**Article Full Title**

The Effectiveness of Manual Therapy and Proprioceptive Neuromuscular Facilitation Compared to Kinesiotherapy: a Four-Arm Randomized Controlled Trial

**Author Names**

Zaworski K., Latosiewicz R

**Reviewer Name**

Beautiful Reed, SPT

**Reviewer Affiliations**

Duke University School of Medicine, Doctor of Physical Therapy Division

**Paper Abstract**

BACKGROUND: Low back pain (LBP) has a negative impact on patients’ life, not only from the physical point of view, but also in terms of psychic, social and economic wellbeing. The increasing costs of treatment and health care encourage the search for the most effective methods of treatment. AIM: The aim of the study was to determine whether the use of combined therapy consisting of manual therapy and proprioceptive neuromuscular facilitation (PNF) is more effective than the use of manual therapy techniques, PNF or traditional kinesiotherapy as single methods in the treatment of LBP. DESIGN: A four-arm RCT. SETTING: Rehabilitation Department of Hospital in Parczew (Poland). METHODS: The study was designed as four-arm randomized comparative controlled RCT and conducted on a group of 200 patients aged 27- 55y. (44.9±9.2 years). The patients were randomly divided into four 50-person groups: 1) group A - manual therapy; 2) B - PNF; 3) C - manual therapy and PNF; and 4) group D - traditional kinesiotherapy and control group. Pain intensity was measured using VAS and Laitinen’s questionnaire. Functional disability was assessed using Oswestry Disability Index (ODI) and Back Pain Functional Scale (BPFS). RESULTS: There was a statistically significant difference in pain reduction (VAS Scale) between Group C (4.8 points) and Group D (3.9 points). In all the groups there was a statistically significant reduction in a degree of disability as measured by the ODI. A level of functional capabilities (BPFS) increased significantly only in Group C (8.8 points) as compared to Group D (5.7 points). CONCLUSIONS: All the evaluated methods caused pain reduction which lasted for at least 2 weeks after the end of treatment. The degree of disability as measured by ODI lowered evenly in all groups. Patients’ functional ability assessed with BPFS improved significantly in the group treated with combined therapy (manual therapy and PNF) as compared to the group of traditional kinesiotherapy. CLINICAL REHABILITATION IMPACT: The therapy consisting of manual therapy and the PNF method seemed to be more effective than the traditional kinesiotherapy in improving functioning of patients with non-specific low back pain.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

1. **Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

Yes

1. **Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Yes

1. **Was the treatment allocation concealed (so that assignments could not be predicted)?**

Yes

1. **Were study participants and providers blinded to treatment group assignment?**

No

1. **Were the people assessing the outcomes blinded to the participants' group assignments?**

No

1. **Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

Yes

1. **Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Yes

1. **Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Yes

1. **Was there high adherence to the intervention protocols for each treatment group?**

Yes

1. **Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

Yes

1. **Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

1. **Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

No

1. **Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Yes

1. **Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

The patients’ functional ability assessed with the Stratford Back Pain Functional Scale (BPFS) improved significantly in the group treated with both manual therapy and PNF as compared to the group treated with only traditional exercise.

**Key Finding #2**

Degree of disability as measured by the Oswestry Disability Index (ODI) lowered evenly in all groups

**Key Finding #3**

Statistically significant decrease in pain on the Visual Analog Scale (VAS) following the 10-day treatment bout and 14 days following said treatment in all groups (PNF + MT, PNF, MT, and exercise)

**Key Finding #4**

**Please provide your summary of the paper**

This is a decent randomized-controlled trial that helps show the value in using manual therapy in conjunction with other treatment options in the low back – specifically PNF. The study states that the patients who had both PNF and MT found significant improvements in their functional abilities. Each group (PNF/MT, MT, PNF, exercise) also had statistical decreases in their pain on the VAS as well as a lowering in score on the ODI. This data was taken at the end of the 10 days of treatment as well as 2 weeks post the treatment bout - both of which showed similar patient outcomes.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

This article helps demonstrate the positives in using manual therapy in conjunction with other treatments for patients with low back pain. All patients in the combined group had a decrease in pain, and an increase in their functional abilities. The patients who only had manual therapy also had decreases in pain and increases in functional abilities, but may have had more success had their treatments been combined with something else (i.e., PNF or exercise). This just goes to show that manual therapy, as other treatment types, may be most effective when integrated as part of a clinician's "bag of tools" and not just the definitive tool.