

## Introduction

In scientific studies the focus is mostly on the differences between approaches. Because of this the effect of the MT is compared to the effect of physiotherapy/physical therapy. This implies that MT is no part of physiotherapy.

In these kind of studies quite often the physiotherapy or exercise therapy is not specified and the MT is passive mobilisation without thrust or high velocity techniques. The question arises if the mobilisation differs from other forms of passive movement in physiotherapy. Because of these incomplete described practices we damage the overall image of physical therapy and MT.

## Method:

A literature search was established, to check MT and PNF for EBP in a case of spinal disorders. Both therapies are studied but often not specified. This paper uses logical reasoning to show the similarities between PNF and MT.

## Results:

Since the last decades there is more interest for exercise therapy within the MT reasoning, probably based on the ICF were activity and participation becomes more prominent then only structure level. Based on biomechanics both therapy approaches build up their mobilisations. MT chooses to start at joint biomechanics and PNF starts at muscle biomechanics. The PNF approach has always focus on neuro-physiological induced activation. Connecting the brains neural pathway to the musculoskeletal entity.

The connection based upon biomechanics needs a neurological control, so a connection to the neuro-physiological initiation of movements. The objectives of both therapy approaches is to restore normal movement function, and in this improving quality of life.

## Conclusion:

Biomechanical we see the same endpositions, but based upon total different reasoning patterns. The MT approach based upon joint biomechanics, the PNF approach based upon muscle biomechanics.

Combining these two approaches will enhance the neural pathway to control the musculoskeletal system so the quality of life will be improved for the patient.

Knowledge of both concepts will also improve the quality of life for the therapist

## Examples: Lumbar and cervical spine mobilisation



**MT:**  
Patients position; right side lying, thorax brought into left rotation, pelvis brought forward and into lateral flexion, manual focus on a specific segment.



**PNF:**  
Patients position; right side lying, left scapula in posterior elevation, pelvis in anterior depression, resulting in the same spine rotation and lateral flexion, emphasis on localisation using the basic procedure of Timing for Emphasis.



**MT:**  
"Maitland's cervical lower quadrant".



**PNF:**  
3 dimensional neck pattern of extension, right lateral flexion and right rotation.



## Saxion Universities of Applied Sciences

This paper was published in: "Fysiopraxis, 2004, Volume 8, 34 - 37, The Netherlands.  
Literature list available f.smedes@saxion.nl Tel: \*\* 31 (0)53 4871725  
Englisch full text available on [www.saxion.edu](http://www.saxion.edu)

# Thinking in a wider physiotherapy perspective, A SEARCH FOR SIMILARITIES IN THE VARIOUS PHYSIOTHERAPEUTIC METHODS.

The differences between therapies are emphasised in the effect study regarding physiotherapy. However, looking at practice, there seem to be many similarities in the methods used. Equal work methods were developed from different perspectives (biomechanical and neurophysiological) (for example, mobilisation in MT/PNF). In order to realise a 'body of knowledge', focusing on the similarities is necessary to realise a broad approach from practice.

The publication by Hoving, Koes, de Vet, et al <sup>(6)</sup> pretends to compare the effectiveness of physiotherapy with that of manual therapy. Physiotherapy is not specifically described in this publication. Manual therapy is described as the application of mobilisations, but without manipulations. The question arises what these mobilisations actually mean and if they distinguish themselves from passive movement as is usual in (physiotherapeutic) practice.

Due to this and other, similar studies, whereby 'undressed', narrow forms of physiotherapy are compared to one another, the image of physiotherapy got damaged. In a foreword <sup>(11)</sup> of Physical Therapy, the American Physiotherapy Journal of the APTA, this study is criticised. This editorial was also confirmatively quoted in a publication in Germany, which concerned the quality of physiotherapeutic studies.

Research like this gives the impression that there are strong differences between the different methods in physiotherapy and suggests that they exist independently from one another. This article intends to indicate that there are many similarities between the methods. More than may seem at first sight.

