Platinum Live Zoom
October 2025

Heidi Haavik BSc (chiropractic), PhD
VP Research, Dean Research
New Zealand College of Chiropractic

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Welcome to New Platinum Members!!

- Online Classes for DCs and CAs
- Live Zoom Workshops every 8 weeks
- Level 1 The Brain Model
- Level 2 Pain, the Brain and Chiropractic care
- Level 3 Stress, Disease and Chiropractic care

- Your resources:
  - ChirosHub – for patients
  - ChirosAcademy – for chiros
  - LearningHub – for CAs

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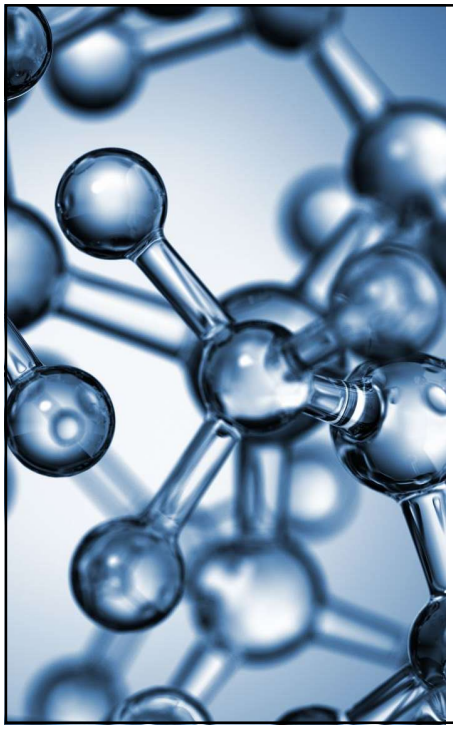
Outline Level 1

ALL ONLINE

- 20 Steps for chiros
  - https://chirosacademy.com/the-new-brain-model-2024/
- 13 Steps for CAs
  - https://chiroslearninghub.com/enlighten-practice-members-2024/

Plus LIVE DC workshops roughly every second months
- covers live Q&A plus a topic

3



Today's Topic: Can Chiro Care enhance sports performance

December: How might chiropractic care enhance sports performance

February: Can chiropractic care prevent (sports) injuries? And if so, how can it prevent sports injuries?

These workshops will also be recorded and appear on your ChirosHub membership page and on the course outline page along with the handout and PowerPoints if you want them.

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Outline

- https://chirosacademy.com/the-new-brain-model-2024/

Dec 2024 Topic
How I present this latest science to other health care providers

Feb 2025 Topic
How I present this latest science to the lay public

April 2025 Topic is how to explain the chiro-neuro-immune connection according to the brain model

June 2025 How, according to brain model, can chiro care impact organ function

Aug 2025 How, according to brain model, can chiro care impact anxiety & depression

Recorded Live Zoom Sessions

5

Chiropractic Assistants

- 14 online classes for CAs
- Happy to book a practice CA live zoom session also
- Reward your staff for their effort!!!
  - Voucher
  - Pay rise

https://chiroslearninghub.com/enlighten-practice-members-2024/
https://chiroslearninghub.com/platinum-level-1

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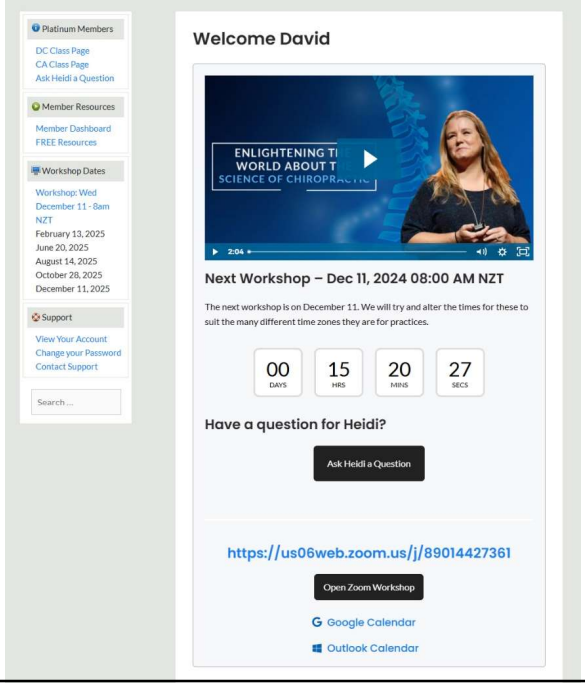
Platinum Member on ChirosHub

- The Platinum Member also has a dedicated platinum member site on ChirosHub.com
- Next life workshop countdown
- Question for Heidi
- Next workshop link
- Prefrontal cortex poster
- Cerebellum poster



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Any Questions Regarding Membership?

- Technical Support - Dave
- Administrative Support - Debbie

support@chiroshub.com

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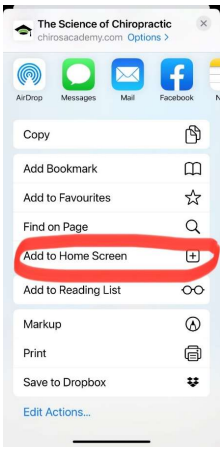
1

On your smart phone click on Safari and type in ChirosAcademy.com

2

Click on the up arrow

3



Click on 'Add to Home Screen'

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ChirosAcademy will now appear as an App on your phone!

