

# DETERMINING A UNIVERSAL MEANING OF SUBLUXATION IN CHIROPRACTIC

Phillip Ebrall BAppSc(Chiro), DC (Hon), PhD<sup>1</sup>

## ABSTRACT

**Objective:** To construct an evidence-based paragraph in English (the paragraph) describing subluxation and its role in conventional chiropractic that has fidelity of meaning when translated to other languages. I give my meaning of 'conventional chiropractic' and 'subluxation' in the Lexicon and Context.

**Method:** The 5 parts of the method were (1) to undertake a thematic analysis of papers returned in an earlier systematic review of the indexed literature where subluxation is described, (2) through thematic analysis, extract terms common to expressed understandings of subluxation, (3) to assemble these terms, concepts and wordings into a constructed paragraph describing subluxation and its place in conventional chiropractic practice, (4) the translation of this constructed paragraph to selected languages and then the reverse translation back into English, and (5) to undertake a subjective assessment of the fidelity of the result in each language where the determinant was whether the reverse translation meant in English what I meant when I constructed the original paragraph in English.

**Results:** A paragraph was able to be constructed and then shown to retain fidelity in both translation and reverse translation in 15 languages other than English. The languages tested in this work were purposively selected as Afrikaans, Arabic, Chinese (Traditional), Danish, Filipino, French, German, Hebrew, Hindi, Japanese, Korean, Russian, Spanish, Turkish, and Ukrainian. The paragraph was true to the found themes from the literature and is presented in this paper.

**Discussion:** An ongoing issue in chiropractic is the absence of a common, agreed understanding of subluxation and its place in the clinical practice of conventional chiropractors. Most organizations, institutions, and associations carry their own understanding of subluxation, which may not be concordant, and indeed a minority deny subluxation and its meaning in chiropractic. If subluxation is a central tenet within chiropractic then the term should retain common meaning when used in different cultures and languages. Further, given that chiropractic is a growing

healthcare system rapidly expanding into different cultures and languages, it is reasonable to expect consistency of meaning regarding subluxation and its role in clinical practice.

**Conclusion:** A constructed paragraph is presented in English which is shown to retain fidelity of meaning through machine translation to any of 15 chosen languages. I propose that this constructed paragraph be widely adopted as the universal meaning of subluxation within chiropractic. The paragraph is particularly suited to inform the World Federation of Chiropractic in their current project to recommend training benchmarks to the WHO. (*J Contemporary Chiropr* 2022;5:222-239)

**Key Indexing terms:** Subluxation; Meaning; Culture; Linguistics; Lexicon; Chiropractic.

## INTRODUCTION

This paper presents an idea not previously addressed within the chiropractic literature. In 1988 Luedtke reported (1) that a definition of chiropractic including subluxation had been submitted to a world organization, presumably the World Federation of Chiropractic (WFC) which was formalized in Sydney Australia in that year. (2) At the time of writing this paper the WFC carried a singular definition of chiropractic on its website, and only in English. (3) The term 'subluxation' is difficult to find on the site of the body claimed to represent the profession globally; it appears once in a description of a video of the 'Facts on Chiropractic' (4), and is absent from the Secretary-General's proposition that 'Chiropractic is part of the solution to the world crisis in spine-related disability' (5). In another of Brown's papers, he positions 'Spinal Health as the backbone of chiropractic's identity' (6); however, the term 'subluxation' appears only 5 times and in an historical, apologetic context. The term 'subluxation' remains within the over-arching WHO's 'Guidelines on basic training and safety in Chiropractic' (7) and must be considered part of the contemporary identity of chiropractic (8,9), holding meaning for practitioners. (10)

The issue I address is whether or not the idea of subluxation as used in chiropractic is able to hold meaning when translated to different languages. I do not give a definition of subluxation on the basis of the

<sup>1</sup> Research Scientist (Field 220299 History and Philosophy - Chiropractic), Australia

findings in my systematic review reported in 2021 (11) but note it has been reported that the term 'subluxation' sits within the published curriculum of all but 2 course catalogues globally. (12) In my 2021 paper (11), I concluded that there is 'little evidence that subluxation is a quantifiable entity and rather that it exists as an idea that small dysfunctions in the spine relating to health and well-being are identifiable and correctable.' Hence when I use the term 'subluxation' in this paper my meaning is of small dysfunctions in the spine relating to health and well-being that are identifiable and correctable. The systematic review that underpinned that paper (11) is the same review which informs this work.

The original nature of this current work requires me to provide my lexicon, which is my internalised dictionary (13), and a context for the methods and outcomes.

#### *Lexicon and Content*

In this paper 'conventional chiropractic' means those 80% or so practitioners of the profession who adhere to its founding precepts as described in a previous paper. (14) The founding precepts are well established (15) and largely remain as summarized by Forster in 1923 (16) and as reviewed by Senzon in 2018. (17,18) In essence, they are that subluxation exists and is identifiable and correctable. Its meaning which has remained consistent over 5,000 years has been reported by historian Bovine and I (19) as of being small, correctable dysfunctions in the spine associated with clinical presentations.

I am not particularly interested in nuances of meaning given by others to subluxation as used in chiropractic, and when I use the term my meaning is most basic as 'subluxation exists and is identifiable and correctable.' It is this idea that I wish to hold meaning when translated.

I use the term 'reverse translation' while others may use 'back translation' as being the act of taking a paragraph translated from English to another language, then to again translate the paragraph from that 'other language' back to English. To determine the fidelity of this process the reverse translation in English must say what I meant when I first said it in English. Fidelity may be a loose semantic concept but it carries the essential requirement after Noveck and Reboul (20) of words being true to what I meant when I said them. I provide in the methods my criteria for testing fidelity.

#### *Universal Meaning*

A 'universal meaning' is taken as being one that retains the idea expressed by the speaker in their native language and is retained across other languages at all times. As an example I can use an idea expressed in English that when not only transmitted to a listener or reader in English,

but is also transmitted in the receiver's language, which would be other than English, retains my meaning as the speaker.

To be universal the original speaker's meaning must withstand the receiver's self-translation and use of it, as well as any return to English. This looks complicated but can be reduced to 'when I say "subluxation", do you hear "subluxation" no matter your language of practice?' And then, after 'hearing' what I, the creator and speaker of the statement actually said, 'what meaning do you give subluxation in the context of my constructed paragraph?' I emphasize that it is this meaning and not a definition which must closely approximate my meaning as speaker to allow the paragraph to have universal meaning.

