



Restoring Musical Performance: The Role of Occupational Therapy in the Rehabilitation of Musicians with Focal Hand Dystonia

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INTRODUCTION/RATIONALE

Musicians' focal hand dystonia is a task-specific neurological disorder characterized by **involuntary movements that impair fine hand control and compromise instrumental performance and activities of daily living (ADLs)**.

Given that musical performance is both a professional and meaningful occupational activity, the condition significantly impacts fine manual skills, career continuity, self-identity, and quality of life. Addressing these challenges requires a **targeted rehabilitation approach** aimed at restoring fine motor control and engagement in this essential occupation.

OBJECTIVE

This study aimed to evaluate the **effectiveness of an integrated rehabilitation protocol of occupational therapy and physiotherapy**, in enhancing musical performance as a core occupational activity in musicians with focal hand dystonia. Secondary objectives included assessing **improvements in daily living activities and overall quality of life**.

METHODS/APPROACH

A case series study was conducted with **nine musicians** diagnosed with focal hand dystonia who participated in a combined rehabilitation program.

Table 1. Demographic characteristics of the sample

	Frequency (n)	Percentage (%)
Gender		
Male	8	88.9
Female	1	11.1
Affected hand		
Right	6	66.7
Left	3	33.3
Dominant hand		
Right	7	77.8
Left	2	22.2
Status		
Professional musician	7	77.8
Non-professional musician	2	22.2
Years of musical practice		
20-30 years	4	44.4
30-40 years	2	22.2
50-50 years	3	33.3
Years since dystonia onset		
0-20 years	7	77.8
20-35 years	2	22.2

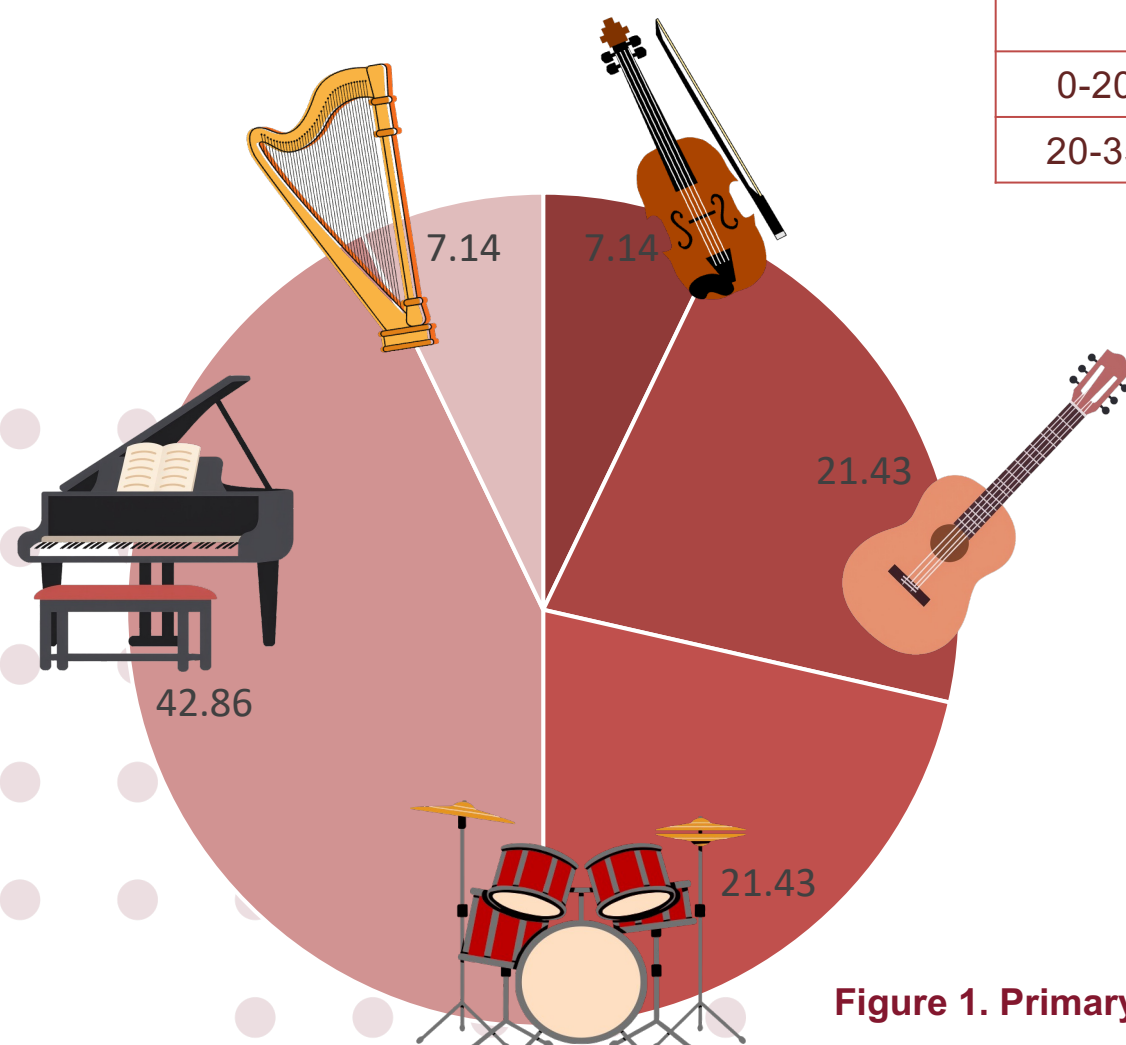


Figure 1. Primary musical instruments

The rehabilitation program included 5 participants treated in an outpatient setting at Policlinico Umberto I (Rome) and 4 participants following a mixed rehabilitation modality, combining three telerehabilitation sessions with one in-person outpatient session.

