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RESEARCH METHODS LEVEL 2

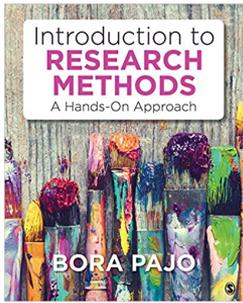
3 Writing for Academic Purposes



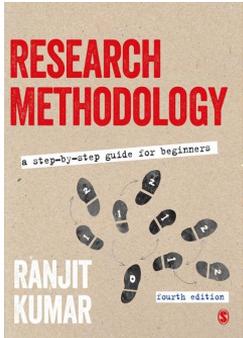
Class Outline

- Three main steps of the research and publication process
- How to choose what to research
- Choosing your journal
- Impact factor
- Title page, cover letter, co-authorship vs acknowledgement
- Abstract, Introduction, Methods, Results, Discussion & Conclusion
- Figures, Tables and their Legends

Book References to support Power Points



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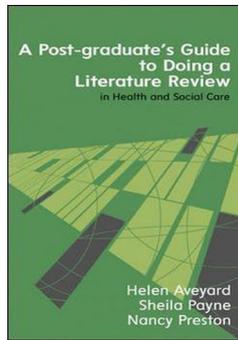
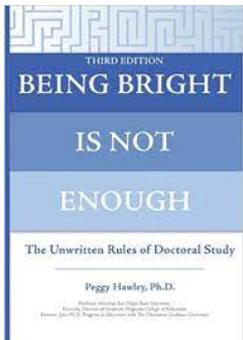
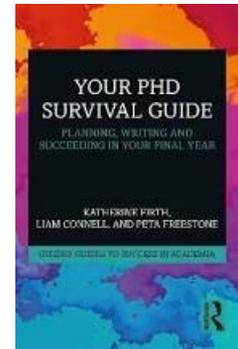
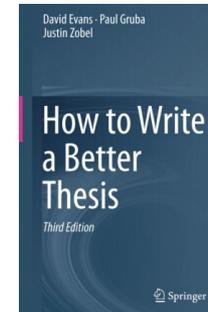
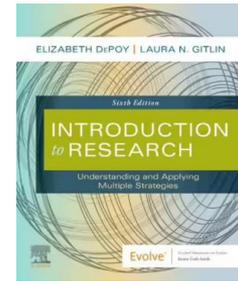
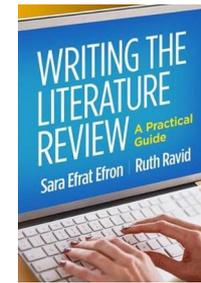
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Research and publication process may be broadly divided into three main steps:

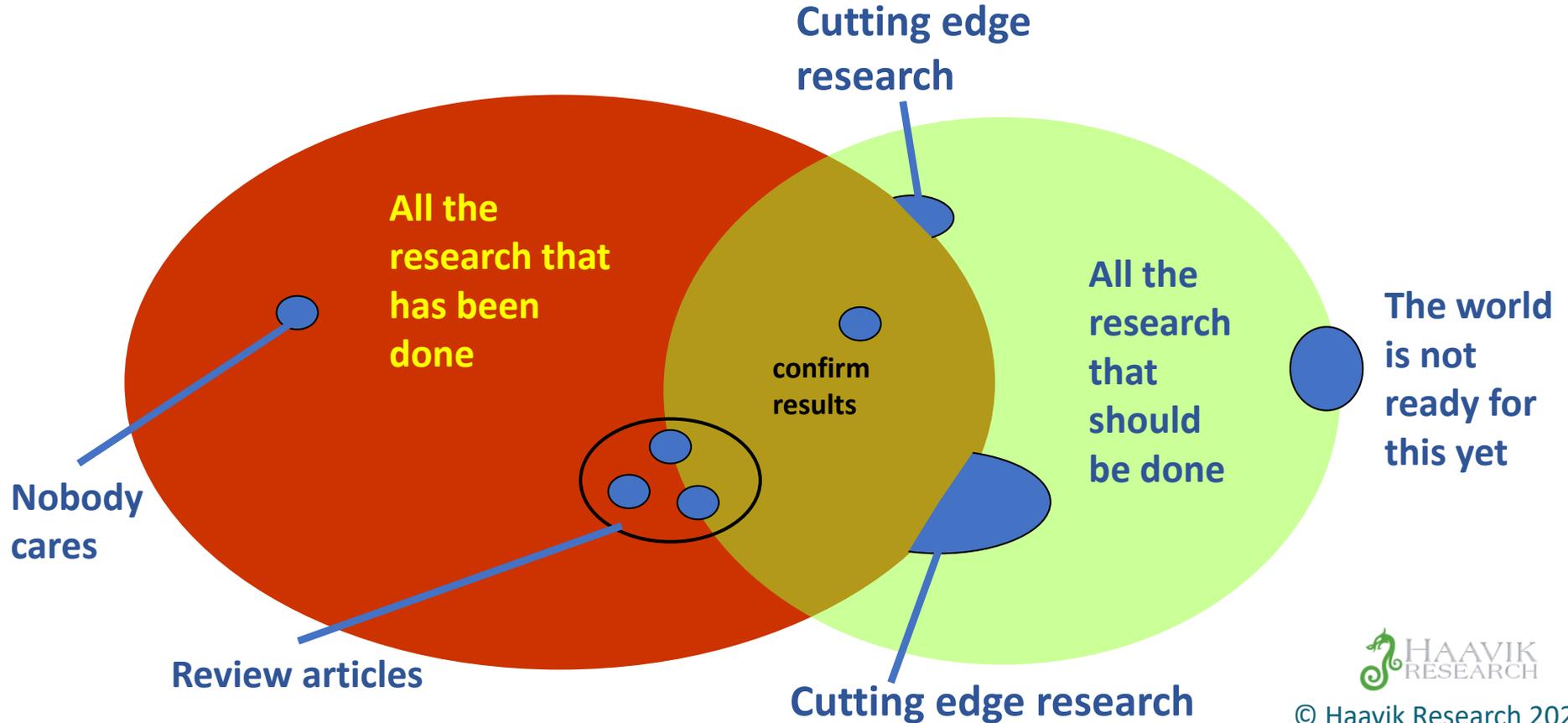
1. Performing the research
2. Analyzing the data (results)
3. Preparing the manuscript

(Shidham, Pitman & DeMay, 2012)