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If anyone requires USA CE credits

- Go to Palmer College Continuing Education Online Courses
- https://palmerce.learningexpressce.com/index.cfm?eventTypeID=0&categoryIDs=&q=Haavik

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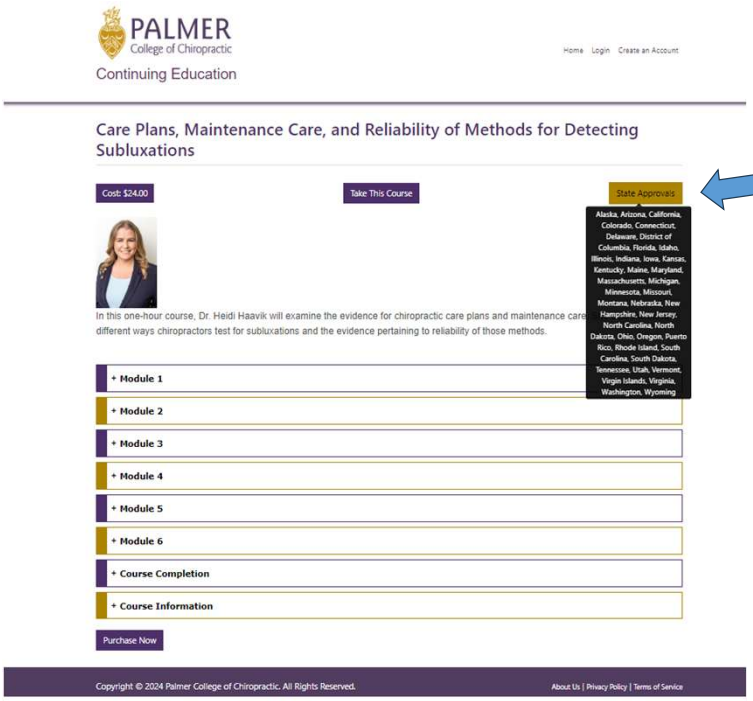

Check here for which states have approved each class

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Questions

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Chiropractic & Sports

- Can Chiropractic Care Enhance sports performance?

Heidi Haavik BSc (chiropractic), PhD
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Chiropractic & Sport Topic

Clinical Research

Can Chiropractic Care Enhance Sports Performance?

Can Chiropractic Care Prevent Sports Injuries?

How might chiropractic care enhance sports performance or prevent injuries?

Basic Science

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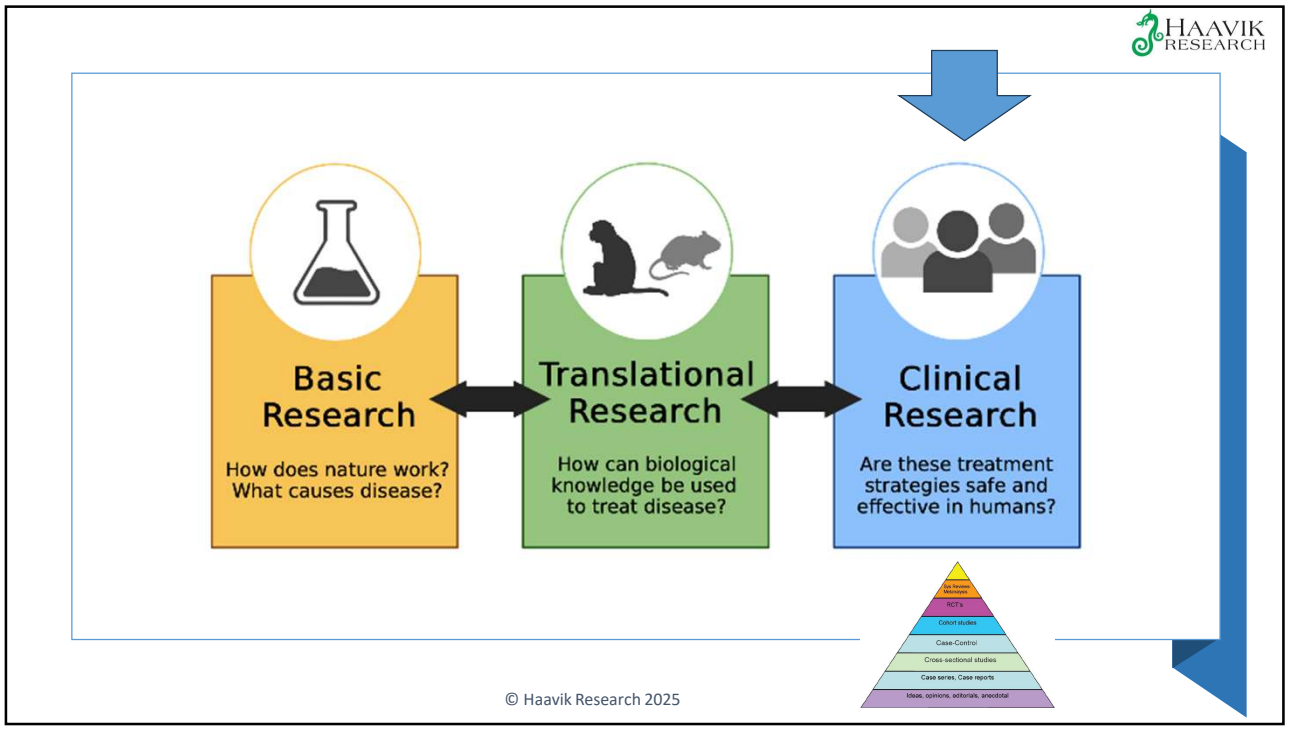
HAAVIK RESEARCH
Basic Research
How does nature work? What causes disease?
Translational Research
How can biological knowledge be used to treat disease?
Clinical Research
Are these treatment strategies safe and effective in humans?
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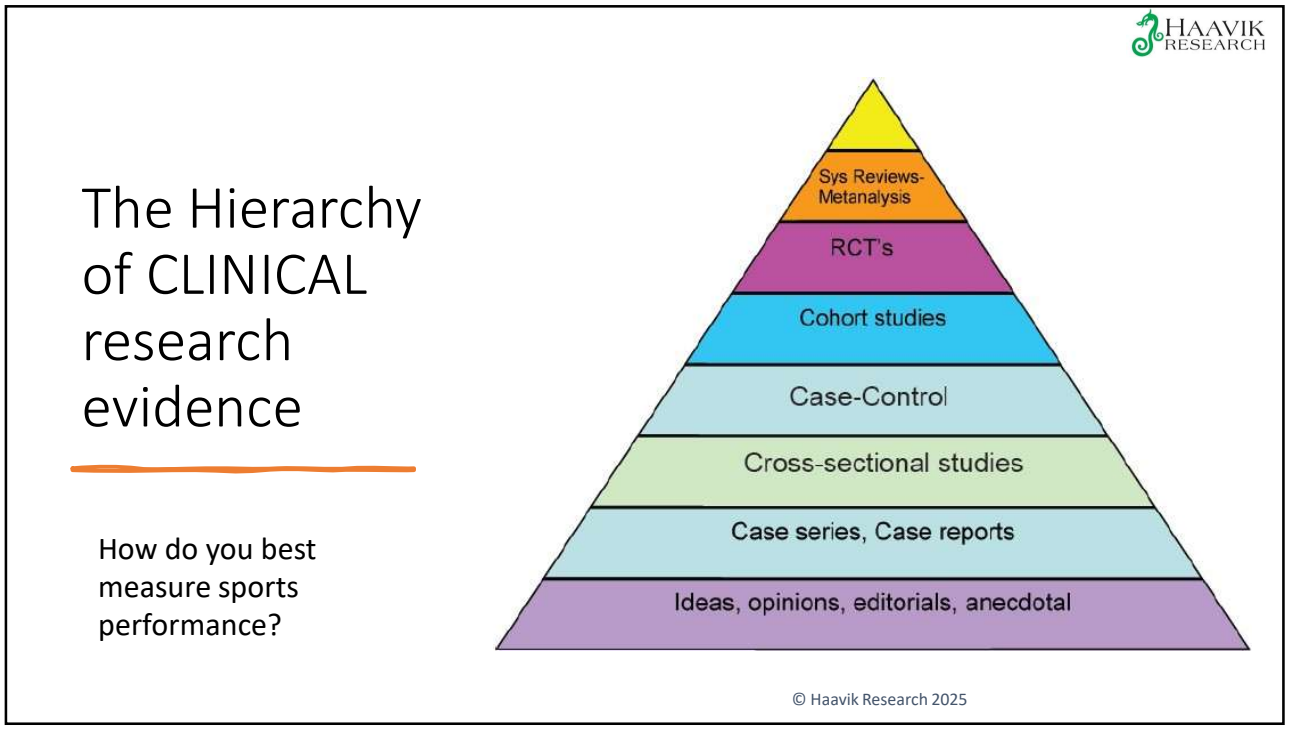
HAAVIK RESEARCH
The Hierarchy of CLINICAL research evidence
How do you best measure sports performance?
Sys Reviews-Metanalysis
RCT's
Cohort studies
Case-Control
Cross-sectional studies
Case series, Case reports
Ideas, opinions, editorials, anecdotal
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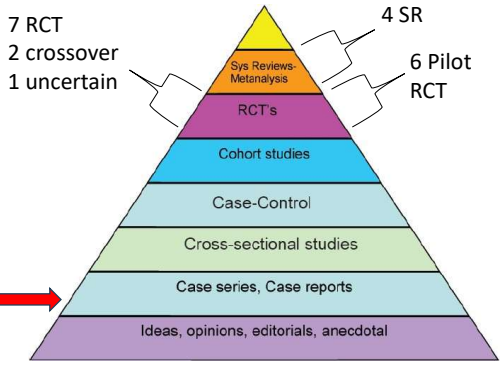
Chiropractic Care and Sports Performance

