

# MS-*fit*: a comprehensive, two-month circuit training in people with multiple sclerosis - adherence and satisfaction

I. Lehmann<sup>1\*</sup>, I. Thaler<sup>1</sup>,  
M. Verra<sup>1</sup>, G. Luder<sup>1</sup>, U. Damm<sup>2</sup>, C. Wälti<sup>2</sup>,  
S. Steinheimer<sup>3</sup>, T. Nyffeler<sup>2</sup>,  
T. Vanbellingen<sup>2,4</sup>, C. P. Kamm<sup>2,3</sup>

MS-*fit* 

<sup>1</sup>Department of Physiotherapy, Inselspital, Bern University Hospital, Bern, Switzerland

<sup>2</sup>Neurology and Neurorehabilitation Center, Luzerner Kantonsspital, Lucerne, Switzerland

<sup>3</sup>Department of Neurology, Inselspital, Bern University Hospital and University of Bern, Bern, Switzerland

<sup>4</sup>ARTORG Center for Biomedical Engineering Research, Gerontechnology and Rehabilitation Group, University of Bern

# BACKGROUND

## Exercise therapy in people with multiple sclerosis (MS)

- Might improve strength, aerobic capacity, fatigue, balance and manual dexterity
- Circuit training poorly investigated
- Exercise adherence and patient satisfaction rarely investigated

# PURPOSE

## Study aims

- **Adherence** of people with MS to structured circuit training
- Determine overall **satisfaction** with the program

Ethical approval obtained by local Research Ethics Committee

Funded by the Swiss Multiple Sclerosis Society

No conflicts of interest to declare

# METHODS: PARTICIPANTS

## Included

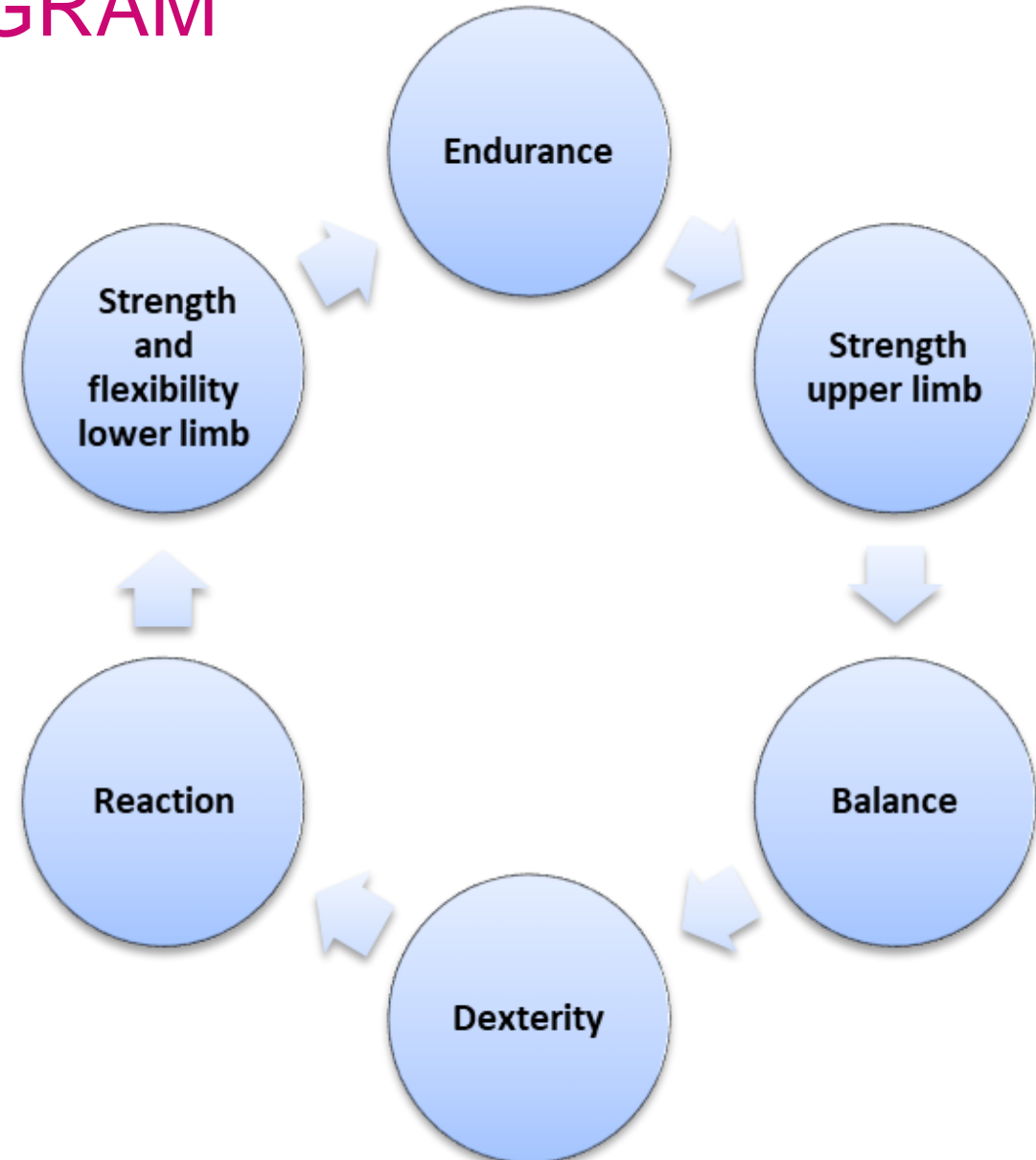
- People with MS-related disability affecting activities of daily living and/or quality of life
- Age between 18-75 y

