

# Osteopathy Explained

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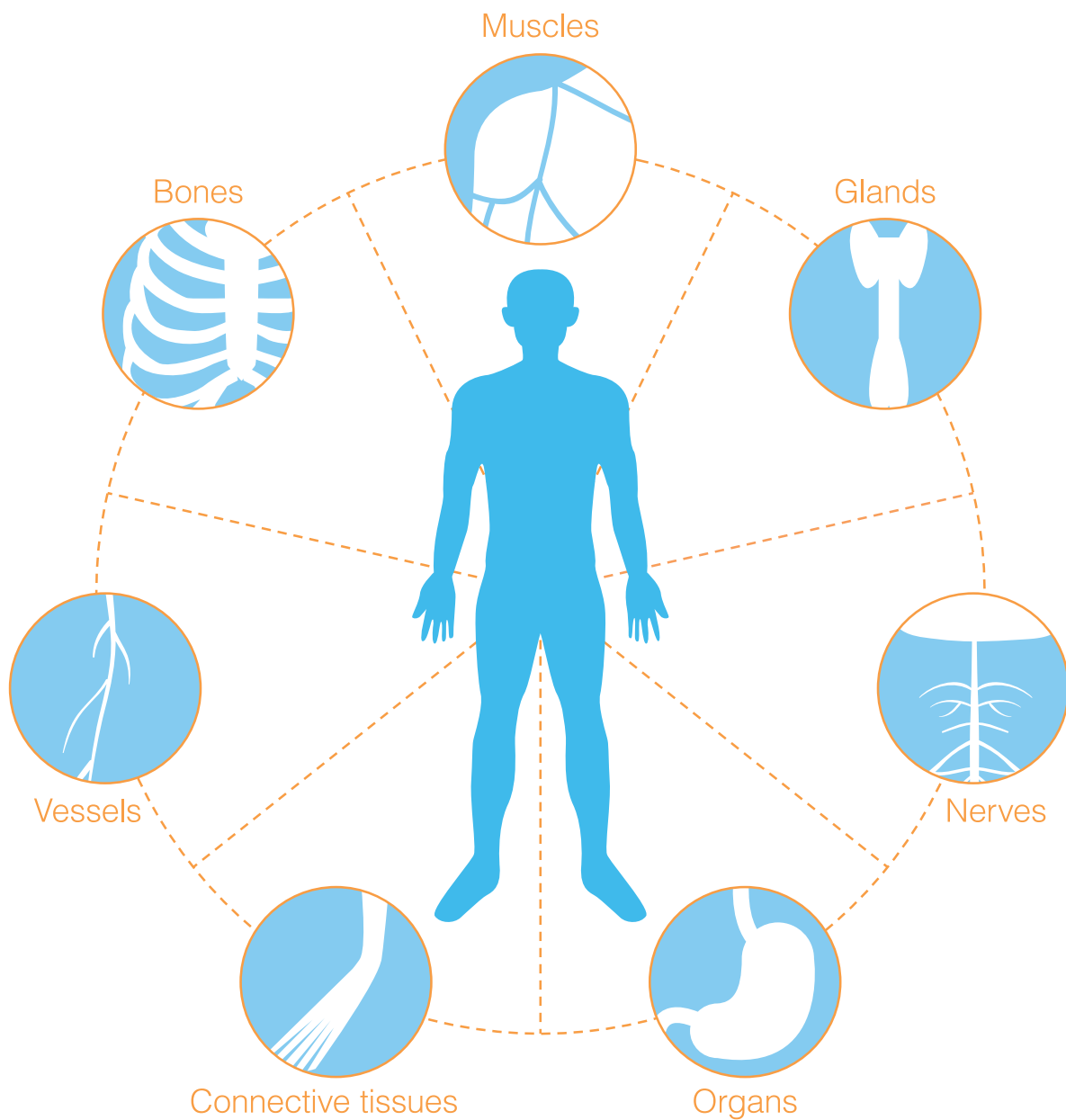
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# Contents

