

# Latin American Survey on Shock Wave Therapy

R Kobayashi<sup>1</sup>, L Schledorn de Camargo<sup>2</sup>, Daniel Moya<sup>3</sup>

## Abstract

The use of shock waves in musculoskeletal pathologies has become very widespread in recent years. However, a clear consensus has not been reached regarding therapeutic parameters, and there is great variability in treatment indications and protocols.

This publication seeks to diagnose the situation in Latin America and is based on a survey carried out on physicians from different specialties and countries who practice the therapeutic use of shock waves. The questionnaire was carried out during the first Congress of the International Federation of Shock Wave Treatment and the V Brazilian Congress of Shock Wave Therapy.

**Keywords:** Shock Waves; Survey, Musculoskeletal

## Introduction

The therapeutic use of radial pressure waves and focused shock waves in the field of musculoskeletal pathology has achieved great development in the last two decades. Numerous studies support their effectiveness and low morbidity [1-3]. However, a clear consensus has not been reached regarding therapeutic parameters, and there is great variability in treatment indications and protocols [3-6]. For this reason, any opportunity to conduct an opinion poll among medical professionals dedicated to this practice is useful.

This study is the result of a survey that was carried out among Latin American physicians, in São Paulo (Brazil), during the first Congress of the International Federation of Shock Wave Treatment and the V Brazilian Congress of Shock Wave Therapy held in August 2024.

## Material and Methods

A total of 50 professionals from six countries participated in the interactive survey (Brazil: 36, Mexico: 5, Argentina: 4, Chile: 3, Peru: 1, Uruguay: 1). All participating professionals were medical doctors, including orthopedic surgeons, physiatrists, pain specialists, and sports physicians. The participants' experience with the application of the method is shown in Fig. 1.

The survey was conducted interactively using the Mentimeter® app, which allows the audience to easily interact and participate by simply entering a unique code [7]. A series of questions previously agreed upon by the two authors were asked, related to the personal characteristics of the participants and the practice of radial pressure waves and shock waves focused on musculoskeletal pathology.

The information was presented directly during the final scientific

session of the congress and compiled through the application for subsequent analysis and publication.

## Results

The majority of those surveyed responded that they use radial waves (43.5%) in their practice, in the second place, it was stated that both modalities were used (34.5%) and a third group only applied focused shock waves (22%).

When asked about the indication with the most predictable successful results, the most chosen option was plantar fasciitis and the least chosen were lateral epicondylopathy, patellar tendinopathy, and cervical pain (Fig. 2). Coincidentally, in response to the question about the worst results, lateral epicondylitis, patellar tendinopathy and cervical pain were the most chosen options and plantar fasciitis the least chosen (Fig. 3).

The preferred method for the most frequently treated pathologies was surveyed. The details regarding the preferred technology for each indication are shown in Table 1.

Regarding treatment prognostic factors, it was asked about the influence of finding bone edema in magnetic resonance studies in pathologies as plantar fasciitis and knee osteoarthritis.

Of the total responses, 80% of respondents considered that the presence of bone edema improves expectations of a good result, 2% considered that it did not, and 18% chose the option "I don't know."

Regarding the influence of sports rest on the treatment outcome, 84% of respondents considered it to be positive and 16% considered it not.

Seventy percent of respondents reported having experienced complications from the application of radial pressure waves and

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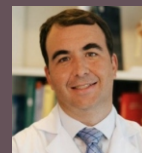
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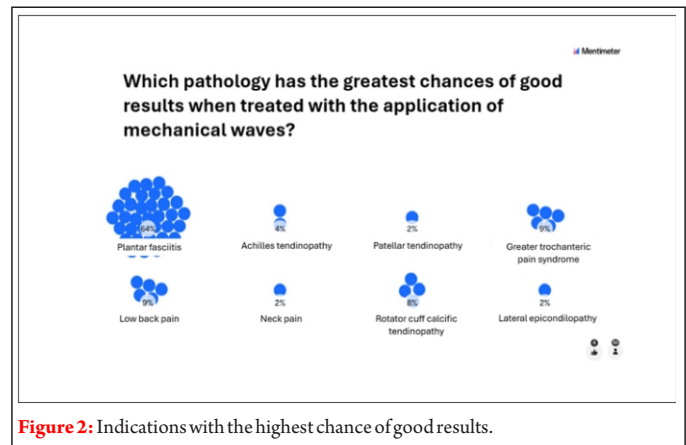
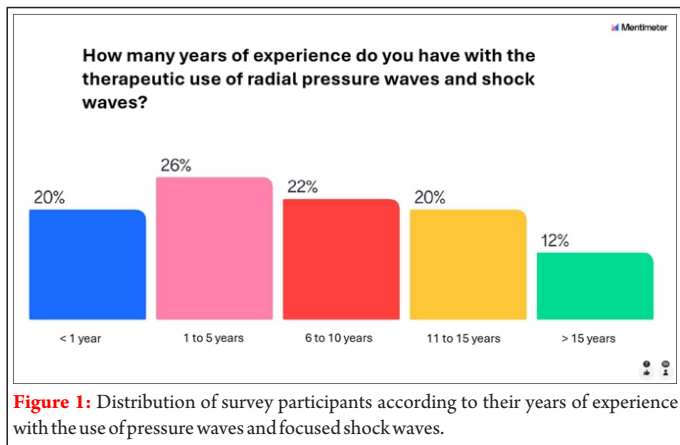


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focused shock waves, including ecchymosis, tinnitus, fainting, etc. However, none of the participants reported having had legal litigation for malpractice related to the use of shock waves.

**Discussion**

The survey we publish has the advantage of being the result of the opinion of a group of medical professionals with different levels of experience in the use of radial pressure waves and focal waves in musculoskeletal pathology. They are professionals whose practice takes place in a specific geographical area with similar conditions.

