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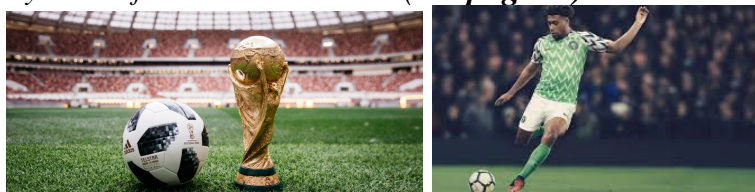
August 2018

# Newsletter IPNFA research committee

*With the objective to create awareness and motivation for the IPNFA-members to spread the philosophy and reasoning within the PNF-concept, we are focussing on case reports; the first line of evidence to support our therapy-strategies in our individual patients.*

*Leandro and Fred submitted last year during the annual meeting a manuscript to a journal, and that manuscript went through the review process of this peer reviewed journal from Elsevier publishers and was accepted for publication. It has been published online on May 30. It will appear in print in one of the next issues of "Journal of Bodywork and Movement Therapies".*

*Furthermore this newsletter several abstracts from publications we found in our web-search in the past few months in order to update our reference list. Because the World Cup in football (soccer) was this summer, we specifically looked for a PNF connection (**see page. 6**)*



*I wish a joyful reading. Fred.*

*Even the cup has diagonals in its design ☺ Elongation LE right / UE: a-symmetrical reciprocal*

Fred Smedes and Leandro Giacometti da Silva

## **Motor learning with the PNF-concept, an alternative to constrained induced movement therapy in a patient after a stroke; a case report**

Journal of Bodywork & Movement Therapies (2018), <https://doi.org/10.1016/j.jbmt.2018.05.003>

### abstract

*Introduction:* Over sixteen million people suffer a stroke each year. Stroke is characterized by a one-sided paresis. Upper extremity and hand function are most limited. The current view on "neuro rehabilitation" advocates a constrained induced movement therapy (CIMT) setting. This case report seeks to illustrate the clinical reasoning and the feasibility of applying an alternative approach in patients who are not accepted or not suitable for the constrained induced movement therapy.

*Case description:* A male patient, 68 years of age, developed impairments in his right arm and hand, such as loss of range of motion and strength be-

sides spasticity after a stroke. This resulted in a loss of dexterity in his affected right side and in “disuse” of that arm and hand.

*Patient management:* A therapy was designed based upon the Proprioceptive Neuromuscular Facilitation-concept (PNF-concept) and consisting of PNF pattern exercises in a functional task setting with specified PNF-principles of facilitations and PNF-techniques for motor re-learning activities, over a period of six weeks. This resulted in clinically important improvements of wrist extension, grip strength, spasticity, dexterity and patient satisfaction with specific tasks.

*Discussion and conclusion:* The provided comprehensive therapy mimics CIMT and robotics. The approach addresses possibly motor learning effects, cortical reorganization and structural impairments.

Proprioceptive Neuromuscular Facilitation (PNF) - diagonal movement patterns have been described as: “having beneficial effects in cortical adaptations and cortical organization resulting in motor learning effects”. In cases where CIMT is difficult to apply, a specified PNF-based therapy has shown to be a feasible alternative.

## The Difference Between Knowing and Applying

As the complexity of physical therapy interventions grows and the options for examination and evaluation increase, the knowledge that practitioners must obtain and carry with them threatens to reach unmanageable levels. Therefore, like other members of the health care team, we are highly dependent on our literature and our ability to quickly and in a clinically practical manner extract salient information for the management of our patients. But this challenge—the retrieval of evidence for everyday practice—is only one part of the daunting task we face.

In dialogues about evidence-based practice, we often forget that most proponents of this approach believe in something more than the application of data in a vacuum. As Sackett et al' state,

**Evidence-based medicine (EBM) is the integration of best research evidence with clinical expertise and patient values.**

Clinical expertise and patient values are critical to the way we care for our patients and how we relate to them as partners in care.

