): 3-month home training program, supervised via internet by sport therapists directly after rehabilitation

Primary outcome:

- Fatigue after 3 months (WEIMuS questionnaire[2])

Secondary outcomes:

- Quality of life (MSIS-29, EQ-5d)
- Mobility (2min walking test, 10m WT, Tinetti score)
- Neuropsychological parameters (alertness)
- Physical activity (standardized questionnaires)
- Willingness to pay

Measurements:

- T0: within the first week after admission (Baseline)
- T1: end of rehabilitation (Discharge)
- T2: follow-up after 3 months (Month 3)
- T3: follow-up after 6 months (Month 6, via mail)

Patients

84 PwMS were included, of whom 64 completed the study:

	Control	E-Training
n	30	34
Female (%)	17 (57 %)	22 (65 %)
Age [years]	46.4 ± 12.2	47.6 ± 9.2
EDSS (median) (range)	4.0 (1.5 – 6.0)	4.25 (1.0 – 6.0)
Disease duration [years]	9.0 ± 7.5	13.4 ± 7.9
RR-MS (%)	20 (67 %)	19 (56 %)

EDSS: Expanded Disability Status Scale. RR-MS: Relapsing-remitting MS
Data are given as mean ± standard deviation, unless otherwise indicated.

Results

At baseline, median WEIMuS scores were higher (indicating a higher degree of fatigue) in EG than in CG, but decreased similarly at discharge in both groups. However, WEIMuS scores increased again in CG at both follow-up measurements, whereas in the e-training group, fatigue further improved at 3 and 6 months (fig 1).

Similarly, MSIS-29 scores were improved in both groups at discharge, but remained stable at month 3 only in the e-training group (fig 1). The improvements in gait parameters were also more pronounced in EG, particularly for the 2-minute walking test (fig 2).

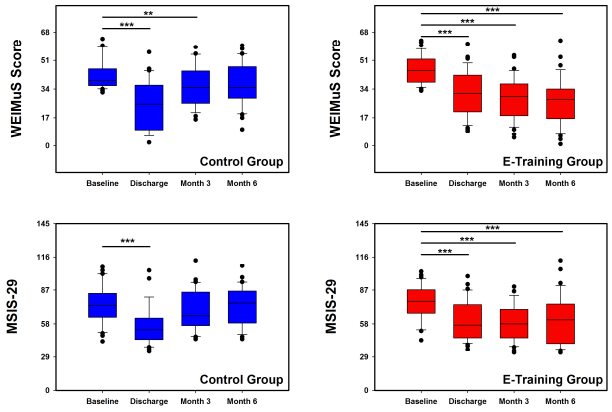

Figure 1: *WEIMuS scores (above) and MSIS-29 (below) in 30 PwMS without (Control Group, blue columns) and 34 PwMS with a 3-month internet-based training (E-Training Group, red columns).*
***p< 0.005, *** p< 0.001, repeated measures ANOVA on ranks with Tukey method.*

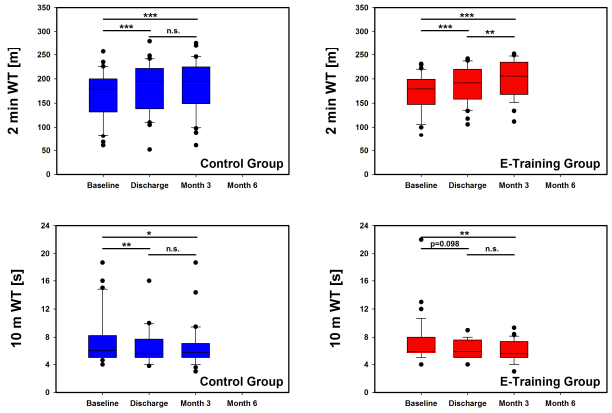

Figure 2: *Gait parameters (2 minute walking test, above; 10 meter walking test, below) in 30 PwMS without (Control Group, blue columns) and 34 PwMS with a 3-month internet-based training (E-Training Group, red columns). n.s. = not significant, *p< 0.05, **p< 0.005, *** p< 0.001, repeated measures ANOVA on ranks with Tukey method.*

Conclusions

The results of our study demonstrate that the effects of rehabilitation on fatigue, quality of life and mobility can be maintained with an internet-based home training program for up to 3 – 6 months. Further studies are needed to investigate whether longer-lasting programs may have more sustained effects on these disabling symptoms in PwMS.

References

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Disclosures

AKB, SK, ACW and KG has nothing to disclose. AT has received honoraria and travel grants from Bayer, Biogen, Novartis and Teva. He has changed affiliation to MedDay Pharmaceuticals Ltd. after this work. None resulted in a conflict of interest. KP has received research grants from Biogen and Novartis. None resulted in a conflict of interest. PF has received speaker's fees and honoraria for advisory boards from Almirall, Bayer, Biogen, Genzyme, Merck-Serono, Novartis, Roche and Teva. He has participated in pharmaceutical company sponsored trials by Almirall, Biogen and Novartis. None resulted in a conflict of interest.