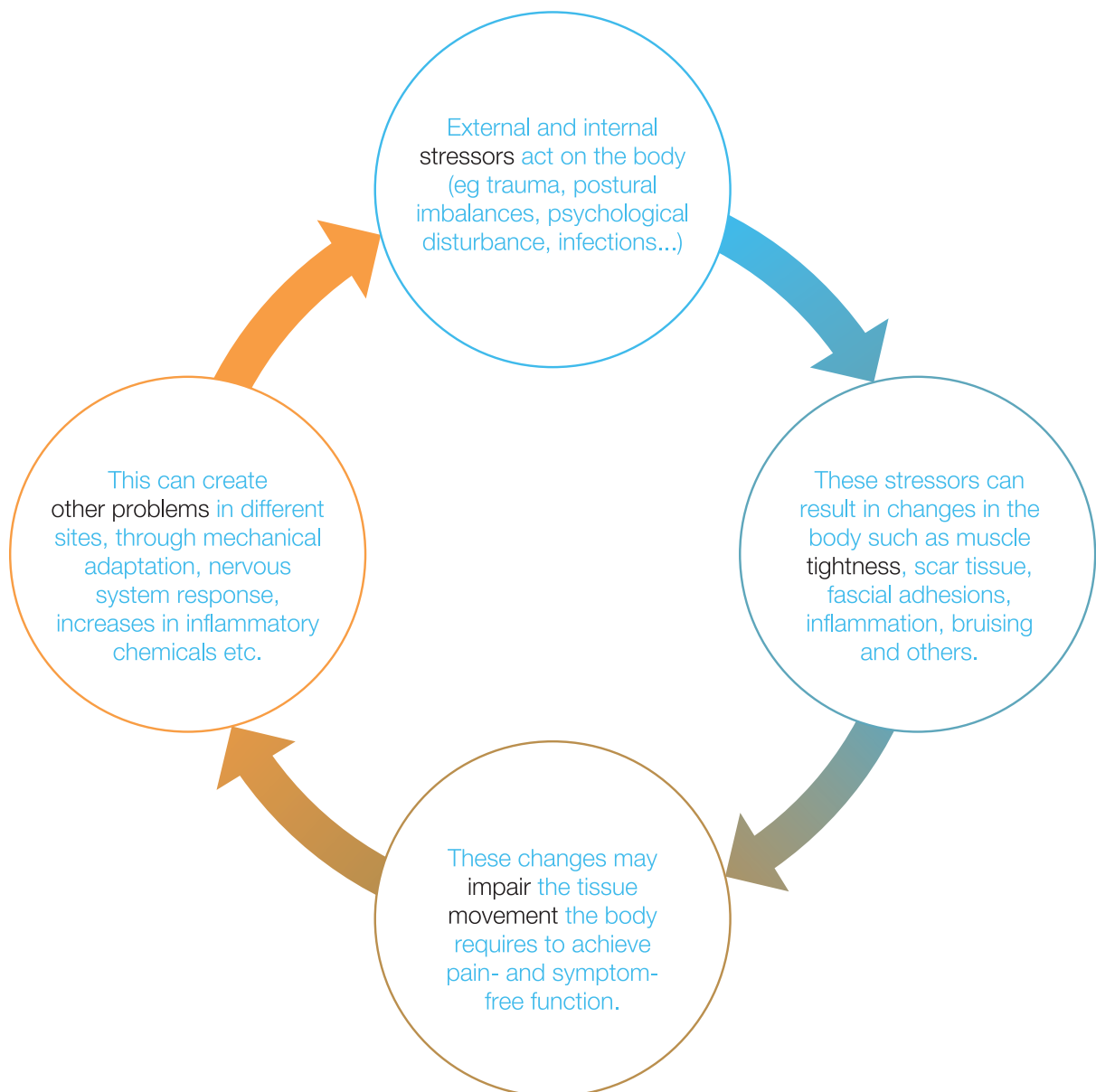
What do osteopaths do? .....	3
How do physical restrictions and tension patterns come about?.....	4
What problems can physical restrictions and tension patterns cause? .....	5
How do osteopaths clinically reason? .....	6
How do osteopaths diagnose? .....	6
How do osteopaths treat? .....	7
How do hands-on techniques result in freeing physical restrictions?.....	7
What measurable physical and physiological changes can osteopathy bring about?.....	8
What clinical conditions have research support for this type of work? .....	8
Anything else? .....	9
How do osteopaths think about themselves, and their role in health? .....	10
Why doesn't osteopathy have wider mainstream acceptance? .....	12
Appendix: Examples of osteopathic techniques .....	16
Acknowledgements .....	20
References .....	21