It is not possible to ensure that the meaning in my mind, as the creator and speaker, is exactly replicated in the mind of any receiver as this process has many sociocultural variables, including an understanding of the context within which the meaning is embedded. In this case the context is chiropractic as practiced by a conventional chiropractor, which I have described. By extension I propose that a person or a regulatory body in a country with no chiropractors would not understand chiropractic, let alone its *raison d'être* first as given by D.D. Palmer as founder 'We adjust displaced vertebrae ... subluxations in the spine ...' (21), and then as reported by contemporary writers (22,23) and scientists. (24)

My Statement of Universal Meaning about subluxation in chiropractic has been constructed with linguistic precision after Noveck and Reboul (20), with the purpose being to convey the 'speaker's meaning' and 'intent' to the listener and reader. An important characteristic of this statement is its ability to retain the meaning of a conventional chiropractor (8,9,14) when speaking of subluxation in any cross-cultural or cross-national context.

It is the first such statement to be tested and found to retain the speaker's meaning when machine-translated to different languages. (25) The content is not open to discussion, as it is drawn from a thematic analysis from the returns of a systematic review previously described. (11) In essence, that review showed there was no standardized or consistent definition of subluxation, nor any quantitative evidence as to its nature. Subluxation, therefore, must be taken as a professional construct, being 'a phenomenon understood by informed clinical narration and observable clinical evidence' (11, p. 59) by trained chiropractors.

Similarly the parsing is not open to discussion at this time as it has evolved during the research for this paper through the translation processes and was modified until it consistently retained its meaning across all 15 languages plus English. There is little doubt that native

speakers will transliterate the constructed paragraph with individual variations based on their own held meanings, and it is for this reason that I placed a reliance on one machine-based translation service, which is freely available globally.

The issue with transliteration by a friend or a colleague of something you say is their modulation of meaning introduced to suit their individual framework that may, to some degree, be influenced by political expediency. In my experience with commissioning professional translation of the original Hieronymi thesis (26) guidance as to desired meaning will always be requested by the commissioned agent when unfamiliar terms are identified. This has not been found to hold true when my teaching materials and live presentations have been transliterated into Japanese or Korean, as the case may be. The appropriate tools to understand such conscious embodiment and expressions embedded in chiropractic dialogue are those from the qualitative spectrum in general, including linguistics, heuristics, semiology as semiotics, proxemics, and verbalized tactility.

Nevertheless, I consider chiropractic to be a health discipline that sits beside medicine to contribute to the fundamental human right (27) of individual choice of health care provider by the public.

I also consider chiropractic to be a system of health care best described as 'a licensed health care profession.' (28) It relies on manual methods avoiding pharmaceutical and surgical interventions except where clinically indicated as a safe and preferable mode of care. After Brown (29), chiropractic is 'a mainstream provider of neuromusculoskeletal services', however, as reported by Hartvigsen and French 'there is an urgent need to agree on, and further describe, what chiropractic is, what chiropractors do and importantly to provide evidence for value of these activities to patients and societies' (30).

This paper contributes to this 'urgent need' by providing the first tested, universal meaning of subluxation as spoken about by chiropractors.

## METHODS

### *Overview*

The aim of this project was to develop a meaning of subluxation as it is used within conventional chiropractic, with a view to standardizing discussion about what some 80% of the profession (14) see as the central element of chiropractic: the identification and correction of vertebral subluxation.

I give my methods in 5 parts:

Part 1: The thematic analysis of papers returned in an earlier systematic review of the indexed literature where subluxation is described;

Part 2: The extractions of terms common to expressed understandings of subluxation;

Part 3: The assembling of these terms, concepts and wordings into a constructed paragraph descriptive of subluxation and its place in conventional chiropractic practice;

Part 4: The translation of this constructed paragraph to selected languages then the reverse translation of it back into English; and

Part 5: The subjective assessment of the fidelity of the resultant in each language.

The conceptual framework is that of conventional chiropractic (14) as practiced globally modified with the recognition that chiropractic education is in a growth phase and new programs are emerging in different languages and cultures. There are now more colleges outside North America than there are English-speaking colleges within. (31) This presents challenges to educators in emerging programs regarding the nature of chiropractic they deliver in their programs, increasingly in languages other than English (LOTE). There is no global curriculum in spite of attempts by The Rubicon Group, an association of 6 colleges with a common purpose. (32). There is also the Councils on Chiropractic Education International (CCEI) (33), representing 3 regional accrediting bodies (Australasia, Canada, Europe) but not the United States. The CCEI seeks to 'define and promote consistent, high quality standards for chiropractic educational programmes worldwide.' Its so-called standards do not make any reference to subluxation let alone any technical skills required for subluxation identification and correction. They bear a striking resemblance to the standards for graduate outcomes of Australasians (34), which also make no mention of any competency required to identify and correct subluxation and offer no real differentiation between chiropractic and physical therapy. The broad weaknesses of the Australasian accreditation body in particular have been discussed. (35)

The research was conducted under supervision at Southern Cross University (Australia) as part of my doctoral studies. This project was included in the overall approval of my research by the institution's Higher Degrees by Research Committee.

**Table 1.** Three discordant understandings of subluxation from the 101 returned papers of my systematic review.

Publication year	Author	Extracted meaning
1995	Kent	Traditional chiropractic philosophy defines with 4 criteria: loss of juxtaposition of a vertebra with the one above, the one below, or both; occlusion of an opening; nerve impingement; interference with the transmission of mental impulses.  Citation: Kent C, Gentempo P. Static and Dynamic paraspinal surface EMG: An outcome assessment for subluxation-based chiropractic. <i>ICA Int Rev Chiropr.</i> 1995;May/June:29-35. Paper copy only.
2001	Cates et al.	Both the ICA and CCP guidelines present a biased assessment of the chiropractic subluxation. One example of this conflict is the chiropractic subluxation. In the scientific community, there is a spectrum of opinions ranging from those that question the existence of the chiropractic subluxation to those that feel it has profound significance. Other perspectives include the ACA policy, which notes that ‘The chiropractic use of the term “subluxation,” in reporting, is usually valid as an objective descriptor, but is not acceptable as a diagnostic term, unless demonstrable as a scientifically acceptable and classified entity.’ Several authorities note that there is ‘little hard data regarding the reliability and validity of its clinical identification and pathophysiologic impact,’ and others caution chiropractors not to treat the chiropractic subluxation as a ‘sacred cow’ but rather to submit the theories to appropriate scientific testing.  Citation: Cates JR, Young DN, Guerrero DJ, et al. Evaluating the quality of clinical practice guidelines. <i>J Manipulative Physiol Ther.</i> 2001;24(3):170-6. DOI <a href="https://doi.org/10.1016/S0161-4754(01)19243-2">https://doi.org/10.1016/S0161-4754(01)19243-2</a> .
2018	Funk	Classified as an unscientific term.  Citation: Funk MF, Frisina-Deyo AJ, Mirtz TA, et al. The prevalence of the term subluxation in chiropractic degree program curricula throughout the world. <i>Chiropr Man Therap.</i> 2018;26:24. URL <a href="https://doi.org/10.1186/s12998-018-0191-1">https://doi.org/10.1186/s12998-018-0191-1</a>