- 4 Systematic Reviews 2017 & 2019 (no meta-analyses)
- 1 Narrative review (2010)
- 7 RCTs
- 6 Pilot RCTs
- 1 Feasibility study
- Surveys (i.e. cross sectional)
  - 1 of athletes
  - 3 practice characteristics of sports chiros
- 1 utilization of chiro in world games 2013
- 1 Sports research agenda
- 1 Opinion review

4 Basic Science Studies that measured maximum voluntary contraction strength



I did not even look at

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How do you measure sports performance?

- What is improved sports performance?
- Is it running faster or lifting heavier weights or is it winning a game?
- Or is it something else entirely?

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Baseball Players Upper Cervical Chiro Care Pilot Study

- 21 male baseball players, assigned 'randomly' to either a control or chiropractic (adjustment) group over 14 weeks
- Measured vertical jump, long jump, muscle 'strength' and capillary count.
- The results showed significant improvement at 14 weeks in muscle strength and long jump distance in the group receiving adjustments.
- Moreover, this same group showed significant improvement in capillary counts at five and fourteen weeks of chiropractic care.
- Limitations: small pilot study, vague randomization, lack of blinding, strength test really endurance test, potential learning effect, stats not ideal (paired t-tests, no accounting for multiple comparisons, no effect sizes calculated)

(Schwartzbauer et al., 1997)

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Increased hip extension – no speed changes

- A prospective, randomized, controlled experimental pilot study.
- 17 healthy male junior athletes (age, 17-20 years) training in middle distance running were recruited from local Swedish athletic associations.
- Treatments were given once a week during the 3-week study period by one experienced, state-registered chiropractor
- The treatment group showed significantly greater hip extension ability
- No change in running speed
- Limitations: small sample, not blinded, short term assessment, short term treatment, only men.