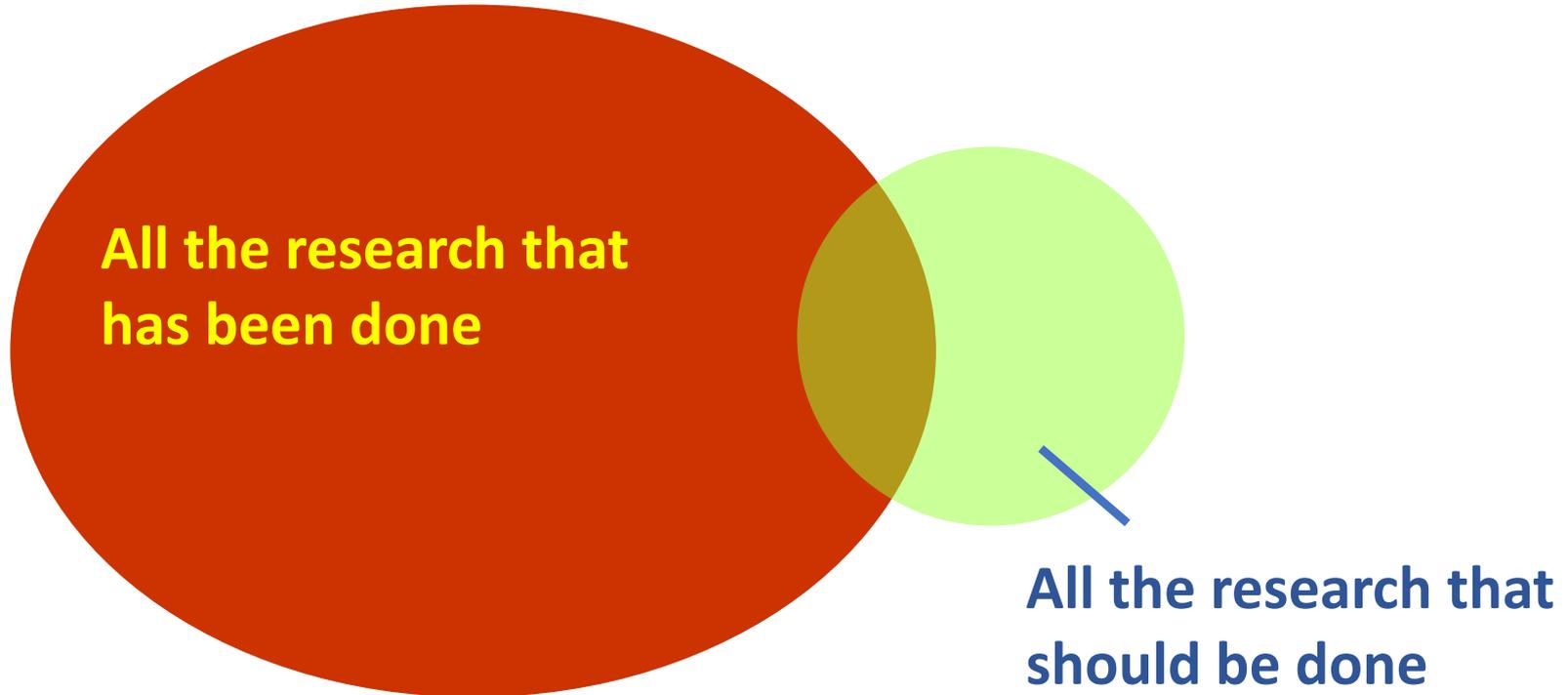
How do you choose what to research?

- Should be answering an important question
- You need to investigate your chosen field really well before you start
- Must make sure your research is novel and well designed
- Get statistical advice early!!

How will your study contribute to your research field?

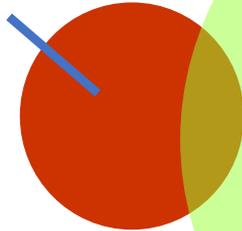


A mature research field



A new research field

**All the
research that
has been done**



**All the research that
should be done**

Academic writing: What is your purpose? What kind of writing are you attempting?

- Original article
- Review article
- Meta-analysis article
- Book chapter
- Letter to the editor
- Case report
- Abstract (conference)
- Internal report/essay

Publish your study - Choose your journal well

- Be realistic in the journal selection
- High impact factor
- Time for review
- High/low rejection rate
- National/international journal
- Ensure NOT a predatory journal!
- Open Access or not



The Impact Factor

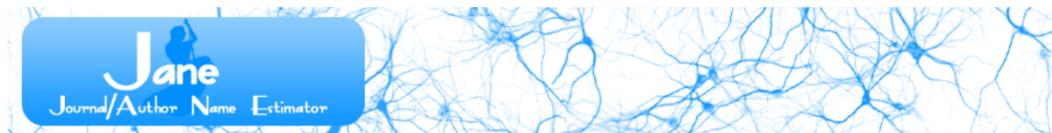


Number of citations of articles in a journal during a two-year time period after publication, divided by the total number of articles in this journal during the same period.

Impact Factor - pros and cons

- US journals favor US authors
- non-English literature not cited
- self-citations – both author and journal (to please editor)
- citations on request – I cite you , you cite me!
- a disproved paper may receive many citations
- review/state-of-the-art articles are heavily cited
- within-institution/center citations
- A small % of published papers receive most of the citations

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Before you start

- read “instruction to author” carefully
- Make sure to follow correct style, format and length
- Ensure your figures are created in appropriate format
- Ensure your references comply with appropriate style

Title page

- Exciting title sells the paper!!
- Try to keep title short and to the point
- “the marvels of a gentle squeeze”
- Author contribution essential (co-author vs acknowledgement)
- Order authors in degree of contribution
- First author writes first draft; biggest contribution to paper
- Corresponding author (PhD/senior/guest)
- Last author is the senior author, i.e. usually the leader of the team/laboratory
- Key words – essential for future searches

(Weinstein, 2020)

Co-authors

- Co-authors should only include those who actively contributed to the overall design, execution and write-up of the experiment
- The order of authors should be according to the importance of their contribution to the experiment/publication
- Routine help is usually just acknowledged.
- Crucial, unique assistance can be co-authorship.
- Co-authors have intellectual responsibility of the paper.



The most important phrase in your paper is your title

- Title should be ‘simple, brief, clear and attractive’ to precisely ‘tell readers’ about the research paper.
- It may not be a grammatically complete sentence. Redundant words like verbs and articles are best omitted.
- Make the title dynamic and informative, rather than descriptive
- Avoid jargon and abbreviations
- A good title helps the reader to ‘understand and believe’ the content of the manuscript and prepare them for what is to be followed in the full text article.
- Writing a good title is a ‘process’ with revisions, revisions and more revisions to include the research theme of ‘what, how, where, when, who’.

