



Evaluation is treatment for low back pain

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ABSTRACT

Objective: To investigate the effect of the examination process (history taking and physical examination) on pain and function.

Methods: An observational cohort trial of patients presenting to outpatient physical therapy clinics for the first time with low back pain ($n = 34$, 57.7 ± 18.7 years, 53% female). A blinded investigator measured participants prior to the beginning of the initial evaluation and after each component of evaluation (history taking and physical examination). Another physical therapist provided normal history taking and physical examination as the patient case presented itself. Primary outcome measure was numeric pain rating scale (NPRS) for the low back and leg. Secondary outcomes and time during examination process and connection between PT and patient were also measured as potential confounders.

Results: Participants showed a significant reduction in pain through just the history taking and physical exam for both the back with an NPRS reduction of 1.23 and the leg showing a 0.95 NPRS reduction. The most significant reduction occurs after history taking.

Discussion: The evaluation process produced small, but significant, therapeutic effects related to pain, fear-avoidance, pain catastrophization, and functional measures of mobility and sensitivity. The therapist's report of connection with the patient did not alter the patient outcome.

KEYWORDS

Physical examination;
medical history taking;
physical therapy;
musculoskeletal pain

Introduction

It is well documented that low back pain (LBP) is still the most widely reported musculoskeletal disorder in the world and accounts for significant health-care expenditures [1,2]. In the United States (US), LBP accounts for 25% of outpatient physical therapy (PT) visits and it is estimated over 170,000 people on a daily basis in the US consult a PT for LBP [3–6].

When patients with LBP attend a visit with a health-care provider, they often encounter clinical rituals [7,8]. In general, most initial medical visits contain the clinical ritual of history taking, physical examination, and treatment. This clinical ritual aligns well with current patient expectation studies for LBP that emphasize the importance of doing a thorough history, followed by a physical examination, and then treatment for their primary complaint to reduce pain and disability [9,10]. Patients and health-care providers typically attribute reduction in primary complaint to the treatment provided. In medicine, the treatment delivered is often a medication, which does not provide immediate change in patient status during the initial visit [11]. In physical therapy (PT), however, therapists also perform

the clinical ritual of history taking, physical examination, and treatment, but often re-tests are completed following treatment at the conclusion of the initial visit to assess the effectiveness of the treatment. If the patient is better, it is believed the treatment alone was the effective cause of this improvement [12,13]. In this model, outcomes are associated with the chosen treatment [13–15], and little to no thought is given to the influence of the history taking and/or physical examination as a means to influence the outcome [16].

In recent years, with the shift toward the biopsychosocial model, more attention is looking into the therapeutic alliance (TA) and effects it has on outcomes [17,18]. But, research into TA as having an effect on outcomes is still minimal compared to other specific treatments such as exercise, manual therapy, and modalities. TA is defined as the working rapport or positive social connection between the patient and the clinician [19]. TA is a complex blend of clinician technical skill, verbal and non-verbal communication, sense of warmth, collaboration, and trust [19]. Increasing evidence supports the notion that TA, especially trust, is shown to powerfully influence pain and outcomes [8,17,20,21]. During the history taking, strategies such as active listening, being

present and in the moment, acknowledging the individual experience of the patient, eye contact, empathy, etc., all have been shown to build trust and foster the TA [22,23]. Even though it can be argued similar virtues of the history taking are displayed during the physical examination, i.e. being present, eye contact, empathy, etc., would influence TA, the actual physicality of touch during the examination may further build trust and foster a TA via the neuropeptide oxytocin and its involvement with pain relief [21,24–27]. In addition, some of the physical tests and measures performed during the physical exam (i.e. repeated movement, joint and soft tissue mobility) may actually serve the function of treatment, before the more formal treatment intervention is applied.

In this study, we explore the idea of history taking and a physical examination potentially influencing the patient's status. Currently, no study has looked specifically to see if history taking and physical exam alone can alter a patient's pain and function in the short term. If this is found to be true, then future study should explore elements of the history taking and physical exam to maximize outcomes. The purpose of the study is to investigate if the PT evaluation ritual actually results in a meaningful shift in pain and function for patients with LBP, even before implementing the actual treatment interventions. This study aims to test if there are any therapeutic effects of the history taking and physical examination of patients with LBP attending PT. Secondary aim is to investigate the amount and effect size of change for various outcome measures of pain and function after history taking and physical examination.

