

Scientific Osteopathic Approach To Patients With Low Back Pain



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The same author also published books on:

- Cranial Nerve Disorders and the Scientific Osteopathic Approach
- Fascial Chains
- Nutrition and Physical Complaints
- Posturology and its Scientific Osteopathic Approach
- Scientific Osteopathic Approach to Patients with Abdominal Complaints
- Scientific Osteopathic Approach to Patients with Cervical Pain
- Scientific Osteopathic Approach to Patients with Headache
- Scientific Osteopathic Approach to Patients with Knee or Foot Pain
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- Scientific Osteopathic Approach to Patients with Shoulder, Elbow, Wrist or Hand Pain
- Scientific Osteopathic Approach to the Immune System
- Scientific Osteopathic Approach to Vascularization and Oxygen Supply in Patients
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- Perimenopausal Women and their Complaints
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- Principles of Modern Osteopathy – Integration of Osteopathy into General Healthcare
- Evidence Based Practice
- Patient Information – What can Osteopathy do for You?

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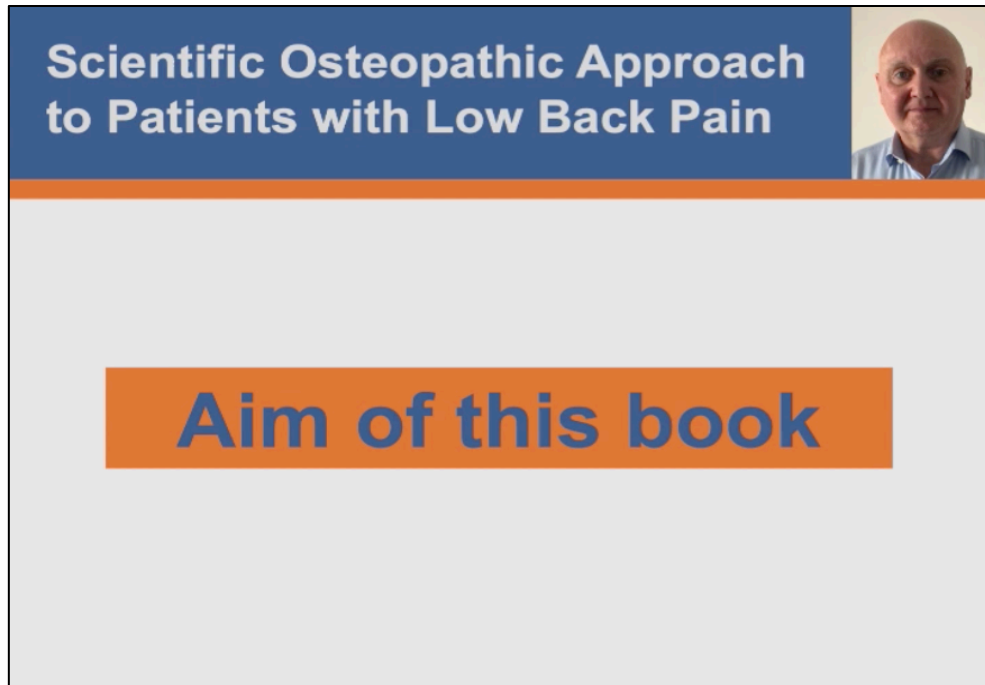
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Aim of this book

In this book, I provide all possible information, theoretically and practically to **manage patients with low back pain** in an Evidence Based Practice approach.



Video 1 - Aim of the book

We discuss

- Assessment and treatment strategies.
- Relevant and functional anatomical information.
- Information on the basic principles of osteopathy.
- Relevant and functional biomechanical information.
- Palpation (on topography and tissue quality).
- Exclusion diagnosis.
- Mobility tests.
- Techniques.
- Treatments.
- Clinical cases.

The book contains

- Texts.
- Figures.
- Explanatory videos.
- Streaming videos of all tests and techniques.
- Clinical cases.

Remark

Some elements in this book are repeated in the 4 Chapters since they apply to the 4 body regions and general differentiation strategy.

Learning outcomes

After having studies this book, the student will be able to:

- Efficiently differentiate between the different possible causes of low back pain.
- Recognize the red flags in patients with low back pain and be able to refer appropriately.
- Palpate, investigate and test the regions that originate low back pain.
- Set up and execute an appropriate treatment for patients with low back pain.

Concept

The gathered information to build up this book comes from different scientific search engines such as ScienceResearch, Google Scholar, Bioline International, Directory of Open Access Journals, ScienceDirect, PubMed, Medline, Mednets, Healthline, MedConnect, eMedicine and Medscape.

Beside this, the author added his more than 30 years of experience as an osteopath and teacher.

The **bibliography** can be found at the end of each Chapter.