## What do osteopaths do?

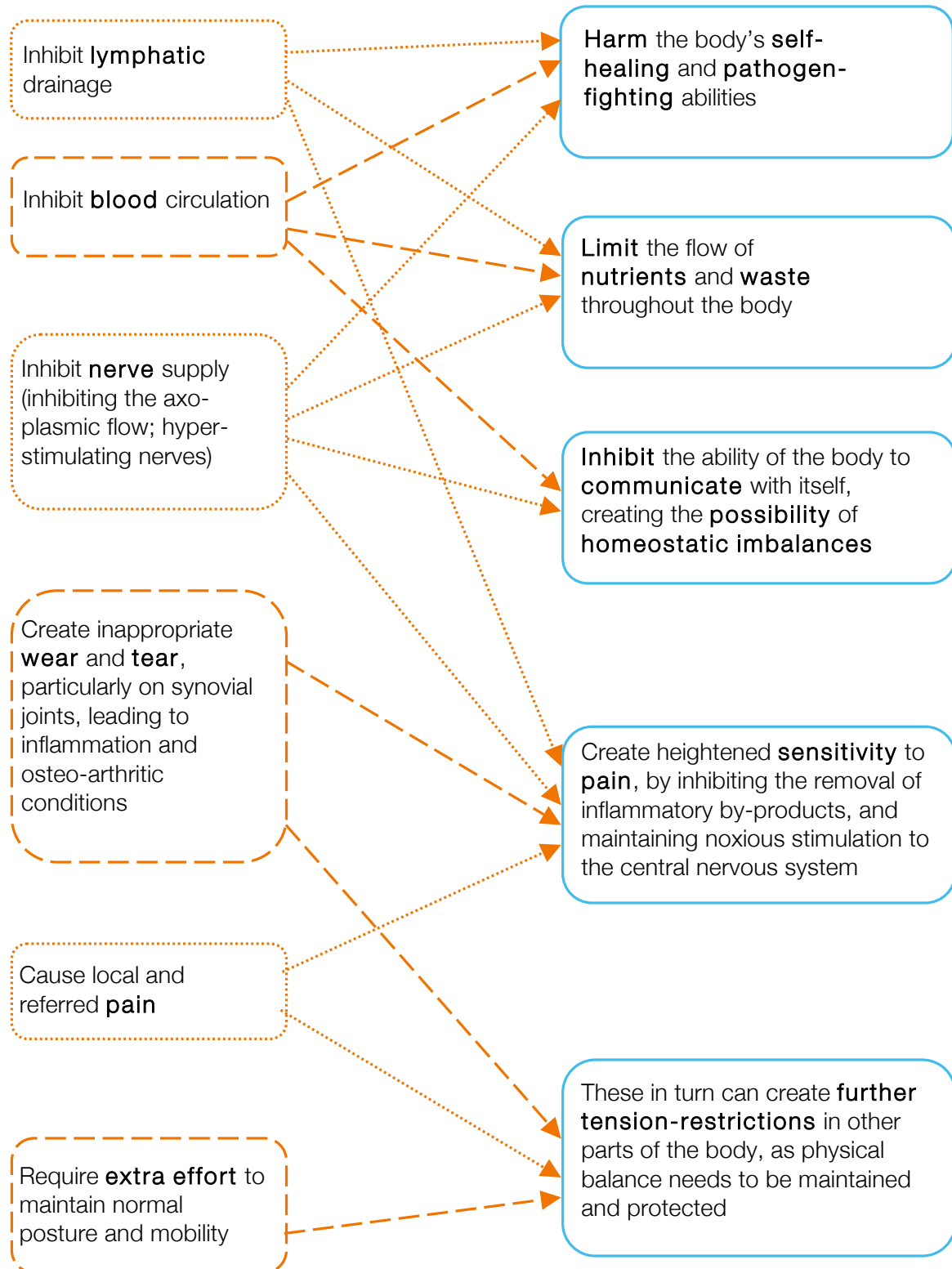
Osteopaths facilitate ease of **movement** of, and **integration** between, the tissues of the body. They do this largely through **helping patients** to be **free** from inappropriate physical restrictions and tension patterns in and between:



## How do physical restrictions and tension patterns come about?



## What problems can physical restrictions and tension patterns cause?



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## How do osteopaths clinically reason?

- Osteopaths look for **underlying causes**, and seek to enhance a person's health and self-healing abilities.
- They ask: “**how would a body normally resolve** this problem; and what is blocking that from happening in this individual at this time?”
- Because osteopaths seek to treat the underlying causes of ill health, **diagnosis** isn't just a one-off event, but **can be a process** that continues during the treatment; as different issues are resolved, other underlying causes can become apparent.
- Osteopaths **vary** in how widely they think about underlying causes; many will consider habitual patterns of body use, psycho-social factors, nutritional factors, past injuries, traumas and illnesses.

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## How do osteopaths diagnose?

- Interview, with thorough history taking.
- Observation and movement analysis.
- In-clinic diagnostic and screening tests as appropriate (e.g. orthopaedic tests, auscultation).
- Primarily **touch** (or “palpation”).
- Diagnostic imaging where appropriate.
- Some use various forms of biochemical testing.

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## How do osteopaths treat?

- They provide **explanations** of what seems to be happening and why (which can be particularly relevant to pain perception).
- Primarily **manual treatment** using a **range of techniques** from different modalities. (See appendix for more details.) Treatment is highly interactive, and so different practitioners develop their own preferences about which modalities they use more frequently. The techniques overlap those used by other manual or manipulative therapies, but the combination and the **approach to clinical reasoning** creates **a whole greater than the sum of the parts**.
- Individualised **exercise programs** based on functional outcomes.
- **Postural** and **ergonomic** advice.
- Advice on **lifestyle** and **diet**.

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## How do hands-on techniques result in freeing physical restrictions?

- Helping the central nervous system to **re-calibrate** its instructions to the body about appropriate **levels of tissue tension** and neural stimulation<sup>1</sup>.
- Helping the central nervous system to shift from a **“fight-or-flight”** mode to a **“healing-and-repair”** mode<sup>2</sup>.
- Helping the central nervous system to re-calibrate its sense of what normal and abnormal inputs feel like, and thus to **re-calibrate perceptions of pain**<sup>3</sup>.
- **Stimulating the lymphatic system** to move fluid more quickly, by temporarily increasing its internal pressures (which stimulates it to work more quickly)<sup>4</sup>.
- Physically improving the **range of motion** in joints and connective tissues that have been limited in at least some planes of movement. This in turn can create more space for cellular, vascular, lymphatic and nerve pathways that may be under states of adverse tension. (see above in 'What problems can physical restrictions and tension patterns cause?')<sup>5</sup>.
- By using the body's self springing (“tensegrity”) and balance and control mechanisms, freeing one part of the body often results in **altering tension patterns elsewhere**<sup>6</sup>.
- Through the above techniques, and through physically pushing lymph, **improving local fluid flows**, which in turn can help to disburse inflammatory chemicals and improve hormonal and other chemical signaling<sup>7</sup>.