Methods

Participants

A sample of convenience of 40 consecutive patients with LBP with/without leg pain attending four different

outpatient PT clinics over a 3-month time period were invited to participate in this observational cohort study. One PT at each site did the history taking and physical exam, while another PT did the outcome measurements. The clinicians involved with the history taking and physical exam had an average of 6 years of clinical practice (range 4–8 years). Three of the four clinicians were board certified in orthopedics, and the other had achieved post-professional certifications in manual therapy and pain science. Data sample size was determined by the number of eligible participants collected during the 3-month time period of study. Institutional Review Board approval was obtained. Inclusion criteria were that patients had to: (1) be presenting for treatment of LBP; (2) age greater than 18 years; (3) ability to read and understand English; and (4) be willing to participate in the study. Exclusion criteria included: (1) inability to forward flex the lumbar spine due to some medical complication or contraindication; (2) skin lesions in areas to be tested with pressure pain threshold; or (3) red flag medical condition that indicated PT was not appropriate. As noted in Figure 1, six participants were excluded from the study, thus resulting in a sample total of 34 participants for this study.

Measurements

Upon arrival and prior to history taking and examination, all participating patients completed a demographic survey which included age, gender, ethnicity, socioeconomic status, duration of LBP pain, past LBP, and lumbar surgical history. Prior to the start, participants also completed the Oswestry Disability Index [28–30] to assess their level of disability in order to describe the patient cohort for the study.

Following the demographics, a series of outcome measures were completed before the history as well as immediately after history taking and physical examination:

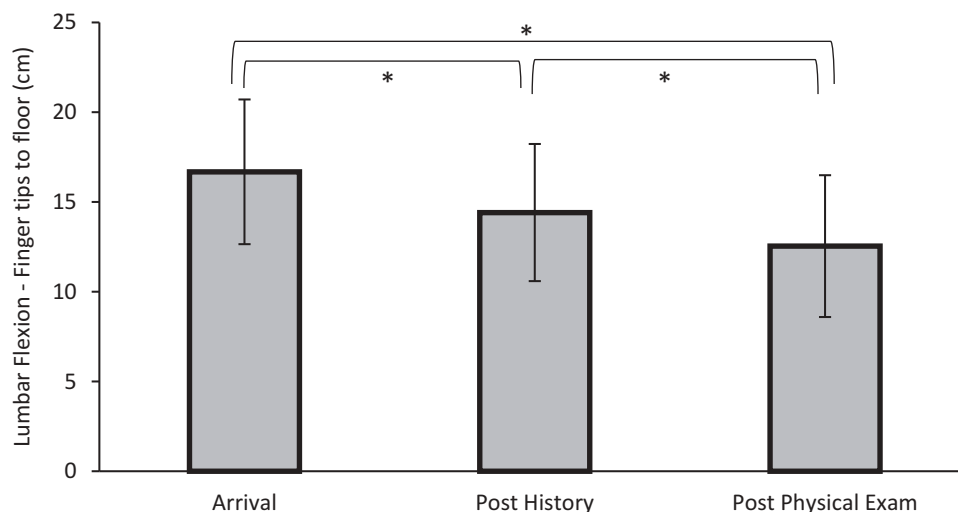


Figure 1. Means of lumbar flexion between each time point with 95% confidence interval bars. * $p < 0.05$ between arrival and post history, post history and post physical exam, and arrival and post physical exam.

Pain (low back and leg) (numeric pain rating scale – NPRS)

Low back and leg pain were measured with the use of an NPRS, as has been used in various studies on LBP [31–34]. The minimal clinically important difference (MCID) for the NPRS for acute/subacute LBP is reported to be 2.0 [35] and for chronic pain 1.7 [36].

Fear-avoidance beliefs (fear-avoidance beliefs questionnaire – FABQ)

The FABQ is a 16-item questionnaire with two subscales: (1) physical activity (PA) and (2) work (W). Each item is scored from 0 to 6 with higher scores representing an increase in fear-avoidance beliefs. The FABQ has demonstrated acceptable levels of reliability and validity in previous LBP studies [37–39]. The MCID for the FABQ has been reported as 13.0 [40].