(Sandell, Palmgren & Björndahl. 2008)

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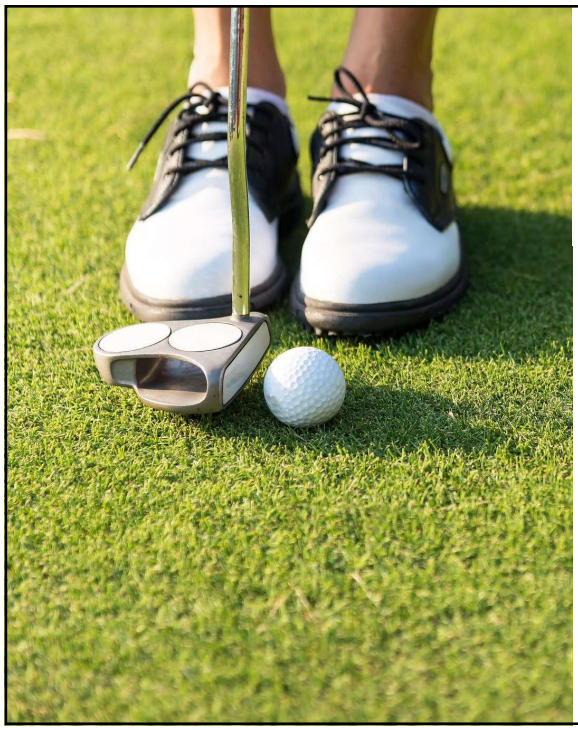

Take Home Message

HAAVIK RESEARCH

In a randomised controlled trial that investigated the effects of chiropractic care on the ability of a group of golfers to drive the ball.

Researchers found that after 4 weeks the group that received chiropractic care as well as a stretching programme had an increase in the length of their golf drives of 8 metres compared to half a metre improvement in the control group that only did the stretching programme.

These results suggest that chiropractic care in association with muscle stretching seems to improve a golf players ability to drive the ball when compared with muscle stretching alone

(Costa, Chibana, Giavarotti, Compagnoni, Shiono, Satie, & Bracher 2009)

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Effect of cervical spine manipulative therapy on Judo athletes' grip strength

- Looked at changes in grip strength in
- 18 professional judo athletes in Brazil before and after 3 chiropractic interventions or sham treatments
- Adjustment 1 - grip strength increased by 7% on the right and 13% on the left
- Adjustment 3 - 11% increase in strength on the right and 17% on the left compared to baseline

(Botelho & Andrade 2012)

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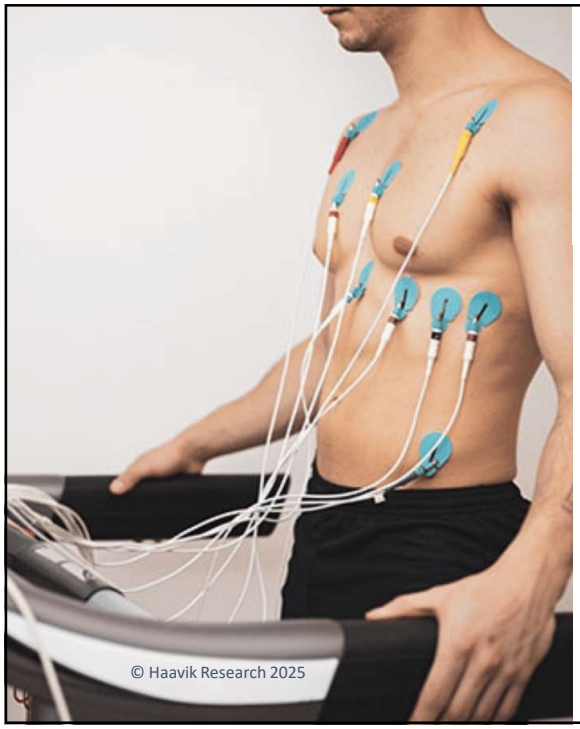

Thoracolumbar spinal manipulation and the immediate impact on exercise performance

- Randomized crossover study design with Treadmill-based graded exercise test
- Exercise performance measured by:
  - blood lactate concentration
  - exercise heart rate
  - and rating of perceived exertion
- Single T12/L1 manipulation had no effect on any of the parameters
- Limitations
  - What if not subluxated at T12/L1?
  - Only 20 participants
  - Outcome measures may Not be sensitive
  - Asymptomatic people

(Ward, Coats, Ramcharan, Humphries, Tong & Chu *2012)*

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Handball players vertical jump hight

- 19 female handball players with talocrural joint dysfunction were randomized to receive either HVLA manipulation (n = 11) or sham treatment (n = 11) once a week during a 3-week period.
- HVLA manipulation had a statistically significant mean improvement in vertical jump height of 1.07 cm
- Preliminary results suggest that chiropractic HVLA manipulation may increase vertical jump height in young female athletes with talocrural joint dysfunction.
- However, the clinical result in favor of HVLA manipulation compared with sham treatment needs statistical confirmation in a larger randomized clinical trial
- Limitations: small sample, short duration, ancle manipulation only, females only, pilot design

(Hedlund, Nilsson, Lenz & Sundberg 2014)

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Asymptomatic Cyclist Sprint Performance and Hip Flexibility

- Mid-lumbar spinal manipulation on 12 asymptomatic cyclist sprint performance and hip flexibility
- Randomized cross-over design
- **Results:** No significant differences:
  - flexibility
  - sprint time
  - heart rate
  - or perceived exertion
- **Conclusion:** Lumbar spinal manipulation did **not** improve hip flexibility or sprint performance in asymptomatic cyclists.
- Multiple limitations
  - Only 12 cyclists
  - Healthy asymptomatic
  - What if not subluxated at L3?
  - Outcome measures may not be sensitive enough
  - Only 1 werek washout
  - Possibly insufficient power

(Olson et al., 2014)

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Strength Changes with chiropractic adjustments

- 18 College students, randomly allocated into a control group or adjustment group.
- Measured maximum force production as well as other measures
- Control group 13% decrease in strength and shift of median frequency (reflecting fatigue)
- Chiropractic group post-adjustments had 16% increase in strength (i.e. and no fatigue!)

(Niazi, Türker, Flavel, Kinget, Duehr & Haavik 2015. Exp Brain Res)

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Faster kicking speed in Soccer Players

- A non-randomised experimental feasibility study
- Explored the immediate effect of three different spinal manipulative protocols on kicking speed performance in 40 soccer players
- Results: Lumbar spine manipulation combined with SI joint manipulation resulted in short-term increases in kicking speed/performance (by 3.5 - 6.5 km/hr)
- Limitations: not randomized, no blinding of assessors, what about other subluxations?