*Part One: Systematic Review to Allow Thematic Analysis*

For this enquiry, I determined to identify the quantitative evidence in humans for the thing or idea called subluxation. To determine the contents for the constructed paragraph I applied the methods of systematic review in accord with the Southern Cross University Guidelines, based on the Cochrane specification (36) and Campbell Collaboration. (37) I aimed to gather the evidence that existed as published and indexed descriptions of subluxation in humans, where those descriptions were evidence-based. From the returned papers I could extract descriptive elements of subluxation.

The search criteria agreed upon was ‘chiropractic [mesh] AND (subluxation [ti] OR subluxation [ab])’ which as those familiar with systematic reviews appreciate would expand into a search string; I used ‘“chiropractic”[MeSH Terms] AND (subluxation[ti] OR (“joint dislocations”[MeSH Terms] OR (“joint”[All Fields] AND “dislocations”[All Fields]) OR “joint dislocations”[All Fields] OR “subluxation”[All Fields]))’.

This string reflected my broad review of the literature on chiropractic in general.

I accessed portals into the medical and chiropractic databases of literature, namely ‘PubMed’ and ‘Index to Chiropractic Literature’. I retrieved 101 papers. These were each reviewed with my supervisor using the approach of a thematic analysis to extract elements thought to be indicative of subluxation. In Table 1 I provide a very short sample of just 3 returns to demonstrate the variable nature of the found data.

I also conducted a literature review of textbooks published during the 20th Century, where subluxation had been examined by content experts from its first use in chiropractic in 1902. (38) This evidence included B.J. Palmer’s first known use about 1905 (39), through Foster in 1917 and 1920 (40), Firth in 1919 revised in 1967 (41), Wilson in 1955 and 1956 (42), B.J. Palmer in detail in 1961 (43), Homewood in 1962 and 1977 (44), Illi in 1971 (45), Kirkaldy-Willis and Burton in 1983, 1988, and 1992 (46), Keating Jr. in 1992 (47), Wardwell in 1992 (48), Leach in 1994 and 2004 (49), Lantz in 1995 (50), Waddell in 2004 (51), and Cooperstein and Gleberzon in 2004 (52). Not one of these authors published evidence to support their expressed opinion and while informing the systematic review these opinions were only used to confirm elements returned by the review.

In particular I found Kent's 2011 position (53) to be telling, as he and colleagues point to the lack of agreement within the profession. In response to the position of the Council on Chiropractic Education (CCE) they stated:

*'Subluxation is well defined and clinical strategies for identifying its presence as well as outcomes measures to demonstrate its reduction and/or correction are well entrenched in the literature and the practice of chiropractic. "Regarding subluxation, the CCE states in their Open Letter: Despite its historical legacy in the profession, a number of educational programs and practitioners have opted to use other terms, such as joint fixation or joint dysfunction. This single statement gets to the heart of the concern of the chiropractic community. The chiropractic subluxation is not synonymous with joint fixation or joint dysfunction". / "Even the Association of Chiropractic Colleges (ACC) has not reached a unified definition or specific criteria for subluxation, despite its own task force addressing this issue". / Chiropractic is concerned with the preservation and restoration of health, and focuses particular attention on the subluxation. A subluxation is a complex of functional and/or structural and/or pathological articular changes that compromise neural integrity and may influence organ system function and general health. A subluxation is evaluated, diagnosed, and managed through the use of chiropractic procedures based on the best available rational and empirical evidence".'*

I found no paper that presented objective human-based findings descriptive of subluxation. I consider a definition, of which there are many, not to be objective evidence; rather, a definition is a consensus and highly subjective to the agenda of the organization which generates any particular definition. However, published definitions do contain pointers to what it is that chiropractors think a subluxation may be, and also what they probably do to it, and concepts were extracted from the returned definitions.

#### *Part Two: The Extraction of Terms Common to the Meaning of Subluxation*

Both the literature review as noted above and the returned papers which were analyzed, showed consistency in the idea that within chiropractic a subluxation is a small dysfunction in the spine which can be identified by a trained chiropractor against observable clinical evidence such as restricted movement and pain (to be brief) and as a professional construct is amenable to correction by hand with or without mechanical assistance and is related to a patient's general health and well-being.

During my work, my colleague Donald McDowall at the same university completed his doctoral thesis (54) which extracted from the chiropractic and historical literature in general and Palmer's teachings in particular the concept of 'tone' as a mechanism linking the correction

of subluxation with expressed health and well-being. (55) I therefore included this newly explained linkage in my constructed paragraph on the basis of the breadth of research undertaken by McDowall to produce his findings. I consider he filled-in gaps in my systematic review and literature review. I also specifically note that D.D. Palmer stated chiropractic was 'founded on tone.' (56)

#### *Part Three: Assembling the Constructed Paragraph*

The ideas taken from the summations of my thematic analysis, which included both my systematic review and my review of what I considered as key textbooks over chiropractic's first Century, plus a summation of McDowall's thesis provided the basis for the construction of an initial paragraph. I then drew from my own experience as an educator in the field of professional practice, and my earlier research on other aspects of chiropractic practice. (57-66)

Essentially, the paragraph reduced to the idea that a person consults a chiropractor because something has changed in their life experience and the chiropractor examines them and does something to the spine with the intent to correct a dysfunction and this is often associated with improved health and well-being in that particular person. This idea was informally tested in a modified Delphi process of almost 30 practitioners known to me. I found it to be robust. I then formed this collection of ideas into the following constructed paragraph:

