International Journal of Osteopathic Medicine 33–34 (2019) 16–23

Contents lists available at ScienceDirect

International Journal of Osteopathic Medicine

journal homepage: www.elsevier.com/locate/ijosm

Review

Is visceral manipulation beneficial for patients with low back pain? A systematic review of the literature

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ARTICLE INFO

Keywords:
Visceral manipulation
Visceral range of motion
Low back pain
Systematic review

ABSTRACT

Objectives: Visceral dysfunction (e.g., mobility or motility restriction) may be an underlying cause or contributing factor for some non-specific LBP and can be treated by osteopathic manipulative treatment (OMT). The aim of this registered systematic review (CRD42018100633) is to determine the effectiveness of visceral mobilization for non-specific LBP and explore associations between changes in range of motion of the viscera and LBP symptoms.
Data sources: In November 2018 peer-reviewed studies published in English or German where retrieved from the following databases from inception: Medline, Cochrane library, Science Direct, PEDro, OSTMED.RD and Osteo web res.
Study selection: Articles identified during searching were screened using the eligibility criteria based on title and abstract. Studies were included following independent review of full-text versions.
Data extraction: Study quality appraisal (risk of bias tool and the PEDro score) and data extraction (means and standard deviations for patient-reported outcome measures and impairments - pain, function and ultrasound measurements of change in visceral mobility) were completed/extracted by two independent authors.
Data synthesis: Cohen's effect sizes were calculated. Meta-analysis was not performed due to heterogeneity in study populations and methods. A total of four RCT's where included with a moderate to good methodological quality. Two studies reported a significant short-term (< 3 days) improvement in pain and visceral range of motion, although the clinical significance of these differences were unclear. Only one study reported significant differences in the long term (52 weeks) for pain and one for the medium term (6 weeks) for quality of life. Adverse events were poorly reported.

Introduction

Low back pain (LBP) is a highly prevalent [1] and costly [2] condition. Musculoskeletal discomfort associated with LBP is one of the key reasons that people seek osteopathic consultation [3]. The average recovery time of acute low back pain symptoms is around a month, in which time 85% of people return to work [4]. Nearly 90% of people with LBP are diagnosed with non-specific low back pain, meaning with no known cause [5,6].

The definition of a visceral dysfunction is a restriction in the mobility or motility of the viscera and connected fascial, neural, skeletal, vascular and lymphatic components [7]. A problem in the viscera can cause a diffuse and poorly localized pain which can be referred to other somatic structures [8]. For example, renal/uteral colics [9] and gastrointestinal tract problems [10,11] can cause referred pain to the back. People who have a combination of anterior trunk pain and LBP report more pain and disability in comparison to people with only LBP [12].

The theory behind the mechanism and effect of visceral manipulation on low back is not fully understood, but may be explained in part by the neurological 'structure function' model, which is one of the five structure-function models of osteopathy [13]. This model aims to explain the link between visceral and somatic systems based on their similar innervation. This so called viscero-somatic reflex was first described in the osteopathic literature 1907 by Louise Burns [14]. A viscero-somatic reflex arises from the afferent (i.e., sensory) fibers from the viscera to the somatic structures [15]. Nociceptive input from the viscera may lead to altered sensation in the autonomic innervated

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https://doi.org/10.1016/j.ijosm.2019.09.002
Received 21 January 2019; Received in revised form 21 August 2019; Accepted 3 September 2019
1746-0689/

segments of the viscera [16] and causes hyperalgesia [17–20], trophic changes in the muscle (atrophy) and subcutaneous tissue (increased thickness) in the referred pain area [17,21]. Nevertheless, it is not clear if a visceral dysfunction (e.g., a mobility restriction) causes similar symptoms as a visceral pathology/disease.