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## What measurable physical and physiological changes can osteopathy bring about?

Osteopathic manual therapy has been shown to have **clinically measurable effects** on the following physical and physiological parameters, which can, in turn, impact overall health:

- the activity of the autonomic nervous system<sup>8</sup>;
  - biochemical markers<sup>9</sup>;
  - blood supply and circulation<sup>10</sup>;
  - immunity and inflammation<sup>11</sup>;
  - joint range of motion<sup>12</sup>;
  - lung function and capacity<sup>13</sup>;
  - increased transport of lymph in the lymphatic vessels<sup>14</sup>;
  - spinal mobility<sup>15</sup>;
  - tissue-texture<sup>16</sup>; and
  - more<sup>17</sup>.
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## What clinical conditions have research support for this type of work?

This work has been shown to contribute to positive **clinical outcomes** for people with:

- ankle sprain & instability<sup>18</sup>,
- anxiety & depression<sup>19</sup>,
- asthma<sup>20</sup>,
- back pain<sup>21</sup>,
- chronic pain & fibromyalgia<sup>22</sup>,
- infantile colic<sup>23</sup>,
- ear infection (otitis media)<sup>24</sup>,
- fracture-related swelling<sup>25</sup>,
- frozen shoulder (adhesive capsulitis)<sup>26</sup>,
- gastroesophageal reflux<sup>27</sup>,
- headaches & migraine<sup>28</sup>,
- health-related quality of life generally<sup>29</sup>,
- hip pain<sup>30</sup>,
- hospitalisation (reduced length-of-stay)<sup>31</sup>,
- irritable bowel syndrome<sup>32</sup>,
- lactation (breast-feeding) issues<sup>33</sup>;
- lateral epicondylitis (tennis elbow)<sup>34</sup>,
- lymphedema<sup>35</sup>,
- neck pain<sup>36</sup>,
- osteoarthritis<sup>37</sup>,
- period pain (dysmenorrhoea) & endometriosis<sup>38</sup>,
- post-surgical recovery<sup>39</sup>,
- shoulder pain and tightness<sup>40</sup>,
- nerve pain and neurogenic claudication<sup>41</sup>,
- plantar fasciitis<sup>42</sup>,
- pneumonia (as a supplementary treatment)<sup>43</sup>,
- sporting injuries & recovery<sup>44</sup>,
- temporo-mandibular joint (TMJ, or jaw) pain & tightness<sup>45</sup>,
- venous insufficiency<sup>46</sup>, and
- wound healing<sup>47</sup>.

## Anything else?

There is also **more limited evidence** available at this stage for its use in:

- Achilles tendinitis<sup>48</sup>,
- atelectasis<sup>49</sup>,
- attention deficit/hyperactivity disorder (ADHD)<sup>50</sup>,
- Bell's palsy<sup>51</sup>,
- blocked tear duct (dacryostenosis)<sup>52</sup>,
- carpal tunnel syndrome<sup>53</sup>,
- club foot (congenital talipes equinovarus)<sup>54</sup>,
- degenerative disks<sup>55</sup>,
- dementia<sup>56</sup>,
- dental malocclusion<sup>57</sup>,
- diabetes melitis (complications associated with)<sup>58</sup>,
- dizziness/vertigo & balance problems<sup>59</sup>,
- drop foot<sup>60</sup>,
- Dupuytren's contracture<sup>61</sup>,
- emphysema/chronic obstructive pulmonary disease<sup>62</sup>,
- foot pain<sup>63</sup>,
- gall bladder sluggishness (biliary dyskinesia)<sup>64</sup>,
- glaucoma<sup>65</sup>,
- hiccups (singultus)<sup>66</sup>,
- high blood pressure (hypertension)<sup>67</sup>,
- iliotibial band (ITB) friction syndrome<sup>68</sup>,
- immune deficiency<sup>69</sup>,
- infantile postural asymmetry<sup>70</sup>,
- infections<sup>71</sup>,
- infertility<sup>72</sup>,
- insomnia<sup>73</sup>,
- menopausal symptoms<sup>74</sup>,
- muscle fatigue<sup>75</sup>,
- myalgic encephalomyelitis<sup>76</sup>,
- obstructive sleep apnoea in infants<sup>77</sup>,
- pancreatitis (adjunctive treatment)<sup>78</sup>,
- Parkinsons disease (gait in)<sup>79</sup>,
- plagiocephaly (head asymetry)<sup>80</sup>,
- post-surgical ileus (lack of bowel function)<sup>81</sup>,
- postural orthostatic tachycardia syndrome (POTS)<sup>82</sup>,
- rheumatoid arthritis (oedema associated with)<sup>83</sup>,
- stress fracture prevention<sup>84</sup>,
- systemic sclerosis/scleroderma (oedema associated with)<sup>85</sup>,
- tinnitus<sup>86</sup>,
- urinary tract symptoms<sup>87</sup>, and
- whiplash injury<sup>88</sup>.

