

Osteopathy in the Cranial Field – a brief summary of current evidence

Osteopathy in the cranial field (OCF) has a long history of practice and work is progressively being published to document its applications to practice and outcomes. A review of published research is currently being undertaken and this article highlights some of the more recent studies that have been disseminated.



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Searching the literature

An extensive literature search was undertaken utilising subscription databases and free to access databases. Searches were also made of designated osteopathic research sites, professional web sites, and hard copies of journals.

Search terms were created from examination of a number of existing literature sources and from input from members of the profession with expertise in this area of practice. Search terms included: “osteopathy in the cranial field”, “craniosacral”, “cranial bones”, “cranial sutures”, “cerebrospinal fluid”, “cerebrospinal pulse”, “involuntary mechanism” and “cranial impulse”. This list is not complete and further information concerning the entire list of search terms will be available in a more extensive report on this topic. Duplicated papers were removed and papers were then classified based on their methodological approach.

What literature is available?

A total of 506 relevant papers were examined. The literature looking at OCF covers a wide range of methodological approaches. The largest number of studies can be classified as opinion pieces, largely unreferenced and not published in peer-reviewed journals. A small number of case studies exist, as do editorials and hypotheses. A small number of clinical trials have been published, including a small number of literature reviews and one systematic review.

The literature available in this area is predominantly viewed as lower grade evidence in terms of the hierarchy of research. The case study, however, should not be undervalued; it is frequently the most interesting type of study to many clinicians.

How is OCF defined in the literature?

A selection of definitions appears in the literature. The definition used by Greenman and McPartand is given below¹:

“...a structured diagnostic process that evaluates the mobility of the osseous cranium, the related mobility of the skull and sacrum and the palpation of the craniosacral rhythm impulse (CRI) throughout the body. Craniosacral osteopathic manipulative techniques attempt to restore motion to restrictions within individual sutures of the skull, the skull as a total entity, and the skull in relation to the sacrum, and apply inherent force to the articulations of the vertebral axis, rib cage and extremity.”

In 1999, Green *et al* undertook a systematic review looking at studies relating to OCF, this paper is one of the most widely quoted². It employed a three-dimensional framework for evaluating studies evaluating:

- Craniosacral interventions and health outcomes
- Validity of cranial assessment
- Pathophysiology of the craniosacral system

The systematic review identified 33 studies providing primary research data on “craniosacral therapy”. The findings of the review can be summarised:

- Nine studies were identified that reported on mobility or fusion at cranial sutures in adults. The quality of the studies was variable as were the designs, but although incomplete, the research supported the theory that the adult cranium is not always solidly fused.
- Eleven studies reported primary data on the motion of cerebrospinal fluid (CSF). The studies were essentially undertaken to provide neurosurgeons with data on pathophysiology relating to CSF motion for diagnostic, treatment and brain monitoring purposes.
- Seven studies were identified that looked at the effectiveness of craniosacral therapy in altering health outcomes. The studies were classified as being of low grade and poor quality.
- Three studies directly examined the potential association between health and craniosacral mobility restrictions. Two of the studies were cross-sectional studies allowing the craniosacral system and health outcomes to be measured at the same point in time. The studies were judged to be of poor quality since the health states were subjectively determined. The third study was observational. The validity and reliability of the cross-sectional studies were regarded as problematic undermining their credibility and quality in the opinion of the reviewers.

The reviewers concluded that insufficient evidence had been found to support craniosacral therapy, although they qualified this with the statement that research methods that could evaluate effectiveness had not been applied to date.

Subsequent to the systematic review, a small number of clinical trials have taken place. A prospective controlled trial was undertaken by Hayden *et al*³. This pilot study involved 28 infants with colic. The outcomes assessed were hours of “colicky” crying within a 24 hour period, and hours of sleeping within a 24 hour period. The key results of the study identified that the difference between the infants who received treatment and those that did not was a mean reduction in crying time of 1 hour (95% CI 0.14 to 2.19). The difference in mean increase in sleep between infants who received treatment and those

who didn't was 1.17 hours (95% CI 0.29 to 2.27). This well-conducted trial is frequently cited as good quality evidence by many sources⁴.

