



# Systemic manual therapy is better than exercises for hip pain: Does it really matter?

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## ARTICLE INFO

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## ABSTRACT

**Background:** Recent hip-area pain studies quantified the rate of pain improvement attributed to therapeutic exercise. Hip-area pain was treated with SMT protocols. Improvement rates were measured. The primary purpose of this study was to compare rates of improvement from SMT protocols with rates of improvement from those previous studies. Other purposes are to identify the most effective SMT protocols, develop hypotheses as to the reasons for their success, and extrapolate the findings toward a more effective approach prescribing exercise-based interventions.

**Design:** Cohort comparative analysis.

**Methods:** The rate of improvement was measured in 449 patients during 556 episodes of care using SMT protocols. Specific analysis to establish which protocols produced the highest rate of improvement was also done. **Results:** During 352 episodes of care, 63% of patients with hip symptoms improved compared to 54% in the study that used an exercise approach. This difference had a statistically significant ( $p < 0.001$ ) moderate effect size (Hedges'  $g$  0.36). The 13 SMT protocols found to be most effective are hypothesized to do so due to their decongestive, desensitization, and mechanical effects.

**Conclusion:** This study demonstrates the effectiveness of SMT over other interventions when treating hip pain. Decongestion, desensitization, and correcting of altered joint mechanics should be prioritized over “core” strengthening and stretching at least in the early stages of treatment, because it is less certain that a normal adaptive response to exercise loading would occur. However, exercises could still be used early to help with decongestion and desensitization if they have a cardiovascular-loading emphasis.

## Introduction

Treatment options for hip-related pain can include surgical and non-surgical options. Probst et al. (2023) highlighted the benefits of exercise in selected patient populations as one of the nonsurgical options. Probst accomplished this by quantifying the rate of recovery in patients receiving an exercise-based therapeutic intervention compared to the rate of recovery in patients to whom exercise was not offered. This study used a similar approach to measure the rate of improvement in symptoms when patients are treated using Systemic Manual Therapy protocols. From the results, it was also our purpose to identify the most effective interventions for future clinical application when treating patients with hip pain, and to gain insight into both the pathology of this condition and the pathophysiology involved in recovering from hip-related pain.

There are several challenges when trying to accomplish this task; the first being the pragmatic manner that certain systemic manual therapies

such as fascial counterstrain (FCS) (Tuckey, 2018), Barral (Barral and Mercier, 2005) Integrative manual therapy (IMT) (Weiselfish-Giammatteo and Giammatteo, 2003; Giammatteo and Weiselfish-Giammatteo, 2006), and Muscle energy techniques (MET) (Mitchell and Mitchell, 2001; Weiselfish-Giammatteo & Giammatteo, 2003) are traditionally practiced. While it can certainly be effective, the lack of standardization in the pragmatic approach makes it more challenging both to evaluate and to teach these techniques to the novice clinician.

To mitigate this lack of standardization, individual techniques from these methods were grouped by Halili (2020a) into roughly 50 distinct protocols, which are administered in the exact same manner every time they are used. In a later study it was demonstrated that clinicians as well as students who treated patients in this setting can do so with similar effectiveness (Halili, 2021a).

The second challenge is (unlike Probst, who clumped together all forms of exercise as a single variable) that if we are interested in

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**Table 1**  
Demographics and comorbidity.

Sample	Population	Male	Female	Age	Age SD	Range
Database	2859	983	1876	59.2	18.12	0 to 98
Study Group	449	118	331	62.07	15.47	9 to 92
Comorbidity	Population	Study group	Pop Pct.	Study		
Abdominal surgeries	1366	275	47.78	61.38		
Bowel/Bladder/Reproductive	1310	265	45.82	59.15		
Cancer	478	105	16.72	23.44		
Cardio/Respiratory	1102	229	38.54	51.12		
Insomnia	1170	242	40.92	54.02		
Metabolic	824	174	28.82	38.84		
Neurosurgeries	416	85	14.55	18.97		
Neurological	854	172	29.87	38.39		
Orthopedic surgeries	961	218	33.61	48.66		

measuring the rate of improvement of multiple specific protocols, how would we statistically isolate, in a clinical setting, the effect of one intervention over the one used in the preceding treatment (regardless of how standardized they might be)?