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# How do osteopaths think about themselves, and their role in health?

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## It's a science

Osteopathy is a science that involves facilitating human self-healing, largely through assisting a person to release their tension-restrictions.

Science is a process of **continual learning** in a world that is infinitely complex and inherently uncertain. It involves:

- open-minded curiosity;
- experimentation;
- rigorous testing;
- dissemination and discussion of findings (often, although not always, through publication); leading to
- open-minded curiosity.

This process operates on the macro level for the whole profession and, to some extent, within the course of each treatment.

By this definition, osteopathy is **fundamentally scientific**.

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## It's also an art

Osteopathy is a healing art, practiced largely through the practitioner's hands.

It treats each patient as a **unique individual**, whose health issues may have a **complex** array of causes. It involves, among other things, a back-and-forth communication between the patient's presentation and the practitioner's hands, which is **analogous to a conversation**. Like a conversation, there are different levels of innate ability, different and equally valid ways for osteopaths to practice, and capacity for ongoing skill development.

This makes it a sometimes-difficult fit within health-care systems that benefit from standardisation and replicability, and has made it challenging to research scientifically. Nonetheless, these challenges are being overcome, and there is a developing body of scientific literature about its effectiveness, and increasing integration with the broader health professions.

Like conversation, while osteopathy can be studied scientifically, it is **best understood** through **experience** and **appreciation**.

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## It facilitates health

Osteopaths seek to facilitate health and improve efficient functioning.

They don't guarantee to heal any condition; their emphasis is on helping a person's body to **maximise its own health** and **efficiency**.

At the same time, the approach has been shown to deliver positive therapeutic outcomes for people with a range of conditions (see above, and references).

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## It's patient-centric

Osteopaths recognise that there are other valid and helpful approaches to improving health; and they believe osteopathy can make a valuable contribution to most of them, as well as being able to function in isolation.

It is not unique in the following, but it does bring these emphases:

- trying to uncover the **causes** of ill health, as well as treating the presentation;
- treating patients as **individuals** first, before seeing them as members of a disease classification;
- wanting to understand what the patient's system is doing **to heal itself**, and what can be done to facilitate that; and
- dealing with the **complex interplay** of **all** of the patient's tissues, systems, and broader environment, rather than overly emphasising one specific part or aspect.

## Why doesn't osteopathy have wider mainstream acceptance?

1. A.T. Still developed (or in his view, “discovered”) osteopathy in the second half of the 1800s, at a time when mainstream medicine still used bloodletting and mercury to treat a wide range of conditions. In this context, it was **deliberately alternative**, and **mistrustful** of the mainstream. This established a **culture of free thought**, independent action, and **deliberate separation** from mainstream medicine. This culture, over the years, has engendered a deep divide.

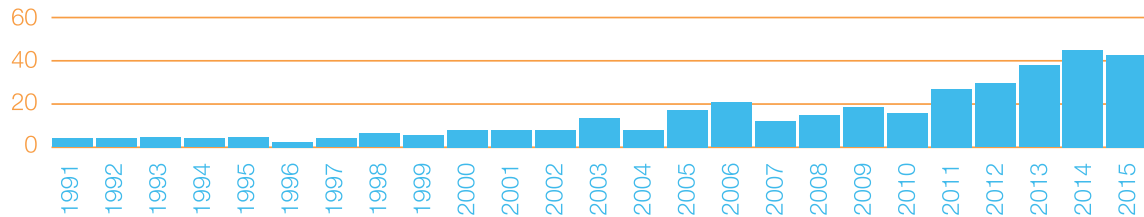
It is interesting to **contrast** this culture with that of **physiotherapy**, which was originally developed in Sweden, and picked up in the early 1900s by British nurses who were trained in Swedish massage therapy and, sometimes, in osteopathic techniques. Physiotherapists have generally been at pains not to intrude onto what could be seen as the territory of doctors, and have sometimes been disparaging of osteopaths for claiming to be able to “cure disease”, while embracing osteopathic techniques for musculo-skeletal complaints<sup>89</sup>. Physiotherapy, of course, generally enjoys a high level of acceptance within mainstream medicine.

