

## **Efficacy of a specialized group therapy for compulsive exercise in inpatients with anorexia nervosa: A cluster-randomized controlled trial**

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### **Authors**

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### **Introduction**

Excessive physical activity despite severe emaciation is a common and distinctive phenomenon in anorexia nervosa (AN) (Hebebrand et al., 2003). It is observed in 31-81% of AN patients (Bewell-Weiss & Carter, 2010; Brewerton et al., 1995; Dalle Grave et al., 2008; Davis, 1997; Favaro et al., 2000; Shroff et al., 2006). Several studies have shown that dysfunctional exercising in AN is associated with treatment drop-out or a longer duration of inpatient treatment and represents a predictor of relapse and chronification (Carter et al., 2004; Strober et al., 1997). Despite the importance of this phenomenon no interventions specifically targeting compulsive exercise behavior have been evaluated so far. We developed a manualized group intervention (called “Healthy exercise behavior”=HEB) to promote healthy exercise behavior by both reducing the compulsive quality and excessive quantity of the patients’ exercise behavior.

### **Objectives**

The aim of this project was to conduct a cluster-randomized controlled trial (RCT) to evaluate the efficacy of this new comprehensive multimodal treatment as an add-on element to inpatient treatment.

### **Methods**

Patients were recruited at Schön Klinik Roseneck in Prien, Germany. All patients who met inclusion criteria and gave informed written consent were cluster-randomized to HEB (N=112) or to inpatient treatment as usual (TAU) (N=95). The manualized HEB group therapy comprised eight sessions of 100 min each and was collaboratively led by a clinical psychologist and a sports therapist. During each session, cognitive-behavioral and/or dialectical-behavioral as well as exercise-based therapy elements complemented each other. Group sessions were supplemented with additional, individual graded exposures with response management. Patients

were assessed at five time points: at baseline (T0, within the first week after admission), pre-intervention (T1, within 3 days before the start of HEB), post-intervention (T2, within 3 days after the end of HEB), at discharge (T3, within one week before discharge), and at 6-months-follow-up after discharge (T4). Body-mass-index (BMI) was assessed. Furthermore, a wide range of questionnaires was used to evaluate outcome: Commitment to Exercise Scale (CES), Compulsive Exercise Test (CET), Eating Disorder Examination-Questionnaire (EDE-Q), Eating Disorder Inventory-2 (EDI-2), Brief Symptom Inventory-18 (BSI-18) and Beck Depression Inventory-II (BDI-II). Patients' leptin and cortisol levels were measured at T0 and, in a subgroup of patients, additionally at the four time-points during inpatient treatment for process evaluation.

## **Results**

Out of 112 patients who started HEB, 80 (71.4%) completed the intervention (defined as having attended at least 6 out of 8 sessions of the HEB group).

In the intention-to-treat analysis, patients who additionally participated in the HEB group showed a significantly stronger reduction in compulsive exercise (CES) over the four weeks of the intervention as well as from admission to discharge, and from admission to follow-up compared to TAU (**IG:** T0: M=3.00±0.65, T1: M=2.91±0.72, T2: M=2.40±0.76, T3: M=2.14±0.69, T4: M=2.22±0.84; **CG:** T0: M=2.85±0.71, T1: M=2.63±0.81, T2: M=2.40±0.81, T3: M=2.29±0.73, T4: M=2.28±0.79; inter-action effect time\*group: T0-T3: p=0.008, T0-T4: p=0.037, T1-T2: p=0.005). Completers also showed a significantly higher BMI gain over the four weeks of the intervention and from admission to discharge (**IG:** T0: M=14.98±1.96, T1: M=15.96±1.88, T2: M=16.75±1.76, T3: M=18.03±1.85, T4: M=17.75±2.23; **CG:** T0: M=15.35±1.86, T1: M=16.16±1.85, T2: M=16.77±1.71, T3: M=18.05±1.52, T4: M=17.90±2.06; interaction effect time\*group: T0-T3: p=0.005, T1-T2:p=0.031, T2-T3: p=0.005). No significant differences between groups were found concerning eating disorder pathology (EDE-Q, EDI-2) and general psychopathology (BSI, BDI-II).

We assessed leptin in a subsample of N=66 inpatients with AN (with and without compulsive exercise). Results show that at baseline (admission) leptin was correlated with the level of compulsive exercise. However, we found no correlation between leptin change and change in compulsive exercise during inpatient treatment. Regarding cortisol, no significant correlations with compulsive exercise were found at admission or regarding change during treatment.

## **Conclusions**

This was the first study to examine the efficacy of an interdisciplinary and multimodal group therapy to overcome compulsive exercise in patients with AN treated in an inpatient setting. Results suggest that patients participating in the HEB group show a more favorable outcome at discharge regarding reduction of compulsive exercise as well as BMI gain. At follow-up, they still show a higher reduction in compulsive exercise. Qualitative evaluations (from our pilot

study) also suggest that the HEB group is highly accepted by our inpatients. Therefore, we have already implemented it in our routine inpatient treatment program. Future studies should also investigate the efficacy of the HEB group in different patient samples or treatment settings.

## **References**

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