

# Pain exposure physical therapy (PEPT) may be a safe and effective treatment for longstanding complex regional pain syndrome type 1

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**Background & Aims:** To investigate a new and promising functional approach neglecting the pain (Pain Exposure physiotherapy ) for chronic CRPS type 1. Pain Exposure physiotherapy may be a new treatment option for patients with Complex Regional Pain Syndrome type 1. It has been evaluated in retrospective also as in prospective studies and proven to be safe and possibly effective. This indicates that Pain Exposure physiotherapy is now ready for clinical evaluation. The results of an earlier performed pilot study with an n = 1 design, during which 20 patients with Complex Regional Pain Syndrome type 1 were treated with Pain Exposure physiotherapy , were used for the planning and power calculation of this study. After completion and evaluation of this phase III clinical trial study, a multi-centre implementation study are going to be conducted. The aim of this study is to work out whether Pain Exposure physiotherapy can improve functional outcomes in patients with Complex Regional Pain Syndrome type 1.

The aim of this study was to research primarily whether PEPT might be applied safely in patients with CRPS-1. Twenty patients with CRPS-1 were consecutively enrolled within the study after giving consent . The diagnosis of CRPS-1 was defined using the Bruehl and Harden/IASP diagnostic criteria. CRPS-1 was diagnosed between 3 and 18 months after the inciting event (trauma). According to a multiple single-case design (baseline [A1], treatment [B], follow-up [A2]), multiple baseline and follow-up measurements were performed to evaluate changes in CRPS signs and symptoms and to assess functional parameters. When comparing the baseline with the follow-up phase, patients improved significantly with reference to pain on the visual analogue scale (57%), pain intensity (48%), muscle strength (52%), arm/shoulder/hand disability (36%), 10-meter walking speed (29%), pain disability index (60%), kinesiophobia (18%), and therefore the domains of perceived health change within the SF-36 survey (269%).

Three patients initially showed increased vegetative signs but improved altogether other CRPS parameters and showed good functional recovery at follow-up. We conclude that PEPT may be a safe and effective treatment for patients with CRPS-1. A progressive-loading exercise program and management of pain-avoidance behavior without the utilization of specific medication ("pain exposure" physical therapy) is safe and effective for patients with complex regional pain syndrome.

**Methods:** Patients with longstanding CRPS (meeting the IASP-criteria for CRPS type 1) were included and treated with a functional approach, neglecting the pain. This approach isn't in line with the standard approach with radical scavengers and physiotherapy restricted by pain tolerance. The mobility of the affected limb was measured with functional tests (Radboud Skills Test (arm), 7 meters walking, 3 stepup and down, walking distance (leg)). Pain was measured with an NRS. Pain

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**Measurements-**

Outcomes were assessed at baseline and at 3, 6 and 9 months after randomisation. The primary outcome measure was the Impairment level Sum Score--Restricted Version (ISS-RV), consisting of visual analogue scale for pain (VAS-pain), McGill Pain Questionnaire, active range of motion (AROM) and skin temperature. Secondary outcome measures included Pain Disability Index (PDI); muscle strength; Short Form 36 (SF-36); disability of arm, shoulder and hand; Lower Limb Tasks Questionnaire (LLTQ); 10 m walk test; timed up-and-go test (TUG) and EuroQol-5D.

**Results:** In 94 out of 102 patients with end stage CRPS type 1, earlier treated with various accepted therapies, the function of the affected extremity improved. Pain, although indirectly treated, decreased in 75 patients. In a total of 45 patients function was completely restored.

**Discussion-**

This is the primary randomized controlled study with single blinding that has ever been planned in patients with Complex Regional Pain Syndrome type 1 and doesn't specialise in a single aspect of the pain syndrome but compares treatment strategies supported completely different pathophysiological and cognitive theories.

**Conclusion:** This pilot study provides evidence that this approach is safe and effective. The treatment is brief , monodisciplinary, cheap and no side effects were observed. The main issue within the treatment is that pain in CRPS 1 has no physiological aim and will not interfere with functional use by the patient, or with treatment by the therapists. The therapist ignores the pain, verbally and non-verbally. This must also be understood by the patients (and their relatives).

We cannot conclude that PEPT is superior to standard treatment for patients with CRPS-1. Further high-quality research on the consequences of PEPT is warranted given the potential effects as indicated by the per protocol analysis.