Visceral manipulation is one of many techniques used in osteopathic manipulative treatment (OMT) for LBP and other peripheral conditions [7,13]. The aim of visceral manipulation is to reduce pain in the somatic structure that shares innervation with the viscera that is manipulated [22], decrease adhesion and therefore improve mobility of the viscera [23], activation of viscero-somatic reflexes and increase of the intestinal pressure by putting pressure on the abdomen which may stimulate bowel movements [24]. In the literature visceral manipulation has been described as a treatment in the management of female infertility [23], irritable bowel syndrome [25] and chronic constipation [26,27]. Manipulation of the sigmoid colon has previously demonstrated hypoalgesia effects in the lumbar spine [22] which suggests it may be useful in the treatment of LBP. However, no systematic reviews have been conducted to determine the effectiveness of visceral mobilization for people with LBP.

Aims

The aim of this study is to systematically review the available literature to provide clinicians and patients with greater knowledge of the strength and quality of the research evidence underpinning this commonly used treatment technique. This systematic review focuses on the following two questions: 1) what is the effectiveness of visceral manipulation on pain, function and disability in individuals with low back pain and 2) is there a change in visceral range of motion after visceral manipulation?

Methods

This systematic review was registered on PROSPERO (CRD42018100633)[28] and was undertaken according to PRISMA guidelines [29]. The Eligibility criteria are reported in Table 1. Only randomized controlled trials (RCT's) of OMT interventions for LBP published in English or German language were included.

The search was performed in November 2018. The following single or combination of search terms were used: Low Back pain, Lumbar spine, Visceral Mobilization, Visceral manipulation, Osteopathy, Osteopathic, Physiotherapy and Manipulation. The following electronic medical databases were searched from inception: Medline, Cochrane library, Science Direct, PEDro, OSTMED.RD and Osteo web res. In addition, the reference lists of retrieved articles were searched individually for articles which were possibly overlooked during the primary search.

Data collection and selection

Two authors independently performed the search strategy, study selection and the data extraction as recommended by the Cochrane Collaboration [30]. Disagreements were resolved with discussion. If no agreement could be reached the third reviewer was consulted.

Table 1
Eligibility criteria.

Inclusions	Exclusions	Restrictions
Intervention	Spinal manipulations	Studies published in English and German
Low back pain	Test on animals	
Visceral manipulation	Visceral diseases	
Visceral mobilization	Pregnancy	No year restrictions
Osteopathy	Post pregnancy	
Physiotherapy	Constipation	**Study design**
	Irritable bowel syndrome	Audits, qualitative studies and mixed methods research
Study design		
Only RCT's		

Study characteristics

For each included study, data relating to the study characteristics, population, intervention, comparison and outcome (PICO) were extracted. The National Health and Medical Research Council (NHMRC) Hierarchy of Evidence was used to rate the different levels of research evidence included in the review [31]. The following information was extracted: country of origin, where and how subjects were recruited, number of therapists and their education (e.g. physiotherapist, osteopath or other health professional), inclusions and exclusion criteria reported, outcome measurements used, follow up duration, characteristics of the intervention and control group, treatment duration, and report of adverse effects.

Methodological quality

To identify the methodological strengths and weaknesses of the included studies the 10-item Physiotherapy Evidence Database (PEDro) scale was used (Table 2). The PEDro scale is validated [32] and has an acceptable reliability [33].

Assessment of risk of bias

In order to assess the risk of bias it is important to determine the strength of the available evidence. For example, articles with a high risk of bias such as errors in design, insufficient sample sizes or inappropriate allocation of subjects, subjective outcome measurements, may lead to an underestimation or overestimation of the available evidence [34]. To evaluate the risk of bias of randomized trials the Cochrane risk of bias tool was used [30]. The Cochrane risk of bias tool provides thirteen questions and is answered with low, unclear or high risk of bias [30]. Two reviewers made the assessment of the bias, if there are disagreement a third reviewer is consulted.

Data analysis

The effect size was calculated using the methods of Cohen [35] i.e., calculating standardized mean differences (SMD) and was calculated post treatment and for the follow up. The effect size was defined as small (0.2–0.5), medium (> 0.5 to 0.8) or large as (> 0.8)[36].