A variety of other symptoms being treated using OCF have been investigated. Adults with asthma, lateral epicondylitis and chronic epicondylopathia humeri radialis underwent treatment and their outcomes have been documented in a series of studies^{5,6,7}.

Physiological investigations and inter-rater reliability

Inter-rater and intra-rater reliability has been investigated for all aspects of osteopathic care. Moran and Gibbons (2001), and Rogers *et al* (1998) investigated reliability for palpation of the cranial rhythmic impulse but findings were not encouraging^{8,9}. Wirth-Patullo *et al* (1994) and Nelson *et al* (2006) investigated craniosacral rate measurements and the relationship to subjects' and examiners' heart and respiratory measurements, and the rate of the cranial rhythmic impulse respectively^{10,11}. They found a direct correlation between the palpated rate and a physiological pulse. This physiological pulse is termed the Traube Hering Meyer (THM) oscillation rate; it has been measured using Laser Doppler Flow^{12,13}.

Case studies

A small number of case studies have been published that document the use of OCF in the care of patients. Gillespie describes the treatment of a nine year old boy with asthma using craniosacral therapy, and a 27 month old boy for extreme hyperactive behaviour^{14,15}. Lancaster and Crow describe their treatment of a 26 year old woman with Bell's palsy, and Leach describes the role of both cranial and manual treatment in supporting a 66 year old patient recovering from gastric cancer^{16,17}.

Adverse events associated with treatment

One study undertaken by Greenman and McPartland involved the treatment of patients with traumatic brain syndrome. The authors noted some adverse effects of the treatment; this is a new departure for OCF which hasn't previously reported any adverse events¹.

Dissenting voices

Cranial osteopathy is not without its critics who question its scientific plausibility, its place within osteopathic medicine, and its lack of evidence of effectiveness^{18,19,20}. The growth of good quality clinic trials and scientific investigation will attempt to act as a rebuttal to such critics.

References:

1. Greenman PE, McPartland JM. Cranial findings and iatrogenesis from craniosacral manipulation in patients with traumatic brain syndrome. *J Am Osteopath Assoc*. 1995;95(3):182-188.
<http://www.jaoa.org/cgi/content/abstract/95/3/182?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=greenman%2C+&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT>
2. Green C, Martin CW, Bassett K *et al*. A systematic review of craniosacral therapy: biological plausibility, assessment reliability and clinical effectiveness. *Complementary Therapies in Medicine*. 1999; 7:201-207. [^ "A SYSTEMATIC REVIEW: AND CRITICAL APPRAISAL OF THE SCIENTIFIC EVIDENCE ON CRANIOSACRAL THERAPY"](#)
3. Hayden C, Mullinger B. A preliminary assessment of the impact of cranial osteopathy for the relief of infantile colic. *Complementary Therapies in Clinical Practice*. 2006;12:83-90.

http://www.ncbi.nlm.nih.gov/pubmed/19880081?itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum&ordinalpos=1.

4. Phillips B. Towards evidence based medicine for paediatricians. *Arch Dis Child*. 2009;94(7):555.

http://adc.bmj.com/cgi/content/full/94/7/555?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=Phillips&searchid=1&FIRSTINDEX=0&volume=94&issue=7&resource_type=HWCIT

5. Mehl-Madrona L, Kligler B, Silverman S *et al*. The impact of acupuncture and craniosacral therapy interventions on clinical outcomes in adults with asthma. *Explore* (NY). 2007;3:28-36.

http://www.ncbi.nlm.nih.gov/pubmed/17234566?itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum&ordinalpos=5

6. Nourbakhsh MR, Fearon FJ. The effect of oscillating energy manual therapy and the effect of lateral epicondylitis: a randomised placebo-controlled double-blinded study. *J Hand Ther*. 2008;21:4-13;quiz 14.

http://www.ncbi.nlm.nih.gov/pubmed/18215746?itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum&ordinalpos=11

7. Geldschlager S. Osteopathic versus orthopaedic treatment for chronic epicondylopathia humeri radialis: a randomised controlled trial. *Forsch Komplementarmed Klass Natureheilkd*. 2004;11:93-7.