2. As part of this culture of mistrust, historically some people within the osteopathic profession have sought (unsuccessfully) to **keep their techniques secret**; this has, naturally, contributed to the level of misunderstanding.
3. While there is a long tradition of research within osteopathy, researching it has always been more challenging than researching some other forms of medicine, for a number of reasons.
  - a. It sees each patient as an individual, which makes researching whole conditions challenging. Osteopaths are as interested in the cause for that individual, as they are in the effect.
  - b. The economics of large-investment and potentially-larger-return which fund much medically-related research do not apply to osteopathy in the same way, and so the same level of funding enjoyed by pharmaceutical- and equipment-based interventions has not applied.
  - c. As well as treating people as individuals, osteopaths tend to act as individuals. They emphasise different modalities and apply them with different levels of skills. This means that valid clinical outcomes are not always replicable from one patient to another, and from one practitioner to another.

This means that **for a long time**, there was only **limited research** support for osteopathy; and, as in all areas of medicine (but perhaps more so in osteopathy) there is a vast amount of research yet to be done. These challenges are now being overcome, but most of the research has only been undertaken recently.

## Number of studies published

(Based on the collection of the author; this graph is indicative rather than comprehensive)



4. There are **superficial similarities** between osteopathy and some forms of “**alternative**” health care. Public criticisms of them are sometimes seen as also applying to osteopathy. (That comment is in no way intended as a criticism of other health professions; it is merely an observation that it is sometimes seen as being akin, and that some of them have had some poor publicity.)
5. Osteopathy is still a **relatively small profession**. This is, in part, because, at a time when chiropractic was expanding rapidly, there was a move to close down all but one osteopathic school and to concentrate the work in one location; apparently for financial reasons. There are also probably **economic factors** at work here. Osteopathy requires intense one-on-one involvement; and this usually results in profound health improvements. Until the unique benefits of osteopathy are appreciated, it is hard to justify an increased fee for this type of work. The result of this is that there are easier ways to make money, if you work for as hard and long in your training as osteopaths need to.
6. As Thomas Kuhn<sup>90</sup> pointed out, **new scientific paradigms** often go through periods of non-acceptance; and A.T. Still spoke about some paradigms that were counter-cultural in the late 1800s.
  - a. Putting trust in **nature**: “*When we take up the principles, we get down to Nature. It is ever willing, self-caring, self-feeding and self-protecting.*” At that time nature was widely seen to be a hostile force, and “civilization” was largely concerned with the conquest of nature.
  - b. An appreciation of **homeostasis**: “*the body itself . . . may recover from displacements, disorganizations, derangements, and consequent disease, and regain its normal equilibrium of form and function in health and strength.*” While others were also developing ideas of homeostasis at around this time, Walter Cannon did not write his article “Organisation for physiological homeostasis” until 1929, and it is arguable that modern medical prescribing practices could, to this time, benefit from a more considered view of likely homeostatic responses to some pharmaceutical interventions.
  - c. The importance of **seeking the cause** of disease: “*I want it understood that I look upon the treating of effects as being as unwarranted as it would be for the fireman of a city to fight the smoke and pay no attention to the cause that produces it.*” Again, it is arguable that modern medical students would still benefit from a paradigm shift towards treating the cause, not just the effects.
7. It is much easier and quicker to test a new technique manually than to obtain funding, design a robust study, gain approvals, undertake it and then publish it. It is not like a

drug that cannot be used until it has been scientifically developed. Osteopathic techniques cannot be tested in a laboratory test tube; advances in manual therapy arise from ideas developed within the clinical setting. Real-time patient- and tissue-feedback through touch mean that the risks associated with trying techniques that turn out to be unsuccessful are low, particularly if compared with the risks of experimenting with patients using pharmaceuticals or surgery. For this reason, osteopathy has **moved ahead of the published research**. This allowed the impression that it wasn't scientific, whereas it can be demonstrated historically that, in at least some areas, it has been **ahead of its time**.

Over 100 years ago, A.T. Still said:	Much more recently, researchers have said:
<i>"We strike at the source of life and death when we go to the <b>lymphatics</b>"</i>	<i>"This paradigm shift simultaneously forced us to take a brand-new look at the lymphatic system as the other, not the secondary, vascular system. Considering the <b>vital functions</b> that the <b>lymphatic</b> system engages in and <b>how little knowledge we have</b> regarding the system, lymphatic research is truly a gold mine that invites ambitious young scientists and clinicians." (Choy et al, 2012)<sup>91</sup></i>
<i>"The <b>mechanical</b> principles on which osteopathy is based are as old as the universe."</i>	<i>"There has been a renaissance in the field of <b>mechanobiology</b> over the <b>past two decades</b>. Physiologists and clinicians now recognize the importance of mechanical forces for the development and function of the heart and lung, the growth of skin and muscle, the maintenance of cartilage and bone, and the etiology of many debilitating diseases....At the same time, biologists have come to recognize that <b>mechanical</b> forces serve as important regulators at the cell and molecular levels, and that they are equally potent as chemical cues." (Donald E Ingber, 2003)<sup>92</sup></i>
<i>"I know of no part of the body that equals the <b>fascia</b> as a hunting ground."</i>	<i>"Studying <b>fascia</b> objectively at the basic science and clinical levels will provide important information that may change clinical practice. Once the structure and functions of fascia in the musculoskeletal system are further elucidated, the <b>pathophysiology of many disorders</b> and their consequences may be better explained. Many neuromuscular and musculoskeletal disorders can be additionally served by research with a fascial perspective in order to optimize <b>treatment</b> strategies." (Kwong and Findley, 2014)<sup>93</sup></i>