This book ‘Scientific Osteopathic Approach to Patients with Low Back Pain’ consists of 4 main Chapters, depending on the region from which the low back pain originates:

- ***Chapter 1 – The Iliosacral Joints***
- ***Chapter 2 – The Sacroiliac Joints with Visceral Component***
- ***Chapter 3 – The Lumbar Spine***
- ***Chapter 4 – The Hip***

The different Chapters are divided into sub-chapters to make the book easier to read and study.

Evidence Based Practice - EBP

In this book, I respect the Evidence Based Practice (EBP) principles and approach.

This doesn't mean that everything I suggest in this book is proven on Evidence Based Medicine (EBM) basis. EBM is dominated by the pharmaceutical industry and EBM research is done on specific and highly selected cases. This is often without considering real life, in which we mostly see combinations of cases.

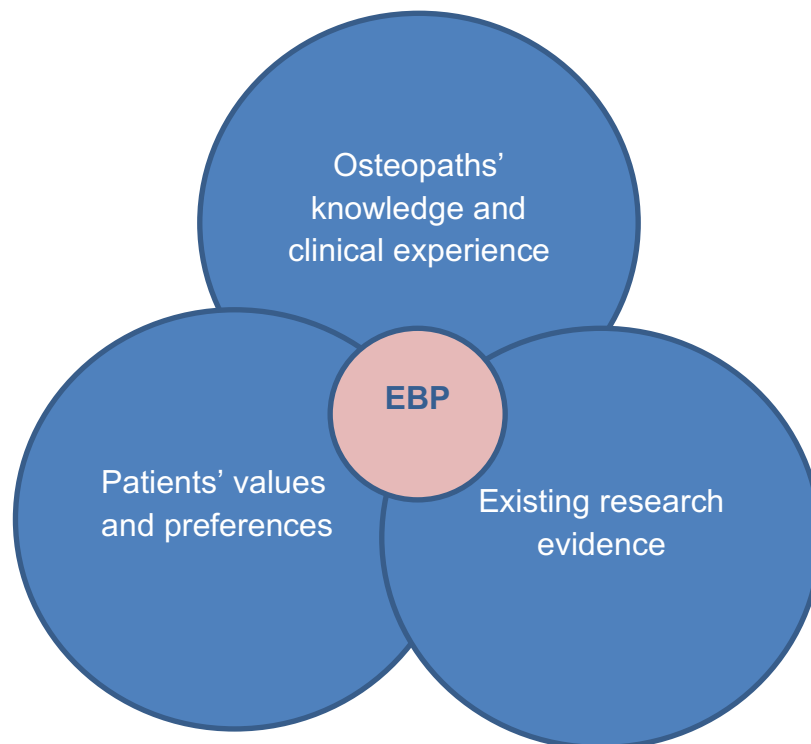


Figure 1 - Evidence based practice - EBP

EBP is 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research.' (*Sackett 1996*)

EBP is the integration of clinical expertise, patient values, and the best research evidence into the decision-making process for patient care.

Clinical expertise refers to the clinician's cumulated experience, education and clinical skills.

The patient brings to the encounter his or her own personal preferences and unique concerns, expectations, and values.

The best research evidence is usually found in clinically relevant research that has been conducted using sound methodology. (*Sackett 2002*)



Video 2 - Evidence based practice - EBP

Why Evidence Based Practice?

For scientifically educated readers, the level of this part may be a bit too elementary, but I will give it here, because there is still a large group of people who want to understand why an accurate scientific methodology is so important when testing the reliability of statements, tests and treatments.

All people, both you and I are susceptible to deception and self-deception.

Science is the only way to adjust our false perceptions and all too quick conclusions, and to make sure we don't deceive ourselves.

Some people say 'the treatment worked' but they don't realize that their personal experience is no basis for proof that the treatment indeed is or was effective.

All they can claim is that they have noticed an improvement after the treatment. This may indicate a real effect, but it may also be an inaccurate observation or a post hoc ergo propter hoc fallacy reasoning, incorrectly assuming that succession in time necessarily indicates a causal link.

A personal experience can therefore only be a starting point: we need the scientific method to determine what the observation actually means.

Some say: 'People who defend a scientific and evidence-based osteopathy do not seem to have confidence in what they see happening to their own eyes.'

The whole process of seeing is in itself largely an interpretation of the brain. We have two blind spots in our field of vision, and we are not even aware of them. I saw with my own eyes how a magician sawed a woman in two, but it was an illusion, a false perception. I saw how a patient got better after treatment, but my interpretation that the treatment was the cause of this improvement can be a mistake, based on a wrong attribution.