Results

Four RCTs [36–39] met the inclusion criteria (Fig. 1).The search identified 621 studies; 598 studies were excluded based on title and abstract and eleven duplicates were removed. After reading the full text of twelve studies, eight articles did not meet the inclusion criteria

Table 2
PEDro scale.

1. Eligibility criteria mentioned[a]
2. Randomization
3. Allocation Concealment
4. Groups at baseline similar
5. Blinding of subjects
6. Blinding of therapist
7. Blinding of accessors
8 .Measurement of at least > 85% of the follow up outcome
9 Intention-to-treat analysis
10 Between-group statistical comparison
11 Point and variability for the outcome measurement.

[a] Item 1 does not contribute to the total score.

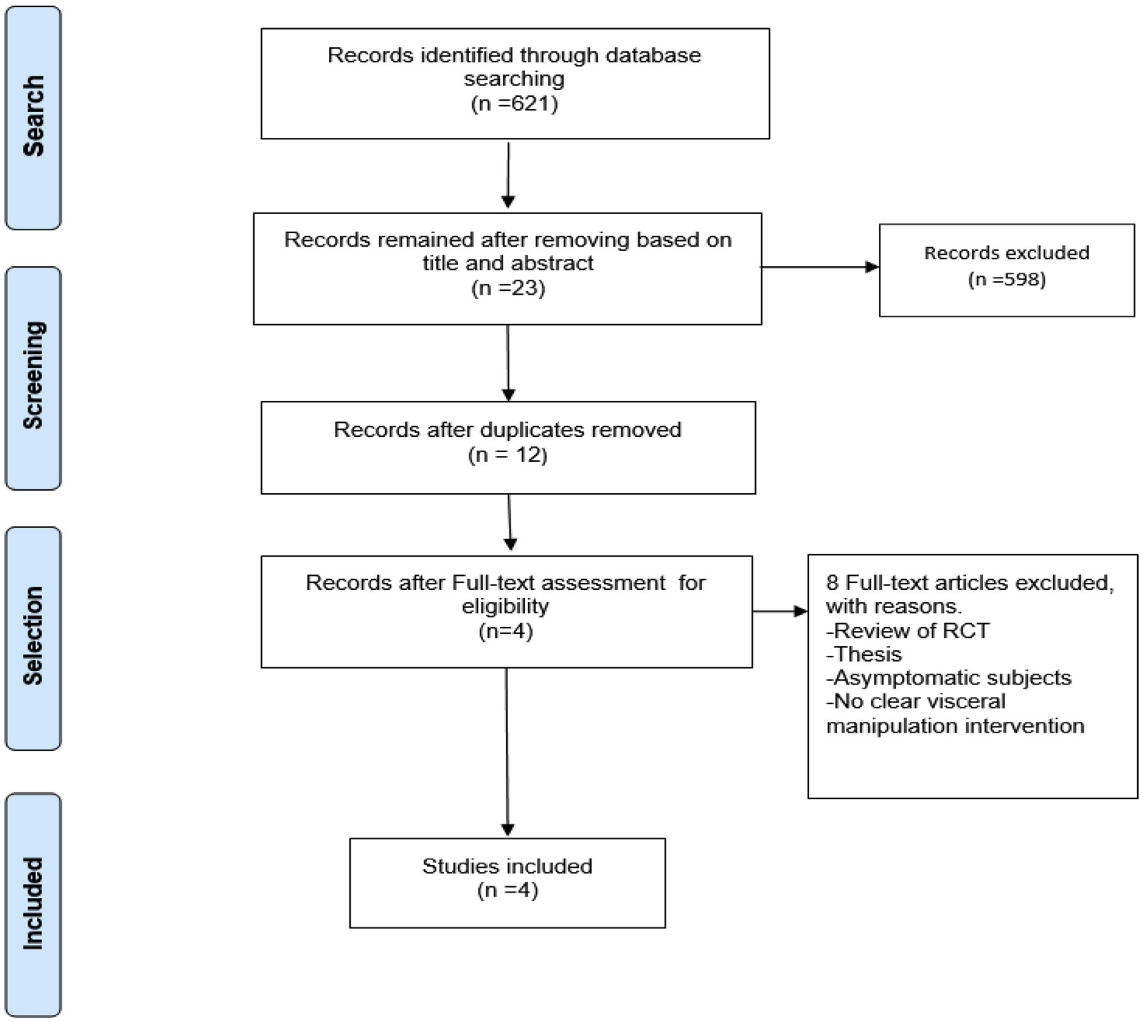

Fig. 1. Flowchart of the search Strategy.

because of the following reasons; one was a thesis and not peer-reviewed [40], one was not an RCT [41], one was a review paper [42], and three were narrative literature reviews [43–45]. One RCT included an asymptomatic subject [22], and one focused mainly on the effectiveness of a diaphragm manipulation intervention on low back pain and did not focus on visceral manipulation [46].

Overall, 303 subjects were included across the four studies. The number of visceral manipulation treatment sessions ranged from one to 12. Adverse events after visceral manipulation were either not reported or discussed in three studies [37–39] (Table 3). All subjects were recruited from clinical populations, three out of four articles were conducted in Europe [37–39] and the follow up duration ranged from immediately post-intervention to one year (Table 4).

The statistically significant differences between the intervention and control groups are summarized in Table 5. In two articles, treatment was performed by an osteopath and reported significant differences in pain reduction and increases in visceral range of motion for the visceral intervention groups compared to sham treatment groups [38,39]. One article found that standard care and standard care plus visceral manipulation both led to significant improvements in pain and function [37]. However, no significant difference was found between the two groups. There was a statistically significant improvement in quality of life for the visceral intervention group in the following subgroups; energy, emotional role