Two Key questions

- 1) If you saw this title, what would you expect in the manuscript?
- 2) Does this title make you excited to read the manuscript?

Abstract

- A miniversion of the full paper
- A brief summary of each of the main sections
- A single paragraph
- Must be self-contained (no abbreviations and references)
- Is the part of a paper that is most often read
- Briefly describe background, methods including design and tools of data acquisition and analysis, and provide data that answer the research question only
- Finish off with conclusions and significance of your study

Writing an abstract means to extract and summarize

AB – ab-solutely,
STR – str-aightforward,
ACT – act-ual data presentation and interpretation

The Abstract is sometimes broken into sections

- Background – briefly outline background
- Objectives – what are your aims
- Design – what was the study design
- Methods - briefly describe methods including tools of data acquisition and analysis
- Results - provide data that answer the main research question only
- Conclusion – state what can be concluded based on your results
- Implications – what are the implications of this
- Check the word limit!!!!

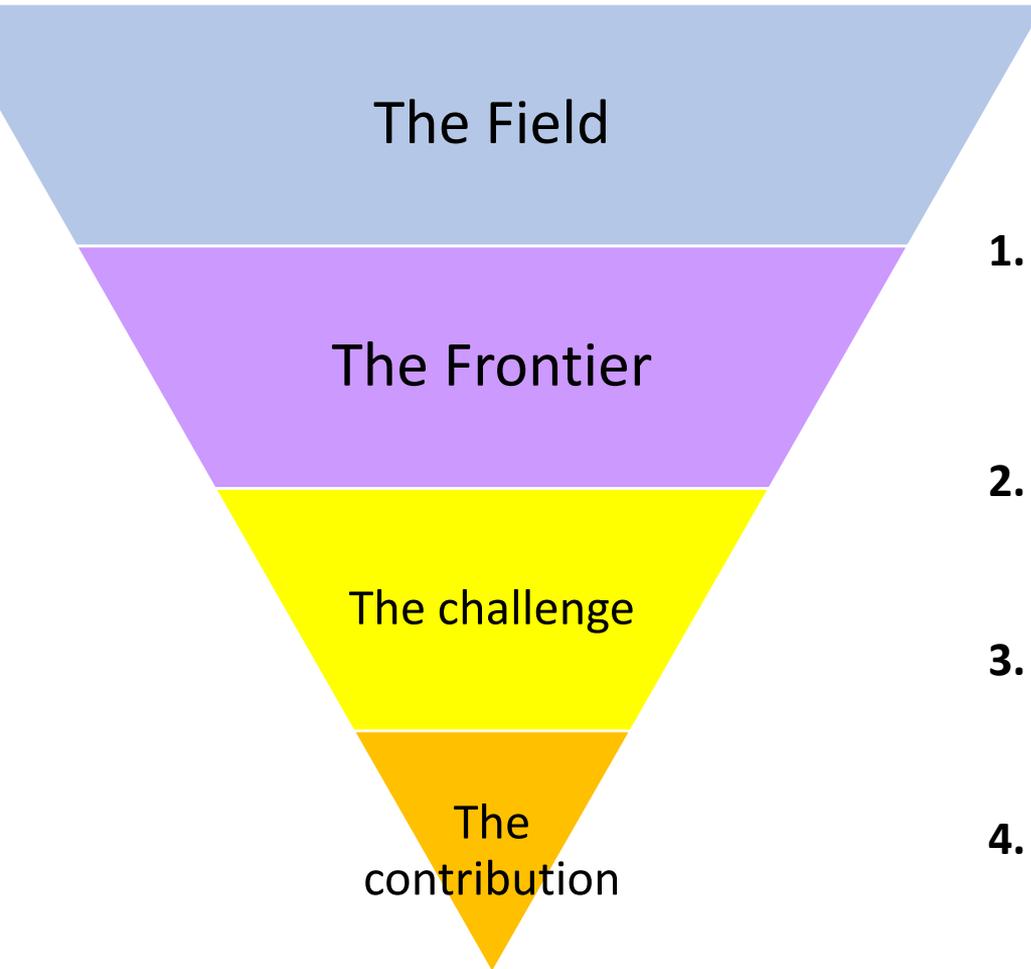
(Weinstein, 2020)

Introduction of Article

- Why your study was necessary
 - Update references
 - Identify gap in scientific knowledge
 - Explain the unknown issues related to the problem
 - Aim and hypothesis (why should this paper be published)
 - Why must the editor publish your paper
 - keep it short and concise
1. write as if there is no abstract
 2. tell the story well
 3. know your audience!
 4. make it exciting, but not a thriller!

(Weinstein, 2020)

Introduction of Article



1. **The Field:** the scope of the problem investigated, background information, major research breakthroughs and issues
2. **The Frontier:** the competition, what have they done so far, what is state-of-art.
3. **The Challenge:** what is the unsolved problem and why does it have to be solved.
4. **The Contribution:** describe briefly the solution offered in the paper

(Weinstein, 2020)

Methods & Materials

“The Materials and Methods section is one of the most important of any scientific manuscript.”

The description should communicate to the reader all critical details that would enable someone else to replicate your study

Purpose of methods section:

- to describe (defend) the experimental design
 - to provide enough detail so that a competent worker can repeat the experiments
1. describe the methods precisely
 2. be careful with syntax
 3. cite only unusual methods
 4. do not describe the results (here)

Methods

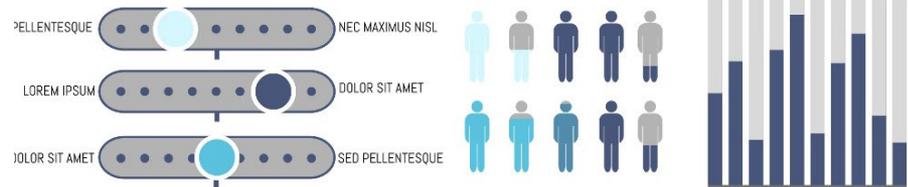
- Diagrams of complicated devices / signals / assessment criteria are great
- state clearly the different sub-experiments
- specific methods used (sensitivity, calibration)
- outcome parameters, analysis methods
- statistical analysis (describe all tests, median versus mean)



(Weinstein, 2020)