*(Cited from Editor's note: J.M. Rothstein)  
(Physical Therapy . Volume 84 . Number 4 . April 2004)*

# Overflow using proprioceptive neuromuscular facilitation in post-stroke hemiplegics: A preliminary study

Journal of Bodywork & Movement Therapies (2018),  
<https://doi.org/10.1016/j.jbmt.2018.02.011>

Karoline Cipriano Raimundo de Oliveira a, \*, Luciane Aparecida Pascucci Sande de Souza b, Marina Mendonça Emilio c, Lorenna Franco da Cunha c, Daiane Menezes Lorena c, Dernival Bertencello

## Abstract

Hemiplegia is the classic condition resulting from a stroke. To assist in recovery, the overflow method can be employed to stimulate the affected limb, using the healthy contralateral lower limb (LL) to activate the plegic upper limb (UL) musculature. The aim of this study was to evaluate the immediate effect of overflow using the PNF method on the plegic upper limb muscles of post-stroke individuals in the acute and chronic stages, as well as on the muscles of healthy individuals. A total of 22 individuals participated in the work, comprising 8 healthy individuals (control group), 6 post-stroke acute stage individuals (acute group), and 8 post-stroke chronic stage individuals (chronic group). The participants were assessed using a questionnaire with sections for personal and disease data and application of the ICF scale and the Fugl-Meyer index. The three groups were submitted to electromyographic evaluation, using the posterior deltoid (PD), anterior deltoid (AD), pectoralis major (PM), and external oblique (EO) muscles in four different positions: P1 (resting the UL, with the LL contralateral to the affected limb positioned in diagonal); P2 (resting the UL, with manual resistance in the contralateral LL); P3 (affected UL positioned in diagonal, with manual resistance in the contralateral LL) e P4 (affected UL positioned in diagonal, with fixed point and manual resistance in the contralateral LL). The electromyography results revealed no significant differences between most of the positions for the four muscles evaluated ( $p > 0.05$ ). However, high clinical relevance ( $d > 0.8$ ) was found for muscle activation in positions 2 and 4. It could be concluded that for post-stroke individuals in the acute and chronic stages, overflow using PNF effectively increased activation of the PD, AD, PM, and EO muscles in the P2, as well as position 4.

Diulian Muniz Medeiros\*, Tamara Fenner Martini. **Chronic effect of different types of stretching on ankle dorsiflexion range of motion: Systematic review and meta-analysis** The Foot 34 (2018) 28–35

## ABSTRACT

The calf muscles are one of the muscle groups that have the most need for adequate flexibility since they are deeply related to normal lower limb function. When the goal is to increase flexibility, the most commonly used technique is stretching. However, it remains unknown which stretching technique and parameters are the most effective to increase flexibility. Hence, the aim of the current review was to investigate the influence of chronic stretching on ankle dorsiflexion range of motion (DFROM) of healthy individuals. The search strategy included MEDLINE, PEDro, Cochrane CENTRAL, LILACS, and manual search from inception to February 2017. Randomized and controlled clinical trials that have analyzed the influence of chronic stretching on DFROM were included. On the other hand, studies with special populations (children, and people with any dysfunction/disease), and articles with no control group were excluded. Twenty studies were included out of 493 identified. The meta-analysis was performed according to the stretching technique used in the study. The results show that static stretching ( $5.17^\circ$ ; 95% CI: 4.39–5.95; I<sub>2</sub>: 0%) and proprioceptive neuromuscular facilitation ( $4.32^\circ$ ; 95% CI: 1.59–7.04; I<sub>2</sub>: 46%) are effective in increasing DFROM. Ballistic stretching did not show positive results to increase DFROM ( $3.77^\circ$ ; 95% CI: –0.03 to 7.56; I<sub>2</sub>: 46%). In conclusion, chronic stretching is an effective way of improving ankle mobility in healthy individuals, especially when it contains a static component.

Tomoko Shiratani, Mitsuo Arai, Hironobu Kuruma, Kazue Masumoto, **The effects of opposite-directional static contraction of the muscles of the right upper extremity on the ipsilateral right soleus H-reflex.** Journal of Bodywork & Movement Therapies (2017) 21, 528-533

**Summary:** The objective of this study was to explore the neurophysiological remote aftereffects of resistive static contraction (SC) of the muscles of the upper extremity, considering the resistant direction on the ipsilateral (right) soleus H-reflex.