Pain catastrophization (pain catastrophization scale – PCS)

The PCS is a self-report questionnaire that assesses inappropriate coping strategies and catastrophic thinking about pain and injury and demonstrated strong construct validity, reliability and stability [41]. The PCS utilizes a 13-item, 5-point Likert scale with higher scores indicating elevated levels of catastrophizing. Previous studies utilizing the PCS have shown a median score of 18 in healthy individuals and a score over 30 reported as a high level of pain catastrophization [41]. In patients with musculoskeletal pain, the minimal detectable change (MDC) for the PCS is reported to be 9.1 [42], and the MCID has not been established.

Lumbar flexion

Active trunk forward flexion, measured from the longest finger on the dominant hand to the floor in centimeters (cm). The participant is instructed to bend forward at the waist, with knees kept straight, as far as they feel comfortable reaching the fingers toward the floor. The MDC for active trunk forward flexion has been reported as 4.5 cm [43]. Intra- and interrater reliability with fingertip to floor measurement was excellent with ICC of .99 [44].

Nerve sensitivity (pressure pain thresholds – PPT)

To assess the sensitivity of the nervous system, pressure algometry was used. PPT followed standardized protocols [45] and was measured in pounds (lbs/in²) using a digital pressure-pain algometer over the three points on their dominant side: (1) the first and second interosseous web space of the hand; (2) upper trapezius; and (3) adjacent to L3 spinous process. Three consecutive PPT measurements were taken at each point with 20 seconds rest in between each measurement and the mean of the three trials was used for analysis. Various studies have reported a 15% reduction in PPT as a significant clinical change [46–48].

PPT has demonstrated excellent intrarater reliability in both health individuals and those with pain[49].

Intervention

Upon consent and completion of the pre-examination paperwork, patients were escorted to a private treatment room for the physical measurements of active trunk flexion and PPT by non-attending PT. To ensure blinding of attending therapist to the outcome measures, the measurements were conducted by a non-attending PT who was not involved in the patient history taking or examination. After completion of arrival outcomes measures, the attending PT entered the room and performed a pragmatic history taking process guided by the patient's clinical presentation and clinical reasoning process of attending PT. History taking included gathering information about chief complaint, mechanisms, medical history, functional limitations, prior level of function, social and environmental factors. The attending PT recorded the duration of the history taking episode. Additionally, using a Likert scale, upon completion of the history taking, the attending PT was asked to indicate how well he/she believe they 'connected' with the patient (0 = not connected; 10 = very connected). Upon completion of the history taking the non-attending PT collected post history taking outcome measurements (Figure 1). Next, the attending PT conducted a physical examination per his/her discretion. The physical examination was devoid of any treatment interventions during examination process. The physical examination included necessary systems review, functional movement and range of motion assessment, neurologic screening, palpation, joint and soft tissue mobility, and special tests as needed based on the patient presentation to come up with a working hypothesis needed to progress with treatment. Duration of the physical examination was also recorded. Upon completion of the physical examination, all pre-history measurements were once again repeated by the non-attending PT. This concluded the study and the remainder of the session and subsequent plan of care was per attending PT discretion.

Data analysis

Data analysis was performed using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated for means and frequencies for the sample population. A significance level of .05 was set for all analyzes. Changes in non-parametric outcome measures (NPRS-low back, NPRS-leg, FABQ-PA, FABQ-W, PCS) between the three time points were analyzed by using Friedman's ANOVA with all pairwise for multiple comparisons. Individual mean changes and adjusted significant scores by Bonferroni

Correction for multiple tests were calculated for the different time frame comparisons. Generated Z-score was used to determine the effect size ($r = Z/\sqrt{N_1 + N_2}$). Interpretation of effect size reported as small 0.1, medium 0.3, and large 0.5 [50].

Repeated measures ANOVA was used to analyze for time point changes for trunk flexion and PPT at the three different measurement points. Mauchly's test was used to look for sphericity and the Geenhouse-Geisser correction was used to correct for violation of sphericity.