Outcome measures used to assess treatment effectiveness (t0 and t1) included:

- the *Disabilities of the Arm, Shoulder and Hand* (DASH)
- the *Jebesen Taylor Hand Function Test* (JHFT)
- the *Short Form-36 Health Survey* (SF-36)
- the *Tubiana and Chamagne Scale* (TCS)
- the *Arm Dystonia Disability Scale* (ADDS).

The intervention programme included 4 steps:

1. MOBILIZATION and NEURODYNAMICS:

applied as a warm-up using active, passive, and active-assisted techniques, including progressive neural gliding and tensioning of the ulnar, radial, and median nerves.



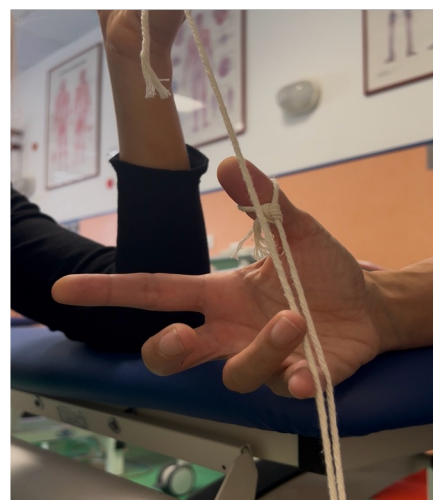
2. DESENSITIZATION:

exercises involving controlled contraction and decontraction of intrinsic and extrinsic hand muscles, performed on different surfaces to modulate tactile hypersensitivity and improve motor control.



3. SENSORY RETRAINING:

exercises aimed at promoting cortical reorganization and improving sensorimotor and proprioceptive integration.



4. INSTRUMENT-SPECIFIC EXERCISES:

targeting dystonic movement patterns and the recovery of selective motor control during musical performance and work-related activities. Sometimes, this step also included ADLs training.



RESULTS / PRACTICE IMPLICATIONS

The Wilcoxon test showed a **statistically significant improvement** only in the **JTHFT Item 1 (writing) (p=0.000)**, while no statistically significant differences were found for the remaining outcome measures ($p < 0.05$).

However, **improvements in mean scores were observed at post-treatment (t1)** across several measures.

- the DASH Total score and the DASH Sport/Music subscale;
- the SF-36 Role Limitations due to Physical Health, Social Functioning, and Pain subscales;
- the TCS;
- the JHFT Item 5 (*simulated feeding*) and in Item 1 (*feeding*) non-dominant, although these did not reach statistical significance.

Table 2. Demographic characteristics of the sample

Outcome measures	t0	t1	Wilcoxon	p
	Mean±SD	Mean±SD		
DASH	7.93±7.7	8.6±8.5	6.25	17.000
DASH-SP	53.1±31.2	51.6±27.5	53.12	8.000
SF-36 Role limitations due to physical health	71.8±28.2	65.6±37.7	75.00	10.000
SF-36 Social functioning	67.2±16.3	70.4±16.3	69.000	3.000
SF-36 Pain	87.5±20.6	91.8±19.3	100.00	3.000
TCS	2.7±1.7	3.3±1.5	3.50	16.000
JTHFT				
ITEM 1 Dominant	14.8±2.9	11.37±1.80	11.6850	0.000
ITEM 1 Non-dominant	40.6±17.8	29.4±9.62	29.0350	1.000
ITEM 5 Dominant	14.7±15.1	4.31±0.81	4.4300	6.000

CONCLUSION/SIGNIFICANCE TO THE OCCUPATIONAL THERAPY PROFESSION

Although most outcome measures did not reach statistical significance, **clinically relevant improvements were consistently observed across functional, occupational, and task-specific domains.**



Figure 2. Dystonic pattern at baseline (November 2024)

Baseline condition showing dystonic pattern during drumming, with **finger and wrist hyperextension and overflow to adjacent fingers.**

In addition to impaired musical performance, the patient reported **difficulties in ADLs**, including tying shoelaces, putting on a sweater, and using a knife, due to reduced fine hand control.



Figure 3. Dystonic pattern after rehabilitation (November 2025)

After one year of rehabilitation (t1), motor control was substantially restored.

The patient was able to **play the instrument for several consecutive minutes** without the emergence of the dystonic pattern, with **improved selective motor control** during task execution and **reduced impact on daily activities.**

Despite the lack of statistical significance, the clinical improvements observed in this study underscore **the relevance of occupational therapy practice in supporting musicians with focal hand dystonia in re-engaging with their primary occupation, musical performance.**

By addressing task-specific motor control within meaningful and work-related activities, occupational therapy interventions may contribute to functional gains that are highly relevant in clinical practice.

Within a personalized and multidisciplinary rehabilitation framework, **occupational therapy plays a key role in supporting functional recovery and in addressing aspects related to professional performance and occupational identity in musicians.**

