

Blood Flow Restriction Training Improves Pain and Function in Chronic Regional Pain Syndrome: Two Cases

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Abstract

Introduction

Recently published studies denote the strength and functional gains achieved with low work load and Blood Flow Restriction Training (BFRT). To achieve maximum benefit, a noxious stimulus via pressurized cuff is applied to a limb changing blood flow and muscular metabolic demand. Emerging evidence suggests the use of pain exposure for CRPS, however, to this date no studies have examined the benefit of BFRT for the treatment of CRPS. The purpose of this case study is to present two cases of CRPS treated with BFRT with remarkable improvement in pain levels and function.

Methodology

A 46 year old female patient diagnosed with patellar tendinosis and CRPS of the area, participated in two years of PT without significant improvement or change in pain level. At evaluation, pain on the Numeric Pain Rating Scale (NPRS) was 8 of 10. She could ambulate 2 blocks with a brace donned and could not tolerate stair negotiation.

A 31 year old female patient diagnosed with CRPS from tearing of her right posterior cruciate ligament presented non-operatively with pain of 9 of 10 on the NPRS. At evaluation, function was limited to ambulation of 1 block and inability to negotiate stairs. She wore hinged braces bilaterally and ambulated with two straight canes.

Both patients underwent 3 sessions of BFRT at 80% limb occlusion pressure; three sets of 20/10/10 repetitions were performed for long arc quadriceps, quadriceps setting, standing heel raise and straight leg raise.

Findings

At discharge, both patients had a 90% improvement in pain level. Case one ambulated 8 blocks without bracing and negotiated 5 steps reciprocally. Case two ambulated without bracing or assistive device for 1 mile and negotiated 5 steps with reciprocal pattern.

Conclusion and Significance

Successful research exists for pain exposure therapy and CRPS. Tightness of the BFRT cuff is an intense stimulus and may contribute to this hypothesis. Microvascular, oxygenation and muscular changes are present with both BFRT use and the disease process of CRPS. Despite the success of these two cases, more investigation is required to determine long term BRFT use and safety with this population.

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