The best results reported in cases of plantar fasciopathy coincide with the findings in the literature [3,6,8,9]. The use of radial waves and focused waves has been given a grade of recommendation A according to the criteria of the Journal of Bone and Joint Surgery [3]. Wang reported a good to excellent outcome rate of 82.7% in a series of 79 patients treated with focused waves with a follow-up of 60–72 months [8]. The American College of Foot and Ankle Surgeons includes shock waves in the treatment algorithm for plantar fasciitis [9].

Low predictable results of success were expected in the low back and neck pain. This is probably related to the large number of possible etiologies, the fact that the role of the waves in these cases is symptom control rather than curative, and the high tendency to recurrence. Liu et al. concluded in a systematic review and meta-analysis of 632 patients that radial pressure waves and focused waves are effective and safe for treating chronic low back pain [10]. However, they acknowledge the limitations of the study such as the heterogeneity of the sample, the numerous biases, and that the outcome indicators may be subjective. Jun et al. found in a meta-analysis of randomized controlled trials that focused waves are effective in controlling

myofascial neck and shoulder pain but had no conclusive results regarding radial waves [11]. It is interesting to note that in the survey over 50% responded that they used only radial pressure waves for the treatment of neck pain.

There was also a poor perception regarding the results of the treatment of lateral epicondylopathy. A recent systematic review and meta-analysis that included 13 articles with 1035 patients, concludes that mechanical waves can effectively relieve pain and functional impairment [12]. However, the authors state that the number of studies is limited and that their scientific quality is not high to the evidence.

Patellar tendinopathy was also considered by survey participants as an indication with results far from ideal. A current concept study published in 2015 recommended the use of ESWT in chronic patellar tendinopathy [13]. However, not all authors agree.

Llombart et al. stated that although the results are promising, the evidence is still limited [14]. In a systematic review and meta-analysis that looked at outcomes across multiple indications, Charles et al. found low–moderate evidence that ESWT has a negligible effect on pain and function [15]. Challoumas et al. concluded that extracorporeal shockwave therapy appears to provide limited clinical benefits in patellar tendinopathy [16].

When choosing between the different techniques, in general terms, focused waves were chosen by more than twice as many as radial waves (56% vs. 25,7%). This is surprising since 43.5% stated that they only applied radial pressure waves. The result is even more striking considering that the survey of indications included myofascial pain in the lumbar and cervical spine and excluded non-unions and delayed healing of fractures. Both procedures were considered a good option in 18.3% of responses, according to the diagnosis.

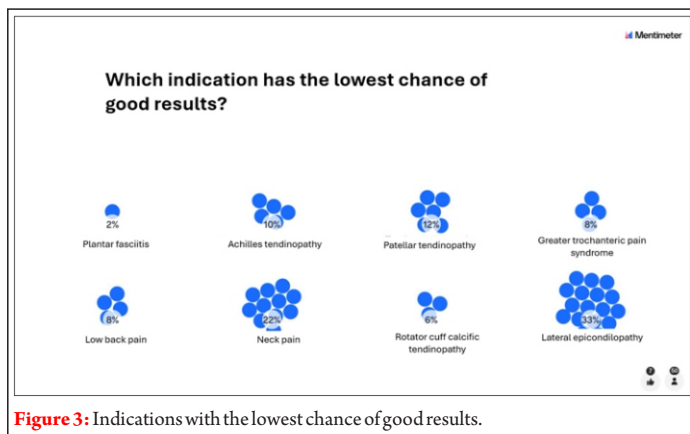


Table 1: Preferred technology according to diagnosis					
	Radial (%)	Focused (%)	Both (%)	Poor results (%)	I don't use them (%)
Rotator cuff calcific tendinopathy	10	88	2	-	-
Rotator cuff non-calcific tendinopathy	24	44	24	2	6
Lateral epicondylopathy	29	38	33	-	-
Greater trochanter Pain syndrome	10	73	18	-	-
Patellar tendinopathy	20	58	20	-	2
Non-insertional Achilles tendinopathy	35	35	29	-	-
Insertional Achilles tendinopathy	6	88	2	2	2
Plantar fasciitis	26	45	28	-	-
Medial tibial stress syndrome	13	73	6	-	8
Myofascial cervical pain	52	21	13	-	13
Myofascial low back pain	46	27	19	-	8

Analyzing the indications individually, focused waves were the most frequently chosen except in cases of myofascial pain. In non-insertional tendinopathies of the Achilles tendon, the rate of choice was equal for both technologies (35%), and it was considered that either of the two could be used (29%).

The four pathologies with the greatest indication of focused waves were rotator cuff calcifications (88%), insertional tendinopathies of the Achilles (88%), greater trochanteric pain syndrome (73%), and medial tibial stress syndrome (73%). In the case of calcifications, this coincides with the literature [3,17-19].

In insertional Achilles tendinopathies, it is consistent with the frequent association of bone edema, a factor that was considered an indicator of good prognosis of results. Furia [20] found focused extracorporeal shock wave therapy effective for the treatment of

chronic insertional Achilles tendinopathy.

Regarding trochanteric pain, the literature presents good results with both radial and focused waves [3,21,22] but high energy was chosen by just 18% of the participants.

Complications with radial pressure waves and focused shockwaves are not unusual [23]. Seventy percent of participants admitted having had complications, but these did not appear to have been severe, as no one reported having had legal claims.

### Conclusion

The results of the survey are generally consistent with what has been published in the literature. There is still a lack of uniformity regarding the type of technology to be used. Future opinion polls will allow us to follow the evolution of this issue over time.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

**Conflicts of Interest:** Nil. **Source of Support:** None.

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