

OPTIMAL HEALTH UNIVERSITY™

Presented by YOUR NAME HERE

Can Chiropractic Adjustments Make You Smarter?

Chiropractic adjustments are specific maneuvers YOUR NAME HERE and other doctors of chiropractic use to correct dysfunctional areas in the spine known as vertebral subluxations. It's simple to grasp how chiropractic adjustments may ward off conditions like neck and back pain. But did you know that cutting-edge research suggests that this gentle and safe procedure may actually boost cognitive functioning?

The Spine/Brain Connection

The spinal cord is a major component of the nervous system. It fuses into the brain at the base of the skull. The spinal cord is housed in the protective shell of the spinal column. The spinal column consists of bones called vertebrae that are stacked one on top of the other and separated by flexible discs. This ingenious construction facilitates mobility while maintaining structure.

Nerves flowing to organs, muscles and sites throughout the body emerge from and return to the spinal cord. These nerves enter and exit through small canals between spinal bones.

Doctors of chiropractic, like **YOUR NAME HERE**, theorize that subtle alterations in the spine and surrounding structures may interfere with nervous system activity. For instance, studies show that even slight spinal degeneration caused by osteoarthritis may



affect nerve flow (*J Manipulative Physiol Ther* 2003;26:426-37).

Vertebral subluxations are areas in the spine where function is restricted or bones are slightly out of place. Investigators reason that inhibited nervous system function due to vertebral subluxations may be the connection between the spine and suboptimal brain functioning.

Adjustments Speed Thinking

According to one late-breaking analysis, chiropractic adjustments designed to remove vertebral subluxations appear to speed reaction time, or what researchers term "movement time."

The study's authors explain that "movement time was measured as participants moved a cursor onto a target appearing on a computer screen. A range of target widths and target distances were used to vary the index of difficulty."

A group of five patients completed the test before and after receiving chiropractic adjustments aimed at removing vertebral subluxation. Another five patients served as a control group (*J Manipulative Physiol Ther* 2006;29:257-66).

"All participants in the experimental group had significantly improved movement times following spinal adjustments compared with only one



participant in the control group. The average improvement in movement time for the experimental group was 183 milliseconds, a 9.2 percent improvement, whereas the average improvement in movement time for the control group was 29 milliseconds, a 1.7 percent improvement."

"The results of this study demonstrated a significant improvement in movement time with chiropractic care," conclude the study's authors. "These results suggest that spinal adjustments may influence motor behavior." (*J Manipulative Physiol Ther* 2006;29:257-66.)

Additional Evidence Shows Adjustments Up Reaction Time

YOUR NAME HERE wants patients to know that the new study outlined above is not the first indicating that chiropractic adjustments hasten reaction time. Previous investigations produced similar findings.



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One experiment conducted in New Zealand included 36 subjects with evidence of vertebral subluxations in their upper neck (cervical spine). All of the participants completed a cognitive test where they were asked to identify whether an object on a computer screen appeared as normal or as a mirror-reversed image. This test measures what scientists call “mental rotation reaction time.” Some of the patients then received chiropractic adjustments to their upper cervical spine. A control group did not receive adjustments. Next, all the participants repeated the mental task.

“The average decrease in mental rotation reaction time for the experimental group was 98 milliseconds, a 14.9 percent improvement, whereas the average decrease in mental rotation reaction time for the control group was 58 milliseconds, an 8.0 percent improvement.”

“The results of this study have demonstrated a significant improvement in a complex reaction-time task after an upper cervical adjustment. These results provide evidence that upper cervical adjustment may affect cortical processing.” (*J Manipulative Physiol Ther* 2000;23:246-51.)

More Vertebral Subluxations = More Cognitive Problems

The more vertebral subluxations an individual has, the more his or her cognitive function may be compromised, according to one analysis of 30 volunteers.

The researchers concluded, “This pilot study provides a context for the improvements in cortical processing observed after cervical spine adjustment.” (*J Manipulative Physiol Ther* 2005;28:502-7.)

Activate Brain Activity

Another study was designed “to ascertain whether manipulation [adjustment] of the cervical spine is associated with changes in brain function.”

This large trial of 500 individuals used high-tech imaging to map brain activ-

ity in patients before and after receiving an upper cervical chiropractic adjustment. Results revealed that chiropractic adjustments activate “specific neurological pathways.” (*J Manipulative Physiol Ther* 1997;20:529-45.)

Boost Cognitive Function

An additional study suggesting that chiropractic adjustments may boost brain power was presented in November 1999 at the Sixteenth Annual Upper Cervical Conference at Life University in Marietta, Ga.

Investigators used a computer-testing program called Microcog to evaluate mental functioning in 30 individuals. The volunteers completed Microcog testing prior to receiving their first upper cervical (neck) adjustment, and again four weeks after initiating chiropractic care. A control group of 10 subjects underwent “sham” adjustments.

The study found that “significant improvements were observed in neurocognitive function in the group receiving upper cervical care. The control group did not demonstrate a similar trend. This study suggests that upper cervical chiropractic care may positively affect neurocognitive function.”

Pain Shrinks the Brain

A further way that chiropractic adjustments may improve cognitive function is by warding off pain. Alarming research shows that back pain literally shrinks the brain.

One study published in the *Journal of Neuroscience* discloses that individuals enduring chronic back pain (CBP) suffer brain loss or atrophy.

Scientists at Northwestern University in Chicago used specialized magnetic resonance imaging brain scans to compare the brains of 26 individuals with CBP with the brains of 26 pain-free control subjects (*J Neuroscience* 2004;24:10410-5).

The report uncovers that “patients with CBP showed 5 to 11 percent less neocortical gray matter volume than control subjects.” Gray matter is the

part of the brain that processes information and memory.

According to the scientists, “The magnitude of this decrease is equivalent to the gray matter volume lost in 10 to 20 years of normal aging.”

The study also showed that CBP patients had decreased density of their remaining gray matter.

“Our results imply that CBP is accompanied by brain atrophy . . .,” conclude the authors (*J Neuroscience* 2004;24:10410-5).

Further evidence, which is slated for publication in an upcoming issue of the journal *Pain*, compared 18 patients suffering from chronic back pain with 18 healthy controls. Findings showed “a significant decrease of gray matter in the brainstem and the somatosensory cortex.” The more pain the subjects endured, the more extensive the changes (*Pain* 2006;122:Epub).

And it’s not just gray matter that is diminished by pain. An investigation of elderly individuals determined that white matter changes are also linked with pain. These changes were associated with symptoms of dementia (*Pain* 2006;122:Epub).

Make the Smart Move, Discover Chiropractic

Feel like you need to sharpen your mental edge? Regular chiropractic adjustments may do the trick. While additional research is needed before a firm link may be established, the current preponderance of evidence demonstrates that chiropractic adjustments may indeed boost cognitive function. Make the smart move; schedule an appointment for a chiropractic evaluation today!

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