Why do we often have the impression that some treatments work: some possibilities:

- The affection just followed its normal course and lots of affections heal spontaneously.
- Many diseases and syndromes have a cyclic pattern whereby there are better and worse periods.
- We are all subject to suggestions.
- Maybe there was also another treatment, maybe medication?
- The original diagnosis could have been wrong.
- Temporary mood improvement is often mistaken for healing.
- Correlation and causality are often misinterpreted.
- It is not because an effect in time follows a certain action, that that action is necessarily also the cause of the effect. When the rooster crows and the sun rises, we usually realize that it is not the crows that make the sun rise.

There are so many ways to be wrong.

Fortunately, there is also a way in which we can ultimately get it right: scientific research. There is nothing mysterious or complex about the scientific method. In essence, it is just a handy toolbox full of sensible ways to test things.

In this book I use an Evidence Based Practice approach.

General Approach to Patients with Low Back Pain

1. Introduction and First Differentiation

Patients with low back pain are probably the largest group of patients that consult osteopaths, orthopedic surgeons, physiotherapists, manual therapists and chiropractors.

51–85% of all people have back pain at some time in their life. In the USA, back pain is the most common cause of activity limitation in people younger than 45 years, the second most frequent reason for visits to the physician, the fifth-ranking cause of admission to a hospital and the third most common cause of surgical intervention.

Data in other western countries are very similar.

When we talk about low back pain, acute or chronic, we mean pain (can be of different nature) in **the region of the lumbar spine, the pelvic and hip region.**

I often read theories and treatments for patients with non-specific low back pain.

This terminology 'non-specific low back pain' is a very poor terminology because it states that the cause of the low back hasn't been found.

What if you are a patient with low back pain and the therapist says 'I have no idea what this is, it is a non-specific complaint but I'll treat you,...'. Most patients accept this, but they don't realize that they then get also a very 'non-specific treatment'.

The therapists of 'non-specific treatments' claim success after some weeks although they don't realize that low back pain often heals spontaneously.

Non-specific low back pain just doesn't exist.

In every patient with low back pain, there is a cause for the low back pain, there is always a pain generator that is specific for that patient.

For osteopaths it is important to find:

- The structure that causes the low back pain (bone, capsule, ligament, muscle, fascia, nerve, blood vessel,...
- The pain generator (what is wrong with the pain causing structure).
- Which qualities of the pain causing structures can I influence? (mechanics, neurological conduction, vascularization and oxygenation, metabolic qualities).

For the above reasons, osteopath assess and treat every patient on individual basis; there are no generalized or standardized treatments.

When we see a patient with acute or chronic low back pain, it is important to first **differentiate whether the pain comes from:**

- The iliosacral region.
- The sacroiliac region with visceral component.
- The lumbar region.
- The hip region.