Differences between participant outcomes for each of the clinicians were evaluated through one-way ANOVA for initial status (age, duration of symptoms, ethnicity, gender, ODI, and baseline outcome measurements) and changes after history taking and physical exam for the outcome variables of interest. For any significant findings, a post hoc Bonferroni correction for multiple tests was calculated to determine significance.

Pearson correlations were calculated to determine if there were associations between the differences of outcome measures at baseline and values following either the history or physical examination based on the duration of the patient's pain, duration of the history, duration of the physical examination, and the perceived connection with the physical therapist providing the care.

Results

Sample description

A total of 34 patients consented to participate and complete all data collection in this single cohort study. Six participants were excluded during the consent process due to age ($n = 3$), lack of consent ($n = 2$), and a skin lesion over the testing site ($n = 1$). Table 1 shows demographic information for the participants. The cohort consisted of patients with mean duration of LBP of 113.7 months (range 1–360 months) and mean

Table 1. Demographics and clinical characteristics of patient population.

	Population sample ($n = 34$)
Mean age (years) \pm SD	57.7 \pm 18.7
Gender, female (%)	18 (52.9)
Race, n (%)	
African-American	2 (5.9)
Asian American	1 (2.9)
Hispanic	1 (2.9)
Caucasian	29 (85.3)
Other	1 (2.9)
Educational level, n (%)	
High school	15 (44.1)
College graduate	10 (29.4)
Postgraduate education	9 (26.5)
Currently employed, n (%)	22 (64.7)
Previous history of LBP, n (%)	27 (79.4)
Previous history of back surgery, n (%)	8 (23.5)
Duration of LBP (months) \pm SD	113.7 \pm 101.1
Oswestry disability index \pm SD	28.2 \pm 14.8

SD, standard deviation; LBP, low back pain.

disability (ODI) of 28.2% indicating moderate disability. Subjects presented to each treating therapist with no significant differences in age, gender, ethnicity, duration of symptoms, FABQ-PA, FABQ-W, PCS, low back and leg pain, and PPT at initial intake. The only significant difference was one set of clinicians had patients with significant differences for their ODI score, $F(3,30) = 4.37, p = .011$.

LBP and leg pain

Mean scores with standard deviation for LBP and leg pain are reported for each test point (Table 2). NPRS for LBP significantly decreased following the conclusion of the physical exam from intake measurements and showed a moderate effect size, yet mean improvements did not meet or exceed MCID. Leg pain showed a significant change after history taking at a moderate effect size but did not reach MCID levels (Table 3). There was no difference found between the changes after history taking or physical exam with each individual clinician and their patients with these outcome measurements. Immediate following the history, eight patient's (23.5%) LBP decreased ≥ 2 points exceeding MCID, while nine patient's (26.5%) leg pain reduced ≥ 2 points. Four patient's (11.7%) LBP decreased ≥ 2 points from after the history taking to after the physical examination and no patient's leg pain eased with addition of the physical examination.

Psychosocial: FABQ and PCS

FABQ-PA improved at each time point but fell short of significance after applying the Bonferroni correction (Table 3). There were no differences found for FABQ scores between clinicians with their specific patients. Prior to the history, 13 patients (38.2%) exceeded the cutoff score of >14 points for increased disability, whereas the number of patients exceeding the cutoff was nine (26.5%) after the history and seven after the physical examination (20.6%). FABQ-WS also showed minimal improvements at each time point, but did not

Table 2. Mean outcome measurement scores at each time point.

	Arrival	Post history	Post physical examination
NPRS – low back	3.97 \pm 2.25	3.02 \pm 2.14	2.74 \pm 2.43
NPRS – leg	2.69 \pm 2.67	1.65 \pm 2.45	1.74 \pm 2.57
FABQ – PA	12.97 \pm 4.54	11.35 \pm 5.36	10.29 \pm 5.89
FABQ – W	14.06 \pm 11.37	12.50 \pm 11.03	11.59 \pm 9.85
PCS	25.47 \pm 9.19	22.76 \pm 8.39	22.28 \pm 8.76
Lumbar flexion	16.68 \pm 11.56	14.41 \pm 10.95	12.54 \pm 11.33
PPT – hand	8.39 \pm 4.20	9.57 \pm 5.58	9.87 \pm 6.09
PPT – upper trapezius	9.83 \pm 5.51	11.36 \pm 6.51	12.26 \pm 7.06
PPT – low back	10.61 \pm 6.37	13.05 \pm 8.14	14.56 \pm 9.12

Values are mean \pm standard deviation.

