National Council for Osteopathic Research

Cranial osteopathy – a snapshot summary statement (May 2013)

Context

Cranial osteopathy is just one of a large range of techniques used by osteopaths for treating patients presenting with musculoskeletal and non- musculoskeletal symptoms. Osteopaths who practise cranial osteopathy may place their hands over the head or the sacrum, but also may place their hands over other areas of the body during tissue palpation.

Evidence summary from published peer-reviewed systematic reviews

- **Key messages**
- Research findings suggest some small beneficial effects on clinical outcomes from this intervention in some patient populations.
- Studies conducted to date have been more commonly pilot in nature, and larger studies with increased methodological quality will need to be conducted to provide more definitive evidence.
- Only one study involving the treatment of patients with traumatic brain syndrome noted some adverse effects of the treatment.
- Further research is required to build more knowledge about this area of practice.

A range of models exist to explain what occurs during cranial osteopathy. Examples of these models have been described by Ferguson, Hamm, and Sutherland[1,2,3]. Hamm attempts to bring together research looking at different

aspects of osteopathic practice, and proposes a hypothesis to explain the palpatory experience and therapeutic claims of cranial osteopathy.

Published studies

There are five main foci of research in this area:

- Validity of cranial assessment (palpation and diagnosis)
- Pathophysiology of the craniosacral system (testing the association between restrictions and health)
- Physiological assessment (examining underpinning theories)
- Craniosacral interventions and health outcomes (effectiveness studies)
- Treatment reactions

Studies relating to these areas have been summarised:-

Focus of research	**Clinical studies**
1. Cranial assessment	**Movement between the cranial bones** Green et al[4] summarised a selection of studies concerning this area in their 1999 systematic review (Todd and Lyon; Baker; Greenman; Frymann; Hubbard et al; Kokich; Heifetz and Weiss; Pitlyk et al; Kostopoulos and Keramidas[5,6,7,8,9,10,11,12,13]). They commented that the studies were of variable design, and were most suited to hypothesis generation. The studies supported the view that the adult cranium may not always be solidly fused, but the study designs selected did not demonstrate that movement of the cranial sutures could be achieved by manually applied techniques. A different research approach to those used previously would be required to investigate this phenomenon. The concept of motion between the cranial bones has its critics who question its scientific plausibility. Such criticism extends to the place of cranial osteopathy within osteopathic medicine, and its lack of evidence of effectiveness (Hartman and Norton[14], Hartman[15]). **Agreement on evaluation findings** Upledger initially assessed a cohort of children who were judged to have restrictions in cranial motion[16]. Later studies were undertaken by Upledger and Karni; Wirth-Pattullo and Hayes; Hanten et al; and Rogers et al[17,18,19,20]. The more recent studies have better design, and measured intraclass correlation coefficients. They were consistent in not finding assessment of the craniosacral rhythm reliable.

2. The association between restrictions and health	Early work was undertaken by Frymann[21] but had no explicit classification criteria; further work was undertaken by Upledger[22] and White et al[23] but both studies were ranked low on assessment for study design in the review by Green et al[4].
3. Underpinning theories	Studies have been undertaken to investigate a range of physiological functions. These include: • Examination of the effect of the CV-4 (a cranial technique that reportedly affects the cranial rhythmic impulse) upon low-frequency oscillations in cutaneous blood flow[24]; • Demonstration of the cranial rhythmic impulse as being synchronous with the Traube-Hering oscillation when measured in blood flow velocity[25]; • Demonstration of the physiological effects of a CV-4 technique on an autonomic nervous system function[26]; • Investigation of the motion of cerebrospinal fluid (CSF) for diagnostic, treatment and brain monitoring purposes (O'Connell; Du Boulay et al; Cardosos et al; Takizawa et al; Avezaat and van Eijndhoven; Enzmann et al; Feinberg and Mark; Ursino; Zabalotny et al; and Li et al[27,28,29,30,31,32,33,34,35,36]). These studies were not undertaken to contribute to the knowledge base for cranial osteopathy but by neurologists looking for pathophysiological information concerning CSF flow. More recent work has been carried out in Russia by Moskalenko et al[37].
4. Effectiveness studies	A range of studies have been conducted which have investigated the effect of cranial osteopathy on different clinical and physiological phenomena. Studies of higher quality which have been selected for inclusion in systematic reviews are described below. They investigated: • *Sleep latency and the role of muscle sympathetic nerve activity (MSNA) in this process.* Cutler et al[38] investigated whether cranial osteopathy is associated with altered sleep latency. Healthy subjects were investigated after exposure to three randomly-ordered treatments. Sleep latency decreased with the active intervention, and MSNA was decreased when measured at the cranial "stillpoint"; • *General health, wellbeing and physical function in children with cerebral palsy*[39]. This pragmatic randomised controlled trial investigated treatment in 142 children aged 5-12 years. The study found participants had statistically significant differences in 1 out of 4 subscales in the Child Health Questionnaire (CHQ), mental component score of the SF-36 assessment which assessed the care givers' quality of life, mean time to sleep, and global sleeping when measured at 10

	weeks. These changes were not sustained when measured again at 6 months. A greater proportion of the parents with children in the intervention group rated "improvement" in their child's general health at both 10 weeks and 6 months; • *Infantile colic*[40]. Infants with symptoms of crying and requiring parental attention were assessed in this pilot clinical trial. A statistically significant reduction in crying time within a 24 hour period was identified when measured by parents, and less parental attention was required in the intervention group. The preliminary data suggest that cranial osteopathic treatment can benefit some infants with colic; a larger, double-blind study will be required to validate these findings. • *Myopia or hyperopia in adults*[41]. This randomised controlled trial investigated change in visual function in adults with myopia or hyperopia. Statistically significant effects were identified within the treatment group and the control group in distance visual acuity of the right eye (OD) and left eye (OS), local stereoacuity, pupillary size measured under dim illumination OD and OS, and near point of convergence break and recovery. For the treatment group vs. the control group, a statistically significant effect was observed in pupillary size measured under bright illumination OS. • *Adults with tension-type headaches*[42]. A total of 60 adults between 21-35 experiencing tension-type headaches (TTH) were assigned to one of three treatment groups. Participants in group one received a cranial osteopathic intervention; participants in group two rested supine after careful positioning of the head and neck; and in group three participants lay quietly. Pain was measured pre- and post-intervention using a Visual Analogue Scale (VAS). Statistical examination of the data identified that significant improvement in pain took place, but no long term follow up data were recorded.
5. Treatment reactions	Wyatt et al; Greenman and McPartland[39,43]. One study[39], which employed cranial osteopathy in a trial involving children with cerebral palsy, reported on the safety of cranial osteopathy and found no worsening effects mentioned. One other earlier study[43] involving the treatment of patients with traumatic brain syndrome noted some adverse effects of the treatment. Studies in this area, as in all clinical trials, will benefit increasingly from routine reporting of adverse events/treatment reactions.

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