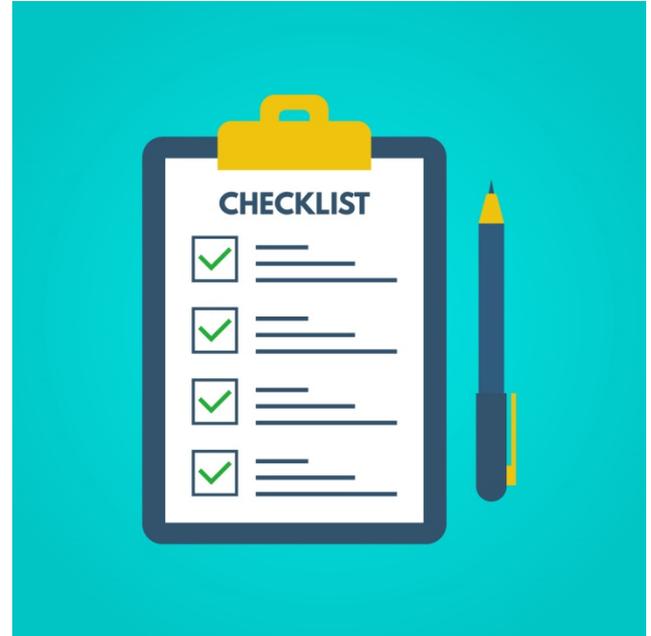
Methods

- do not refer to previous descriptions
- use sub-headings
- limit the use of abbreviations
- population included (experimental work)
- study design – protocol outline
- diagrams are useful



Methods – Checklist for experimental study

- ethics approval
- details on subjects/animals used
- methods of randomization/blinding
- sizes of groups
- inclusion/exclusion criteria
- detail materials and methods
- accuracy and precision of methods
- statistical analysis
- p value accepted to disprove the null hypothesis
- sufficient information to allow repetition of the study



Results

The whole paper stands or falls with this section!

- The aim is to keep it short and effective - show the reader the outcome of the research.
- Introduction, Methods, Discussion is the "Why", "How" and "So What" of the Results.

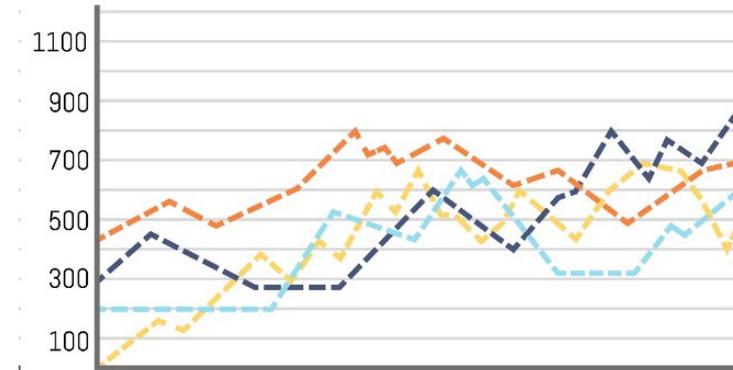
Figures are the essential parts

– they should tell the story themselves.

(Weinstein, 2020)

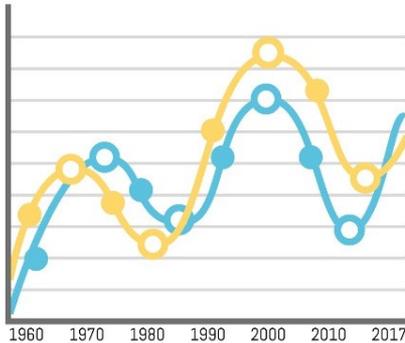
Results

- separate from Methods
- avoid redundancy
- strive for clarity - make it simple
- do not try to trick or mislead the reader
- use statistics properly:
- ask yourself the question for each point you make:
Is this point helping the reader to understand the main results?



(Weinstein, 2020)

Results



- do not blur the message by too many results/analysis
- use sequence from method (exp1, exp2..)
- use sub-headings
- do NOT use “tend”, “different”, “changes”
- use “significantly reduced (xx%, p<0.02)”
- do not replicate data in tables and figures
- use graphs to substantiate and highlight findings
- Show variability (SD, range, CI)

- Structure your Discussion into
 1. Introductory paragraph
 2. Intermediate paragraphs
 3. Concluding paragraph
- The aim of the Discussion is to show the relationship among observed facts, and the relationship between observed facts and already known facts.
- The Discussion should answer the questions:
 - *what do the results mean?*
 - *what is their significance/implications?*
- Keep the distinction between Results and Discussion!
- **Results** is what you know (have found) to be true.
- **Discussion** is what you think is true.

(Hess 2004; LaPlaca et al 2018; Vieira et al 2019; Masic 2018; Mack 2014)

Review

The Potential Mechanisms of High-Velocity, Low-Amplitude, Controlled Vertebral Thrusts on Neuroimmune Function: A Narrative Review

Heidi Haavik ¹✉, Imran Khan Niazi ^{1,2,3,*}✉, Nitika Kumari ^{1,2}✉, Imran Amjad ^{1,4}✉, Jenna Duehr ¹ and Kelly Holt ^{1,*}✉

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Abstract: The current COVID-19 pandemic has necessitated the need to find healthcare solutions that boost or support immunity. There is some evidence that high-velocity low-amplitude (HVLA) controlled vertebral thrusts have the potential to modulate immune mediators. However, the mechanisms of the link between HVLA controlled vertebral thrusts and neuroimmune function and the associated potential clinical implications are less clear. This review aims to elucidate the underlying mechanisms that can explain the HVLA controlled vertebral thrust–neuroimmune link and discuss what this link implies for clinical practice and future research needs. A search for relevant articles published up until April 2021 was undertaken. Twenty-three published papers were found that explored the impact of HVLA controlled vertebral thrusts on neuroimmune markers, of which eighteen found a significant effect. These basic science studies show that HVLA controlled vertebral thrust influence the levels of immune mediators in the body, including neuropeptides, inflammatory markers, and endocrine markers. This narrative review discusses the most likely mechanisms for how HVLA controlled vertebral thrusts could impact these immune markers. The mechanisms are most likely due to the known changes in proprioceptive processing that occur within the central nervous system (CNS), in particular within the prefrontal cortex, following HVLA spinal thrusts. The prefrontal cortex is involved in the regulation of the autonomic nervous system, the hypothalamic-pituitary–adrenal axis and the immune system. Bi-directional neuro-immune interactions are affected by emotional or pain-related stress. Stress-induced sympathetic nervous system activity also alters vertebral motor control. Therefore, there are biologically plausible direct and indirect mechanisms that link HVLA controlled vertebral thrusts to the immune system, suggesting HVLA controlled vertebral thrusts have the potential to modulate immune function. However, it is not yet known whether HVLA controlled vertebral thrusts have a clinically relevant impact on immunity. Further research is needed to explore the clinical impact of HVLA controlled vertebral thrusts on immune function.