limitations, mental health and total mental health score [38]. Panagopoulus et al. (2015) found no significant differences in disability and function when multi-modal physiotherapy techniques were compared to visceral manipulation at 2, 6 and 52 weeks [36], with the exception that there was a significant difference found in favor of visceral manipulation for pain at 52 weeks post treatment, despite no differences found at 2 and 6 weeks post intervention.

Methodological quality

PEDro scores for the four RCT articles ranged from 5/10[38] to highest 9/10[37] (Table 6). As the therapist delivered the intervention, blinding of the therapist (criterion 6) was not possible for this study design.

Risk of bias

The evaluation of the risk of bias (Table 7) revealed more than 50% of the criteria were considered as low risk (33/52) and 25% (13/52) were considered as a high risk across all four studies. All included studies scored a high risk on blinding of the therapist and personnel. Blinding of the therapist is difficult when a manual intervention is performed. One article demonstrated high risk of bias by not explicitly mentioning if the subjects or outcome assessor were blinded, and did not describe the dropouts rates [37]. Moreover, the description of the intervention lacked sufficient detail to allow for reproducibility, with multiple possible combinations of the intervention described. The number of sessions each participant attended was similarly not reported and therefore individual patient exposure and compliance considered as high risk of bias.

Table 3
Intervention characteristics.

First Author	Treatment Duration	Adverse events		Intervention group	Control group
Panagopoulos 2015	12 Treatments for 6 weeks, one to two session a week	No	Subjects	32	32
			Age range	18–80	18–80
			Age mean	N/M	N/M
			Sex	13 (M)	12 (M)
				19 (F)	20 (F)
Tamer 2017	10 Treatments for 5 weeks at two sessions a week	Not mentioned	Subjects	20	19
			Age median	42	36
			Age IQR	34.2–51.5	29–47
			Sex	8 (M)	10 (M)
				12 (F)	9 (F)
Tozzi 2011	1 Treatment	Not mentioned	Subjects	30 (LBP)	30
			Age range	21–58	28–52
			Age mean	39.1	39
			Sex	18 (M)	22 (M)
				12 (F)	8 (F)
Tozzi 2012	1 Treatment	Not mentioned	Subjects	109	31
			Age Range	20–59	23–55
			Age mean	39.8	37.6
			Sex	54 (M)	20 (M)
				55(F)	11 (F)

M = Male F= Female N/M = Not mentioned, IQR = Interquartile range.