## Excluded




- Relapse within 60 days prior to screening
- Rapidly progressive disease
- Additional neurological condition
- Medical conditions limiting training capacity or completing the study


## METHODS: TRAINING PROGRAM

- 2-6 participants
- 2x2 hours weekly
- 2-month duration
- Supervised by an experienced PT






# METHODS: TRAINING PROGRAM

Skalenwert nach Borg	Anstrengungsgrad	% der max. Beanspruchung/ Leistung	Trainingsbereich	Emoticon
6	Überhaupt keine Anstrengung	20 %	Aufwärmen/ Regeneration	
7	Extrem leicht	30 %		
8		40 %		
9	Sehr leicht	50 %		
10		55 %		
11	Leicht	60 %	Grundlagen-/ Zielzone	
12	Optimaler Trainingsbereich	65 %		
13	Etwas schwer	70 %		
14		75 %		
15	Schwer	80 %		
16		85 %	Intensives Training/ Stehvermögen	
17	Sehr schwer	90 %		
18		95 %		
19	Extrem schwer	100 %		
20	Grösstmögliche Anstrengung	Übersäuerung		



## Workstation 4 Dexterity

			
Vorgabe	60 Sek	60 Sek	60 Sek
Woche 1			
Woche 2			

20-point Borg’s scale (RPE) (Borg, 1998)

# METHODS: ASSESSMENTS

**Study design:** randomized-controlled cross over study

## **Adherence**

- Number of attended training session (%)
- Maximal session 16
- Reason for drop out

## **The program quality**

- Face-validated questionnaire
- 10-Items -> 5-point-Likert-scales
- Sum score
- Overall program satisfaction (Likert scale 0-10)

# RESULTS: PARTICIPANTS

51 people with MS eligible



14 (7 women) did not exercise




- Mean age 44.9 (SD 12.7)
- EDSS: 4.0 (min 3.0 to 6.5)

37 (27 women) exercised

- Mean age 52.7 (SD 10.3)
- EDSS: 3.5 (min 2.0 to 6.5)



sent the Questionnaire back

MS-fit   

Name/Vorname: \_\_\_\_\_

Datum: \_\_\_\_\_

Wir danken Ihnen für die Beurteilung des MS-fit Programmes

**Administration**

	schlecht	mäßig	gut	sehr gut	ausgezeichnet
Waren Sie mit der ersten Kontaktaufnahme (Telefon und Aufgebot) zufrieden					
Studieneinführung					

**Programmbeurteilung**

Allgemeine Punkte Wie fanden sie...	schlecht	mäßig	gut	sehr gut	ausgezeichnet
die Dauer des Programms					
die körperliche Belastung					
die Dauer der Pausen					
die Übungsauswahl					
die Information					
das Begleitbroschür / Trainingsbuchlein					
die Organisation					