(Deutschmann, Jones & Korporaal. 2015)

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HAAVIK RESEARCH

2017 SYSTEMATIC REVIEW

- Systematically searched for original studies published up to July 2016
- **Conclusions:** Although 4 of 7 studies showed that SMT improved sports performance tests, the evidence is still weak to support its use. Spinal manipulative therapy may be a promising approach for performance enhancement that should be investigated with more consistent methodologic designs.

Spinal Manipulative Therapy and Sports Performance Enhancement: A Systematic Review

Marcelo B. Botelho, DC, MD, MSc,[a] Bruno A.P. Alvarenga, PT, DC,[b] Nícolly Molina, PT,[a] Marcos Ribas, PT,[a] and Abrahão F. Baptista, PT, MSc, PhD[c]

ABSTRACT

Objective: The purpose of this study was to review the literature regarding the relationship between spinal manipulative therapy (SMT) and sports performance.
Methods: PubMed and Embase databases were searched for original studies published up to July 2016. Inclusion criteria were if SMT has been applied to athletes and if any sports performance–related outcome was measured.
Results: Of the 581 potential studies, 7 clinical trials were selected. Most studies had adequate quality (≥6/11) when assessed by the PEDro scale. None of those studies assessed performance at an event or competition. Four studies revealed improvement in a sports performance test after SMT. Meta-analysis could not be performed because of the wide differences in methodologies, design, and outcomes measured. Spinal manipulative therapy influences a wide range of neurophysiological parameters that could be associated with sports performance. Of the 3 studies where SMT did not improve test performance, 2 used SMT not for therapeutic correction of a dysfunctional vertebral joint but to an arbitrary previously set joint.
Conclusions: Although 4 of 7 studies showed that SMT improved sports performance tests, the evidence is still weak to support its use. Spinal manipulative therapy may be a promising approach for performance enhancement that should be investigated with more consistent methodologic designs. (J Manipulative Physiol Ther 2017;40:535-543)
Key Indexing Terms: *Musculoskeletal Manipulations; Athletic Performance; Sports; Athletes; Spine*

(Botelho, Alvarenga, Molina, Ribas & Baptista 2017 JMPT)

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HAAVIK RESEARCH

7 RCTs Identified (of Decent Quality)

Focused on chiropractic SMT in *athletes*

Table 2. *PEDro Scale Criteria That Were Not Fulfilled in the Studies*

Study	Concealed Allocation	Similar Groups at Baseline	Blinding of All Subjects	Blinding of All Therapists	Blinding of All Assessors	Final PEDro Score
Shrier et al (2006)[66]	No	Yes	No	No	No	7/11
Sandell et al (2008)[60]	Yes	No	No	No	Yes	8/11
Costa et al (2009)[61]	Yes	Yes	No	No	No	8/11
Botelho and Andrade (2012)[44]	Yes	Yes	No	No	Yes	9/11
Humphries et al (2013)[65]	Yes	Yes	No	No	No	8/11
Olson et al (2014)[63]	Yes	Yes	No	No	Yes	9/11
Deutschmann et al (2015)[69]	No	No	No	No	No	5/11

PEDro Scale = the 11-item checklist used to rate the **methodological quality** of RCTs

(Botelho, Alvarenga, Molina, Ribas & Baptista 2017 JMPT)

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Table 3. *Selected Studies Main Results*

Study	n	Age in Years (SD)	Sport/Athlete Level	Sex M/F	Number of Interventions/Joints	Outcome Measure	Main Results
Shrier et al (2006)[66]	19	26 (±4)	"Sprint sports"/Elite	M/F	1/Thoracolumbar and tarsal	Jump height and 40-m run	No changes
Sandell et al (2008)[60]	17	17-20	Runners/Junior	M	3/Sacroiliac and hip	Hip extension and 30-m run	↑Hip extension; running velocity unchanged
Costa et al (2009)[61]	43	34.64 (±11.2)	Golf/NI	M	4/Full spine	Full-swing range	↑Full-swing
Botelho and Andrade (2012)[44]	18	20.28 (±3.2)[a]	Judo/Elite	M/F	3/Cervical	Grip strength	↑Strength
Humphries et al (2013)[65]	24	26.3 (±9.2)	Basketball/Recreational	M	1/Left C5-6 column	Grip strength and free-throw	No changes
Olson et al (2014)[63]	20	36.3 (±7.4)	Cycling/NI	M/F	1/L3	Hip flexibility and cycling sprint	No changes
Deutschmann (2015)[69]	40	23.4 (±3.4)	Soccer/Elite	M	1/Lumbar, sacroiliac	Range of motion and kicking speed	↑Kicking speed

F, female; *M*, male; *n*, sample size; *NI*, no information; *SD*, standard deviation.
[a] Data directly provided by author.

(Botelho, Alvarenga, Molina, Ribas & Baptista 2017 JMPT)

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Interesting finding!

ABSTRACT

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Key Indexing Terms: *Musculoskeletal Manipulations; Athletic Performance; Sports; Athletes; Spine*

(Botelho, Alvarenga, Molina, Ribas & Baptista 2017 JMPT)

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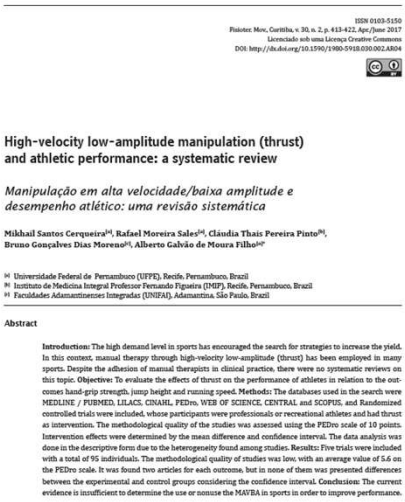
Systematic Review 2017 (Physios Brazil)

- Included multiple professions (PT, DC, DO) using HVLA on spine or extremities
- Identified Five trials (a total of 95 individuals)
- **Conclusion:** The current evidence is insufficient to determine the use or non-use the manual therapy through high-velocity low-amplitude (thrust) in sports in order to improve performance.