Keywords: high-velocity; low-amplitude thrust; HVLA; chiropractic; spinal manipulation; central nervous system; prefrontal cortex; immune system; endocrine system

1. Introduction

The COVID-19 pandemic has resulted in significant global morbidity and mortality [1,2], especially amongst individuals who are immunocompromised, such as older people and those with underlying medical conditions [2,3]. The current pandemic and



The contemporary model of vertebral column joint dysfunction and impact of high-velocity, low-amplitude controlled vertebral thrusts on neuromuscular function

Heidi Haavik¹ · Nitika Kumar^{1,2} · Kelly Holt¹ · Imran Khan Niazi^{1,2,3} · Imran Amjad^{1,4} · Amit N. Pujari^{5,6} · Kemal Sitki Türker^{7,8} · Bernadette Murphy⁹

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Abstract

Purpose There is growing evidence that vertebral column function and dysfunction play a vital role in neuromuscular control. This invited review summarises the evidence about how vertebral column dysfunction, known as a central segmental motor control (CSMC) problem, alters neuromuscular function and how spinal adjustments (high-velocity, low-amplitude or HVLA thrusts directed at a CSMC problem) and spinal manipulation (HVLA thrusts directed at segments of the vertebral column that may not have clinical indicators of a CSMC problem) alters neuromuscular function.

Methods The current review elucidates the peripheral mechanisms by which CSMC problems, the spinal adjustment or spinal manipulation alter the afferent input from the paravertebral tissues. It summarises the contemporary model that provides a biologically plausible explanation for CSMC problems, the manipulable spinal lesion. This review also summarises the contemporary, biologically plausible understanding about how spinal adjustments enable more efficient production of muscular force. The evidence showing how spinal dysfunction, spinal manipulation and spinal adjustments alter central multimodal integration and motor control centres will be covered in a second invited review.

Results Many studies have shown spinal adjustments increase voluntary force and prevent fatigue, which mainly occurs due to altered supraspinal excitability and multimodal integration. The literature suggests physical injury, pain, inflammation, and acute or chronic physiological or psychological stress can alter the vertebral column's central neural motor control, leading to a CSMC problem. The many gaps in the literature have been identified, along with suggestions for future studies.

Conclusion Spinal adjustments of CSMC problems impact motor control in a variety of ways. These include increasing muscle force and preventing fatigue. These changes in neuromuscular function most likely occur due to changes in supraspinal excitability. The current contemporary model of the CSMC problem, and our understanding of the mechanisms of spinal adjustments, provide a biologically plausible explanation for how the vertebral column's central neural motor control can dysfunction, can lead to a self-perpetuating central segmental motor control problem, and how HVLA spinal adjustments can improve neuromuscular function.

Keywords Chiropractic · Spinal manipulation · Muscle strength · Neuromuscular function

Abbreviations

AMCT Activator methods chiropractic technique
ASMT Activator-assisted spinal manipulative therapy
APB Abductor pollicis brevis

CSMC Central segmental motor control
CNS Central nervous system
CSP Cortical silent period
EIP Extensor indicis proprius
EMG Electromyography
EBP Early Bereitschaftspotential
FFA Feed-forward activation
GTO Golgi tendon organ
HD High density
HVLA High-velocity, low-amplitude
IVF Intervertebral foramina
LBP Late Bereitschaftspotential

Communicated by Michael Lindinger.

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Extended author information available on the last page of the article

Discussion

- The opening paragraph (1-3 sentences) should outline your main findings
- Why should this paper be published (first time, new method, what is novel)?
- Use sub-headings
- Use sequence from method, results (exp1, exp2..)
- Strengths and weaknesses in relation to other studies
- Discuss controversies between your findings and other studies. Try to provide a rationale if you can
- How does this specific study contribute, why should it be cited?
- What are the implications of the findings? What are the possible mechanisms?
- Open up for future studies (but do not give all good ideas away)

(Hess 2004; LaPlaca et al 2018; Vieira et al 2019; Masic 2018; Mack 2014)

- Be constructive but not negative about your findings
- Do not make conclusions on aspects you have NOT investigated
- Ensure there is a logical flow
- Keep it short and concise
- Make sure references actually conclude what you cite them for!!!!
- You can criticize other studies but be moderate
- Only discuss most relevant literature (unless it is a review)
- Not too many self-citations
- Finish with concluding remarks (why publish it)

(Hess 2004; LaPlaca et al 2018; Vieira et al 2019; Masic 2018; Mack 2014)

OPEN

The effects of chiropractic spinal manipulation on central processing of tonic pain - a pilot study using standardized low-resolution brain electromagnetic tomography (sLORETA)

Muhammad Samran Navid^{1,2,3}, Dina Lelic¹, Imran Khan Niazi^{1,4,5}, Kelly Holt¹, Esben Bolvig Mark¹, Asbjørn Mohr Drewes^{1,2} & Heidi Haavik²