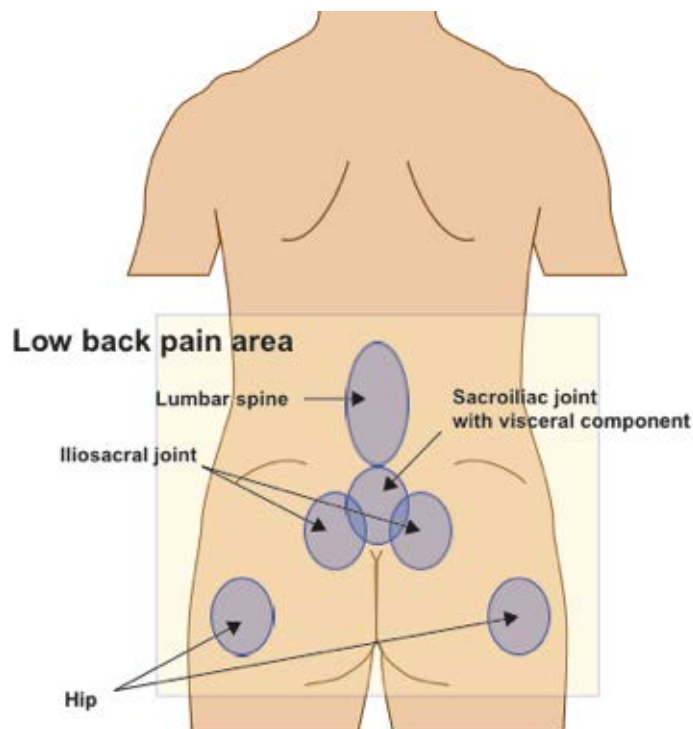


Figure 1 - Low back pain area

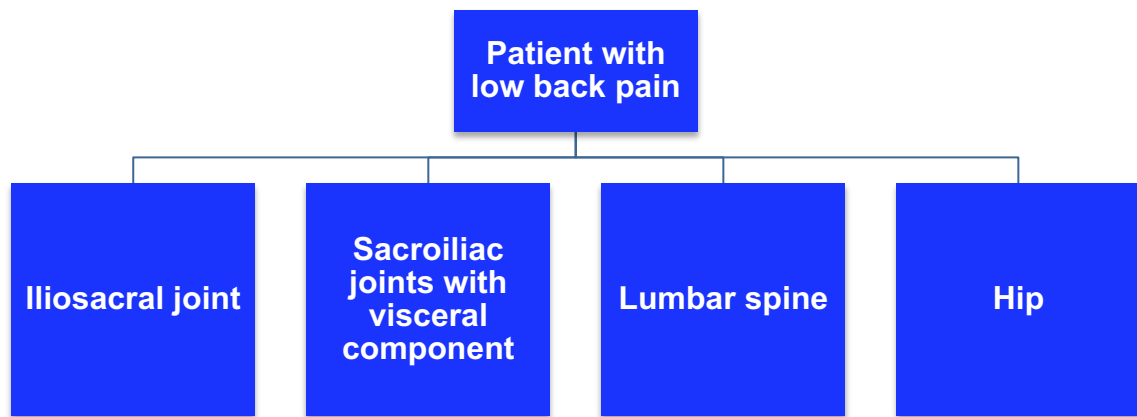


Figure 2 - First differentiation

2. Pain Generators

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.

The possible pain generators are:

- Tissue damage or near tissue damage such as overstretch or high pressure (mechanoreception).
- Ischemia (chemoreception – pH).
- Inflammation (chemoreception – pH).
- Infection (chemoreception – pH).
- Temperature (if high or low enough – thermoreception).

The pain is captured by nociceptors which are free nerve endings of sensory A δ and un-myelinated C nerve fibers, which respond to tissue damage. They guide the pain stimuli to the spinal cord, from where it is further transmitted to the brain.

3. This First Differentiation is Done By

- Etiology (cause).
- Communication with the patient (verbal, visual...).
- Observation.
- Specific tests.

Once we found out whether the complaint comes from one of the above-mentioned regions, the specific testing can begin.

To be safe and efficient, the osteopath has a specific way of reasoning. Besides the classic clinical reasoning, there is the specific osteopathic reasoning. This osteopathic reasoning is based on the osteopathic principles.



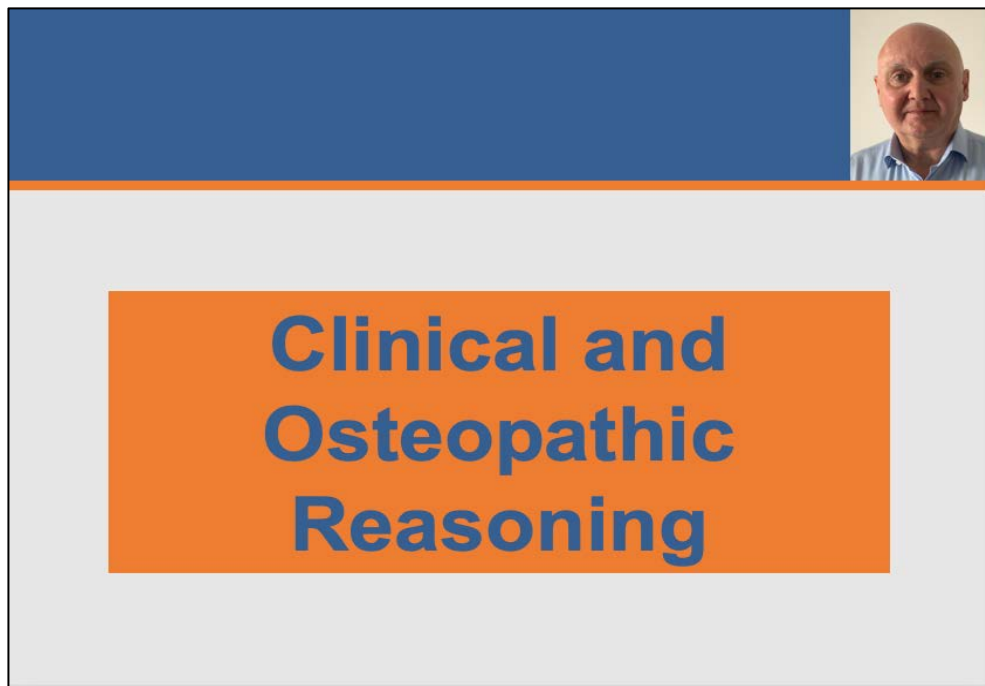
Video 1 - First differentiation iliosacral joint

4. Osteopathic Principles



Video 2 - Osteopathic principles

5. Clinical and Osteopathic Reasoning



Video 3 - Clinical and osteopathic reasoning

6. Case History

Depending on different criteria that we get from the case history, we can have a good impression from where the complaint originates.