NPRS, numeric pain rating scale; FABQ-PA, fear-avoidance belief questionnaire-physical activity subscale; FABQ-W, fear-avoidance belief questionnaire-work subscale; PCS, pain catastrophizing scale; PPT, pain pressure threshold.

Table 3. Mean change score between each time point for pain, fear-avoidance, and catastrophization with significance values and effect sizes.

	Friedman's ANOVA	Change between arrival and post history			Change between post history and post physical examination			Change between arrival and post physical examination		
	<i>p</i> -Value	Mean change	<i>p</i> -Value	Effect size (<i>r</i>)	Mean change	<i>p</i> -Value	Effect size (<i>r</i>)	Mean change	<i>p</i> -Value	Effect size (<i>r</i>)
NPRS – low back	0.003	0.95	0.345	0.19	0.28	0.489	0.17	1.23	0.009	0.36
NPRS – leg	<0.001	1.04	0.033	0.31	−0.09	1.00	−0.02	0.95	0.054	0.29
FABQ – PA	0.041	1.62	0.825	0.13	1.06	.609	0.15	2.68	.054	0.29
FABQ – W	0.097	1.56	n/a	0.18	0.91	n/a	0.13	2.47	n/a	0.29
PCS	<0.001	2.71	.003	0.40	0.48	1.00	0.09	3.19	<0.001	0.49

NPRS, numeric pain rating scale; FABQ-PA, fear-avoidance belief questionnaire-physical activity subscale; FABQ-W, fear-avoidance belief questionnaire-work subscale; PCS, pain catastrophizing scale.

reach significance levels (Table 3). Only two patients exceeded the cutoff score >34 points at the initial evaluation, of which one dropped below the cutoff after the history and physical examination. PCS improved significantly with a moderate effect size from arrival to after history taking, but did not show a significant change between history taking and physical exam (Table 3). One significant difference was found between two therapists in patient improvements in PCS score after objective exam, $F(3,30) = 3.14$, $p = .040$. Prior to the history, 12 patients were classified as high on the PCS (score >30 points), whereas only 6 exceeded the cutoff after the history as well as the physical examination.

Physical tests: flexion and PPT

With each of the outcome measures of lumbar flexion and the three different PPT measures sphericity assumption was violated, so the Greenhouse–Geisser adjustment was used. Figure 1 showcases the differences in flexion during the examination process. Active lumbar flexion significantly improved following the history by 2.27 cm ($p < 0.001$), it improved another

1.86 cm following the physical examination ($p < 0.001$) for an overall increase of 4.14 cm ($p < 0.001$). None of the changes met or exceeded MCID and there were no differences between therapists for patient changes with lumbar flexion.

PPT change for the hand, upper trapezius, and low back from initial measurement to immediately after the history and following physical examination all exceeded MCID of 15% (Figures 2–4). But overlap in 95% confidence intervals between changes was evident. Some differences were found when comparing individual therapist's changes after history taking or physical exam for the different PPT measurements, but none were consistent across all three measures or between specific therapists.

Duration of evaluations

The mean duration of the history was 20.5 minutes (range 11–35 minutes) and physical examination was 18.4 minutes (range 8–41 minutes). There were no statistically significant correlations between the duration of the subjective examination and the pre-to-post changes of any of the outcome measures taken. There

