

The authors cite limitations of no randomization and participant self-referral by the parents. The authors also suggest a possible gut-brain axis mechanism of action in which worsening of behavior symptoms may be a result of inflammatory gut reactions mediated by immunologic signals. As a source for such speculation, the authors cited the osteopathic research of Hodge et al.^{1,2}

This article demonstrates a possible benefit of osteopathic intervention in this special needs population and thus warrants additional investigation. (doi:10.7556/jaoa.2016.064)

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Postural Balance and Gait Improved With an Osteopathic Intervention in a Special Needs Population

Vismara L, Cimolin V, Galli M, Grugni G, Ancillao A, Capodaglio P. Osteopathic manipulative treatment improves gait pattern and posture in adult patients with Prader-Willi syndrome [published online September 12, 2015]. *Int J Osteopath Med*. 2016;19:35-43. doi:10.1016/j.ijosm.2015.09.001.

Researchers at the Istituto Auxologico Italiano in Piacavallo, Italy, evaluated the effects of a single application of osteopathic manipulative therapy (OMTh; manipulative care provided by foreign-trained osteopaths) on patients with Prader-Willi syndrome (PWS). This condition is a relatively rare genetic disorder affecting a part of chromo-

some 15. Major clinical features of PWS are short stature, obesity, scoliosis, developmental delay, muscular hypotonia, reduced physical activity, and gait and postural disorders. Study participants were 10 patients with genetically confirmed PWS. Two control groups were used: one of 15 obese individuals and another of 20 normal-weight healthy participants. Obese participants were recruited among other inpatients in rehabilitation, and healthy participants were recruited from the institute staff. Exclusion criteria included history of cardiovascular and neurologic conditions or musculoskeletal complaints, vision loss, vestibular impairments, symptoms related to intracranial hypertension or use of neuro-active drugs, pregnancy, and substance abuse.

The outcome measures were 3-dimensional gait analysis and static posturography. The PWS participants were assessed on admission and 24 hours after OMTh. One-time assessments were made with the control participants.

Participants in the PWS and obese groups received conventional treatment, but the PWS participants additionally received OMTh, which was delivered in a single 45-minute session. This was a pragmatic OMTh session delivered before any other intervention or rehabilitation by a registered osteopath. Somatic dysfunction was assessed, and the major sites addressed by OMTh were the spine, legs, dural system, and thoracic respiratory diaphragm. Procedures used included “thrust,” muscle energy, strain-counterstrain, and myofascial release.

Before treatment, the PWS group had a significantly slower walk, shorter stride length, reduced cadence, and reduced postural stability compared with both control groups. After treatment, the PWS participants showed significant improvement in knee and ankle kinematics with greater ground push-off force. Postural stability also improved significantly, with reduced antero-posterior and mediolateral sway. The authors noted the small sample size as a limitation, and

they suggested that if verified by further research, OMTh would show benefit and reduced cost in a comprehensive rehabilitation program.

This study was selected for review as demonstrating a possible benefit of OMTh in patients with a genetic disorder and to highlight the further use of gait analysis and posturography in osteopathic research. (doi:10.7556/jaoa.2016.065)

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Significant Benefit Shown After Lumbar Disk Surgery Rehabilitation by Inclusion of Osteopathic Intervention

Kim BJ, Ahn J, Cho H, Kim D, Kim T, Yoon B. Rehabilitation with osteopathic manipulative treatment after disc surgery: a randomized, controlled pilot study. *Int J Osteopath Med*. 2015;18:181-188. doi:10.1016/j.ijosm.2014.11.003.

The use of osteopathic manipulative therapy (OMTh; manipulative care provided by foreign-trained osteopaths) in postoperative rehabilitation after lumbar microdiscectomy was compared with a standard exercise program in a major metropolitan hospital in Seoul, South Korea. A total of 33 patients aged 25 to 65 years were randomly assigned to the OMTh group (n=16) or exercise group (n=17).

Inclusion criteria were low back pain with referred leg pain caused by imagery-verified herniated intervertebral disk at spinal levels L3-4, L4-5, and L5-S1. Eight patients had more than 1 herniated disk. There were no statistically significant differences between the groups.

Primary outcome measures were the Roland-Morris Disability Questionnaire and visual analog scale (VAS) for pain. Secondary outcome measures were lumbar range of motion, use of medications, and patient satisfaction. Patients received

either OMTh or exercise twice a week for 4 weeks, and each session was 30 minutes.

Each OMTh intervention was performed by 2 osteopathy students under the supervision of a qualified osteopath. Techniques were individualized and included soft-tissue and joint mobilization, myofascial release, muscle energy, craniosacral release, and rib raising; no high-velocity, low-amplitude thrust was used. The same exercise protocol was used for all patients in the exercise group and included stretching for low back and abdominal muscles, isometric strengthening for back and hip extensors, and back stability exercises using a Pilates exercise apparatus.

Outcome measures were made at baseline (2-3 weeks after surgery) and after the final rehabilitation session (7-8 weeks after surgery). Results showed that both groups improved on primary outcome measures; however, postsurgical physical disability was more improved in the OMTh group (54% vs 26%, $P<.05$). Although not statistically significant, residual leg pain on VAS was reduced 53% in the OMTh group and 17% in the exercise group, and residual back pain reduced 37% in the OMTh group and 10% in the exercise group. Patients in both groups required less frequent use of medications—reduced 87% in the OMTh group and 73% in the exercise group. Both groups were highly satisfied by their rehabilitation, and there were no adverse events reported for either group.

This study is the first to my knowledge that assessed the use of osteopathic manipulation after lumbar surgical care. I believe postsurgical use of osteopathic manipulative treatment would be beneficial for patients, and I hope this study is replicated in the United States soon. (doi:10.7556/jaoa.2016.066)

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