8. Health-care systems based on high patient numbers in hospital settings **require** a measure of **standardisation** and repeatability. For reasons outlined above, this is not always possible with osteopathy. This can present its own challenges. These are being overcome around the world, and there are an increasing number of places where

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osteopaths are involved in the hospital system. In the USA, osteopathic physicians use it extensively in some hospital emergency departments, to good effect<sup>94 95 96</sup>. The amount of recent research indicating a reduced length-of-stay in hospitals, when osteopathy is involved, is likely to accelerate this trend<sup>97 98 99 100 101 102</sup>.

The situation is changing. Osteopathy is gaining wider acceptance in various places around the world. In general, the more widely it is understood, the better it becomes integrated with mainstream medicine.

## Appendix: Examples of osteopathic techniques

It has been calculated that there are more than 100 osteopathic techniques; and more are being developed all the time<sup>103</sup>. Osteopaths often combine some of these techniques within a single treatment. This list should be seen as illustrative rather than definitive, as should the lists of conditions.

Technique	Background	Explanation	Improved outcomes when use on its own*	Examples of improved outcomes with other techniques*
<b>Myofascial release</b>	The phrase was originally coined in 1960 by osteopath Robert Ward. The technique is now widely used by soft-tissue therapists.	Application of low-load, long-duration manual force applied to muscles and fascia.	Anti-inflammatory effects on fibroblast tissue preparations <sup>104</sup> , plantar heel pain <sup>105</sup> , pain associated with acetabular labral tears <sup>106</sup> , temporomandibular disorder <sup>107</sup> , fibromyalgia <sup>108</sup> , tension headaches <sup>109</sup> .	Chronic migraine <sup>110</sup> , gait in Prader-Willi syndrome <sup>111</sup> , post-partum low-back pain <sup>112</sup> , tension headaches <sup>113</sup> , lateral epicondylitis <sup>114</sup> , coronary-bypass recovery <sup>115</sup> , reduction in cardiac complications <sup>116</sup> , balance in the elderly <sup>117</sup> , GI function in pre-term infants <sup>118</sup> , otitis media (middle-ear infection) in children <sup>119</sup> , low back pain, fatigue in breast cancer, pelvic rotation, hamstring tightness <sup>120</sup> .

\* Described in at least one clinical study; the studies vary in quality, and these lists should not be taken as comprehensive.

Technique	Background	Explanation	Improved outcomes when use on its own*	Examples of improved outcomes with other techniques*
<b>Muscle Energy</b>	These have been used for many years by osteopaths, but the techniques were first collected and described by osteopath Fred Mitchell Sr in 1979.	A range of techniques using active patient cooperation of either concentric, isometric or eccentric muscle contraction. Some of these are similar to PNF stretches such as physiotherapists might use; others involve more targeted approaches aimed at improving the range of motion of joints.	Lateral epicondylitis <sup>121</sup> , posterior shoulder tightness <sup>122</sup> , range of motion in the cervical spine <sup>123</sup> and the trunk <sup>124</sup> , hamstring extensibility <sup>125</sup> .	Post-partum low-back pain <sup>126</sup> , infertility <sup>127</sup> , balance in the elderly <sup>128</sup> , vertigo <sup>129</sup> , cervicogenic headaches <sup>130</sup> .
<b>Counter strain</b>	Developed by osteopath Lawrence Jones in 1954.	Locating specific tender points, then placing the body in a position of maximum ease around that point. This affects the messages the nerves send to the central nervous system: both nociception (pain signals) and proprioception (signals indicating relative positioning of different parts of the body).	Tissue-texture changes in the neck <sup>131</sup> , chronic ankle instability <sup>132</sup> , inflammation (fibroblast proliferation and interleukin secretion) <sup>133</sup> , plantar fasciitis <sup>134</sup> .	Iliotibial band friction syndrome <sup>135</sup> , recurrent otitis media in children <sup>136</sup> , and hospital length-of-stay in pancreatitis <sup>137</sup> .