## DIVERSITY

Physiotherapy is a profession with expertise in the field of moving functioning. Moving functioning is a very extensive area that forms part of functioning in general. According to the current ICF view, this functioning can be classified with regard to three dimensions: structure, activities and participation.

This view is not entirely new, but makes the uniform description of a health problem/health condition possible and makes us more aware of the complexity of disturbed functioning.

During the course of the years, physiotherapy developed a large variety of methods and approaches. The main resemblance between all of these methods is the intended improvement of daily moving functioning. The main difference is found in the way to this improvement. One method analyses activities, and another analyses the functions of the parts of the muscular-skeletal system more, or focuses more on participation. So, there are different ways in looking for the cause and result-relations in the complexity of (moving) functioning. However, the perspective for physiotherapy is often on the somatic component of the health problem. The somatic approach is in our roots as a 'physical therapist', physiotherapist. This is where we have our expertise and knowledge of experience. Of course, every person with health problems is in his or her own specific psychosocial environment. We have to respect this environment as an entity that can possibly be influenced. However, our roots are on the somatic side of moving functioning and, particularly, in influencing the biomechanical side. In this context, highlighting mainly the similarities between the many methods of approach is important.

## COMPARISON

As an example, I would like to compare two methods of approach. Manual therapy and PNF are not directly connected to

each other at first sight. However, when we look at the practical interpretation with our expertise as analysts of moving functioning, we come across many similarities. What I want to demonstrate by way of the examples below is that colleagues, who apparently use totally different methods of approach, still have a great degree of correspondence in their work methods.

The mobilisation of the lumbar segments by means of a rotation and lateroflexion technique as described by Maitland <sup>(10)</sup>, for example, has a great degree of correspondence with the combined patterns described in the PNF concept <sup>(1, 13)</sup>.

When we look at the mobilisation of the left side of the spinal column at lumbar level, the patient is placed in a starting position on his/her right side. The left leg is placed in flexion, causing the pelvis to rotate slightly to the right. The bottom side at the level of the shoulder is turned forwards. In doing so, a left rotation in the spinal column is realised. During the mobilisation, the pelvis is tilted further forwards and pulled to the right in lateroflexion; in this the upper half of the trunk is stabilised or even fixated in the opposite direction. If necessary, emphasis can be put on a certain segment with the hands.

Concretely, the freedom of movement is increased on the basis of the anatomical-biomechanical thinking model.



Figure 1: Manual mobilisation.

In the PNF concept, combined pattern movements are described. In the starting position – on the right side – a reciprocal

symmetric combination of a pelvis pattern with a scapula pattern can be practised. The pelvis pattern of Anterior Depression combined with the scapula pattern of Posterior Elevation results in a left rotation in the trunk with a right lateroflexion. Passive mobilisation is possible with the technique of Rhythmic Initiation.

In a summary: the freedom of movement is increased on the basis of a neurophysiological model.



Figure 2: PNF Mobilisation.

If the muscular activity is too high, and so limiting the joint mobilisation, a detoning technique will be used in support of this in both methods of approach. Manual therapy uses the term of post-isometric relaxation and uses a hold-relax performance. This is also described in the PNF concept, but then as a mobilisation technique <sup>(1, 13)</sup>.

The current view in manual therapy <sup>(2, 15)</sup> allows room for active exercise. This supports the integration of the newly acquired mobility in the patient's active, independent moving functioning. The same is obligatory in the PNF approach, where a newly acquired 'range of motion' is integrated in daily activities by means of functional exercise.

### ANOTHER EXAMPLE

In the cervical column, a combined movement of extension, lateroflexion and rotation to the same side is a blocking movement. This movement is described by Maitland as a 'quadrant test'. The same combination is described as a neck pattern in the PNF concept. The same end

position is described from a biomechanical perspective. Both methods are effective in realising the same functionality. Evidence can be found for both the manual and the exercise-therapeutic methods of approach (4, 12).