The participants included 12 normal subjects with a mean (SD) age of 23.8 (2.8) years. The subjects were asked to maintain their upper extremity against the traction force, at a level of resistance that was 50% of the maximal SC strength. A 20-s SC of the muscles of the upper extremity utilizing contraction of the upper extremity muscles using a diagonal flexion (shoulder flexion-adduction-external rotation) or extension (shoulder extension-abduction-internal rotation), a proprioceptive neuromuscular facilitation (PNF) pattern was induced. The traction force line of the diagonal flexion or extension direction ran parallel to the diagonal line from the left acromion process to the right ASIS.

Three-way analysis of variance of the H/Mmax ratio with Scheffe's post-hoc tests revealed that the H/Mmax ratio of SC via diagonal extension was significantly smaller than that via diagonal flexion and that the H/Mmax ratio during the 120e140 s phase after SC, as remote after-effect SC, was significantly smaller than that during SC. The induction of neurophysiological descending effects for inhibition requires consideration of the force direction.

**Teaching PNF can bring you to be totally fatigued. 😊😊😊**  
**Just see our IPNFA-assistant before 😊**



**and after 😊 10 days of teaching**

Ha K-J, Lee S-Y, Lee H and Choi S-J **Synergistic Effects of Proprioceptive Neuromuscular Facilitation and Manual Lymphatic Drainage in Patients with Mastectomy-Related**

**Lymphedema.** Front. Physiol. 2017 8:959. doi:10.3389/fphys.2017.00959

**Purpose:** Manual lymphatic drainage (MLD) and proprioceptive neuromuscular facilitation (PNF) are potential therapeutic strategies to reduce mastectomy-induced edema. The purpose of this study was to investigate whether the combination of these therapies would induce synergistic effects to treat lymphedema-related complications and to analyze a possible physiological mechanism involved in the observed effects.

**Methods:** A total of 55 patients diagnosed with mastectomy-induced lymphedema were recruited and randomized into three experimental groups: PNF group (n = 17), MLD group (n = 20), and PNF + MLD group (n = 18). They were subjected to designated rehabilitation program three times a week for 16 weeks. ROM (flexion of the shoulder joint), edema size, arterial blood flow velocity, and degree of pain and depression were measured every 4 weeks over experimental period.

**Results:** Lymphedema volume, VAS pain scale, and Beck depression scale were decreased in PNF and MLD groups for 16 weeks in a time-dependent manner. In combination, a greater reduction of these variables was observed over 16 weeks compared to each PNF and MLD. While axillary arterial blood circulation rate in the affected extremity was increased in both PNF and PNF + MLD groups over 16 weeks, this value was not increased in MLD group throughout the experimental period. A greater reduction of scales of VAS pain and Beck Depression Inventory (BDI) was observed in PNF + MLD group after the 16 week-treatment, as compared to each PNF and MLD group. Pearson's coefficients test demonstrated that there are significant correlation of depression against pain ( $r = 0.616$ ,  $p < 0.01$ ), ROM ( $r = -0.478$ ,  $p < 0.01$ ), and lymphedema size ( $r = 0.492$ ,  $p < 0.01$ ).

**Conclusion:** The combination of MLD and PNF induces potent synergistic effects on edema volume, shoulder range of motion (ROM), pain, and depression in patients with lymphedema. In addition, an increased rate of axillary arterial blood flow in PNF-treated patients provide a potential physiological mechanism by which local arterial pulsation in the affected extremity plays a positive role in the treatment of lymphedema. Therefore, it is suggested to incorporate an element of PNF into traditional MLD method to facilitate treatment process for patients with lymphedema.

Available in full text on: <https://doi.org/10.3389/fphys.2017.00959>

## Case Reports: Still a Priority

**Any patient or patient management scheme that has not been previously described in the literature is novel and worthy of reporting in a case report.**

Perhaps it seems odd that we would consider almost any type of patient to be "fair game" for a case report, but it reflects a practical necessity. In physical therapy, we lack a literature that describes—in replicable detail—what we do with patients. Without such a literature, the world cannot possibly understand the patient management of which we are so proud, colleagues cannot engage in dialogue designed to improve patient care, and researchers are deprived of knowledge about the nuances of practice—which means that the research they conduct cannot be as applicable to practice as it needs to be.