Two studies [38,39] reported that the subjects were randomized; however, the authors did not describe the randomization process, e.g. computer-generated random sequence. The two studies that used ultrasound as a primary outcome measure tool did not demonstrate a valid and reliable method of ultrasound assessment [38,39] The compliance criteria is deemed irrelevant for single session interventions as was the case for two studies [38,39].

Effect size

All four articles had detailed information to calculate effect size (Table 8). Two articles showed large effect sizes for pain (1.1[39] and 1.2[40]), large/moderate effect sizes for visceral range of motion - kidney (2.6[39] and 0.8[40]) and bladder (2.3)[39]. Another article showed a moderate effect size for quality of life (0.7),pain (0.5) and function (0.4)[38]. Panagopoulus et al. (2015) reported small effect sizes for pain, disability and patient-reported function at six weeks post-intervention. A large effect size was found two weeks post intervention for disability (0.9) and a moderate effect size was maintained one year post intervention for pain (0.7)[37].

Pain

All four articles used reliable and validated outcome measurement for pain including the visual analogue scale (VAS) [37], numeric pain rating scale (NPRS) [36], and the short form of the McGill Pain Questionnaire (SF-MPQ) [38,39]. In the short term (< 3 days) visceral manipulation showed in two studies a significant improvement for pain in comparison with the control group [38,39]. One article found no significant difference at 2 and 6 weeks post intervention in comparison with the control group [36]. However, at 52 weeks post intervention there was a significant difference between groups in reduction of pain [36]. The other article that compared standard care with standard care plus visceral manipulation showed that both interventions were effective ($P < 0.001$) in reducing pain at 6 weeks from the start of the intervention [37]. No significant differences were found between the two groups ($p = 0.154$).

Disability and Function

Four reliable and validated questionnaires were used in two articles to measure disability and function [36,37]; Patient specific function scale (PSFS) [36], Roland Morris disability questionnaire (RMDQ) [36], Quality of life score (SF-36)[38] and Oswestry function scale (OFS) [37]. Panagopoulos et al. found no significant differences for function and disability at the following outcome measurements: 2 weeks (P = 0,158), 6 weeks ($P = 0.332$) and 52 weeks ($p = 0.882$) after the intervention [36].

For the subgroups of quality of life score there was a difference between groups in favor of the physiotherapy with added visceral manipulation [37]. There was a significant difference ($P < 0.05$) in all subgroups for 1) physical function ($p = 0.028$), 2) energy ($p = 0.034$) and 3) the total physical score ($p = 0.025$)[38]. Tamer et al. found that both groups had significant improvements in Oswestry function scores post-intervention for physiotherapy ($P < 0.001$) and physiotherapy with visceral manipulation added ($P < 0.001$)[38]. No significant difference was found between the two interventions ($P = 0.243$).

Visceral range of motion

Two articles examined the range of motion of the viscera with ultrasound and the effectiveness on somatic complaints [38,39]. The following viscera were examined: kidney [38,39] and bladder [38].

To compare pre-intervention to post-intervention range of motion of the kidney the Kidney Renal-Diaphragmatic distance (RD) was measured. In both articles the control group had no significant pre-post differences in RD distance. One article reported a statistically significant difference in RD distance from pre-intervention (10.33 ± 4.70) to post-intervention (21.60 ± 7.06), units not reported [38]. The other article reported a statistical significant difference ($p < 0.0001$) between the pre-intervention distance of 5.79 mm (St. Dev. 8.55) against post-intervention distance of 11.34 mm (Std. Dev. 8.96)[40]. The kidney mobility score (KMS) was also significantly different between asymptomatic subjects KMS (1.92 mm, Std. Dev. 1.14) and LBP patients (KMS 1.52 mm, STd. Dev. 0.79)[40]. Hence, the patients with nonspecific low back pain included in this study had significantly reduced kidney mobility ($P < 0.05$) in comparison with asymptomatic subjects [39].

