



# Rehabilitation Results of Mobilization with Movement Technique in a Pianist with Painful Thumb: Case Report

## *Baş Parmak Ağrısı Olan Bir Piyanistte Hareketle Mobilizasyon Tekniğinin Rehabilitasyon Sonuçları: Olgu Sunumu*

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### Abstract

Mobilization with movement is a manual therapy technique that combines mobilization with active movement. When the mobilization with movement technique is applied in the right direction, a decrease in joint pain and an increase in functions are observed. A 38-year-old female pianist was referred to our clinic with complaint of persistent pain in her right thumb metacarpophalangeal joint for 6 months. She was diagnosed with non-degenerative arthritis. When she was treated with the mobilization with movement technique and conventional physiotherapy, a significant improvement was observed in her grip strength, disability scores, and pain level in the early period. However, comparative studies with larger numbers of patients are required to generalize this effect.

**Keywords:** Manual therapies; Mulligan mobilization; Range of motion; Thumb

Repetitive strain injuries can affect many parts of the body. Although playing-related musculoskeletal disorders are observed in many instrument players, it is more common in pianists.<sup>[1]</sup> In pianists, the hand is the most commonly used part of the body, and loss of function may occur as a result of tenosynovitis due to frequent use. In addition, tenderness, swelling, and pain occur in the affected area. These disorders can decrease the musician's performance and quality of life and also affect his/her daily life activities.<sup>[2]</sup> According to a study conducted in the United States, more than half of the musicians who seek medical help within a year are pianists.<sup>[3]</sup>

For pianists, the thumb should be examined separately from the other four fingers because of the difference in functional use due to the anatomical structure. When the pianist puts the hand on the piano keys in a normal way, it is seen that the natural direction of movement of the thumb is toward the palm. Abduction and extension are often repeated following the opposition of the thumb during finger crossovers.<sup>[4]</sup> Repeating these movements may cause degeneration or arthritis in joints.

Mobilization with movement (MWM), which attempts to correct joint positional faults and restore pain-free move-

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ment, has been associated with a favorable outcome in many studies and areas, such as shoulder and ankle.<sup>[5,6]</sup> MWM is an active joint mobilization technique that applies a sustained accessory glide at a peripheral joint while a movement that would normally be pain-provoking is actively performed. Although the therapeutic effect of MWM is known, its effect on repetitive thumb lesions is unknown. In addition, conservative and surgical treatment methods are employed to treat non-degenerative arthritis. Physiotherapy has an important role in conservative treatment. Detailed physiotherapy protocol has not been found in the literature. Many studies on peripheral joint disorders have demonstrated that the MWM technique provides faster and momentary painless joint movement compared with other physical therapy modalities.<sup>[7,8]</sup> This patient here complained of pain that had been going on for 6 months and was having difficulty in doing her job as a musician. Therefore, it was aimed to apply the MWM technique, which is known for its rapid healing effect in the literature.<sup>[7,8]</sup>

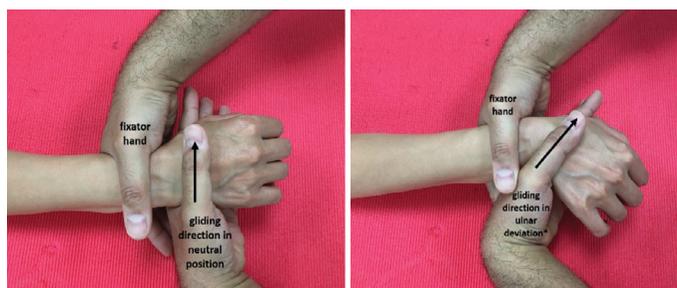
### Case Report

A 38-year-old bilaterally dominant-handed female pianist was referred to our clinic with complaint of persistent pain in her right thumb metacarpophalangeal joint for 6 months. She was diagnosed with non-degenerative arthritis. It was learned that she played piano intensively (5 h a day) in this period. The patient used non-steroidal anti-inflammatory drugs (NSAIDs) and thumb spica splint for 6 months after the diagnosis. As a result of this treatment, the pain did not decrease, and the patient was referred to undergo physiotherapy. The patient history and physical examination findings are presented in Table 1.

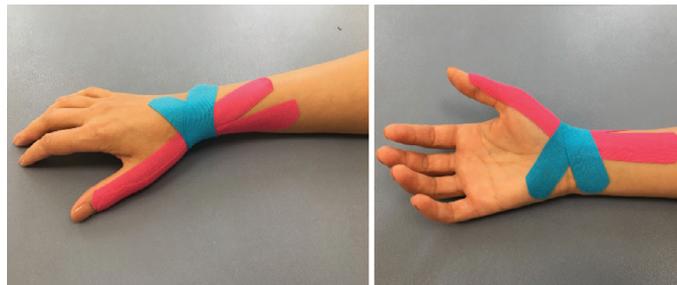
At the first evaluation of the patient, the grip strength of the right hand was 13 kg, and that of the left hand was 25 kg; the lateral grip strength of the right hand was 3.5 kg, and that of the left hand was 6 kg. The range of motion of the right thumb metacarpophalangeal joint was 50° flexion and full extension. The range of motion of the interphalangeal joint was 70° flexion and full extension. According to the visual analog scale, pain was measured as 4 cm in activity, 2 cm at rest, and 6 cm at night. In addition, the Disabilities of the Arm, Shoulder and Hand (DASH) score was 69.16, and the DASH musician module was 100. No deficiency was observed in the range of motion measurements of the patient's left thumb. On the first therapy session, the patient was also evaluated for MWM, and the pain improved in the active ulnar deviation pattern with sustained lateral mobilization of the wrist (Fig. 1).