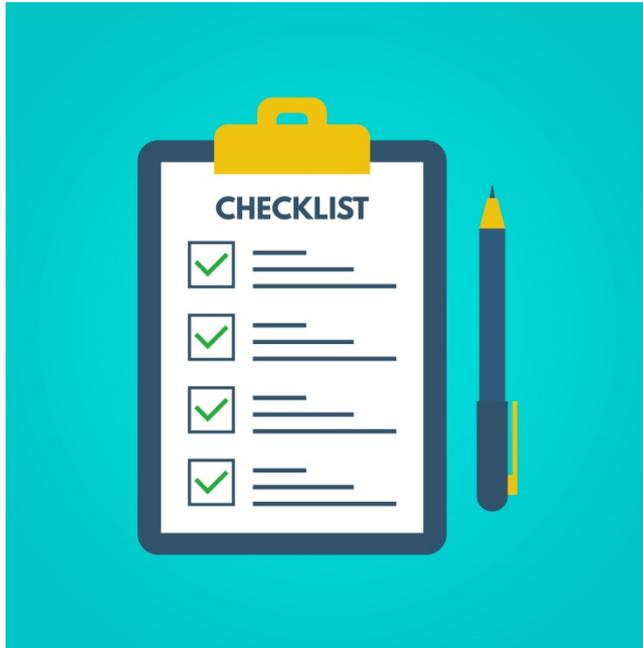
The objectives of the study were to investigate changes in pain perception and neural activity during tonic pain due to altered sensory input from the spine following chiropractic spinal adjustments. Fifteen participants with subclinical pain (recurrent spinal dysfunction such as mild pain, ache or stiffness but with no pain on the day of the experiment) participated in this randomized cross-over study involving a chiropractic spinal adjustment and a sham session, separated by 4.0 ± 4.2 days. Before and after each intervention, 61-channel electroencephalography (EEG) was recorded at rest and during 90 seconds of tonic pain evoked by the cold-pressor test (left hand immersed in 2 °C water). Participants rated the pain and unpleasantness to the cold-pressor test on two separate numerical rating scales. To study brain sources, sLORETA was performed on four EEG frequency bands: delta (1–4 Hz), theta (4–8 Hz), alpha (8–12 Hz) and beta (12–32 Hz). The pain scores decreased by 9% after the sham intervention ($p < 0.05$), whereas the unpleasantness scores decreased by 7% after both interventions ($p < 0.05$). sLORETA showed decreased brain activity following tonic pain in all frequency bands after the sham intervention, whereas no change in activity was seen after the chiropractic spinal adjustment session. This study showed habituation to pain following the sham intervention, with no habituation occurring following the chiropractic intervention. This suggests that the chiropractic spinal adjustments may alter central processing of pain and unpleasantness.

Changes in the way the human brain processes pain, as well as the capacity to modulate the pain experience, underlies the pathogenesis of most chronic pain conditions¹. Typically, the perception of pain is induced by a potential damaging stimulus in the periphery, which activates peripheral nerves. The pain signal is transmitted to the spinal cord and further to deep centers within the brain. However, the pain system is not hard-wired, but rather a complex dynamic process with advanced modulatory properties, such as activation of descending pathways that can modulate pain perception, and that is also responsible for the recurrence and chronicity of the pain experience^{2,3}. During the last two decades of research, there has been a growing interest to understand the underlying mechanisms of the descending inhibition of pain. Pain modulating processes in humans are present at multiple levels of the human nervous system; at the spinal level in the dorsal horn⁴, in the brainstem, including neurons in the rostral ventromedial medulla and periaqueductal grey (RVM-PAG)⁵, and at the cortical level⁶.

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Published online: 06 May 2019

Discussion: Checklist



- Summarised main findings
- Qualified the findings in relationship to the limitations of the techniques used
- Compared data with relevant previous literature
- Discussed/explained controversies
- How does the study contribute to the field?
- Limitions of your study
- Highlight possible future research
- Overall conclusion

Conclusion

1. What have I discovered – and why does it matter?
2. What do I know now, that I didn't know before? (e.g., before I collected and analyzed my data)
3. Who cares? / Who should care?
 - The final place where authors can demonstrate that the manuscript deserves to be accepted and published
 - Close the circle with your question posed in your introduction
 - Essential that your data supports your conclusions

(LaPlaca et al 2018; Mack 2014)

Conclusions DO NOTs

- Do not just summarise manuscript (abstract does this)
- Do not trivialise your findings
- Do not overstate your findings
- Be bold, not uncertain. Avoid 'might' 'probably' 'maybe'
- Do not make claims your results cannot justify

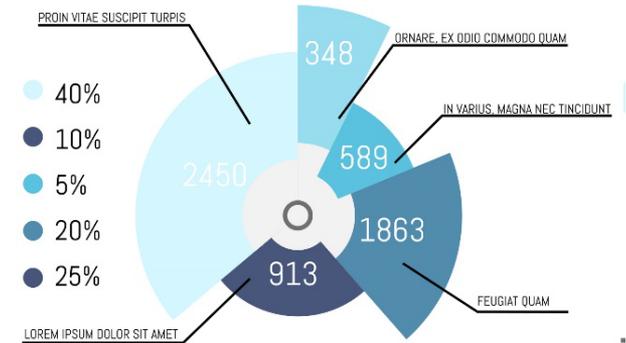
References:

- Double check every reference is accurate and appropriate
- Be punctual and accurate!
- Limit the number unless it is a review
- Include only the most relevant and most up to date
- Ensure you are citing a paper for the right reasons
- Cite original research primarily

(Weinstein, 2020)

Tables and Figures and their Legends

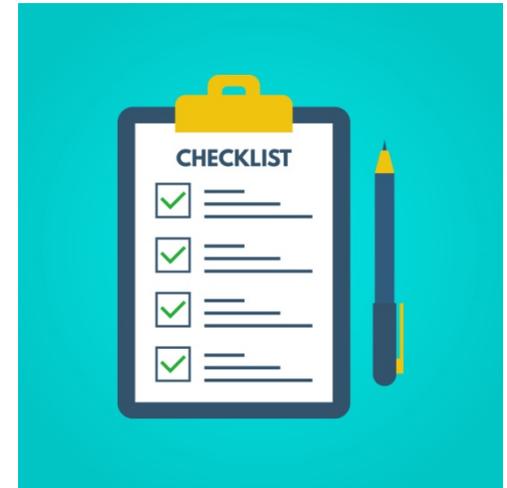
- Figures and Tables should be stand-alone
- Do NOT refer to method section
- Do not use abbreviations, or at least define all abbreviations used
- Include units of any data
- Outline variability by including standard deviation, standard error, range and/or confidence intervals
- Use adequately sized graphics/fonts/symbols
- Include main statistical information
- Group mean (N=x) or individual data (“Typical” example)



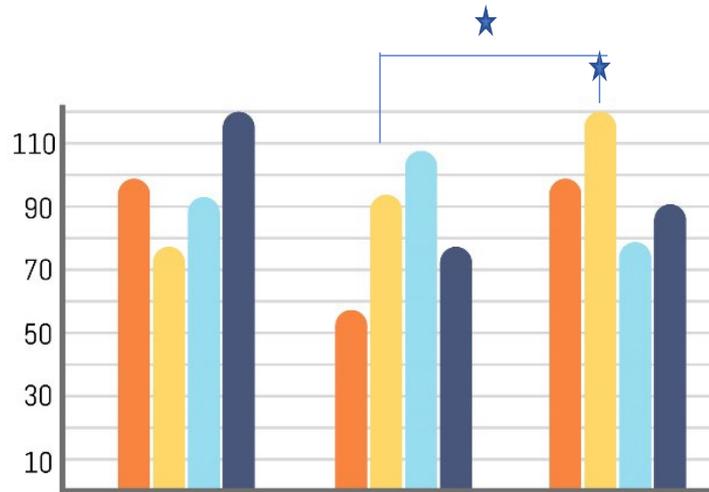
(Weinstein, 2020)