The range of motion of the bladder was the measurement of the distance of the neck of the bladder and the anterior vesical wall on the perpendicular line [38]. For the intervention group the pre-intervention distance was 12.70 mm (St. Dev. 4.18) compared to a post-intervention distance of 22.73 mm (St. Dev. 3.73) which was a significant differences ($p < 0.0001$)[39]. None of the articles examined the reliability or

Table 4
Study and participants characteristic.

First Author	Level of research	Country of origin	Recruitment	Therapist Number	Inclusions and exclusions criteria reported	Outcome measurement	Follow up
Panagopoulos 2015	RCT (II)	Australia	Private physiotherapy clinic	Physiotherapist 2	Yes	Pain (NPRS) Disability (RMDQ) Function (PSFP)	2,6 and 52 weeks
Tamer 2017	RCT (II)	Turkey	University physical therapy department	Physiotherapist Not Mentioned	Yes	Pain (VAS) Disability (SF-36) Function (Oswestry function scale)	6 weeks after the beginning of the intervention
Tozzi 2011	RCT (II)	Italy	Clinical Centre	Osteopath 1	Yes	Pain (SF-MPQ) Ultrasound on Kidney and Bladder	Pain: 3 days post-intervention Ultrasound: post-intervention
Tozzi 2012	RCT (II)	Italy	Clinical Centre	Osteopath 1	Yes	Pain (SF-MPQ) Ultrasound on Kidney	Pain: 3 days post-intervention Ultrasound: post-intervention

Table 5
P Value between intervention and control group.

First author	Intervention	Control	P value*
Panagopoulos 2015	Physiotherapy plus visceral manipulation	Physiotherapy plus placebo visceral manipulation	Pain (NPRS) • 2/52: P = 0.362 • 6/52: P = 0.858 • 52/52: P = 0.015 Disability (RMDQ) • 2/52: P = 0.479 • 6/52: P = 0.418 • 52/52: P = 0.942 Function (PSFPS) • 2/52: P = 0.158 • 6/52: P = 0.332 • 52/52: P = 0.882
Tamer 2017	Osteopathy plus physiotherapy (vOMT)	Physiotherapy (OMT)	Pain (VAS): • 6/52: P = 0.154 Function (OFS): • 6/52: P = 0.243 Quality of life (SF-36) • 6/52: P= < 0.028
Tozzi 2011	Osteopathy	Sham	Kidneys ROM: • P < 0.0001* Bladder ROM: • P < 0.0001* Pain (SF-MPQ): • 3/7 (P < 0.0001*
Tozzi 2012	Osteopathy	Sham	Kidney ROM: • P < 0.0001* Pain (SF MPQ) • 3/7: P < 0.0001*

*P value is from Post Intervention Both = Intervention and control.
Osteopathy: include MET, Visceral techniques, Still techniques, Fascial techniques, HVLA, lymphatic pump techniques.
Physiotherapy: include Manual therapy, Exercise therapy, Stretching Lumbar re-training, Functional exercise prescription, Massage.

Table 6
PEDro score.

First Author	1[a]	2	3	4	5	6	7	8	9	10	11	Score
Panagopoulos et al., 2014	1	1	1	1	1	0	1	1	1	1	1	9/10
Tamer et al., 2016	1	1	1	1	0	0	0	0	0	1	1	5/10
Tozzi et al., 2011	1	1	0	0	1	0	1	1	0	1	1	6/10
Tozzi et al., 2012	0	1	0	1	1	0	1	0	0	1	1	6/10

[a] Item 1 does not contribute to the total score.

validity of ultrasound variables [38,39].