**Table 1.** Patient history and physical examination findings

Age	38
Sex	Female
Dominance	Right–Left
Occupation	Musician (Pianist)
Complaint	Right thumb metacarpophalangeal joint pain
Aggravating factors	Playing piano
Onset of pain	6 months earlier
Previous treatment	NSAIDs (non-steroidal anti-inflammatory drugs), thumb spica
Past medical history	Allergic rhinitis



**Figure 1.** Active ulnar deviation pattern with sustained lateral mobilization of the wrist.



**Figure 2.** Dorsal thumb taping with wrist support.

The patient was treated by a physiotherapist who specializes in hand therapy. As treatment, MWM (2 × 10 repeat), conventional TENS, fluidotherapy, and kinesio taping were performed for 3 weeks (3 days per week). Figure 1 and Figure 2 present the MWM and kinesio taping interventions. The rehabilitation protocol is presented in Table 2.

At the end of the third week of therapy session, measurements were performed. The grip strength of the right hand was 22 kg, and that of the left hand was 26 kg. The lateral grip strength of the right hand was 4 kg, and that of the left hand was 6 kg. The range of motion of the right thumb metacarpophalangeal joint was 50° flexion and full extension. The range of motion of the interphalangeal joint was 70° flexion and full extension. According to the visual analog scale, pain was measured as 0 cm in activity, 0 cm at rest, and 0 cm at night. In addition, the DASH

**Table 2.** Rehabilitation protocol

MWM	Active ulnar deviation pattern with sustained lateral mobilization of the wrist (2 × 10 repeat). Figure 1.
TENS	20 minutes, 80 Hz, conventional
Fluidotherapy	10 minutes, 50°C, surged
Kinesio taping	Dorsal thumb taping with wrist support. Figure 2.

**Table 3.** Rehabilitation results before and after treatment

	Before treatment	After treatment
Grip strength (kg)-right	13	22
Grip strength (kg)-left	25	26
Lateral grip strength (kg)-right	3.5	4
Lateral grip strength (kg)-left	6	6
1 <sup>st</sup> MCPJ range of motion flexion (°)-right	50	50
1 <sup>st</sup> MCPJ range of motion extension (°)-right	0	0
1 <sup>st</sup> IPJ range of motion flexion (°)-right	70	70
1 <sup>st</sup> IPJ range of motion extension (°)-right	0	0
1 <sup>st</sup> MCPJ range of motion flexion (°)-left	80	80
1 <sup>st</sup> MCPJ range of motion extension (°)-left	0	0
1 <sup>st</sup> IPJ range of motion flexion (°)-left	90	90
1 <sup>st</sup> IPJ range of motion extension (°)-left	0	0
Pain (VAS) activity/rest/night (cm)-right	4/2/6	0/0/0
DASH/DASH musician	69.16/100.00	9.16/37.00

score was 9.16, and the DASH musician module was 37. No deficiency was observed in the range of motion measurements of the patient's left thumb. The rehabilitation results are summarized in Table 3.

## Discussion

This case report is important to regain the correct joint movement that is disrupted by repetitive intense movement in a piano player. According to various studies, the lifetime prevalence of musculoskeletal disorders in pianists varies between 26% and 93%.<sup>[9]</sup> In this case report, the thumb metacarpophalangeal joint non-degenerative arthritis gave findings such as pain when using the hand and thumb, localized sensitivity in the radial styloid area, edema, and weakness. The patient had difficulty moving her thumb and doing her job.

Conservative and surgical treatment methods are used to treat non-degenerative arthritis. Physiotherapy has an important role in conservative treatment. Detailed physiotherapy protocol has not been found in the literature. In our report, we mentioned the physiotherapy program in detail. We believe that it will guide the physiotherapists, orthopedists, and occupational therapists working on this subject.

There was no limitation in the range of motion before treatment; thus, it was maintained after treatment. The patient has used NSAIDs previously, but her pain did not decrease. However, she was able to perform painless movement for a short time, like 3 weeks, and her muscle strength increased. This may be due to the conventional therapy and MWM. The conventional therapy may have removed metabolic waste and increased circulation. In addition, we think that by teaching the correct movement with MWM maneuvers, the patient may have reduced pain during movement as well as increased hand function and strength. Thus, it can be deduced that conventional therapy and MWM may reduce symptoms and increase the hand function for a short time after this type of cumulative soft tissue trauma. This type of patient group should be followed up for a long time because they are exposed to repetitive trauma because of their profession.

In this patient treated with the MWM technique and conventional physiotherapy, a significant improvement in grip strength, DASH scores, and pain level was observed in the early period. However, more studies investigating the effects of the MWM technique on non-degenerative arthritis are required.

**Peer-review:** Externally peer-reviewed.

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

**Authorship Contributions:** Concept: AÖ, İC; Design: AÖ, İC; Supervision: AÖ, İC; Fundings: AÖ, İC; Materials: AÖ, İC; Data Collection or Processing: İC; Analysis or Interpretation: AÖ; Literature Search: AÖ, İC; Writing: AÖ, İC; Critical Review: AÖ, İC.

**Conflict of Interest:** None declared.

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