Tables: Checklist

- Tables have a number and an accurate title
- Tables include content that is above what is used in the results section
- Tables should all be listed on separate pages at the end of the manuscript
- Group data locally
- Ensured units of measurements are listed
- Provided an index for scatter (e.g. SD or SE)
- Defined all abbreviations
- Use asterisks to indicate statistical differences (make clear what is different to what)
- Explained in legend what is statistically compared with what



Figures: Checklist



- Check that data in figures coincide with "results" and "abstract"
- Ensured appropriate indications of scatter (e.g. SD)
- Stand-alone, self-explanatory legends
- Definition of abbreviations and symbols
- Permission of reproduction if required
- Indicate significant differences by asterisks

Proof reading: Important final touch

- Proof, proof & proof again
- ask a third person to proof read it
- look particularly at:
 - legends
 - authors list/address
 - symbols, special characters
 - abbreviations



Cover letter



- be polite
- cite name of paper
- corresponding author, address, phone, e-mail
- why paper (state category) is relevant for that journal
- data not previously published (formal statement)
- signed by all
- check with “instruction for author”
- copyright transfer

(Weinstein, 2020)

Author's response to the editor and reviewer(s)

- this is a very important and timely task
- start promptly, consult the other authors
- be polite “Thank you for your constructive criticism”
- don't be defensive – act professionally
- point by point reply to criticism
- additional changes/exp. should be mentioned

(Weinstein, 2020)

Most common reasons for rejection (experimental research)

- problems with experimental design
- inappropriate methods
- lack of originality
- lack of interest i.e. subject matter of low priority or importance
- problems with the analysis, especially the statistics
- conclusion and hypothesis not supported/tested by the experiment(s)
- too many language/syntax errors

(Weinstein, 2020)

Thank You



DR. HEIDI HAAVIK

ENLIGHTENING THE
WORLD ABOUT THE
SCIENCE OF CHIROPRACTIC



Introduction to Chiropractic Care

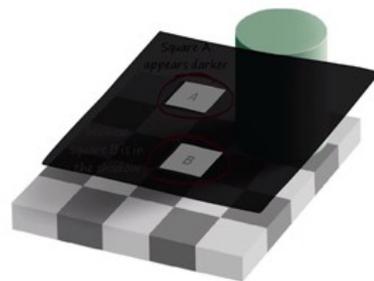
The introduction to chiropractic video series is the perfect way to gain an understanding of why chiropractic care may help you and your family.



The Beginners Guide to Chiropractic

In this first introductory video we explore what chiropractic is all about, and how it works, then we briefly explore the evidence informed effects of chiropractic care.

[View video >](#)



How the Brain Perceives the World

Did you know that your brain and central nervous system are constantly changing? It's quite amazing - from one day to the next your brain is not the same.

[View video >](#)

The Beginners Guide to Chiropractic

The Beginners Guide to Chiropractic

The word chiropractic derives from the Greek words "cheir", meaning hand, and "praktikos" meaning skilled in or concerned with. The origin of the word chiropractic can be traced back to [D.D. Palmer](#) who coined it in 1895 when he founded chiropractic.

Chiropractic care is really about total health and wellbeing

What does a Chiropractor do?

A chiropractor is a healthcare professional who specializes in the health and [function of the spine](#) and nervous system. Because of this focus on the spine, many people think chiropractors can only help with problems such as back pain, [neck pain](#) and [headaches](#). They can often help with these issues but there is much more to chiropractic than just pain.

This is the first video in our animated series "Introduction to Chiropractic". In this video, we outline what a chiropractor does, then we briefly explore the effects of care. It is a perfect one to watch for anyone that is curious about chiropractic care, and how it can help their family.

Video References

1. Rosner AL. Chiropractic Identity: A Neurological, Professional, and Political Assessment. *J Chiropr Humanit* 2016;23(1):35-45.
2. de Souza R, Ebrall P. Understanding wellness in a contemporary context of chiropractic practice. *Chiropr J Aust* 2008;38(1):12-16.
3. Schuster TL, Dobson M, Jauregui M, et al. Wellness lifestyles II: Modeling the dynamic of wellness, health lifestyle practices, and Network: Spinal Analysis. *J Altern Complement Med* 2004;10(2):357-67.
4. Henderson CN. The basis for spinal manipulation: Chiropractic perspective of indications and theory. *J Electromyogr Kinesiol* 2012.
5. Haavik H, Murphy B. The role of spinal manipulation in addressing disordered sensorimotor integration and altered motor control. *J Electromyogr Kinesiol* 2012;22(5):760-76.
6. Haavik Taylor H, Holt K, Murphy B. Exploring the neuromodulatory effects of the vertebral subluxation and chiropractic care. *Chiropr J Aust* 2010;40(1):37-44.
7. Herzog W, Zhang YT, Conway PJ, et al. Cavitation sounds during spinal manipulative treatments. *Journal of Manipulative & Physiological Therapeutics* 1993;16(8):523-6.

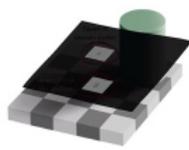




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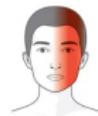
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Break the Pain Cycle

Did you know that pain is created in your brain to let you know that something is not ok within your body? Feeling pain is good because it is actually helpful and informative.

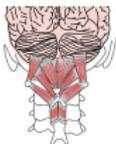
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Chiropractic Care and Migraines

Did you know that 1 in 6 people in the world experience migraines regularly? The World Health Organisation consider them to be the most debilitating of all neurological disorders.

[View Video >](#)



Chiropractic Affects your Brain

Your brain receives information about your body from the environment and your organs. Did you know that the muscles in your body are also sensory organs?

[View Video >](#)



What is that Pop?

If you have been adjusted before by a chiropractor you may have noticed a strange popping sound. Don't worry – it is just the formation of gas within a joint.

[View Video >](#)



Lower Back Pain

Scientists have worked out that at any one time, over 500,000,000 people around the world are suffering from low back pain and it is now the leading cause of disability worldwide.