Two articles measured changes in visceral range of motion and in pain [38,39]. Both reported significant differences between pre- and post-measurement range of motion and a significant difference in the short term (< 3 days) for pain.

Discussion

The aim of this systematic review was to investigate the effectiveness of visceral manipulation on low back pain and to explore associations between changes in range of motion of the viscera and LBP symptoms. The main finding was that visceral manipulation may be beneficial in the short term for low back pain symptoms and may be associated with increased range of motion of the viscera. However, due to insufficient follow up periods it is not clear how long this effect lasted. Therefore, further research to explore its effectiveness is needed.

Caution should be taken when generalizing the findings of this systematic review (303 participants) to the wider population of people with LBP. Of the 303 subjects, 191 received visceral manipulation as an isolated intervention or as part of a multi-modal intervention such as manual therapy, muscle energy techniques (MET), Still Technique or

Table 7
Risk of Bias of the included studies assessed by the Cochran Risk of bias.[30].

Criteria	Panagopoulos 2015	Tamer 2017	Tozzi 2011	Tozzi 2012
Randomized	Low	Low	Unclear	Unclear
Concealment	Low	Low	High	High
Blinding of the Patient	Low	High	Low	Low
Blinding of the care provider	High	High	High	High
Outcome assessor blinding	Low	High	Low	Low
Drop-outs reported and acceptable	Low	High	Low	Low
Were the randomized participant analyzed	Low	Low	Low	Low
Free of selective outcome	Low	Low	High	High
Groups similar at baseline	Low	Low	Low	Low
Co-intervention avoided or similar	Low	High	Low	Low
Compliance acceptable	Low	High	Unclear	Unclear
Similar Timing of outcome measurement	Low	Low	Low	Low
Other Bias	Low	Low	Unclear	Unclear

exercise. In terms of generalizing the findings of this review, it is important to consider that the osteopathic intervention only had one treatment [38,39], whereas the physiotherapy intervention had ten to twelve treatments [36,37].

A major concern of this systematic review is that more than half of the included articles did not report or measure adverse events related to visceral manipulation [37–39]. Therefore, it is hard to conclude if visceral manipulation is safe because there is no sufficient data available. Less than a quarter of the subjects (64/303) participating in the included studies were asked or checked for adverse effects after the visceral manipulation and no adverse effect was reported [36]. It has been estimated that the incidence rate for adverse events is 2%–6% after OMT intervention [47,48]. The most common complaints were pain and discomfort after the intervention and no serious adverse effect was reported [48]. This is relatively low in comparison with the minor and moderate side effects after manual therapy, e.g. mobilization and manipulation, which has been reported to be 16–41% [49,50]. The incidence for a serious side effect after manual therapy is considered low [50,51].

Serious adverse effects after visceral manipulation were only reported in three studies. These included hepatic hematoma, perforation of the sigmoid colon, uretal stent displacement, embolizant of the kidney, ruptured uterus [52,53] and bladder rupture [54]. The person who performed the treatment ranged from traditional healer, rolfing therapist, family member or was not specifically mentioned [52–54]. The risk of serious adverse events should therefore be considered when making clinical decisions about the use of visceral manipulation.

Ultrasound was used in two articles as an outcome measurement to quantify whether visceral manipulation results in changes in the anatomical positions of the viscera after being treated [38,39]. Both articles did not mention if there were any reliable or validated studies to measure the visceral range of motion. To the knowledge of the authors there have been no recent reliability studies conducted for the renal length measured with ultrasound. Based on one older study, renal length has good intra-rater reliability [55]. Whilst these findings of these two articles are interesting, it is more clinically important to know whether these changes in visceral mobility are related to the viscera function and to the progression of LBP symptoms and function. Therefore, research is first needed to determine reliability of the diagnostic measurement of the viscera organ range of motion.