Technique	Background	Explanation	Improved outcomes when use on its own*	Examples of improved outcomes with other techniques*
<b>Cranial Techniques</b>	Developed by osteopath WG Sutherland in 1929	“Cranial” techniques are so-called because they were initially used to treat the cranium. They involve working with the subtle involuntary movements and rhythms of the body. They are now used to facilitate ease of movement of, and integration between tissues anywhere in the body.	Neck pain <sup>138 139 140 141</sup> , relaxation <sup>142 143</sup> , insomnia <sup>144</sup> , urinary tract signs and symptoms in multiple sclerosis <sup>145</sup> , migraine <sup>146</sup> , pain <sup>147</sup> , dementia <sup>148</sup> , asthma <sup>149</sup> , autonomic nervous system function <sup>150</sup> , gait in Parkinsons’ disease <sup>151</sup> , infantile colic <sup>152</sup> , tension headaches <sup>153</sup> .	Migraine <sup>154</sup> , tension headaches <sup>155</sup> , tinnitus <sup>156</sup> , otitis media <sup>157</sup> , hospital length of stay for pre-term infants <sup>158</sup> , balance in the elderly <sup>159</sup> , GI function in pre-term infants <sup>160</sup> , vertigo <sup>161 162</sup> , low back pain <sup>163</sup> , myalgic encephalitis <sup>164</sup> , cardiac complications <sup>165</sup> , infantile postural asymmetry <sup>166</sup> , and autonomic nervous system activity <sup>167</sup> .
<b>Lymphatic Manipulative Techniques</b>	Developed by AT Still, the founder of osteopathy, in the late 1800s. Different techniques developed by massage therapist Emil Vodder in the 1930s. Some of these techniques have entered the mainstream, primarily as treatments for lymphedema.	There are three broad sets of techniques for improving the functioning of the lymphatic system: those based on AT Still’s work, which involve locating and unblocking points of resistance; those based on Vodder’s work which involve gently moving the superficial lymph; and more recent techniques developed by osteopaths for stimulating the lymph through pumping actions.	(Most of the research into the lymphatic system has involved using these techniques in isolation. Where they have been used with other modalities, they have been listed elsewhere.) Edema <sup>168 169 170 171 172 173 174 175</sup> , fibromyalgia <sup>176 177</sup> , immune support <sup>178 179 180 181 182 183 184 185</sup> , post-surgical recovery <sup>186 187 188 189</sup> , injury recovery <sup>190 191 192</sup> , sporting-performance recovery <sup>193 194</sup> .	

Technique	Background	Explanation	Improved outcomes when use on its own*	Examples of improved outcomes with other techniques*
<b>Visceral manipulation</b>	These were also initially developed by AT Still, and have been built on by many osteopaths over the years.	These aren't so much techniques in themselves, as a range of osteopathic techniques applied to the organs of the body.	(Because these techniques are largely other techniques applied to the viscera, all of the outcome studies have used other techniques.) Irritable bowel syndrome <sup>195 196 197 198</sup> , GI symptoms in children with autism <sup>199 200</sup> , endometriosis <sup>201</sup> , low back pain <sup>202 203</sup> , gastroesophageal reflux in infants <sup>204</sup> , sphincter pressure in gastroesophageal reflux <sup>205</sup> , postoperative ileus <sup>206 207</sup> , infertility <sup>208</sup> , chronic constipation <sup>209 210</sup> , infantile colic <sup>211 212</sup> , sluggish gallbladder <sup>213</sup> , period pain <sup>214</sup>	
<b>Thrusting techniques</b>	Predate osteopathy. Practiced in many places, including: Bali, Hawaii, Japan, China, India, Mongolia, Mexico, Nepal, Russia and Norway. Hippocrates documented a number of these techniques at around 400BCE. These techniques were largely abandoned by physicians and surgeons by the 1700s; possibly because of the danger of manipulating spines weakened by tuberculosis <sup>215</sup> . The practice was continued by "bone setters"; and at one time AT Still described himself as such.	he audible manipulation of joints using a high-velocity but low-amplitude thrust.	Low back pain <sup>216 217 218</sup> , peripheral skin blood flow <sup>219</sup> , cervicogenic headaches <sup>220</sup> , degenerative disk disease <sup>221</sup> , paraspinal sensory response <sup>222</sup> , neck pain and stiffness <sup>223 224 225</sup> , psychological responses <sup>226</sup>	Low back pain <sup>227</sup> , tension headaches <sup>228</sup>

## Acknowledgements

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I want to particularly thank all of the people who have researched osteopathy and osteopathic techniques.

Doing research basically involves: trying something to see whether the results seem interesting enough to be worth researching; doing a huge amount of reading to work out what has already been done; obtaining collaborators who agree that the issue is worth spending their time on; designing a study which is both practical and robust (no trivial undertaking); obtaining approval for the study (including ethics approval); obtaining funding; recruiting researchers and subjects; conducting the study; analyzing the data; writing up the study; submitting it for publication; providing additional information or doing extra work as required by the peer-review process; and, hopefully, seeing the results published.

After that, researchers often find that their work is completely ignored, or else criticised; often for not having done more in the study. It can be a truly thankless task; and yet it is incredibly valuable. Academic **criticism** is a useful activity; but I think it needs to be balanced with much more academic **appreciation**.

## References

For the sake of **brevity**, most of the footnotes below contain a reference to a single journal article. A more extensive set of references can be found at <http://smarttosteopath.com>. This is referred to below as [SO].

- 1 da Silva RC, de Sá CC, Pascual-Vaca AO, de Souza Fontes LH, Herbella Fernandes FA, Dib RA, Blanco CR, Queiroz RA, Navarro-Rodriguez T. 2013 Increase of lower esophageal sphincter pressure after osteopathic intervention on the diaphragm in patients with gastroesophageal reflux. *Dis Esophagus* Jul;26(5):451-6
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