This latter challenge was addressed in two ways: First, creation of a standardized scale: the Patient Identified Problem scale (PIP) (Halili, 2020b). Before each treatment, the patient entered a numerical score for their individual problems, providing a series of continuous measurement points. In addition, the Halili physical therapy statistical analysis tool (HPTSAT) (Halili, 2021b) was used to isolate the rate of improvement of each protocol or combination. This was accomplished by having the HPTSAT tool establish the rate of change through groups of five consecutive protocols (ROC5) throughout an episode of care. Then the tool measured the differences in the ROC5 between groups containing a specific protocol (or sequence of protocols) compared to all other groups.

**Methodology**

This study was approved by Argus Independent Review Board ([www.argusirb.com](http://www.argusirb.com)) on July 21, 2021.

The HPTSAT tool (Halili, 2021b) was used to analyze 48,211 blinded records of 2859 patients from the Halili physical therapy EMR system v. 2022 (HPT2022) between the dates of February 4, 2015 and 4/27/2023. The study sample was created by looking for the word “Hip” in one of the

patient identified complaints. The initial study sample included 465 patients. Fourteen patients were excluded either because their hip symptoms were not active during the study period, or they did not have a follow up visit. Two additional entries were determined to be duplicates of existing patients. The remaining sample included 449 patients (331 female, 118 male, average age 62.07, range 9–92) with 556 episodes of care (a new episode of care was considered to begin if 90 days had passed between the patient’s last visit and a new visit). The average length of episode of care was 204 days (SD = 316, 95% CI 178–230 days). Average number of visits per episode were 20.4 (SD = 31, 95% CI = 17.9 to 23.0 visits). Average days between visits was 11.1 days (SD = 9.0, 95% CI = 10.4–11.9 days). The evaluating physical therapist identified, in the original sample, central sensitization as one of the differential diagnoses in 326 patients (71%). This determination was done using a similar methodology to the one outlined by Lluch (Lluch et al., 2017). On average the patients in the study sample had 10.4 problems (SD 6.0, 95% CI 9.8 to 10.9) on the Patient Identified Problems scale (PIP) (Halili, 2020b). To be included in the study sample, one of the PIPs needed to include the word “hip.” Among the 556 episodes of care, in 229 the treatment for right hip pain was observed, 184 for left hip and in 143 the term used was “pain in hips.” If the patient had more than one identified problem with the word “hip” (for example: “right hip pain” and “left hip pain”), the problem with the highest starting score (more symptomatic) was chosen for this analysis. Table 1 includes additional demographic and comorbidity information. Additional information can be found in the accompanying dataset (Halili, 2023).

Rate of progress across episode of care was measured with a paired *t*-test using MedCalc software (Schoonjans, 2022). A Welch’s test was used to compare the rate of improvement across episode of care to the rate observed by Probst (Probst et al., 2023). Hedges’ *g* test was used to estimate the effect size of the difference between the two studies.

To identify which interventions yielded the highest rate of improvement, the HPTSAT measured the average rate of change in scores over 5 measurements (ARC5) of 439 SMT protocols or protocol combinations (having frequency >5). It compared the ARC5 observed in the presence of each protocol or combination of protocols to the average rate of change of all other interventions. Average rate of change of all other interventions is defined, for the purpose of this discussion, as the optimal standard of care (oSOC).

For the HPTSAT to declare a protocol or a combination to be better than the oSOC, the following criteria were used: A *p* value < 0.05 in all of