*'The collective noun 'subluxation' is used within the discipline of chiropractic by chiropractors to predominately denote one or more clinical signs and symptoms evidenced on and by physical examination. Conceptualized as exhibiting elements of biomechanical dysfunction to variable degrees, subluxation may be identified in a specific joint complex of the spine, known as a 'spinal mobility unit', or other structures and is corrected manually using a hands-only controlled and rapid therapeutic thrust with intent. The thrust may be mechanically assisted. The outcome of such a correction is an adjustment of systemic neural tone which may be supported with lifestyle elements from nutrition to exercise.'*

The paragraph, as given above, approximates the most robust meaning I could create from my systematic review of the literature and its thematic analysis for entry into the translation and reverse translation process. This paragraph is the final output paragraph of the process as the actual paragraph with which I started the translation process was slightly different. This is because some original words and phrases were modified during the translation/reverse translation process. As an example of such modification I came to use the term 'spinal mobility unit' instead of my own preference of 'spinal motion unit' as the former is translated with fidelity while the latter introduces variations across different languages. I

used this argument for each phrase in the constructed paragraph. Once any change was made, the entire process was re-commenced to ensure consistent use of only the refined constructed paragraph in all translations.

#### *Part Four: The Translating Process*

To conduct the translation process I used the software program Google Translate™ first in 2020 and then in July 2022; the program does not carry a version number. It ran on an iMac 27 most recently using macOS Monterey 12.4. In technical terms, Google provides 'Google Neural Machine Translation (GNMT).' (67) Some are cautious of this service (68) as lacking in confidentiality; however, this was not a concern in my use of the software.

My reliance on machine-translation was to remove any emotive transliteration that can creep into the product when humans are involved. Google Translate™ was chosen as the platform since it is universally available, covers some 100 languages, and follows consistent algorithms and rules which are updated from time to time. These rules removed human transliteration and prevented any individual's meaning from coloring and shading the output or product.

The constructed paragraph was entered into the left-hand pane and confirmed as English. The output language was selected in the right-hand pane from a drop-down list. The output was copied using the on-screen copying function and pasted into my working documents (using Pages 12.1 on MacOS).

The panes in Google Translate were cleared and the output in its language of translation was pasted into the left-hand pane. The language was auto-identified by the software, which I confirmed to be as intended, and English was selected as the output language in the right-hand pane. This was then copied and pasted into my working documents for checking structural and linguistic integrity against the original constructed paragraph.

#### *Part Five: Subjective Assessment of Fidelity*

Each resultant reverse-translated English phrase was compared to that in the original English paragraph. The process was iterative with small changes to words, phrasing, and punctuation in the constructed paragraph until the reverse-translated English output demonstrated the required fidelity to the original English input. In my results I give my phrase-by-phrase tests of fidelity.

## **RESULTS**

What I present in the Appendix are emotionless, machine translations of an evidence-based statement about subluxation in chiropractic. The statement is evidence-based since it is drawn from a critical and complete review

of the literature to 2020 as a systematic review and then from thematic analysis of the 101 papers returned. I have given the search strings to allow the systematic review to be repeated in the current literature; however, the thematic analysis reflects my own heuristic constructs. I would argue that on the basis of my 30 years or so of active academic practice in which I teach this content that my construct is most likely common.

It was rare to find a word-for-word reverse translation of my constructed paragraph. Even following refinement the translations given in the Appendix show minor variations. It is my judgement that with 1 exception, which I address, all translations retained fidelity.

The meaning of each reverse translation was assessed linguistically and a grading of fidelity awarded in accord with this scheme:

- o Acceptable when the reverse translation was more or less word for word, where 'more or less' allowed for different tenses and strongly similar words with strongly similar meaning;
- o To be revised where the reverse translation generally conveyed the same meaning in each sentence allowing for cultural variations which did not impact the speaker's meaning; and
- o Rejected where the reverse translation conveyed a different idea or ideas. Rejection led to further changes in the speaker's original paragraph where such changes retained the original meaning but expressed it in a slightly different form. This paragraph then became the test paragraph for all reverse translations, meaning the entire exercise was conducted over a number of cycles until the fidelity of all reverse translations was acceptable.

#### *Phrase-by-Phrase Assessment*

First, I wanted to give a statement of truth regarding a word I consider to be a collective noun that is in common use among most chiropractors (14). The phrase found to retain fidelity is:

*'The collective noun "subluxation" is used within the discipline of chiropractic by chiropractors.'*

Then I wanted to give a meaning to the idea of subluxation in chiropractic while saying how and why a chiropractor may identify something as a subluxation. The phrase found to retain fidelity is:

*'to predominately denote one or more clinical signs and symptoms evidenced on and by physical examination.'*

Next I wanted to give a simple understanding of some things that may help a chiropractor identify a level of spinal dysfunction. The phrase found to retain fidelity is:

*'conceptualized as exhibiting elements of biomechanical dysfunction to variable degrees.'*

I also wanted to say where a chiropractor is most likely to look to identify dysfunctions whilst leaving open the possibilities for other joints such as knees and wrists to be found dysfunctional along with more subtle articulations such as cranial sutures. The phrase found to retain fidelity is:

*'subluxation may be identified in a specific joint complex of the spine, known as a 'spinal mobility unit', or other structures.'*

When it came to state what a chiropractor would typically do when they identified and confirmed such dysfunction (69), I felt it important to emphasize that a therapeutic input into the spine must ethically be accompanied by a therapeutic purpose. The ethical nature of intent is that no therapeutic intervention should be provided without clinical indicators for its need and selection. I consider this to be incorporated within the word 'intent', and the phrase found to retain fidelity is:

*'is corrected manually using a hands-only controlled and rapid therapeutic thrust with intent.'*

It was important to me to not exclude chiropractors using mechanical aids (70,71) such as an upper cervical adjusting instrument, an Activator™, a drop-piece table, the SOT blocks, or other devices that have evolved over time as other chiropractors investigated their clinical behaviors. The phrase found to retain fidelity is:

*'the thrust may be mechanically assisted'*

It turned out that this was one of the more challenging ideas to convey. In some languages 'thrust' became 'push,' an outcome I accepted given some historical descriptions of adjustive interventions as 'push moves' and indeed, its contemporary use with this meaning (72). The term 'mechanically assisted' generally had fidelity but with some minor variances in semantic expression.