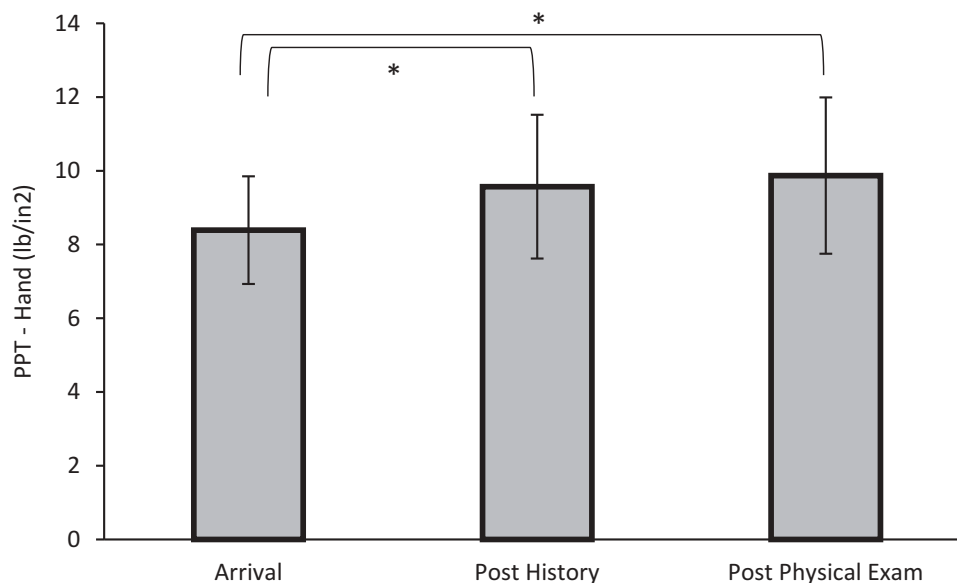


Figure 2. Means of pain pressure threshold (PPT) between each time point for the web space of the dominant hand in pounds per square inch (lb/in²) with 95% confidence interval bars. * $p < 0.05$ between arrival and post history and arrival and post physical exam.

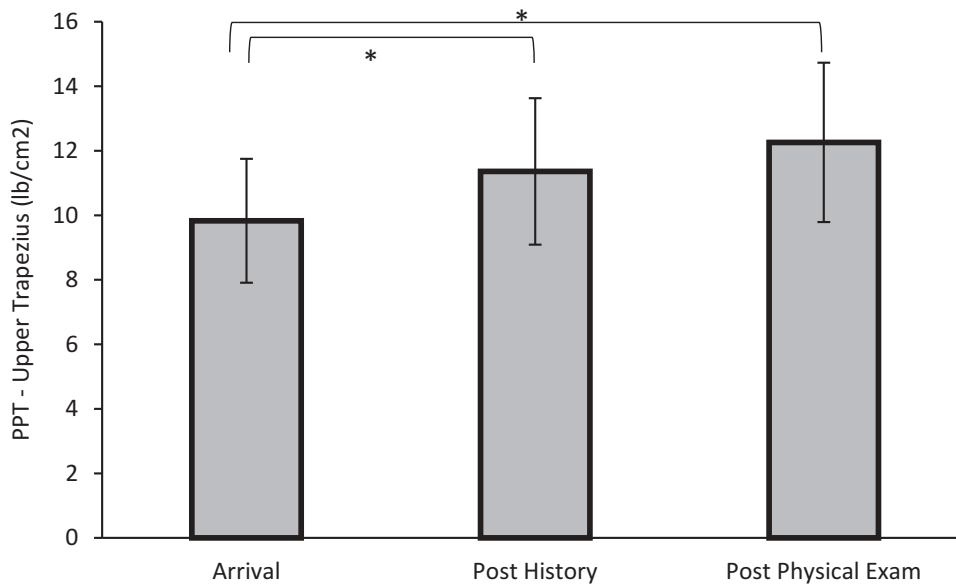


Figure 3. Means of pain pressure threshold (PPT) between each time point for the upper trapezius on their dominant side in pounds per square inch (lb/in²) with 95% confidence interval bars. **p* < 0.05 between arrival and post history and arrival and post physical exam.