**Table 2**  
Passing combinations.

Protocol/combinations	n	freq. control	ARC5	Rx, oSOC	SD (95% CI)	Welch	MW	ANOVA	Hedges’ g
CCCV METVAS SLMG	21	113, 47849	0.59	0.71, 0.12	1.82 (2.16–1.49)	<0.001	0.006	<0.001	0.42
SLMG Barral	20	175, 47787	0.58	0.7, 0.12	1.51 (1.73–1.29)	<0.001	<0.001	<0.001	0.41
LAUG LEDJ OST LEN	49	131, 47831	0.46	0.58, 0.12	1.98 (2.32–1.64)	0.008	<0.001	<0.001	0.33
OST SPDJ UD	22	128, 47834	0.42	0.54, 0.12	1.06 (1.24–0.88)	<0.001	<0.001	<0.001	0.3
LEDJ UD METVAS	41	211, 47751	0.4	0.52, 0.12	1.55 (1.75–1.34)	<0.001	<0.001	<0.001	0.29
DCS Barral CCCV METVAS	74	213, 47749	0.4	0.52, 0.12	1.55 (1.76–1.34)	<0.001	<0.001	<0.001	0.28
BARRAL CCCV CVVT	34	199, 47763	0.38	0.5, 0.12	1.71 (1.95–1.48)	0.002	0.003	<0.001	0.27
METVAS UD DCS	33	164, 47798	0.38	0.5, 0.12	1.64 (1.89–1.38)	0.003	<0.001	<0.001	0.27
UD DCS Barral CCCV METVAS	70	71, 47891	0.38	0.5, 0.12	1.58 (1.95–1.21)	0.046	0.007	0.023	0.27
LAUG LEDJ LEN OST	39	104, 47858	0.38	0.5, 0.12	1.36 (1.62–1.1)	0.005	0.005	0.006	0.27
LEN OST SPDJ UD	21	62, 47900	0.35	0.47, 0.12	0.91 (1.14–0.69)	0.004	0.005	0.052	0.25
VASJ	61	777, 47185	0.34	0.45, 0.11	1.72 (1.84–1.6)	<0.001	<0.001	<0.001	0.23
LEDJ LEN OST	49	270, 47692	0.32	0.44, 0.12	1.4 (1.57–1.24)	<0.001	<0.001	<0.001	0.23
METVAS SLMG	85	751, 47211	0.31	0.42, 0.11	1.32 (1.41–1.23)	<0.001	<0.001	<0.001	0.22
SLMG SPDJ	21	194, 47768	0.29	0.41, 0.12	1.09 (1.25–0.94)	<0.001	0.002	0.004	0.21
LEN OST	57	526, 47436	0.29	0.41, 0.12	1.33 (1.45–1.22)	<0.001	<0.001	<0.001	0.21

Key: **n**: number of times combination was done, **freq.**: number of 1–5 measurements including this combination, **control**: number of 1–5 measurements not including this combination, **ARC5**: average rate of change over five measurements, **Rx**: ARC5 of freq., **oSOC**: ARC5 of optimal standard of care (control frequency), **SD**: standard deviation, **CI**: confidence interval, **Welch**: *p* of Welch’s *t*-test, **MW**: *p* of Mann-Whitney test, **ANOVA**: *p* of Analysis of variance, **Hedges’ g**: Hedges’s *g* effect size, **LEDJ**: Lower Extremity Jones (all variations), **LEN**: Lower Extremity Nerve, **OST**: Periosteum lower extremity, **LAUG**: Lower Abdominal Urogenital, **Barral**: Barral Abdominal Motility, **UD**: Urinary Drainage, **DCS**: Diaphragm Cranial Sinus, **CCCV**: Cardiac Cervical Cranial Sinus, **CVVT**: Cardiovascular Venous Thoracic, **METVAS** Muscle Energy Technique sacroiliac combined with Vascular protocol variations, **VASJ**: Vascular protocol Jones version. **SLMG**: Side-Lying Modified Glides, **SPDJ**: Spinal Drainage Jones (all versions).

**Table 3**  
Additional information on passing protocols.

code	Name	Additional information
CCCV	Cardiac Cervical Cranial Vascular	This protocol uses manipulation of arterial blood flow toward the head and is hypothesized to reduce oxidative stress in sensitized patients (Halili, 2022)
METVAS	Muscle Energy Technique sacroiliac combined with Vascular protocol variations	A combination of two protocols: MET SI uses muscle energy techniques to normalize sacroiliac motion, Vascular uses manipulation of arterial blood flow toward the lumbar spine and is hypothesized to normalize inflammatory activity in the lumbar spinal region
SLMG	Side-Lying Modified Glides	A nerve glide technique along multiple spinal levels
LAUG	Lower Abdominal Urogenital	A protocol containing fascial counterstrain techniques hypothesized to normalize protective guarding in the abdominal and pelvic cavity
Barral	Barral Abdominal Motility	A protocol containing techniques developed by Barral, hypothesized to normalize protective guarding in the abdominal and pelvic cavity.
LEDJ	Lower Extremity Drainage Jones	A protocol containing a combination of venous and lymph drainage techniques along the pelvis and lower extremity
OST	Periosteum lower extremity	A protocol hypothesized to manipulate arterial blood flow and fascial tension along bones of the pelvis, spine and lower extremity
LEN	Lower Extremity Nerve	A protocol containing a number of peripheral nerve inhibitory techniques
SPDJ	Spinal Drainage Jones (all versions)	A protocol hypothesized to manipulate protective reflexive pattern along the lumbar spine
UD	Urinary Drainage	A protocol hypothesized to have a moderate diuretic effect
DCS	Diaphragm Cranial Sinus	This protocol is done over the head and is hypothesized to reduce pressure in the sinus and intracranial cavity
VASJ	Vascular Jones	Uses manipulation of arterial blood flow toward the lumbar spine and is hypothesized to normalize inflammatory activity in the lumbar spinal region
CVVT	Cardiovascular Venous Thoracic	This protocol is done over the ribcage and has been demonstrated to have a moderate decongestive effect on the respiratory system (Halili, 2021a)