Differentiation per region

The pain/complaint comes from	The lumbar region	The iliosacral region	The sacroiliac region with visceral component	The hip
Location of the pain	Also above S ₁	Below the iliac crest and more lateral of the midline – unilateral	Below the iliac crest, unilateral, bilateral or undefined	Below the iliac crest, unilateral and more lateral of the midline
Groin pain	Possible	Possible	Possible	Possible
Irradiation	Possible in whole lower extremity	Possible till knee region	Possible till knee region	Possible till knee region Possible all ages
Muscle force	Possibly weakness	Mostly normal	Mostly normal	Mostly normal
Sensibility disturbance	Possible	Seldom	Possible	No
Reflexes	Possibly affected	Normal	Normal	Normal
Intensity of the pain (the worst back pain is rarely the scariest)	Whole range possible	Whole range possible	Whole range possible	Whole range possible
Gender	Equal	Equal	More in women	Equal
Age	Under 20,	Possible all	Under 20,	Possible all

	less likely	ages	less likely	ages
Morning stiffness	Possible	Possible	Possible	Possible
Worse by coughing (sign of inflammation)	Possible	Possible	Possible	Possible
Worse by lifting	Possible	Possible	Possible	Possible

The following general scheme is a guide for the anatomical inventory process (to find the structure that causes the complaint). It uses keywords and typical characteristics of complaints finding origin in certain structures.

Use the following keywords to pose specific questions to your patients.

STRUCTURE WHERE COMPLAINT ORIGINATES	CONDITION (What must be considered?)	KEYWORDS	PROVOCATION
Bony structures	Bone cancer, tumor (malign or benign) Expansive processes (cysts,...) Fracture or burst	* Sensitivity in the region (constant and spontaneous) * Progression of intensity (worsened over several days or weeks) * Nocturnal pain, relieved on movement * Pain during weight bearing activity * Trauma (always suspect fracture or burst)	Compression test Percussion painful Direct pressure painful
Intra-articular cause	Arthritis (with or without sepsis)	* Sensitivity of the region * Progression of intensity (worsened over several days or weeks) * Nocturnal pain, sometimes relieved with movement * Pain during weight bearing activity * Recent infections in other body regions	Compression test painful

		* Fever (in case of sepsis)	
Capsule/ Ligamentary cause	Overstretch or Retraction of ligaments	* After specific maintained positions * Start (on movement) pain * Morning stiffness (reduces when moving) * Better during non-weight bearing movements * Worse during weight bearing activity * Constant but stable pain	Direct pressure is painful Held stretch of the ligament is painful Maintained traction becomes painful
Muscle	Spasm of the muscle Overstretch of the muscle Trophicity changes of the muscular tissue	* Heavy radiation during movement, resistance or stretch (in the direction of the muscle) * Pain free in rest (in certain positions where the muscle can relax) * In cases of trophicity changes, the muscle reacts more like a ligament	Direct pressure, stretch and contraction are painful
Arterial	Diameter narrowing of the arteries	* Cramps * Loss of normal color (pale or purple) * Worse during circulatory load (activity) * Position dependent * Radiation sometimes deep sensation	Palpation of pulses before and after circulatory load (after the load, the pulse is reduced)
Venous	Entrapment in the course of the venous return towards the heart	* Feeling of heaviness * Fatigue in the region of the complaint * Swollen feeling * Blue-red color * Warm feeling * Position dependent * Varicose veins (visible or not)	Positional changes Observation
Lymph	Entrapment in	* Feeling of heaviness	Palpation of

	the course of the lymphatic return	<ul style="list-style-type: none"> * Fatigue * Swelling (visible or not) * Pallor * Moistness * Red striations 	nodes possible Observation of lymph nodes and swelling
Peripheral nerve	<p>Entrapment of the nerve</p> <p>Radicular-pseudoradicular complaints</p> <p>Tension</p>	<ul style="list-style-type: none"> * Radiation in the course direction of the nerve * Motor and/or sensory changes 	<p>Tension tests (stretch of the nerve)</p> <p>Abnormal reflexes</p> <p>Sensation changes</p> <p>Muscle force changes</p>
Central neurological cause		<ul style="list-style-type: none"> * Consciousness changes * Cranial nerve dysfunctions * Bilateral neurological symptoms 	<p>Cranial nerve function testing</p> <p>Babinski reflex</p> <p>Co-ordination/balance/ senses testing</p>
Neurovegetative system	Hyper/hypofunctions	<ul style="list-style-type: none"> * General status (hyper/hyposympathetic) <p>Segmental symptoms</p>	Observation of the segments, dermatomes
Metabolic	Dietary/excretory organs/oxygen supply (heart/lung functions)	<ul style="list-style-type: none"> * Generalized symptoms * Difficult localization 	
Systemic conditions	Diabetes, rheumatism...	Typical characteristics, depending of the dysfunctional system	Classic assessment in combination with the osteopathic assessment