I felt it important to give a reason for why a chiropractor would do the preceding steps and to provide the basis for determining the idea of outcomes-based care. It was here I relied upon McDowall's work (54) and that of Haavik *et al* (73,74) to allow this phrase which was found to retain fidelity:

*'the outcome of such a correction is an adjustment of systemic neural tone'*

It is of particular interest that I found universal clarity for Palmer's idea of tone retaining fidelity through reverse translation in the languages sampled and reported in this paper. The idea that chiropractic may affect systemic neural tone is held consistently across all sampled languages, and must be considered a globally accepted element of health. The fact that McDowall sits atop his university's rankings of 'most viewed theses' (75) suggests that others around the world have a similar interest. I consider the finding that the idea of 'tone' translates with a universal meaning to be positive for the chiropractic profession.

Finally, I wanted to capture the broader elements known to be part of the chiropractic encounter and for which there are many supportive papers. I anchored on a white paper of the WFC (76) and the summary phrase which was found to retain fidelity is:

*'which may be supported with lifestyle elements from nutrition to exercise.'*

My overall test of fidelity was whether or not the reverse translation said what I meant as given above.

Repeated small changes to the standard English paragraph resulted in acceptable fidelity of all translations with the exception of Hindi, which I found to be the most challenging language to find meaning for the constructed word 'subluxation'; it translates as 'sublimation'. I recommend replacing the Hindi 'उदात्तता' (sublime) with 'मोच आ' meaning 'sprain' to carry the meaning of subluxation in Hindi; 'sprain' is a term dating back to meaning found in the Egyptian medical literature (19). The reverse translation using 'sublimation' is given in the Appendix, as I have not allowed myself to change in my report a word in a language other than English.

Reverse translation was first undertaken in 2020 and the entire exercise was re-run as this manuscript was finalized in August 2022. I noticed that Google Translate™ returned some subtle differences in 2022 in some cases and these have been incorporated. This suggests the machine-translation process is self-developing and I recommend that translations should be undertaken at the time the translation is needed.

By way of an audit, Apple's translation software was used and generally produced results of low fidelity which I deemed unacceptable. I concluded that at this time the machine translation offered by Apple is not yet sufficiently able to produce translations and reverse translations of this constructed paragraph. I also found that the number of available languages was limiting. Google is recommended as the preferred machine translator.

For readers whose native language is not listed in this paper it is recommended you take the constructed

paragraph exactly as it is written here and within Google Translate™ convert it to the language of your choice.

## DISCUSSION

The 15 languages sampled were purposively selected based both on my knowledge of countries in which chiropractic is practiced to some degree and in which new education programs are forming, as well as on my own sphere of professional academic practice throughout East Asia.

The finding that most intrigues me as a philosopher is that a universal meaning can found for the things chiropractors do that revolve around finding and correcting subluxation. I would like to think that such a universal meaning now brings the opportunity to those who deny the place of subluxation in chiropractic, especially the General Chiropractic Council (GCC) of the UK (77), to undertake equivalent work to test the fidelity of the ideas they claim represent chiropractic, as they are translated into other languages and cultures.

The most important outcome of this paper should be the immediate adoption by the WFC of the constructed paragraph describing subluxation in chiropractic practice. More than any others, this trans-national representative professional organization must ensure fidelity in its multiple discussions and submissions to advance the chiropractic profession. They can no longer continue any reliance on its own members to provide imperfect human translations and instead must adopt an evidence-based, tested statement that translates with fidelity by a dispassionate machine.

The concepts of 'speaker's meaning' and its reception by a 'hearer' or audience seems a new idea within chiropractic and is of importance to all educators who hope to convey ideas with meaning to a class of students. My work as reported here shows that educators would benefit by becoming more thoughtful of the terms and phrases they use, even going to the point of translating then reverse translating them into the first languages of students in a typical class. Otherwise the educator in front of the class may well give themselves a good feeling that they are communicating the ideas of chiropractic, while their students actually fail in 'hearing' the idea in a form true to the speaker's intent.

## CONCLUSION

*"When I use a word," Humpty Dumpty said in rather a scornful tone, "it means just what I choose it to mean - neither more nor less." "The question is," said Alice, "whether you can make words mean so many different things."*

*"The question is," said Humpty Dumpty, "which is to be master - that's all." (78)*

Noveck and Reboul (20) align with Humpty Dumpty and emphasize care must be taken by a speaker to ensure the meaning in their words is conveyed with fidelity when those words are heard or read by others. The strongest example of variable meaning within chiropractic is embedded in the constructed noun 'subluxation.' It is an encumbrance for chiropractic speakers to ensure the words they use when talking about key elements of the profession retain meaning with fidelity when translated to different languages for legislative, educational, and practice-centric purposes.

I conclude that the term subluxation is a central tenet within chiropractic and provide an evidence-based and tested paragraph about it which carries universal meaning into different cultures and languages. The paragraph is particularly suited to inform the WFC (79) in their current project to recommend training benchmarks to the WHO.

However this paper does not in any way suggest what meaning an individual chiropractor should give to 'subluxation.' In a previous paper I addressed this matter and reported that 'an individual chiropractor's "truth" about subluxation can be considered as being that meaning which a trained chiropractor gives to a standardized set of clinical findings.' I noted that 'in many respects this would seem true to the intent of evidence-based medicine when clinical findings are interpreted in light of the doctor's experience, the patient's preferences, and best available evidence.' (11)

In this paper I present a constructed paragraph assigning contextual meaning to subluxation and its place within conventional chiropractic practice where these meanings have been drawn from a reasonable examination of the chiropractic literature. I have also have shown that this paragraph is able to be translated into a number of languages other than English while retaining fidelity in meaning. Exactly what is meant when any speaker says 'subluxation' is entirely up to that speaker on the condition it is reasoned, makes sense, and references the profession's literature.

In the absence of a global chiropractic curriculum, notwithstanding the intent of The Rubicon Group (32), there is little guidance for the development of new curricula and the updating of existing curricula in chiropractic education. In spite of the identification of subluxation and its correction being an essential element found in most of the world's chiropractic curricula (12) and a term which is commonly found on chiropractic websites (80), it is only the American CCE which requires competency in students being able to identify subluxation but not necessarily with its correction (81). Neither Canadian (82), European (83), nor Australasian Program Standards (33) make any reference to the term. The proposed programmatic standards of the GCC seem to

actively deny the existence of 'subluxation' as a term (84). However this position is consistent with their opinion of 2010 which drew global censure (77,85,86) as being completely at odds with the evidence known at that time.

I recommend that this constructed paragraph be widely adopted within the profession in its various global expressions and languages at individual, clinical, association, and organisational levels.