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High-velocity low-amplitude manipulation (thrust) and athletic performance: a systematic review

Manipulação em alta velocidade/baixa amplitude e desempenho atlético: uma revisão sistemática

Mikhail Santos Cerqueira[I], Rafael Moreira Sales[II], Cláudia Thais Pereira Pinto[III], Bruno Gonçalves Dias Moreno[II], Alberto Galvão de Moura Filho[I,IV]

[I] Universidade Federal de Pernambuco (UFPE), Recife, Pernambuco, Brazil
[II] Instituto de Medicina Integral Professor Fernando Figueira (IMIP), Recife, Pernambuco, Brazil
[III] Faculdades Adamantinenses Integradas (UNIFAI), Adamantina, São Paulo, Brazil

Abstract

Introduction: The high demand level in sports has encouraged the search for strategies to increase the yield. In this context, manual therapy through high-velocity low-amplitude (thrust) has been employed in many sports. Despite the adhesion of manual therapists in clinical practice, there were no systematic reviews on this topic. **Objective:** To evaluate the effects of thrust on the performance of athletes in relation to the outcomes hand-grip strength, jump height and running speed. **Methods:** The databases used in the search were MEDLINE / PUBMED, LILACS, CINAHL, PEDro, WEB OF SCIENCE, CENTRAL and SCOPUS, and Randomized controlled trials were included, whose participants were professionals or recreational athletes and had thrust as intervention. The methodological quality of the studies was assessed using the PEDro scale of 10 points. Intervention effects were determined by the mean difference and confidence interval. The data analysis was done in the descriptive form due to the heterogeneity found among studies. **Results:** Five trials were included with a total of 95 individuals. The methodological quality of studies was low, with an average value of 5.6 on the PEDro scale. It was found two articles for each outcome, but in none of them was presented differences between the experimental and control groups considering the confidence interval. **Conclusion:** The current evidence is insufficient to determine the use or nonuse the MAVBA in sports in order to improve performance.

(Cerqueira, Sales, Pinto, Moreno & Filho, 2027)

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Table 1 - Description of the studies included in the review (n = 5)

Study	Population	Intervention	Comparison
Botelho (16)	n=18; Professional judo practitioners; Average age of the groups was not presented.	Thrust cervical in places with mobility restriction after evaluation of static and dynamic mobility.	Sham (Sudden drop of the head with the back removed).
Hedlund (23)	n=19; Handball professional players; Average age INT: 22 (SD 1.6); Average age CON: 17.9 (SD 0.5).	Thrust in tibiotarsal joint with dysfunction	Sham (Contact the distal end of the tibia).
Humphries (2)	n=24; Recreational players Basketball; Average age INT: 26 (SD 8.5); Average age COM: 26.3 (SD 10).	Thrust in the cervical spine (C5 - C6).	Sham (cervical rotation through the Activator instrument).
Sandell (6)	n=17; Professional athletics; Average age of groups not displayed.	Thrust the sacroiliac joints and hip, depending on the assessment of mobility.	Sham (thrust without eliciting the cavitation effect – sound of "click").
Shrier (15)	n=17; Professional runners; Average age of groups not displayed.	Thrust applied in the lower back, thoracolumbar and lower limbs depending on the mobility assessment.	Sham (EMG electrodes were placed on the limbs and it was made known that they had the purpose of increasing energy and strength).

Note: n: sample size; CON: control; SD: Standard Deviation; INT: intervention; thrust: High-velocity low-amplitude manipulation.

(Cerqueira, Sales, Pinto, Moreno & Filho, 2027)

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Botelho et al 2017

Table 2 - Methodological quality of eligible studies (n = 5)

Study	PEDro scale items											PEDro score (0-10)	Registered	Outcome Primary stated	Funded	Sample size calculation presented	
	1	2	3	4	5	6	7	8	9	10	11						
Botelho (16)	S	S	N	S	S	N	N	S	S	S	N	6	S	S	N	N	9
Hedlund (23)	S	S	N	S	N	N	S	N	N	S	N	4	S	S	S	S	
Humphries (2)	S	S	N	S	S	N	S	S	S	S	N	7	N	S	N	N	8
Sandell (6)	S	S	S	S	N	N	S	S	S	S	S	8	N	S	N	N	8
Shrier (15)	S	S	N	S	N	N	N	N	N	S	N	3	N	S	N	S	7

Note: S: Yes; N: no.

(Cerqueira, Sales, Pinto, Moreno & Filho, 2027)

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- Basic Science Study
- 11 elite Taekwondo athletes
- Outcome measures:
  - Soleus-evoked V-waves
  - H-reflex
  - Maximum voluntary contraction (MVC) of the plantar flexors
- Results
  - 8% increase in MVC strength
  - No change H-reflex
  - Large increase in V wave
- Limitations
  - Small sample
  - Basic science design (not supposed to be clinical)
  - Strength only (not sure how long it lasts)
  - Not sure if this improves Taekwondo performance

(Christiansen, Niazi, Holt, Nedergaard, Duehr, Allen, Marshall, Turker, Hartvigsen & Haavik 2018*)*

