

Additional file 1: Description of two main interventions within BMR - psychological group therapy and standard exercise therapy (SET) in both participating rehabilitation centres (control group)

| | REHABILITATION CENTER 1 | REHABILITATION CENTER 2 |
|-----------------------------|---|---|
| psychological group therapy | | |
| theoretical approach | - cognitive-behavioural approach | - cognitive-behavioural approach |
| frequency/duration | - six sessions each 60 minutes | - eight sessions each 60 minutes |
| delivery | - closed group - consistency of the therapist | - closed group - consistency of the therapist |
| objectives and contents | - introduction to the multimodal therapeutic approach of the BMR - the instruction of a biopsychosocial approach regarding the chronification of pain - the instruction of the avoidance-endurance-model, techniques to control attention, - emergence of a memory of pain - how to use enjoyment and pleasure as a resource, - self-care - helpful thoughts when coping with pain - relationships between pain and social competence - self-management is encouraged with techniques such as homework after the course | - introduction to the multimodal therapeutic approach of the BMR, - education about the biopsychosocial model regarding a chronification of pain - pain acceptance - the role of thoughts and feelings/emotions - the perception of pleasure and enjoyment - pain-related behaviour - sleep hygiene - social competence - excessive demand and retreat - the development of goals for every day life |
| standardization | - manualised - handouts for patient | - manualised - handouts for patient |
| additional interventions | - progressive muscle relaxation - opportunity of regular individual visits of the psychotherapist | - progressive muscle relaxation - Feldenkrais - opportunity of regular individual visits of the psychotherapist |
| standard exercise therapy | | |
| theoretical approach | - mainly somatic-functional approach | - mainly somatic-functional approach |
| objectives | - physical conditioning via mobilisation and strengthening of the muscles - improvement of cardiopulmonal endurance, - a reduction of pain as result of good postures, - introduction of relief-postures, - education about (patho-) physiological relation as an improvement in well-being due to a better body awareness | - improvement of physical capability, - reduction of endurance- and avoidance behaviour, - improvement of one's body perception and with existing pain, - testing of one's movement boundaries and the re-gain of confidence in one's own capability - water-based exercise is dedicated to a reduction of pain via unloading and the experience of an improved flexibility in the water |
| mean duration | - approx. 26 hours in four weeks | - approx. 26 hours in four weeks |

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|--|---|---|
| delivery | closed group consistency of physical therapist | - closed group - consistency of physical therapist |
| contents (frequency/ duration) | <ul style="list-style-type: none"> - strengthening, stabilizing, coordination and flexibility exercises (5 sessions/30 minutes) - introduction to weight-lifting training (2 sessions/30 minutes) - weight-lifting training (5 sessions/60 minutes) - back school consisting of education about anatomy and physiology of the spine, causes of clbp and body mechanics for daily activities (3 sessions/60 minutes) | <ul style="list-style-type: none"> - strengthening, stabilizing, coordination and flexibility exercises - education about muscular imbalances and the anatomy of the spine - good or healthy posture in every day life: when sitting, standing, getting up, laying down, lifting and carrying objects <p>(content of 5 sessions/45 minutes and seven sessions/30 minutes)</p> <ul style="list-style-type: none"> - water-based therapy (10 sessions/30 minutes) - instruction to weight-lifting training (2 sessions/45 minutes) - weight-lifting training (6 sessions/30 minutes) - cycling on an ergo-bike (6 sessions/30 minutes) - assessment of physical capability in the beginning of the BMR (1 sessions/100 minutes) and at the end of it (1 sessions/60 minutes) with a functional test |
| standardization | manualized leaflet with strengthening exercises for the back take-home charts with the strengthening exercises to foster long-term adherence after rehabilitation training schedules | <ul style="list-style-type: none"> - manualized - take-home handout with exercises - training schedules |
| additional interventions* (*delivered in open groups) | introduction to walking (1 session/30 minutes) walking, or cycling on an ergo-bike (7-10 sessions/90 minutes) water-based exercise (6 sessions/30 minutes) | <ul style="list-style-type: none"> - introduction to (nordic-)walking (1 session/45 minutes) - (nordic-)walking (5-9 sessions/60 minutes) |