I also recommend that accreditation standards now include the constructed and tested paragraph to specifically and uniquely identify as programs of chiropractic education.

## DISCLAIMERS

Some reverse-translations in English have punctuation and capitalization at odds with the American English in which this paper is published. I retain this as exact copies of the returned text in Google Translate.

The study is considered reproducible as I give the exact search string and used a freely available machine translation program Google Translate. The 2 non-reproducible parts of this report are (1) the thematic analysis which necessarily involves subjective judgements and (2) my linguistic comparisons of fidelity with the original constructed paragraph which necessarily involves heuristics.

The intellectual property contained within the translations reported here seems to remain with me as the person who constructed the content for translation, while due recognition is given to the trademark Google Translate (84) which will use that content as they wish. Should any citation be made of any part of this paper then normal academic publishing protocols apply which means such text would be cited as originating in this journal.

## FUNDING

I declare that funding was provided in certain stages of this work by the Australian government through a Post Graduate Research Grant in a non-fee student place provided by Southern Cross University.

## REFERENCES

1. Luedtke KL. Chiropractic definition goes to world organisation. *J Chiropr* 1988;25(6):5,16.
2. WFC History. World Federation of Chiropractic. Accessed 10 August 2022. URL [https://www.wfc.org/website/index.php?option=com\\_content&view=article&id=89&Itemid=87&lang=en](https://www.wfc.org/website/index.php?option=com_content&view=article&id=89&Itemid=87&lang=en).
3. Definition of chiropractic. World Federation of Chiropractic. Accessed 10 August 2022. URL [https://www.wfc.org/website/index.php?option=com\\_content&view=article&id=90&Itemid=110&lang=en](https://www.wfc.org/website/index.php?option=com_content&view=article&id=90&Itemid=110&lang=en).
4. Facts on chiropractic. World Federation of Chiropractic. Accessed 10 August 2022. URL [https://www.wfc.org/website/index.php?option=com\\_content&view=article&id=122&Itemid=138&lang=en](https://www.wfc.org/website/index.php?option=com_content&view=article&id=122&Itemid=138&lang=en).
5. Brown RA. Chiropractic as part of the solution to the world crisis in spine-related disability. *J Chiropr Humanit* 2018;25C:6-9. URL <https://pubmed.ncbi.nlm.nih.gov/31019416/>.
6. Brown RA. Spinal Health: The backbone of chiropractic's identity. *J Chiropr Humanit* 2016;23:22-8. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5127906/pdf/main.pdf>.
7. Guidelines on basic training and safety in Chiropractic. World Health Organisation. Geneva. 2005:4. URL <https://apps.who.int/iris/handle/10665/43352>.
8. Hart J. Analysis and adjustment of vertebral subluxation as a separate and distinct identity for the chiropractic profession: a commentary. *J Chiropr Humanit* 2016 Oct 25;23(1):46-52. DOI 10.1016/j.echu.2016.09.002. PMID: 27920618; PMCID: PMC5127903.
9. Russell D. The assessment and correction of vertebral subluxation is central to chiropractic practice: Is there a gap in the clinical evidence? *J Contemporary Chiropr* 2019;20:4-17. URL <https://journal.parker.edu/index.php/jcc/article/view/42>.
10. Glucina T, Gaskin H, Fox M *et al*. Practice characteristics of New Zealand chiropractors: A 2019 survey. *Asia-Pac Chiropr J* 2021;1(4):1015. URL <https://www.apcj.net/glucina-et-al-demographics-new-zealand>.
11. Ebrall P. The perspective-dependent knowledge claim as an explanation of chiropractic's subluxation conundrum. *J Contemporary Chiropr* 2021;4:52-65. URL <https://journal.parker.edu/index.php/jcc/article/download/157/70>.
12. Funk MF, Frisina-Deyo A, Mirtz TA, *et al*. The prevalence of the term subluxation in chiropractic degree program curricula throughout the world. *Chiropr Man Therap* 2018 Jul 2;26:24. DOI 10.1186/s12998-018-0191-1.

13. Examples of lexicon. ThoughtCo. English. Accessed 15 August 2022. URL <https://www.thoughtco.com/what-is-a-lexicon-1691231>.
14. Ebrall P. The conventional identity of chiropractic and its negative skew. *J Contemporary Chiropr* 2020;3(1):111-26. URL <https://journal.parker.edu/index.php/jcc/article/view/133>.
15. Gatterman MI. *Foundations of chiropractic: Subluxation*. St Louis: Mosby 2005:9.
16. Ebrall PS. A survey of sets of principles of chiropractic. *Chiropr J Aust* 2001; 31:58-69.
17. Senzon SA. The chiropractic vertebral subluxation part 9: complexes, models, and consensus From 1979 to 1995. *J Chiropr Humanit* 2018;25C:130-145. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6472115/>.
18. Senzon SA. The chiropractic vertebral subluxation Part 10: Integrative and critical literature from 1996 and 1997. *J Chiropr Humanit* 2018;25C:146-68. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6472121/>.
19. Ebrall P, Bovine G. A history of the idea of subluxation: A review of the medical literature to the 20th Century. *J Contemporary Chiropr*. = 2022;5:150-69. URL <https://journal.parker.edu/index.php/jcc/article/download/219/106>.
20. Noveck IA, Reboul A. Experimental pragmatics: a Gricean turn in the study of language. *Trends Cog Sci* 2006;12(11):425-30. DOI 0.1016/j.tics.2008.07.009.
21. Palmer DD. *The chiropractor*. Los Angeles: Press of Beacon Light Printing Company. 1914:96.
22. Senzon SA. The chiropractic vertebral subluxation part 1: introduction. *J Chiropr Humanit* 2019 Apr 6;25:10-21. DOI 10.1016/j.echu.2018.10.002. PMID: 31019417; PMCID: PMC6472118.
23. Nelson C. The subluxation question. *J Chiropr Humanit*. 1997;7:46-55.
24. Haavik-Taylor H, Holt K, Murphy B. Exploring the neuromodulatory effects of vertebral subluxation. *Chiropr J Aust* 2010;40:37-44.
25. Testing conducted 04 September 2020 using Safari 13.1.2 within Mac OS 10.15.6 at Google Translate URL <https://translate.google.com>. All languages were retested at the time of manuscript preparation (August 2022) and additional languages were added and are reported.
26. Hieronymi JH. *De luxationibus et sublaxationibus* [thesis] Jena University: 1746.
27. Health is a fundamental human right. World Health Organisation. Geneva. 10 December 2017. Accessed 11 August 2022. URL <https://www.who.int/news-room/commentaries/detail/health-is-a-fundamental-human-right>.
28. *Chiropractic: In depth*. National Center for Complementary and Integrative Health. National Institutes of Health. URL <https://www.nccih.nih.gov/health/chiropractic-in-depth>.
29. Brown, R. A health care system in transformation: making the case for chiropractic. *Chiropr Man Therap* 2012;20, 37. URL <https://doi.org/10.1186/2045-709X-20-37>.
30. Hartvigsen J, French SD. So, what is chiropractic? Summary and reflections on a series of papers in *Chiropractic and Manual Therapies*. *Chiropr Man Therap* 2020;28,4. <https://doi.org/10.1186/s12998-019-0295-2>.
31. Petersen Jr D. As go the colleges, so goes the profession [Report of my findings]. August 2022. *Dynamic Chiropractic*. URL [https://www.dynamicchiropractic.com/digital/index.php?i=1291&s=123247&l=13&a\\_id=59119&pn=18&r=t&Page=18](https://www.dynamicchiropractic.com/digital/index.php?i=1291&s=123247&l=13&a_id=59119&pn=18&r=t&Page=18).
32. The Rubicon Group. Participants. Website accessed 11 August 2022. URL <https://www.therubicongroup.org/participants/>.
33. Councils on Chiropractic Education International. Home. URL <https://www.cceintl.org>.
34. Competency standards for graduating chiropractors. Council on Chiropractic Education Australasia. 2017. URL [https://www.ccea.com.au/s/CCEA\\_Accreditation\\_and\\_Compety\\_Standards\\_2017-jk9r.pdf](https://www.ccea.com.au/s/CCEA_Accreditation_and_Compety_Standards_2017-jk9r.pdf).
35. Innes S, Leboeuf-Yde C, Walker BF. How comprehensively is evidence-based practice represented in councils on chiropractic education (CCE) educational standards: a systematic audit. *Chiropr Man Therap* 2016;24,30. URL <https://doi.org/10.1186/s12998-016-0112-0>.
36. *Cochrane Handbook for Systematic Reviews of Interventions*. Cochrane Training. URL <https://training.cochrane.org/handbook/current>.