the following tests: Welch's *t*-test, Mann-Whitney *U* test (MW), and an analysis of variance (ANOVA). In addition, the passing combinations also needed to have an  $n > 20$ , an effect size (Hedges'  $g$ )  $\geq 0.2$  and a PIP score for  $ARC5 \geq MCID$  95% CI (0.33 for individual score or 1.4 when looking at average changes in the overall scale).

## Results

During the 556 episodes of care, in 352 (63.3%) hip pain was improved, 105 (18.9%) had no change, and 99 (17.8%) noted worsening symptoms. In comparison, Probst reported 54% improvement (Probst et al., 2023).

When considering the patients' overall progress on the PIP scale, 407 episodes (73.2%) resulted in improvement in average symptoms, 35 (6.3%) had no change, and 114 (20.5%) had worsening of symptoms.

The overall mean improvement in hip pain across episode of care, as measured by the PIP scale, was 17.33% (1.56 points,  $p < 0.001$ , SD 2.53, 95% CI 1.35 to 1.77). Using a percentage change for comparison, this improvement was significantly better ( $p < 0.001$ , Hedges'  $g$  effect size of 0.36), than the 11.3% change observed by Probst when using exercise as intervention (Probst et al., 2023).

Of the 439 protocols and protocol combinations analyzed by the HPTSAT, 13 protocols in 16 combinations passed the criteria set to distinguish them as better than the oSOC. These combinations are listed in Table 2.

The individual passing protocols include Cardio-cervical-cranial-vascular (CCCV), Muscle energy techniques sacroiliac joint and vascular protocol combined (METVAS), as well as Vascular-Jones version (VASJ) without the MET portion, Side-lying-modified-glides (SLMG), Lower-abdominal-urogenital (LAUG), Barral abdominal motility protocol (Barral), Lower-extremity-drainage-Jones (LEDJ), Periosteal-lower-extremity (OST), Lower-extremity-nerve (LEN), Spinal-drainage-jones (SPDJ), Urinary-drainage (UD), Diaphragm-cranial-sinus (DCS), and Cardio-vascular-venous-thoracic (CVVT). The possible mechanisms as to why these protocols are effective are discussed by Halili (Halili, 2020a; Halili, 2022) and Tuckey (2021).

Table 3 includes descriptive information on these protocols. Additional data about this research study is available in the accompanying dataset (Halili, 2023).

## Discussion

While there are reasonable limitations to the comparison between this study and the results of the exercise-focused studies summarized by Probst, including different demographics, measurement scales, and study type, it is difficult to ignore the fact that the results of this study show that a higher percentage of patients got better (63.3% vs. 54%). The difference in average improvement between this study and the exercise approach described by Probst had a moderate power (Hedges'  $g = 0.36$ ) and was statistically significant ( $p < 0.001$ ).

As such, when combining these results with previously reported data that SMT, at least in its standardized version, can be taught successfully to physical therapy doctoral interns (Halili, 2021a), it should be more difficult to opine that these techniques have low value, and that there is little indication to teach them during the primary phase of physical therapy education (Flynn et al., 2006; Runge et al., 2022).

But beyond this obvious and important observation, there is more to be learned from this study: primarily, it is the limitation of the approach referred to as "evidence-based research."

If we compared physical therapy techniques the same way two competing medications might be compared, we might incorrectly conclude that one approach should be used exclusively over another. However, it is more likely that best clinical practice should be multifaceted and adaptable, and should use combinations of several interventions (Rhon and Deyle, 2021).

Therefore, rather than using this study to simply advocate for the use of one therapeutic approach over another, it is preferable to revert to the older but more clinically useful "science-based" research as a template for the following discussion. In this approach, instead of oversimplifying the outcomes by favoring one intervention over another, the results should be used to generate a series of hypotheses for the pathology and development of treatment algorithms.

The clinical version of this approach is described by Rothstein in the hypothesis-oriented algorithm for clinicians (HOAC) model (Rothstein and Echterbach, 1986; Rothstein et al., 2003).

Since our study was done in a clinical setting where both treatment and outcome measures were standardized, our hypothesis-generating model could be used not just as a clinical tool, but also to answer a wider range of research questions.

