



Impact of Contract-relax-antagonist-contract (CRAC) Technique on Restricted Elbow Extension After Elbow Joint Bleed

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Abstract

Introduction and Objective: Exercise programmes for PWH are usually designed and implemented to help manage recovery after haemarthrosis or muscle bleed or as a tool to help prevent bleeding episodes from occurring. Proprioceptive Neuromuscular Facilitation (PNF) Contract Relax Antagonist Contract (CRAC) technique is safe exercise technique which uses resistance controlled by patient to improve range of motion (ROM) of joint. Primary objective of this study is to determine effects of PNF – CRAC technique on improvement of elbow joint ROM in patients with haemophilia.

Material and Methods: This repeated-measures study design involved 25 PWH who volunteered by signing an informed consent form. Age group of participants were from 5 to 20 years. Each participant was measured for elbow flexion and extension at 3 different times. First measurement was taken immediately after elbow bleed stopped. Second measurement was taken after 5 sessions of PNF – CRAC techniques provided on daily basis for five consecutive days. Standard procedure of PNF – CRAC as explained by Knott and Vase was given. Third measurement was taken after 10 sessions of PNF – CRAC after first five sessions. A goniometric method was used to measure angle of active elbow flexion and extension. Every measurement was taken with goniometry in supine position by same experienced physiotherapist.

Results: All analysis were done using SPSS version 23 (p value set at ≤ 0.05). Repeated measures ANOVA was used to determine the differences between the three measurement time periods (pre treatment, end of 5th session and end of 10th session) followed by Paired t test to determine the effective time period where Flexion improved and extension loss decreased.

Conclusions: The objective of this study was to determine the effects of PNF – CRAC techniques applied to the elbow joint to improve flexion and extension range of motion in patients with haemophilia after a bleed. Results of the present study showed significant improvements in both flexion and extension range of motion of elbow joint after 10 sessions of PNF – CRAC ($p = 0.000$).

Considering the results of this study it can be concluded that PNF – CRAC is beneficial and safe to improve elbow ROM after a bleed.

Keywords: Proprioceptive Neuromuscular Facilitation (PNF); Physiotherapy; Range of Motion (ROM)

Introduction

Patients affected by hemophilia commonly have recurrent intra-articular bleeding which leads to progressive destruction and instability of joints. After ankle and knee, elbow is the most commonly impaired upper limb joint in patients with hemophilia. Severe arthropathy of the elbow is complicated by pain, stiffness and loss of function which can be debilitating.

Physiotherapy and rehabilitation in hemophilic patients are important to return to the normal status of joint motion, to regain the muscle strength, to obtain the optimal functional levels and to improve the patients' quality of life.

Exercise programmes for people with hemophilia (PWH) are usually designed and implemented to help manage recovery after haemarthrosis or muscle bleed or as a tool to help prevent bleeding episodes from occurring. Proprioceptive Neuromuscular Facilitation (PNF) is a stretching technique utilized to improve muscle elasticity and has been shown to have a positive effect on active and passive range of motions. Proprioceptive Neuromuscular Facilitation (PNF) Contract Relax Antagonist Contract (CRAC) technique is safe exercise technique which uses resistance controlled by patient to improve range of motion (ROM) of joint.