37. How should we summarize bodies of evidence? The emerging evidence architecture for knowledge brokering. Campbell Collaboration. URL <https://www.campbellcollaboration.org/blog/how-should-we-summarize-bodies-of-evidence-the-emerging-evidence-architecture-for-knowledge-brokering.html>.
38. Faulkner TJ. The chiropractor's protégé. Rock Island: The Association for the History of Chiropractic. 2017:72.
39. Palmer BJ. Chiropractic. *The Chiropractor* 1906;2(11): frontispiece.
40. Forster A. Principles and practice of chiropractic 2. Chicago: The National Publishing Company. 1920.
41. Baltzell LG. Firth's technic notes, Revised 1967. Self published. 1967.
42. Wilson GA. Spinatology. Salt Lake City: The Standard Research Laboratories 1955 and 1956.
43. Palmer BJ. Our masterpiece. Hamilton: Hamilton Press. 1961.
44. Homewood AE. The neurodynamics of the vertebral subluxation 3e. St. Petersburg: Valkyrie. 1977.
45. Illi FWH. High-lights of 45 years of experience and 35 years of research, Lectures and films. Geneva: Institute for the study of the statics and dynamics of the human body. 1971.
46. Kirkaldy-Willis WH, Burton CV. Managing low back pain New York: Churchill Livingstone. 1992.
47. Keating Jr. JC. Toward a philosophy of the science of chiropractic. Stockton: Stockton Foundation for Chiropractic Research. 1992.
48. Wardwell WE. Chiropractic, history and Evolution of a new profession. St. Louis: Mosby. 1992.
49. Leach RA. The chiropractic theories. Principles and clinical applications 3e. Baltimore: Williams & Wilkins 1994.
50. Lantz CA. Back to basics. A review of the evolution of chiropractic concepts of subluxation. *Top Clin Chiropr* 1995;2(2):1-10.
51. Waddell W. The back pain revolution. Edinburgh: Churchill Livingstone. 2004.
52. Cooperstein R, Gleberzon BJ. Technique systems in Chiropractic. Edinburgh: Churchill Livingstone. 2004.
53. Kent C, McCoy M, Gutierrez V, *et al.* Open Letter from Council on Chiropractic Education. Foundation for Vertebral Subluxation. 2011. URL [http://www.mccoypress.net/subluxation/docs/cce\\_response\\_open\\_letter.pdf](http://www.mccoypress.net/subluxation/docs/cce_response_open_letter.pdf).
54. McDowall DA. Daniel David Palmer's heritage and his legacy of tone to chiropractic [Thesis]. Southern Cross University. 2021. URL 2021. URL <https://doi.org/10.25918/thesis.121>.
55. McDowall D, Emmanuel E, Grace S *et al.* Tone as a health concept: An analysis. *Comp Thera Clin Prac* 2017;29: 27-34. URL <http://dx.doi.org/10.1016/j.ctcp.2017.08.001>.
56. Palmer DD. Text book of the science, art and philosophy of chiropractic for students and practitioners. Portland: Portland Printing House Company 1910:frontispiece.
57. Ebrall PS. A descriptive report of the case-mix within Australian Chiropractic practice, 1992. *Chiropr J Aust* 1993; 23:92-7.
58. Ebrall PS. Residual disability from delayed manipulative treatment for mechanical low-back pain: A case review. *Chiropr J Aust* 1993; 23:54-8.
59. DeCoster LD, Ebrall PS. A description of WorkCare claims where chiropractors wrote the initiating certificate: Victoria 1990/91. *Chiropr J Aust* 1993; 23:33-7.
60. Ebrall PS. The determinants of chiropractors being providers of appropriate manipulative health care in Australia. *J Canadian Chiropr Association* 1993; 37(3):159-63 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2485038/pdf/jcca00043-0033.pdf>.
61. Ebrall PS, Ellis WB. Transient syncope in chiropractic practice: A case series. *Chiropr J Aust* 2000; 30:82-91.
62. Repka A, Ebrall PS, Draper B. Failure to use vertebral subluxation complex as a diagnostic term: a flaw of reductionistic diagnosis with resultant compromise of student and patient outcomes in chiropractic teaching clinics. *Chiropr J Aust* 2007; 37:84-91.
63. De Souza R, Ebrall PS, Kimpton A. Preliminary Report: Practice-based measures of wellbeing in a typical Australian chiropractic practice. *Chiropr J Aust* 2007; 37:126-134.