The range of motion of the following viscera, liver, spleen and kidneys is estimated from 0 mm to more than 27mm[56, 57]. However, the mobility of the kidney is highly dependent on both the intensity and type of breathing. For instance the cranio-caudal displacement of the kidney is threefold during forced aspiration compared to quiet breathing [58]. Standardizing breathing is a known problem described in a review on oncologic radiotherapy [59]. While the deepness of breathing compromises the reliability of kidney motion measurements,

Table 8
Effect size.

First Author	Outcome	Week	Intervention (SD)	Control (SD)	Effect size
Panagopoulus 2015	Pain (NPRS)	2/52	3.06 (2.08)	3.74 (2.25)	Small (0.3)
		6/52	2.31 (1.99)	2.33 (2.22)	Small (< 0.01)
		52/52	1.52 (1.65)	3.21 (2.27)	Medium (0.7)
	Disability (RMDQ)	2/52	5.78 (5.40)	6.26 (5.35)	Large (0.9)
		6/52	3.00 (2.96)	3.10 (3.98)	Small (0.02)
		52/52	2.06 (3.56)	3.50 (3.61)	Small (0.4)
	Function (PSFS)	2/52	6.10 (2.13)	6.15 (1.95)	Small (0.02)
		6/52	7.70 (1.81)	7.51 (1.86)	Small (0.1)
		52/52	8.43 (1.76)	7.55 (1.82)	Small (< 0.5)
Tamer 2017	Pain (VAS)	6/52	5.65 (1.64)	4.77 (1.91)	Small (< 0.5)
	Quality of life (SF-36)	6/52	42.95 (23.94)	22 (28.54)	Medium (0.7)
	Oswestry function scale	6/52	28.40 (18.19)	22.60 (14.09)	Small (0.4)
Tozzi 2011	Mc Gill (SF-MPQ)	3/7	15.517 (9.839)	25.05 (8.867)	Large (1.1)
	US Bladder	Post	22.73 (3.73)	12.90 (4.23)	Large (2.3)
	US Kidney	Post	21.60 (7.06)	10.10 (4.49)	Large (2.6)
Tozzi 2012	Mc Gill (SF-MPQ)	3/7	9.30 (5.55)	15.41 (5.24)	Large (1.2)
	US Kidney	Post	11.34 (8.96)	4.90 (8.15)	Medium (< 0.8)

Post = Post intervention 52 = weeks 7 = days.

the breathing pattern seems to be important as well. Due to increased diaphragmatic movement, abdominal breathers displayed more kidney motion than subject who used a thoracic breathing strategy [60]. Therefore, a standardization of the breathing should be reported in the article to receive consistent, dependable, repeatable, meaningful and trustworthy results.

The evidence for the effectiveness of visceral manipulation for low back pain is limited to a small number of randomized trials, of variable methodological quality with small sample sizes and limited to mainly short term (< 3 days) effects. Future randomized trials should be conducted with sufficient samples sizes as determined by power analysis and should focus on accurately reporting the treatment parameters (e.g. time, duration, treatment positions). Contra-indications to treatment, risks of adverse events and dropouts should also be reported clearly. Treatment reported in future studies should be standardized when possible and the long term (> 6 Months) effectiveness of visceral manipulation should be investigated.

Conclusion

In this systematic review it was shown that visceral manipulation for low back pain demonstrates beneficial effects for reducing pain and may improve visceral range of motion. However, these findings are based on a small number of studies with a high risk of bias. The lack of reporting of adverse effects in the articles is a major concern in relation to recommendations made for the safe use of visceral manipulation in the clinic.

Visceral manipulation is used to treat low back pain by clinicians; however, this systematic review highlights limitations to the reporting, quantity and quality of evidence underpinning its use. To justify ongoing use of this type of manual therapy it is of great importance that clinicians use reliable and validated outcome measurements to understand and reflect on the effectiveness of their treatment.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

Declarations of interest

All authors declare they have no competing interests.

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