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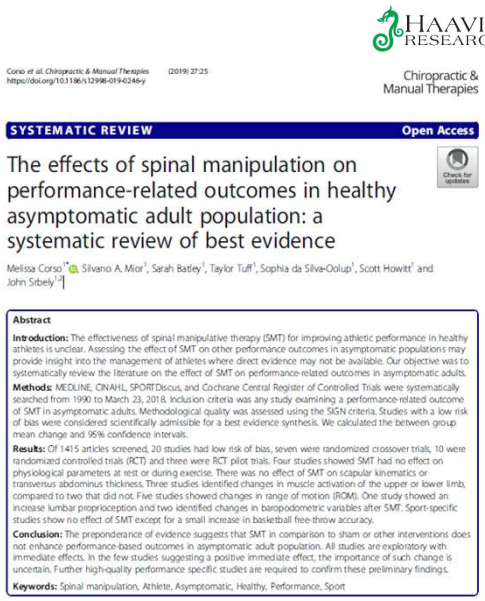
Systematic review 2019

- Searched - 1990 to March 2018
- Conclusion:
  - The preponderance of evidence suggests that SMT in comparison to sham or other interventions does not enhance performance-based outcomes in asymptomatic adult population.
  - All studies are exploratory with immediate effects.
  - In the few studies suggesting a positive immediate effect, the importance of such change is uncertain.
  - Further high-quality performance specific studies are required to confirm these preliminary findings.



Corso et al. Chiropractic & Manual Therapies (2019) 27:25
https://doi.org/10.1186/s12998-019-0246-y

Chiropractic & Manual Therapies

SYSTEMATIC REVIEW — Open Access

The effects of spinal manipulation on performance-related outcomes in healthy asymptomatic adult population: a systematic review of best evidence

Melissa Corso[1*], Silvano A. Mior[1], Sarah Batley[1], Taylor Tuff[1], Sophia da Silva-Oolup[1], Scott Howitt[1] and John Srbely[1,2]

Abstract

Introduction: The effectiveness of spinal manipulative therapy (SMT) for improving athletic performance in healthy athletes is unclear. Assessing the effect of SMT on other performance outcomes in asymptomatic populations may provide insight into the management of athletes where direct evidence may not be available. Our objective was to systematically review the literature on the effect of SMT on performance-related outcomes in asymptomatic adults.

Methods: MEDLINE, CINAHL, SPORTDiscus, and Cochrane Central Register of Controlled Trials were systematically searched from 1990 to March 23, 2018. Inclusion criteria was any study examining a performance-related outcome of SMT in asymptomatic adults. Methodological quality was assessed using the SIGN criteria. Studies with a low risk of bias were considered scientifically admissible for a best evidence synthesis. We calculated the between group mean change and 95% confidence intervals.

Results: Of 1415 articles screened, 20 studies had low risk of bias, seven were randomized crossover trials, 10 were randomized controlled trials (RCT) and three were RCT pilot trials. Four studies showed SMT had no effect on physiological parameters at rest or during exercise. There was no effect of SMT on scapular kinematics or transversus abdominus thickness. Three studies identified changes in muscle activation of the upper or lower limb, compared to two that did not. Five studies showed changes in range of motion (ROM). One study showed an increase lumbar proprioception and two identified changes in baropodometric variables after SMT. Sport-specific studies show no effect of SMT except for a small increase in basketball free-throw accuracy.

Conclusion: The preponderance of evidence suggests that SMT in comparison to sham or other interventions does not enhance performance-based outcomes in asymptomatic adult population. All studies are exploratory with immediate effects. In the few studies suggesting a positive immediate effect, the importance of such change is uncertain. Further high-quality performance specific studies are required to confirm these preliminary findings.

Keywords: Spinal manipulation, Athlete, Asymptomatic, Healthy, Performance, Sport

(Corso, Mior, Bateley, Tulff, da Silva-Oolup, Howitt & Srbley, 2019)

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Main differences between this and earlier reviews

- Broader search so included a few more studies
- Looked at not just athletes but also general population
- Additional outcome measures included neurophysiological responses (ROM, Gait parameters, Strength, Reaction time, Proprioception, Balance, Endurance)
- Unclear if such changes may enhance sports performance

(Corso, Mior, Bateley, Tulff, da Silva-Oolup, Howitt & Srbley, 2019)

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Chiropractic Treatment in Sports: Systematic Review of RCTs

- The literature review include 232 researched articles 8 on the subject, including 3 systematic reviews and 5 randomized clinical trials, of which 4 include evaluable results.
- Overall, in 3 studies, outcomes in the intervention group for performance enhancement, injury treatment and medical rehabilitation are significantly improved by the use of chiropractic care.
- Conclusion: In 3 out of 4 studies, there are significant improvements with the use of chiropractic in therapy.
- Thus, it can be concluded, that the use of chiropractic in sports can improve performance and reduce injury times in medical rehabilitation. Chiropractic in sports is therefore quite efficient.

(Thiele, 2019)

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Table 5. PEDro Scala.

Studys PEDro criteria	Botelho and Andrade 2012 Brazil [1]	Lubbe et al. 2015 South Africa [8]	Pellow and Brantingham 2001 South Africa [9]	Straub et al. 2001 America [10]
Inclusion and exclusion criteria were specified	■	■	■	■
Randomisation of test persons	■	■	■	■
Allocation to the groups hidden	■	■	■	■
The most important prognostic indicators in the groups were similar to each other	■	■	■	■
Test subjects were blinded			■	
Therapists were blinded				
Investigators were blinded	■	■	■	■
more than 85% of the test persons assigned to the groups completed the study	■	■	■	■
"Intention to treat" method followed	■	■	■	■
Group comparison of at least one central outcome	■	■	■	■
Report about point, as well as scatter measures of at least one central outcome	■	■	■	■
total score	8/10	8/10	9/10	8/10
level of evidence	I	I	I	I

(Thiele, 2019)

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Chronic Stroke Study

- Basic Science Study
- 12 Chronic Stroke Survivors
- Outcome measures:
  - Soleus-evoked V-waves
  - H-reflex
  - Maximum voluntary contraction (MVC) of the plantar flexors
- Results
  - 64.2% increase in MVC strength
  - No change H-reflex
  - Large increase in V wave
- Limitations
  - Small sample
  - Basic science design (not supposed to be clinical)
  - Strength only (not sure how long it lasts)
  - Not sure if this improves Taekwondo performance