*(Cited from Editor's note: J.M. Rothstein) (Physical Therapy. Volume 82. Number 11. November 2002)*



Aranha VP, Samuel AJ, Narkeesh K. **Correct the smile of a child by neuromuscular facilitation technique: An interesting case report.** Int J Health Sci (Qassim). 2017 Apr-Jun;11(2):83-84.

**ABSTRACT**

Bell's palsy (BP) in children is a rare case with no documented evidence regarding its rehabilitation management. Till date, individuals with BP are being treated with electrical stimulation are proportionately greater than other conventional means such as facial exercise and massage. These conventional modes of treatment have proved to have less incidence of synkinesis with more benefits. Here, we report a case of a 7-year-old boy diagnosed clinically to have right idiopathic facial nerve paralysis, who underwent 14 days of facial proprioceptive neuromuscular facilitation exercises along with facial therapeutic massage. Documented improvements in facial grading system reveal promising outcomes. Hence, we propose the above technique might improve the functional outcome in the children with BP.

**Keywords:** Bell's palsy, children, exercise, facial paralysis, pediatric rehabilitation, proprioceptive neuromuscular facilitation

Akbulut, T and Agopyan, A.

**Effects of an Eight-Week Proprioceptive Neuromuscular Facilitation Stretching Program on Kicking Speed and Range of Motion in Young Male Soccer Players.** J Strength Cond Res 2015;

29(12):3412–23. DOI:0.1519/JSC.0000000000001015



Only pattern work 😊😊



irradiation 😊



mat activities 😊😊😊

**ABSTRACT**

The aim of this study was to determine the effect of the 8-week proprioceptive neuromuscular facilitation (PNF) exercises that were carried out on lower extremity on kicking speed and range of motion (ROM) performance in young soccer players. Twentyfour soccer players (15.6 ± 0.4 years) were selected from nonprofessional young soccer team. All players' height, weight, ROM (ankle plantar and dorsal flexions, hip flexions and extensions), and kicking speed tests were evaluated before and after 8 weeks. The participants were divided into PNF (n = 11) and control (n = 11) groups. Both groups continued technical and tactical soccer training together 3 days (120 min) a week. The PNF group attended additionally unassisted PNF–contract-relax (CR) stretching through 8 weeks, 2 days per week, 20 minutes' session duration. The control group did not participate in any additional PNF stretching sessions. There were significant differences in kicking speed, right ankle active dorsal flexion, and hip active flexion (right and left) (p < 0.05) of the PNF group, whereas there were no significant differences between groups in left ankle active dorsal flexion, hip active extension (right and left), and ankle active

plantar flexion (right and left) (p . 0.05). We conclude that an 8-week unassisted PNF-CR improved on the ROM of particular lower extremity joints and the kicking speed in the young male soccer players. These results provide strength and conditioning coaches with a practical way to use unassisted PNF-CR in warm-up for positive improvements in the ROM of the hip and ankle and the applications of the kicking speed.

KEY WORDS training, contract-relax, kicking performance, flexibility

## Information for the WCPT



The World Confederation of Physical Therapy (WCPT) offers on their website a variety of free to use materials. Please see:

<https://www.wcpt.org/node/33199>

Member organisations' publicity materials: documents for sharing

WCPT member organisations in some countries do not have the resources available to put together the high quality public relations and publicity materials to raise the profile of their profession and its valuable work.

Some member organisations from higher income countries have kindly agreed to make their materials available – either as examples of good practice, which member organisations can use as a basis for producing their own material, or as material that can be directly reproduced and copied (within the terms specified by the member organisation).

Please read the terms associated with each of the materials before using it in any way.

**To my personal opinion, several of the leaflets and booklets could be used as an inspiration for ones own workplace.**

### *The fun corner*

*Who needs a  
Therapist ??  
I have a sister*

#### **PHYSICAL THERAPISTS ARE:**

- INTELLIGENT
- FUNNY
- ATTRACTIVE
- ALL OF THE ABOVE

*Just give me a diagnosis that fits to my insurance policy.*