

# High-Intensity Interval Training affects physical components of Quality of Life and Skills in Daily Activities in Multiple Sclerosis – Interim analysis of a Randomized Controlled Trial

Sebastian Proschinger<sup>2</sup>, Annette Rademacher<sup>2</sup>, Niklas Joisten<sup>2</sup>, Alexander Schenk<sup>2</sup>, Max Oberste<sup>2</sup>, Roman Gonzenbach<sup>1</sup>, Jan Kool<sup>1</sup>, Andrea Weise<sup>1</sup>, Philipp Zimmer<sup>2</sup> and Jens Bansi<sup>1</sup>

**KLINIEN VALENS**

1 Rehabilitation Centre Valens, 7317 Valens, Switzerland

2 Deutsche Sporthochschule, Köln, Deutschland

## INTRODUCTION

Persons with multiple sclerosis (pwMS) progressively develop impaired functioning that directly impacts health related quality of life (HRQoL) and performance skills in every day life. Physical activity reveals high potential as a non-pharmacological treatment to beneficially impact both motor and process performance. The relevance of regular moderate to high-intensive interval (HIIT) exercise for ameliorating psychomotor symptoms in pwMS is becoming more evident.

## OBJECTIVES

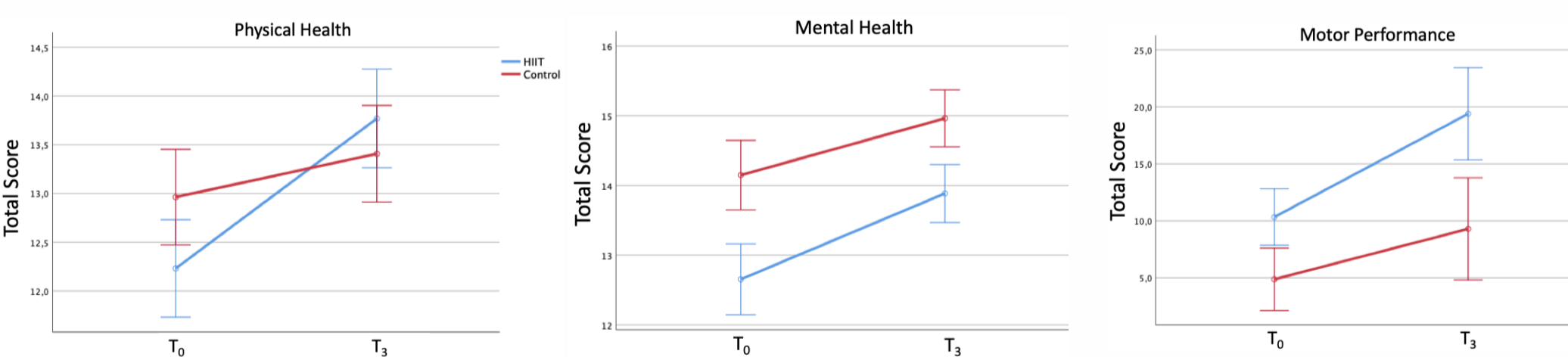
To determine the influence of high-intensity interval training (HIIT) vs. moderate training (CT) over three weeks on HRQoL and motor & process skills in daily activities of pwMS with a moderate disability status (EDSS: 4.0-6.0)

## METHODS

Randomized controlled clinical trial in n=77 pwMS. In this interim analysis n=58 participants are analyzed. The HIIT group (n=30) cycled at 95–100% of HRmax (80–100 rpm) during 5× 1.5-min high-intensive intervals with 2 min of unloaded cycling in between, whereas CT (n=28) cycled continuously for 24 minutes at 65% of HRmax (60–70 rpm). Performance skills in daily activities were assessed with the *Assessment of Motor and Process Skills (AMPS)*, HRQoL was assessed using the *patient-reported outcome measurement information system (PROMIS)* short form Global-10. All assessments were performed at the beginning (T0) and end of a three week training intervention (T3). Effects of between-subject and within-subject factor measurement time-points (baseline vs. post intervention) have been analyzed by ANCOVA.

## RESULTS

No significant group interaction for either outcome measure was observed. However, physical HRQoL improved significantly only in the HIIT group (p=.0001). Mental HRQoL improved significantly in both groups (HIIT: p=.017; control: p=.001). While there is a significant improvement of motor performance in daily activities only in the HIIT group (p=.025), no changes are observed in the process performance in either group.



## CONCLUSIONS

HIIT had stronger impact on physical characteristics of HRQoL and performance skills than moderate training (CT) in pwMS. This is shown by significant improvements of better Global Physical Health (PROMIS) and better motor performance (AMPS).



KLINIEN VALENS Rehabilitationzentrum Valens  
CH-7317 Valens



KLINIEN VALENS Rehabilitationzentrum Walenstadtberg  
CH-8881 Walenstadtberg



RHEINBURG-KLINIK EIN HAUS DER KLINIEN VALENS  
CH-9428 Walzenhausen