Figure 3 and 4: Left; Maitland's lower quadrant. Right; PNF neck pattern.

These examples clearly illustrate the correspondence between the two methods of approach with different perspectives. The comparing analysis of the methods for the stimulation of human movement described above is in the dimension of biomechanics.

There are many descriptions of the movement possibilities (range of motion), for example, of the joints and the influence of the form of bone and capsule-ligament apparatus on this. Additionally, there are descriptions of the specific biomechanical functions of the musculo-skeletal system (5, 8, 16).

Apparently, some of these biomechanical descriptions contradict one another. This could give rise to the development of a variety of physiotherapeutic methods. However, at closer consideration, the many similarities are striking.

### TRAINING EXTENSORS

For example, Vleeming<sup>(16)</sup> propagates training the extensors of the hip in case of lumbosacral instability based on biomechanical consideration. The musculus gluteus maximus and the tendon of mainly the biceps femoris form a unit with the tuberosacral ligament in his description, which radiates to the thoracolumbar fascia. This fascia is also activated by activity from the musculus latissimus

dorsi. Due to this, the ligament system can actively contribute to the stabilisation of the lower trunk region.

The same method of training is also propagated from the perspective in which neurological control forms the centre. After all, there has to be proximal stability where distal movement is required. The PNF concept describes this explicitly and is always based on the principles of irradiation and overflow, so that muscular activity is not only facilitated where direct stimulation takes place, but also in the course of the cooperating synergists. Via irradiation, especially the parts of the body to be stabilised are facilitated. This is why there is also an effect on the stability in the lower trunk region and even further, in practising leg patterns<sup>(1, 13)</sup>. It is evident that the quality of a strength transfer between the trunk and the extremities can only be optimal if the trunk is stable during the movement of the extremities. The ALSR (Active Straight Leg Raising) is a validated test for this.

### BIOMECHANICS

The biomechanical views from the seventies and eighties dominated the manual therapeutic view of the past decades. The exercise-therapeutic concepts were also in the sign of local biomechanical descriptions for a very long time.

However, it is logical that all movements are controlled by the neurological system. Biomechanics and neurological control both need to be respected in a therapeutic programme. People like Bernstein pointed this out as early as in the twenties of the past century. More recent insights<sup>(2, 3, 5)</sup> also state that in the mobility in the extremities, neurological control precedes this to guarantee stability in the trunk. Naturally, proprioceptive training and the proprioceptively directed activation of the muscles are propagated in these approaches.

The views on local stabilisers and global mobilisers, introduced in manual therapy by Hodges, Richardson, O'Sullivan et al<sup>(5, 15)</sup> result in exercise therapy with a view to neurological control. With this, concepts



were described that have existed for decades in neurological exercise methods. PNF is one of the few methods originally based on neurology that also has its application outside of neurology. The joint component in a movement problem, however, is described less concretely. Even so, in the pattern description and performance, the biomechanical entities determined by the joints are respected. That is why exercise-therapeutic interventions from the PNF concept can be combined perfectly with manual therapeutic interventions. Despite the differences in the method of approach to the health problem, uniformity can be recognised in the intervention.

### **BODY OF KNOWLEDGE**

Mr. Hullegie<sup>(7)</sup> pleads for not just focussing on the effect measurement of physiotherapeutic interventions, but mainly to work on the formation of theory, so that a 'body of knowledge' for physiotherapy is formed. The above diversity in methods and approaches are based on different theories. It is not seldom that the same theories (contrary to the above) have supported different methods. For example, the same ideas about motor learning were used by both Dr. Bobath and Dr. Kabath. Both embedded these ideas into their own methods, now known as NDT and PNF. But even here, at a closer consideration of these therapeutic methods of approach, many similarities can be found in addition to the differences.