[View Video >](#)



Growing Pains

We've all heard of growing pains right? But did you know that what we call growing pains aren't associated with growing? So they're not actually growing pains at all.

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Pain and the Immune System

Research studies have shown that the way you feel pain all depends on what's going on for you – and most importantly – what you think and feel about the situation.

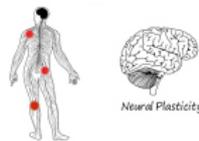
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Chiropractic and Headaches

Headaches are a sign that something is not right. Your brain will create for you the sensation of pain if it thinks there is something wrong or if there is a potential problem.

[View Video >](#)



Pain is Created in Your Brain

Did you know that the scientists now know that the feeling of pain is something your brain decides that you should experience – if it believes that there is a problem?

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Chronic Pain

Chronic pain is the second-most common reason people see a doctor and miss work. More than one-third of people with chronic pain become disabled by their pain to some degree.

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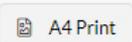
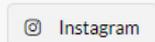
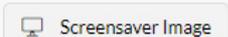
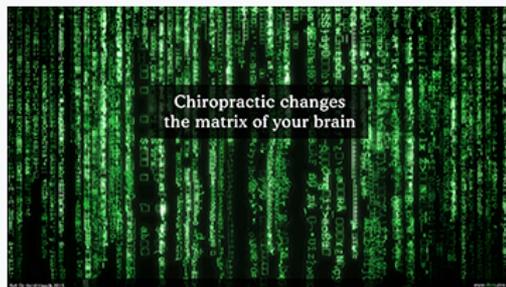
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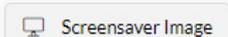


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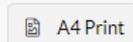
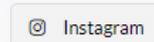
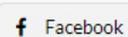
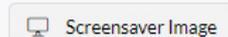
1.



2.



3.



Trykte og digitale ressurser

Bilder med høy oppløsning, A4-trykte brosjyrer og plakater i A3-størrelse som du kan laste ned og dele.



For å laste ned de digitale eiendelene, klikker du bare på den aktuelle knappen under bildet.

1.



 A4-utskrift  A3-plakat

2.



 A4-utskrift  A3-plakat

3.



 A4-utskrift  A3-plakat

Chiropractic Research

Research summary articles to read, download and print (members only) all backed by the latest scientific research studies.



Chronic Pain

Chronic pain that has persisted for more than 3 months is no longer protective, nor informative. So, what is chronic pain and what can you do about it?

[Read more »](#)

Pain is in the Brain

Sometimes pain persists long after tissue damage has actually healed. When pain persists for more than three months we call this chronic pain.

[Read more »](#)

Neck Pain

Up to half the world's population suffers from neck pain at some stage. For some, one big problem is that it just keeps coming back, or becomes chronic.

[Read more »](#)



UNDERSTANDING PAIN



Dr. Kelly Holt

BSc, BSc(Chiro), PGDipHSc, PhD

Dr. Heidi Haavik

BSc(Physiol), BSc(Chiro) PhD

Experiencing pain is normal. Everyone experiences pain now and then.¹ Pain is supposed to be protective to make you stop doing things that may be dangerous.² But chronic pain that has persisted for more than 3 months is no longer protective, nor is it helpful.³ So, what is chronic pain and how do you deal with it if you suffer from it?

PAIN IS CREATED IN THE BRAIN



Dr. Kelly Holt

BSc, BSc(Chiro), PGDipHSc, PhD

Dr. Heidi Haavik

BSc(Physiol), BSc(Chiro) PhD

Did you know that scientists now know the feeling of pain is something your brain decides you should experience if it believes there is some tissue damage in your body?¹ In fact, your brain can decide that you should feel pain even if it only thinks there is a potential threat of tissue damage!!!²⁻⁵

It may seem strange, but it's totally up to your brain to decide whether you should feel pain or not. Your brain may decide you should experience pain even if you have no actual tissue damage yet,⁶ or your brain may not create the feeling of pain for you when tissue damage has actually occurred!^{7,8}

heals the problem.¹ This pain is helpful and informative.¹ If we listen to our body these pain experiences can be a good thing.

But for some people, pain can persist even after the initial injury that caused it has healed.^{9,11,12} And for some people, the pain in these areas that are not injured at all, become non-



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NECK PAIN AND FALLS RISK



Dr. Kelly Holt

BSc, BSc(Chiro), PGDipHSc, PhD

Dr. Heidi Haavik

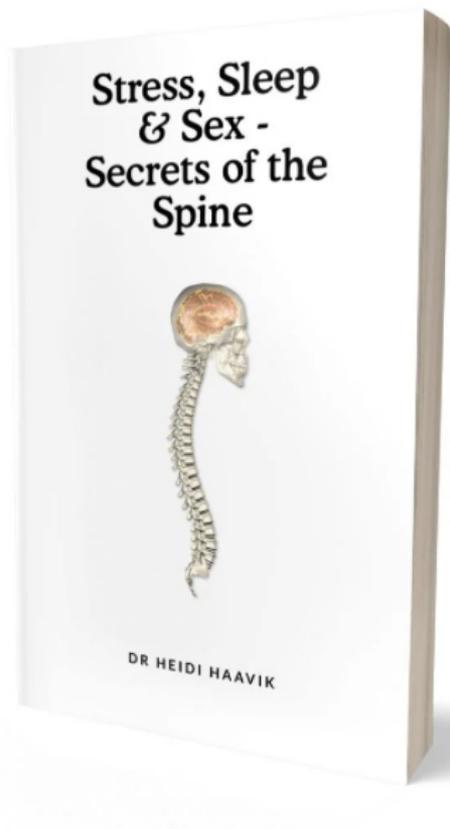
BSc(Physiol), BSc(Chiro) PhD



Neck pain is very common throughout the world.¹ Up to half of all people around the world suffer from neck pain at some stage each year.²⁻⁵ For some people, one big problem with neck pain is that it just keeps coming back, or becomes chronic, and may even increase their risk of suffering from a fall.^{2,4,6,7}

Scientists know that your brain uses sensory information from your muscles and joints around your spine to help control your balance and posture and to make sure you're moving properly.^{1,2} When your brain takes sensory information and uses it to help guide movements and control muscles we call this sensorimotor function.³ One particular study looked at whether neck pain has an impact on proper sensorimotor function in older people.⁷ In this study, the researchers ran a whole lot of tests of sensorimotor function, like how well the study participants controlled the movement of their eyes and how good their balance was, and they took into account their age and other conditions that they suffered from.





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