Considering the second part of this analysis, where specific interventions are identified as more effective than others when treating

## Key points

- The results of this study suggest that SMT is an effective treatment approach and should be used to treat patients with pain in the hip region regardless of their clinical complexity.
- The specific interventions found to be effective suggest that the therapeutic approach should focus on decongestion, desensitization, and restoration of normal SI mechanics.
- The clinicians who use an exercise-focused approach to treatment should initially focus on cardiovascular, interval-based exercise instead of specific regional loading and stretching. As loading tolerance increases, more specific strengthening exercises can be gradually introduced.
- Stretching exercises should be avoided.

hip pain, we can now use the proposed mechanisms of each protocol to make some inferences that would help us develop hypotheses for actual pathology of the impairments, and, going further, why certain additional interventions, that were not in this study, could be used.

From the list of the 13 passing protocols appearing in Table 3, as well as past research, published mechanisms (Halili, 2020a), and clinical experience, we extrapolate three general pathologies that are alleviated by these protocols: **circulatory congestion** (when treated by UD, LAUG, Barral, CVVT, LEDJ, OST, VAS, VASJ) (Barral and Mercier, 2005; Tuckey et al., 2021; Halili, 2020a, 2021a), **impaired joint mechanics** (when treated by MET) (Weiselfish-Giammatteo & Giammatteo, 2003; Mitchell and Mitchell, 2001), and **central and peripheral sensitization** (when treated by CCCV, DCS, Barral, LAUG, UD, LEN, SPDJ) (Halili, 2022; Tuckey et al., 2021).

Having identified these three pathologies, we can recommend that when evaluating patients with pain in the hip region, the therapist should screen for sensitization, congestion and evaluate the mechanical behavior of the pelvis and lumbar region.

In addition to developing this triad of hypothesized pathologies, we can also qualitatively test the implicit hypothesis used in the studies examined by Probst, which is that the presenting pathology occurred due to atrophied/shortened muscles, and that improvement would result with the application of exercise load that increased muscle strength and length.

Probst's findings that exercise improved symptoms in at least some of the patients, suggest that exercise could be of benefit treating hip pain. However, our study's finding that the combination of decongestion, desensitization and restoration of altered SI joint mechanics yielded better outcomes, suggests that while exercise can still be used, the manner in which it is prescribed should be different.

If we consider the hypothesis that when there is hip-area pain, the pelvic region is congested and there is autonomic sensitization present, it is less certain, at least in the early stages of rehabilitation, that a normal adaptive response to exercise loading would take place in response to exercises that are focused on the muscles in this region.

Instead, rather than exercise loading that emphasizes strain on the pelvic lumbar and abdominal area muscles, an exercise approach that promotes blood and lymph circulation through this area (cardiovascular, interval-based exercises, for example) would be more consistent with the premise that decongestion and desensitization should be addressed first. Of course, as tolerance improves, the addition of exercise loading to these specific regions could be beneficial, if done gradually.

As to stretching, the findings of this study suggest that muscle shortening, if observed, is more likely to be a protective reflexive pattern rather than an actual morphological change of the tissue. Therefore, prescription of stretching exercises is inconsistent with the hypotheses considered in this discussion.

### Limitations

- The population profiles in the exercise-based Probst study, and this one, are different.

- The outcome scale used in the Probst study is different than the one used in this study.
- This study is an observational study, not a randomized controlled trial.
- Knowledge of the actual mechanisms of action of the SMT protocols is still evolving.

### Statement of financial disclosure and conflict of interest

"I affirm that I have no financial affiliation (including research funding) or involvement with any commercial organization that has a direct financial interest in any matter included in this manuscript, except as disclosed and cited in the manuscript. Any other conflict of interest (i.e., personal associations or involvement as a director, officer, or expert witness) is also disclosed and cited in the manuscript."

### Patient involvement statement

This study consists of chart reviews and had no patient involvement.

### Data are available in a public, open access repository

Systemic Manual Therapy is better than exercises for hip pain, but does it really matter? dataset", Mendeley Data, V1, <https://doi.org/10.17632/2gg9gbhdrb.1>.

### 1. Impact statement

This study should have an immense impact on the provision of physical therapy since it is, to our knowledge, the first study to provide a head-to-head quantitative comparison between the current established standard of care and a new, more effective, intervention.

### Funding information

There is no funding information to disclose.

### Declaration of competing interest

There were no conflicts of interest or financial support to disclose with this work. Both for the author Adi Halili and the affiliated institution Halili physical therapy.

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