Scientific Osteopathic Approach to Patients with Low Back Pain



Case History

Video 4 - Case history



General red flags

(Red flags are signs and symptoms that cannot exclude severe illness)

- The risk for severe illness in low back pain is higher at the age under 20 and above 55.
- Fever and chills.
- Weight loss.
- History of cancer.
- General unwell feeling and extreme fatigue.
- Recent bacterial or viral infections.
- Associated chest pain with shortness of breath.
- Light tapping on the bones is painful.
- Bilateral complaints (both legs: numbness, tingling, muscle weakness).
- Drop foot (neurological emergency) and other paralysis.
- Difficulties urinating, incontinence (overflow or loss of control).
- Pain not getting better after 6 weeks or even getting worse.
- Saddle pain or numbness.
- Trauma (even minor) may cause fractures.
- Structural deformities.
- Sudden onset of abdominal pain.
- Abnormal vital signs (tachycardia (>120 bpm), bradycardia, tachypnea (>30bpm), hypotension).
- Unexplained bleeding (bloody urination, unexplained vaginal discharge).

- Anemia.
- Jaundice.
- Nocturnal pain.
- Non-mechanical pain.
- Joint swelling with heat.
- Pain not relieved by rest.
- Drug abuse.
- Prolonged corticosteroid use.
- Personality disorders, confusion.

Some of these red flags are more or less red. F.E. weight loss can also come from a diet.



Video 5 - Red flags

7. Acute or Chronic

There are different views on when and why an acute pain turns into a chronic pain. Mostly, acute means within the first 6 months. Once the pain persists more than 6 months it is called chronic pain. **More details on acute and chronic pain come later in this book.**



Figure 3 - Case history

8. Specific Tests

After the case-history (communication with the patient), specific tests differentiate between the iliosacral joint, the sacroiliac joints with visceral component, the lumbar spine and the hip.

Remark:

J. Licciardone found in patients with non-specific low back pain the following division in the presence of somatic dysfunction:

- Lumbar = 49%.
- Sacrum/Pelvis = 28%.
- Innominate/Pelvis = 11%.
- No somatic dysfunction = 7%.

The execution and description of the specific tests can be found in the different Chapters on:

- ***The iliosacral joints.***
- ***The sacroiliac joints with visceral component.***
- ***The lumbar spine.***
- ***The hip.***

Here follows an overview of the different tests:

Tests	The lumbar region	The iliosacral region	The sacroiliac region with visceral component	The hip
Palpation	Minimal 3 spinal processes sensitive/painful	Periosteal pain PSIS, PIIS. Ligamentary pain just below the PSIS and IS-capsule.	Sacral spinal processes painful	Ventral palpation of the hip joint painful
	Swelling connective tissue next to one or more lumbar vertebra (this swelling can disappear with menopause or old age and change in trophicity changes)	No specific swelling visible	Swelling connective tissue on the whole sacrum or on the sacrococcygeal joint (this swelling can disappear with menopause or old age and change in trophicity changes)	No palpable swelling
Compression test	Positive in caudal direction when discitis. Positive in rotation when inflammation of facet joint. (Rotation right: compression of left facet joint)	Often positive when lower IS-joint is compressed	Sometimes positive when lower IS-joint is compressed	Possibly positive when intra-articular inflammation
Compression IS-joint via hip	Negative	Positive	Can be positive	Can be positive
Direct compression of the 'foot' of	Negative	Positive	Can be positive	Negative

the joint				
Mennel test	Positive when fixing the sacrum	Positive when fixing the hip	Can be positive or negative	Positive at start of test
Gaenslen's test	Mostly negative	Positive	Can be positive	Positive
Hibb's test	Mostly negative	Positive	Can be positive	Positive
Fabere test	Negative	Positive	Can be positive	Positive
Provocation standing (Flamingo)	Can be positive	Positive	Can be positive	Can be positive
Sacral thrust test	Mostly negative	Positive	Can be positive	Negative
Compression of the posterior part of the sacroiliac joint	Negative	Sometimes positive	Sometimes positive	Negative
Compression of the anterior part of the sacroiliac joint	Negative	Sometimes positive	Sometimes positive	Negative
Heel compression test (important here is: where is the pain felt?)	Sometimes positive	Sometimes positive	Sometimes positive	Sometimes positive
Compression test of the facet joints	Sometimes positive	Negative	Negative	Negative
Rozet test	Sometimes positive	Negative	Negative	Negative
Finger to toe test	Sometimes positive	Sometimes positive	Sometimes positive	Sometimes positive