Holt, Niazi, Nedergaard, Duehr, Amjad, Shafiq, Anwar, Ndetan & Haavik 2019 Scientific Reports

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Recreational Healthy Athletes

- A randomized, double blind, parallel groups, sham-controlled trial.
- 37 male recreational athletes
- Autonomic modulation (heart rate variability)
- Handgrip strength, jumping ability, and cycling performance (8-minute)
- A single pre-exercise SMT session induced an acute shift toward parasympathetic dominance and slightly impaired performance, i.e lower mean power output was observed during the 8min cycling
- Limitations: small male sample, single intervention, were outcomes sensitive enough?, blinding and expectation issues, etc

(Valenzuela, Pancorbo, Lucia & Germain, 2019)

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Effect of chiropractic manipulative therapy on reaction time in special operations forces military personnel: A randomized controlled trial

- Prospective, randomized controlled trial
- 175 Asymptomatic Active-duty US military Special Operation Forces
- 2 weeks of twice weekly chiro visits vs wait-list control
- Assessment included simple hand/foot reaction time, choice reaction time, and Fitts' Law and whole-body response time.
- *Immediate* pre- and post-changes (at visit 1 and visit 5) in favour of the chiro group in whole-body response time
- No differences were found for simple hand/foot reaction times, choice reaction time, and Fitts' Law.

(DeVocht, Vining, Smith, Long, Jones & Goertz, 2019)

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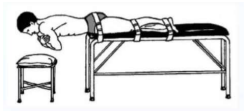
Increased balance strength & endurance!



- 110 active-duty military personnel with self-reported LBP
- 4 weeks chiro care vs control
- LBP-related disability, pain intensity and interference, and fear avoidance behaviour sig improved.
- Mean maximum isometric pulling strength increased by 5.08 kgs in chiro group
- Balance with eyes closed, and Trunk Muscle Endurance were also statistically significantly greater in chiro group

(Vining, Long, Minkalis, Gudavalli, Xia, Walter, Coulter & Goertz *2020)*

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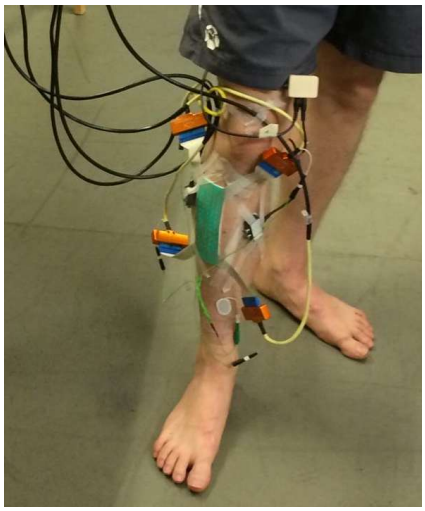
Another Basic Science Strength Study

- Population: 25 subclinical spinal pain
- Design: controlled cross-over design
- A single session of adjusting subluxations
- Primary outcomes:
  - Maximum voluntary contractions (MVC) of the ankle dorsiflexors
  - High-density electromyography (HDsEMG)
  - Intramuscular EMG
  - Near-infrared spectroscopy (NIRS)
- Results included a significant increase in MVC ($p = 0.02$; avg 18.87 28.35%)
- Limitations:
  - Small sample
  - Basic science design



(Niazi, Kamavuako, Holt, Janjua, Kumari, Amjad & Haavik 2020)

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Elite Soccer Players

- Single session Pilot RCT
- Spinal manipulative therapy to correct asymptomatic, biomechanical dysfunction in the spine and pelvis
- No immediate effect on the performance of 20 elite soccer players as measured by 10- and 30-meters sprint times and Change of direction sprint times.
- The proposed placebo strategy was successful in blinding these athletes.
- Limitations
  - Small sample size
  - Chiros only 3 years training
  - One adjustment session

(Botelho, Barbosa, da Silva, Lara, Moreira & Baptista. 2022)

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Adolescent Basketball Players

- Thirty-one male athletes, aged 16–19, from elite basketball training camp in China
- 12 chiropractic manipulations over 12 weeks, targeting subluxations in C1–C7 segments.
- Combine with a Three-Month Physical Training Program (3x/week)
- Both groups improved, adjustment group ‘more’ than control
- Limitations: one way ANOVA only, randomisation?, injury prevention? Did not measure game performance

(Zhang et al., 2024)

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Additional Literature

- (Miners 2010) - Narrative Review Chiro treatment to enhance sports performance
- (Williams et al., 2023) - Research Survey SM performance enhancement Strength Athlete Population; Pilot Study
- (Lin Chu et al 2023) - Opinion Review chiro integration in sports athletes performance and economic growth
- (Belchos, Perle, Mior et al 2023) - Sports Research Agenda
- (Myberg et al 2021) - The Danish sports chiropractic landscape: an exploration of practice characteristics and salient developmental issues
- (Nelson Pollard Ames Jarosz Garbutt 2021) - Descriptive Study Cross Sectional Sports Chiros with International Sports Chiro Qualification.
- (Hostrup, Koza and Myburgh 2020) - *A comparative qualitative case study*
- (Adams et al., 2018) - Descriptive Review of chiros in Aussie treating athletes
- (Nook et al., 2016) - Utilization of chiro care at world games 2013

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So what can we say?

- Chiropractic care can influence neuromuscular and sensorimotor function
  - Multiple mechanistic studies show changes in motor-unit recruitment, conduction velocity, cortical excitability, and strength immediately after spinal manipulation.
- Short-term functional or performance benefits are possible but are inconsistent and often small in magnitude
- Benefits appear strongest in injured or symptomatic people and when dysfunctional joints are targeted
- More research is needed to make more definitive claims!

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Next Topic

How could Chiropractic Care Enhance Sports Performance?

Does Chiropractic Care Prevent Sports Injuries, and if so, How does it do that?

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Questions?

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