The present, modern models about motor learning are again fitted into the curricula of the courses for these methods and will probably result in new practical similarities. Additionally, these will also be used in new

curricula, like the one of the Kinetic Control Group and will seep through to other practices with consequences for practical intervention.

Due to the diversity in methods, researchers got the impression that manual therapy is different from physiotherapy.

Studies regarding the difference in effect were done without doing justice to physiotherapy, nor to manual therapy.

The physiotherapeutic interventions were not described specifically and the manual therapy described does not essentially differ from generally accepted physiotherapy.

Manual therapy is a special form of physiotherapy, and with that, fortunately still physiotherapy.

In the sixth edition of the Dutch Magazine for Physiotherapy of 2002, the suggestion is raised that there is a distinction between physiotherapy and manual therapy.

However, the KNGF (Royal Dutch Physiotherapy Association) clearly states that manual therapy is a specialisation of physiotherapy, and that physiotherapy is practised.

### **FINALLY**

Research regarding the correspondence between the work methods of the different methods of treatment, in my opinion, can bring the broad input that physiotherapy has to offer to light and stop artificial separations as mentioned above. So that the formation of theory can be realised on the basis of what is done in practice, on the basis of a broad approach, and a contribution can be made to the highly necessary, but still skinny 'body of knowledge' of physiotherapy.

F. Smedes, PT, MT, IPNFA Instructor.  
Saxion, University of applied sciences.  
Enschede, the Netherlands.

## LITERATURE

1. Buck M, Beckers D, Adler S, The PNF concept in practice, De Tijdstroom Publishers, 2001
2. Comerford MJ, Mottram SL, Functional stability re-training: principles and strategies for managing mechanical dysfunction, Manual Therapy, 2001, 1, 3-14
3. Comerford MJ, Mottram SL, Movement and stability dysfunction – contemporary developments, Manual Therapy, 2001, 1, 15-26.
4. Hing WA, Reid DA, Monaghan, Manipulation of the cervical spine, Manual Therapy, 2003, 1, 2-9.
5. Hodges PW, Richardson CA, Inefficient muscular stabilisation of the lumbar spine associated with low back pain (a motor control evaluation of transversus abdominis), Spine, 1996, 22, 2640-2650).
6. Hoving JL, Koes BW, de Vet HC, et al. Manual therapy, physical therapy or continued care by a general practitioner for patients with neck pain: a randomised controlled trial. Annals of internal medicine, 2002, 136, 713-722.
7. Hullegie W, The field of tension between the formation of theory, effect studies and social appreciation, Fysiopraxis 2003, 8, 14-17.
8. Kapanji IA, Kinesiology part I, II, III, Bohn Stafleu Van Loghum publishers, 1986
9. Magarey ME, Jones MA, Dynamic evaluation and early management of altered motor control around the shoulder complex, Manual Therapy, 2003, 4, 195-206.
10. Maitland GD, Vertebral manipulations, fifth edition, Butterworths 1986.
11. Rothstein JM, Who are we versus what we do. Physical Therapy, 2002, 7, 2-5.
12. Sarig Bahat H, Evidence for exercise therapy in mechanical neck disorders, Manual Therapy, 2003, 1, 10-20.
13. Smedes F, Understanding PNF better, Fysiopraxis, 2001, 12, 42-46
14. Smedes F, Functional exercise (The meaning of functional exercise in the PNF concept), Fysiopraxis, 2002, 11, 9-11
15. O'Sullivan PB, Tworney LT, Allison GT, Evaluation of specific stabilising exercise in the treatment of chronic low back pain with radiologic diagnosis of spondylosis or spondylolisthesis, Spine, 1997, 24, 2959-2967.
16. Vleeming A, Stoekart R, Snijders CJ, The sacrotuberal ligament, a conceptual approach to its dynamic role in stabilising the sacroiliac joint, Clinical Biomechanics, 1989, 4, 201-203.

Published in Dutch  
August 2004 "Fysiopraxis"