Phalen's test (specific for lumbar stenosis – positive on numbness in legs)	Sometimes positive	Negative	Negative	Negative
Neurological tests on sensibility	Can be positive	Mostly negative	Mostly negative	Negative
Neurological tests on muscle force	Can be positive	Mostly negative	Mostly negative	Negative
Neurological tests straight leg rise	Can be positive (when below 60° = lumbar spine)	Can be positive above 60°	Can be positive above 60°	Can be positive above 60°
Neurological test: Bragard	Can be positive	Negative	Negative	Negative
Neurological tests on deep tendon reflex	Can be positive	Negative	Negative	Negative
Neurological test: Babinski (when positive = central neurological problem)	Can be positive	Negative	Negative	Negative
Sign of the buttock (for severe condition)	Can be positive	Can be positive	Can be positive	Can be positive
Hoover test (on fake complaints)	Can be positive	Can be positive	Can be positive	Can be positive
Kernig test (on dura involvement)	Can be positive	Negative	Negative	Negative
Millgram test	Can be positive	Can be positive	Can be positive	Mostly negative

9. Somatic Dysfunction



Video 6 - Somatic dysfunction

Osteopaths refer often to 'Somatic Dysfunctions'. The old term is 'Osteopathic Lesion', sometimes even just the word 'Lesion' is used.

The definition of 'Somatic Dysfunction' is: Impaired or altered function of related components of the somatic (body framework) system: skeletal, arthrodiar and myofascial structures, and their related vascular, lymphatic, and neural elements.

Somatic dysfunction is treatable using osteopathic manipulative treatment. The positional and motion aspects of somatic dysfunction are best described using at least one of three parameters:

- The position of a body part as determined by palpation and referenced to its adjacent defined structure.
- The directions in which motion is freer.
- The directions in which motion is restricted.

In the spinal area, a somatic dysfunction is mostly accompanied with connective tissue swelling or other trophicity changes left and right of the spinal processes.

The evolution from swelling towards other soft tissue trophicity changes is depending on the age of the patient and the age of the dysfunction. There are also gender and inter-individual differences.

The soft tissue (connective tissue) swelling is visible and palpable.

A combination of several somatic dysfunctions is possible.

Lumbar and sacral somatic dysfunctions or lesions are mostly accompanied with this swelling, while the lesions of the iliosacral joint or hip are not accompanied with visible swelling.

An easy way to find a somatic dysfunction is to use the word **TART: A somatic dysfunction is found where these 4 findings are present at the same location:**

- **Tenderness and/or pain:** can be caused by inflammation, degeneration or neuroplastic changes, nociceptive driven functional changes or peripheral sensitization.
- **Asymmetry:** positional asymmetry or uneven tissue or motor changes, but not always visible.
- **Range of motion:** abnormal.
- **Tissue texture abnormality:** swelling, trophicity changes.

Swelling in the region of the sacrococcygeal joint in a man

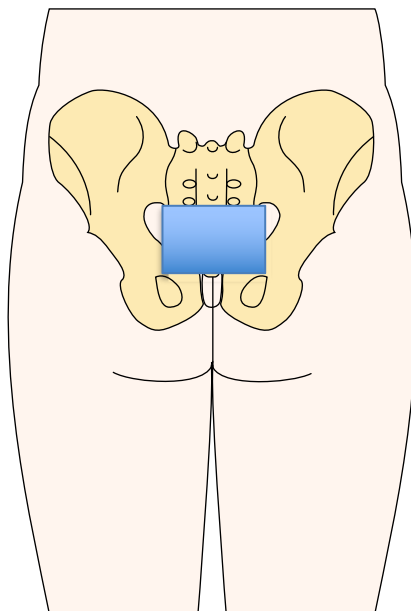


Figure 4 - Swelling in the region of the sacrococcygeal joint in a man

This could be a first sign that there is a somatic dysfunction of the sacrum with eventually related visceral components (in men often related to the prostate).

Other elements to confirm this are: sensibility when palpating the perist of the sacrum and coccyx and loss of mobility, painful perineum on palpation.

Swelling in the region of the sacrum in a woman

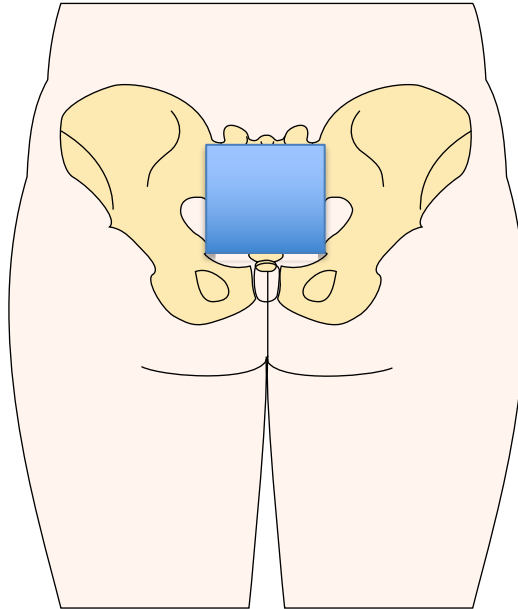


Figure 5 - Swelling in the region of the sacrum in a woman

This could be a first sign that there is a somatic dysfunction of the sacrum with eventually related visceral components. In a woman, there is mostly more swelling than in a man. This has hormonal causes.