<http://content.karger.com/ProdukteDB/produkte.asp?Aktion=ShowAbstract&ArtikelNr=78230&Ausgabe=230087&ProduktNr=224242>

8. Moran RW, Gibbons P. Intraexaminer and interexaminer reliability for palpation of the cranial rhythmic impulse at the head and sacrum. *J Manipulative Physiol Ther*. 2001;24:183-90.

http://www.ncbi.nlm.nih.gov/pubmed/11313614?itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum&ordinalpos=3

9. Rogers JS, Witt PL, Gross MT *et al*. Simultaneous palpation of the craniosacral rate at the head and feet: intrarater and interrater reliability and rate comparisons. *Phys Ther*. 1998;78(11):1175-1185.

http://www.ncbi.nlm.nih.gov/pubmed/9243408?itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum&ordinalpos=9

10. Wirth-Patullo V, Hayes KW. Interrater reliability of craniosacral rate measurements and their relationship with subjects' and examiners' heart and respiratory rate measurements. *Phys Ther*. 1994;74:908-16.

<http://www.ptjournal.org/cgi/reprint/74/10/908>

11. Nelson KE, Segueef N, Glonek T. Recording the rate of cranial rhythmic impulse. *J Am Osteopath Assoc*. 2006;106:337-41.

<http://www.jaoa.org/cgi/content/full/106/6/337>

12. Nelson KE, Segueef N, Lipinski CM, AR *et al*. Cranial rhythmic impulse related to Traube-Hering-Mayer oscillation: comparing laser-Doppler flowmetry and palpation. *J Am Osteopath Assoc*. 2001;101:163-73.

<http://www.jaoa.org/cgi/reprint/101/3/163>

13. Segueef N, Nelson KE, Glonek T. The effect of cranial manipulation on the Traube-Hering-Mayer oscillation as measured by laser-Doppler flowmetry. *Altern Ther Health Med*. 2002;8(6):74-6.

[http://www.ncbi.nlm.nih.gov/pubmed/12440842?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_SingleItemSuppl.Pubmed_Discovery_RA&linkpos=1&log\\$=relatedarticles&logdbfrom=pubmed](http://www.ncbi.nlm.nih.gov/pubmed/12440842?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_SingleItemSuppl.Pubmed_Discovery_RA&linkpos=1&log$=relatedarticles&logdbfrom=pubmed)

14. Gillespie BR. Case study in paediatric asthma: the corrective aspect of craniosacral fascial therapy. *Explore* (NY). 2008;4:48-51.

15. Gillespie BR. Case study in attention-deficit/hyperactivity disorder: the corrective aspect of craniosacral fascial therapy. *Explore* (NY). 2009;5:296-8.

16. Lancaster DG, Crow WT. Osteopathic manipulative treatment of a 26 year old woman with Bell's palsy. *J Am Osteopath Assoc.* 2006;106:285-9.
<http://www.jaoa.org/cgi/content/full/106/5/285>
17. Leach J. Osteopathic support for a survivor of gastric cancer: A case report. *International Journal of Osteopathic Medicine.* 2008;11:106-11
18. Hartman SE, Norton JM. Craniosacral therapy is not medicine. *Phys Ther.* 2002;82:1146-7. <http://www.ptjournal.org/cgi/content/full/82/11/1146>
19. Hartman SE. Should osteopathic licensing examinations test for knowledge of cranial osteopathy? *International Journal of Osteopathic Medicine.* 2005;8:153-154
20. Hartman SE. Cranial osteopathy: its fate seems clear. *Chirop Osteopat.* 2006;8(14):10.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1564028/?tool=pubmed>

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