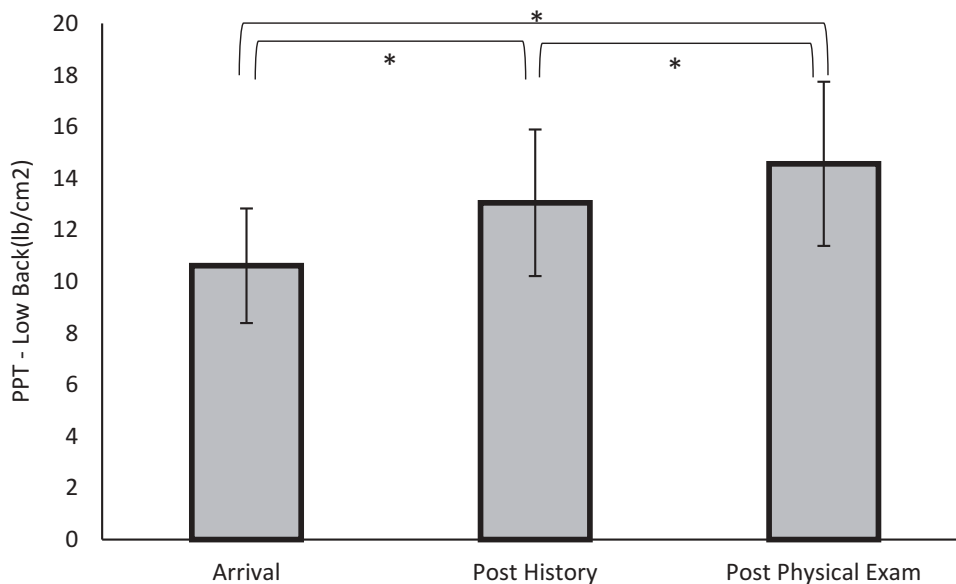


Figure 4. Means of pain pressure threshold (PPT) between each time point for the adjacent to L3 spinous process on their dominant side in pounds per square inch (lb/in²) with 95% confidence interval bars. **p* < 0.05 between arrival and post history, post history and post physical exam, and arrival and post physical exam.

was significant differences, $F(3,30) = 9.16, p < .001$, between one clinician and two of the other three clinicians for longer duration of history taking portion of the exam. Mean duration of the history taking between each clinician was 13.67, 18.62, 21.63, and 28.57 minutes. The same clinician also had significant difference for a longer time for the physical exam, $F(3,30) = 11.91, p < .001$, between the other three clinicians. Physical exam mean duration of time for each clinician was 15.12, 15.17, 17.5, and 28.14 minutes. In contrast, the duration of the physical examination yielded a few positive correlations in regards to PPT at the low back ($r = 0.366; p = 0.033$) and hand

($r = 0.345; p = 0.046$). Interestingly, the duration of the objective examination also resulted in a negative correlation for the PCS ($r = -.578; p < 0.001$).

Connection with the patient

The mean score for perceived connection by the therapist during their history taking was 7.15 (range 3–10). There was no difference in connection score with all but one patient outcome scores between clinicians. PPT for the upper trapezius at intake was positively correlated to the perceived connection the PT felt during the examination process ($r = 0.371; p = 0.031$).

Discussion

In patients presenting with LBP to PT, the evaluation process of history taking and conducting a physical examination yields a significant therapeutic effect in regards to pain, fear-avoidance, pain catastrophization, movement, and sensitivity of the nervous system. Some changes met or exceeded clinical significant differences but they did not correlate to the duration of the examination and perceived connection by the PT.

Following the history taking, the NPRS leg pain, PCS, trunk flexion, and PPT measurements showed significant improvements from initial intake. With the completion of the combination of the history and physical examination, all these measures with the addition of NPRS for LBP improved significantly. In contrast, only two measures (active trunk flexion and PPT for the low back) were significantly improved with the addition of the physical examination when compared to the measurements after history taking. In all, the history taking yielded most of the significant changes seen in the evaluation process. It could be argued that the history, as first contact, versus the physical examination allowed for an immediate opportunity to connect, alleviate fears, and establish a TA. This assumption is supported by the current literature on TA that implies therapist characteristics such as strong communication and listening skills (verbal and non-verbal) [22,23,51–54], demonstrating empathy [23,55–59], being respectful and validating the patient [22,52,56,58], and developing rapport/connection [23,52,55,58,59]. Within the history taking, the display and use of the various bonding elements of TA fosters trust, which in many ways set up the remainder of the clinical encounter.

In this study, the physical examination also yielded a therapeutic effect by itself as well as enhancing various post-history measures. Physical tests are a cornerstone of a PT examination to rule in or out potential problems are a key element of patient expectations [9,10,]. The physical tests within the physical examination likely enhance confidence and alleviate fears of movement as seen in the immediate changes in ROM. The reduction in PPT for the low back may be due to potential changes in psychological variables related to the reduction of fear of movement after going through the physical examination process [60]. These results concur with studies showcasing the power of movement-based tests on movement [61,62]. The physical examination, however, cannot and should not be disconnected from the history and the results from this study may imply that the physical examination yielded such positive changes since the history taking set up the various parameters (TA and trust), which is essential for outcomes [8,17,20,21].