Other elements to confirm this are: sensibility when palpating the perist of the sacrum and coccyx and loss of mobility.

Swelling in the region of L₅

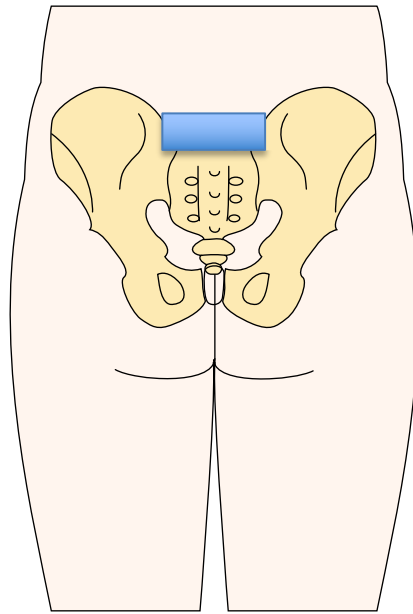


Figure 6 - Swelling in the region of L₅

This could be a first sign that there is a somatic dysfunction of L₅.

Other elements to confirm this are: sensibility when palpating the periosteum of the spinal process L₅ (also some sensibility on spinal process L₄ and S₁) and loss of mobility.

Swelling in the region of L₄

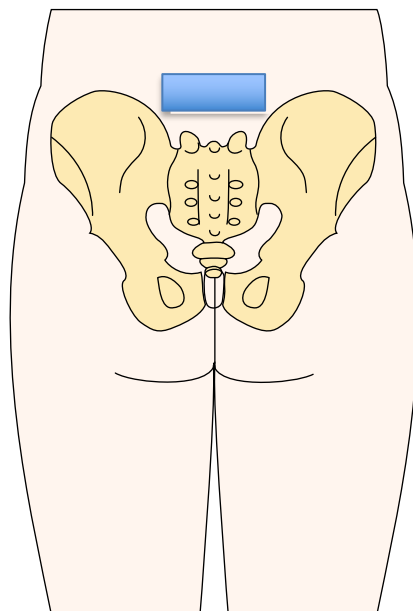


Figure 7 - Swelling in the region of L₄

This could be a first sign that there is a somatic dysfunction of L₄.

Other elements to confirm this are: sensibility when palpating the periost of the spinal process L₄ (also some sensibility on spinal process L₃ and L₅) and loss of mobility.

Swelling in combined regions

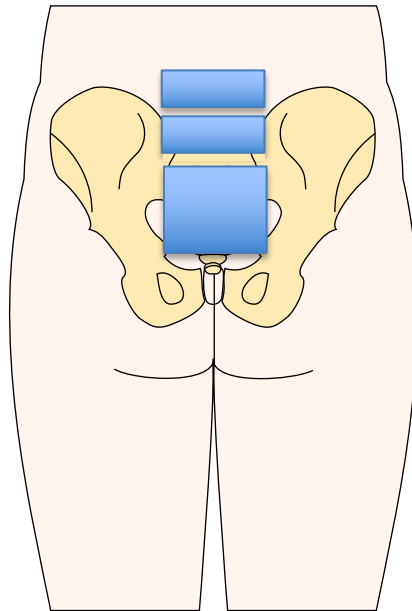


Figure 8 - Swelling in combined regions

This could be a first sign that there are somatic dysfunctions of L₄, L₅ and sacrum.

Other elements to confirm this are: sensibility when palpating the periost and loss of mobility.

When no somatic dysfunctions are present in the lumbar or sacral region, the dysfunction mostly lies in the iliosacral or hip joint.

Every osteopath understands that this differentiation system is to be seen as a model because of course combinations are possible.

Note: it must be clear that in the above observation and palpation, the correct topography is essential.

In purely iliosacral or hip lesions the swelling will mostly not be visible. Obvious swelling on the sacral region concerns a sacroiliac dysfunction with related visceral components.

Once the first differentiation in:

- The iliosacral region.
- The sacroiliac region with visceral component.
- The lumbar region.
- The hip region.

is done we start testing the specific region in detail.

Specific regions:

- ***Chapter 1: The Iliosacral Joints.***
- ***Chapter 2: The Sacroiliac Joints with Visceral Component.***
- ***Chapter 3: The Lumbar Spine.***
- ***Chapter 4: The Hip.***