**Betreuung**

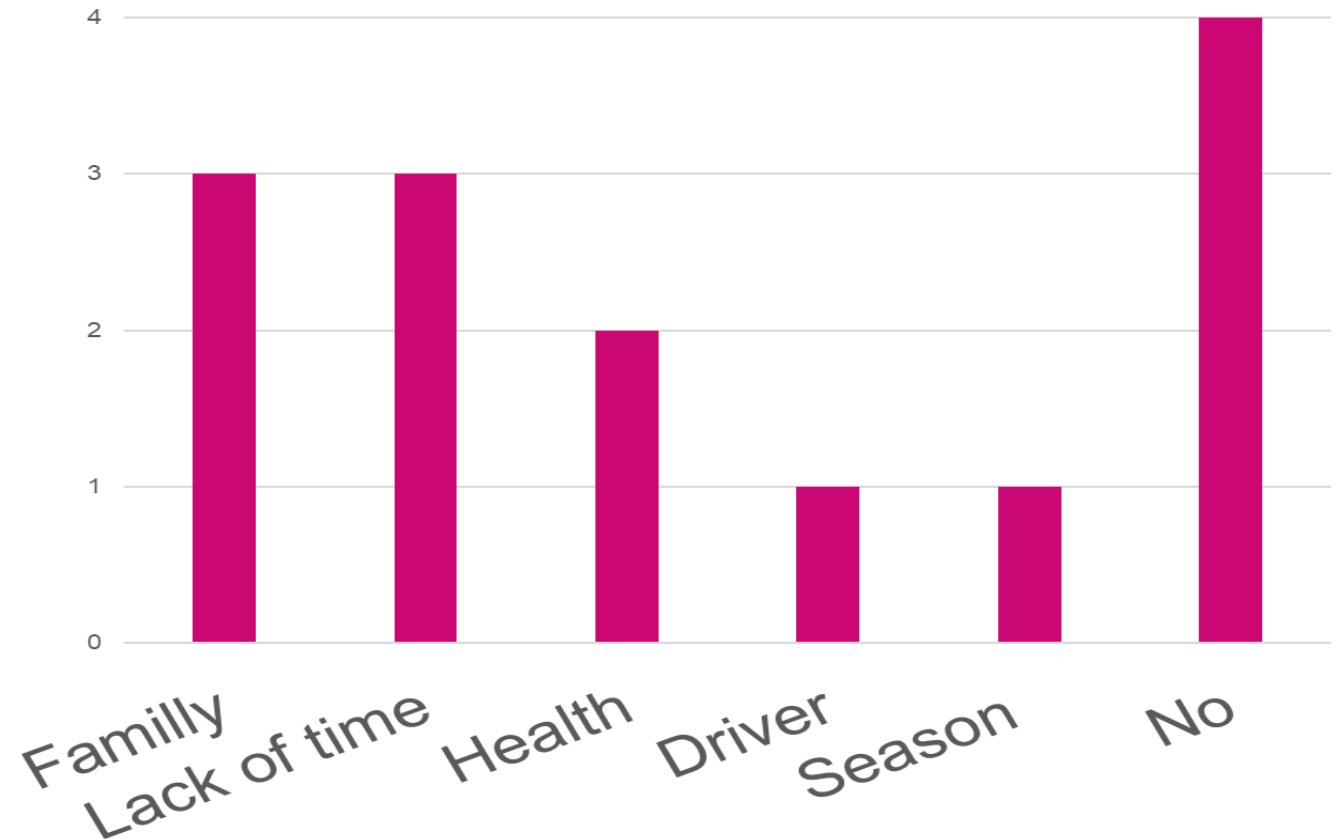
	schlecht	mäßig	gut	sehr gut	ausgezeichnet
Trainingsleitung / Physiotherapie					



## RESULTS: ADHERENCE

All 37 participants achieved >80% (mean 90.5%±8.2) of attendance rate

Reason for drop out  
(n=14)



## RESULTS: PROGRAM QUALITY

Program quality: good with an overall median score of 39/50  
(min 26, max 50)

	Excellent	Good	Fair	Poor	Very poor
Program duration	4 (11%)	<b>17 (46%)</b>	15 (41%)	1 (2%)	0
Exercise intensity	4 (11%)	<b>21 (57%)</b>	10 (27%)	2 (5%)	0
Booklet	4 (11%)	9 (24%)	<b>13 (35%)</b>	11 (30%)	0
Exercises choices	7 (20%)	<b>16 (43%)</b>	13 (35%)	0	1 (2%)
Physical strain	4 (11%)	<b>21 (57%)</b>	10 (27%)	2 (5%)	0

## RESULTS: OVERALL PROGRAM SATISFACTION

95% of participants would recommend the program to others  
 Overall program satisfaction median 8



# CONCLUSIONS AND RECOMMENDATIONS

- MS-*fit* circuit training highly appreciated
- Exercising 2x /week over 2 months is acceptable
- Time and family issues

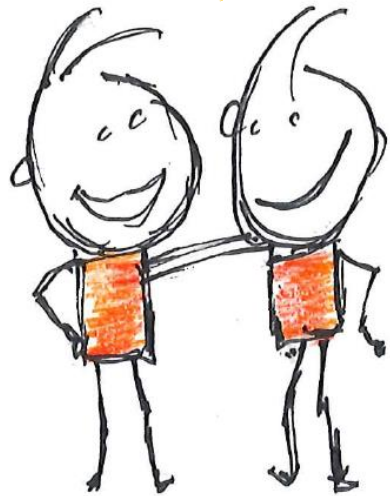
## Recommendations

- Further research is needed to evaluate the functional, mental and physical effects of the program

It is important to  
me to exercise  
with peers

Family/work and  
exercise are  
real challenges

MS-fit as a  
permanent  
option ?



# ACKNOWLEDGMENTS



PD Dr. Christian P. Kamm  
Physio Team Lory Bern  
Norbert Hindenberg  
Dorji Sonam  
Physio Team ASH Bern  
Nicole Siegrist-Klossner  
Nicole Hutmacher  
Physio Team Luzern

Contact: [isabelle.lehmann@insel.ch](mailto:isabelle.lehmann@insel.ch)