An interesting finding regarding the inverse correlation with time during the evaluation and the PCS was produced during this study. More time during the evaluation did show an increase in PCS, which may

be due to the patient becoming more worried during the extended examination time. A quick yet thorough examination may reflect to the patient that everything is okay and more 'normal' than a longer examination. The longer examination time may create some increase magnification and rumination within the patient that the therapist is spending lots of time, thus finding more problems due to their negative outlook. Further study into this potential phenomena would be needed to confirm findings. There potentially could be middle range that is optimal for the examination process in regards to time. There most likely needs to be adequate time to develop the TA and gather needed information for the examination process, but not too long that TA gains neutralize or become a negative [23,52,55,58,59]. In essence, 'being present' and focused on the task at hand (examination and getting to know the patient) may be more important than just time alone [63].

The other surprising finding is that connecting with the patient did not correlate with the changes in pain or function. The fact that connection did not correlate may be due to the question only being asked from the PT-perspective and not the patient. Additionally, the field of 'connection' – be it from provider to patient or vice-versa is poorly understood, especially if they are different or similar when surveying clinician and patient. Future studies should explore this thought.

Study limitations

The study contained various limitations with the most pressing being the study design of a cohort observational study that cannot provide direct causal relationships occurred between the changes found in the outcome measures. The pragmatic design of the study with no specific controls put on history taking and physical examination process are uncontrolled variables in the study design that could affect the findings. Each therapist provided their history taking and examination in their usual fashion. This is demonstrated in the difference in time to deliver history taking and physical exam between each therapist, with one therapist taking significantly longer than the others. Even though this individual took longer, they did not see any improvements in any of the outcome measures compared to other clinicians. In fact, the few measurements that showed some significant differences between the different therapists, the clinician taking longer had lower improvements in their scores. Caution needs to be applied when looking at the individual therapist comparisons as the study design was not powered for this type of analysis, so false positive or negative results may be present. We look forward to future research questions with study designs developed and powered accordingly to further investigate the potential for history taking and physical examination process can have on outcomes.

History taking was done first on every patient followed by physical examination because of the pragmatic design of the study. The larger changes in outcome measures following the history portion may have been because it came first and if the order of delivery during the evaluation process was reversed with the physical examination taking place prior to subjective history taking the results may be reversed as well. Connection ratings were only asked of the clinician, not the patient and validation of the connection question has not been studied. The patient sample only contained patients with LBP, so it may be difficult to generalize findings to other patient populations. The short duration of the follow-up with the design being pre-post does not lead to indication of changes in outcome measures are sustained over time or if only maintained for only short time frame.

Another cause for the changes found could be due to the Hawthorne-effect. The patients may have demonstrated improvements purely from the fact of knowing they were being assessed during the study. The potential Hawthorne-effect actually plays into all clinical encounters as patients may alter their behavior due to the awareness of being observed and evaluated.

Post hoc power analysis showed that the sample size may have been too small based on effect sizes found at the $\alpha = 0.05$ level. Because of the smaller sample size, there is more likely higher variability in the results, so they should be interpreted with caution as bias may be present. Small sample size increases the risk for Type II error for any of the differences between testing points and clinicians.

Conclusion

The examination process of history taking and physical examination lead to positive therapeutic effects of short-term decreases in pain, catastrophization, improved functional mobility, and decreased sensitivity to pressure in patients being seen for LBP by a PT. The most significant reduction was found after the initial history taking process. The examination process and ritual that occurs may be a vital component of the development of the therapeutic alliance and overall patient outcomes.

Highlights

- This study shows that the evaluation process by itself plays a big role in the improvement of patients with low back pain at the initial consultation, not just the treatment.
- The history taking portion showed to have a larger effect over the physical exam on reducing pain and function during the initial evaluation.
- The therapist reported level of connection did not alter the improvements in pain in function following the evaluation process.

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