64. De Souza R, Ebrall PS. Understanding wellness in a contemporary context of chiropractic practise. *Chiropr J Aust* 2008; 38:12-6.
65. Ebrall PS. Discussion paper: Evidenced-based practice and chiropractic. *Chiropr J Aust* 2016;44(4): 309-19. Available at <http://www.cjaonline.com.au/index.php/cja/article/view/120>.
66. Ebrall PS. Finding the professional identity of chiropractic in Australasia: A pragmatic narrative of the Formative Period to 1960. *Chiropr Hist* 2020;40(1):49-71.
67. How Accurate is Google Translate? (Updated 2022 Review). Lingperfect. Accessed 12 August 2022. URL <https://lptranslations.com/learn/how-accurate-is-google-translate/>.
68. Google Translate: 6 reasons to avoid using it [Industry Blog]. Language Insight. Accessed 12 August 2022. URL <https://www.languageinsight.com/blog/2019/google-translate-avoid-using-it/>.
69. Coulehan JL. Adjustment, the hands and healing. *Cult Med Psych* 1985;9:353–82. URL <https://doi.org/10.1007/BF00049230>.
70. Gorrell LM, Beath K, Engel RM. Manual and instrument applied cervical manipulation for mechanical neck pain: A randomized controlled trial. *J Manipulative Physiol Ther* 2016;39:319-29. URL [http://www.jmptonline.org/article/S0161-4754\(16\)30005-7/fulltext](http://www.jmptonline.org/article/S0161-4754(16)30005-7/fulltext).
71. Oakley PA, Harrison DE. A systematic review of CBP® methods applied to reduce lateral thoracic translation (pseudo-scoliosis) postures. *J Contemporary Chiropr* 2022 ;5(1):13-8. URL <https://journal.parker.edu/index.php/jcc/article/view/184>.
72. Wang S, Niedjalski C, Hogg-Johnson S. Discomfort during setup of side posture hypothernar/ilium push manipulation. Platform presentation, Association of Chiropractic Colleges Research Agenda Conference 2020 Abstracts of Proceedings. Platform and poster presentation abstracts [planned to be presented at the 27th ACC-RAC Conference, Dan Diego, California, March 19-21, 2020; cancelled due to the global coronavirus pandemic]. *J Chiropr Educ*. 2020 Mar;34(1):72-103. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7074944/>.
73. Robinault L, Holobar A, Crémoux S *et al*. The effects of spinal manipulation on motor unit behavior. *Brain Sci* 2021 Jan 14;11(1):105. DOI 10.3390/brainsci11010105. PMID: 33466707; PMCID: PMC7828823.
74. Haavik H, Kumari N, Holt K *et al*. The contemporary model of vertebral column joint dysfunction and impact of high-velocity, low-amplitude controlled vertebral thrusts on neuromuscular function. *Eur J Appl Physiol* 2021 Oct;121(10):2675-2720. DOI 10.1007/s00421-021-04727-z. Epub 2021 Jun 23. PMID: 34164712; PMCID: PMC8416873.
75. McDowall DA. Daniel David Palmer’s heritage and his legacy of tone to chiropractic [Thesis]. Southern Cross University. Rankings/Most viewed. URL <https://researchportal.scu.edu.au/esploro/>.
76. Maiers M, Agaoglu M, Brown R *et al*. Chiropractic in global health and wellbeing: a white paper describing the public health agenda of the World Federation of Chiropractic. *Chiropr Man Therap* 2018;26,26. URL <https://doi.org/10.1186/s12998-018-0194-y>.
77. Ebrall P. Antagonists, protagonists, and the General Chiropractic Council: a pragmatic narrative of eminence- based chiropractic. *J Phil, Princ Prac Chiropr* 2020;July 27:37-48. Paywall URL <https://www.vertebralsubluxationresearch.com/2020/07/05/antagonists-protagonists-and-the-general-chiropractic-council-a-pragmatic-narrative-of-eminence-based-chiropractic/>.
78. Dodgson C (Lewis Carol). *Through the looking-glass*. Oxford, MacMillan. 1871 (Dated 1872), Chapter 6.
79. World Federation of Chiropractic. WHO Benchmarks for training in chiropractic. WFC home. August 2022. URL [https://www.wfc.org/website/images/wfc/Latest\\_News\\_and\\_Features/WHO\\_Benchmarks\\_WG\\_-\\_Call\\_for\\_expressions\\_of\\_interest\\_2022.pdf](https://www.wfc.org/website/images/wfc/Latest_News_and_Features/WHO_Benchmarks_WG_-_Call_for_expressions_of_interest_2022.pdf).
80. Young KJ, Theroux J. Prevalence of chiropractic-specific terminology on chiropractors' websites in the United Kingdom with comparison to Australia: an analysis of samples. *J Chiropr Humanit* 2021 Dec 22;28:15-21. DOI 10.1016/j.echu.2021.10.001. PMID: 35002574; PMCID: PMC8720836.

81. CCE Accreditation Standards Principles, Processes & Requirements for Accreditation. The Council on Chiropractic Education. 2021:27. URL [https://www.cce-usa.org/uploads/1/0/6/5/106500339/2021\\_cce\\_accreditation\\_standards\\_\\_current\\_.pdf](https://www.cce-usa.org/uploads/1/0/6/5/106500339/2021_cce_accreditation_standards__current_.pdf).
82. Program Standards for the Doctor of Chiropractic Degree Program - Canada. The Federation of Canadian Chiropractic. URL <https://chirofed.ca/wp-content/uploads/2021/03/program-standards-DCP-Canada-Nov-9-final-1.pdf>.
83. ECCE Accreditation procedure and standard. European Council on Chiropractic Education. Accreditation Procedures and Standards Version 5.3. URL [https://www.cce-europe.com/index.php/accreditation-documentation.html?file=tl\\_files/documents/documents/archive/Accreditation%20Procedures%20and%20Standards%205.3%20-%20November%202019%20Aachen%20%20270320.pdf](https://www.cce-europe.com/index.php/accreditation-documentation.html?file=tl_files/documents/documents/archive/Accreditation%20Procedures%20and%20Standards%205.3%20-%20November%202019%20Aachen%20%20270320.pdf).
84. General Chiropractic Council. Education Standards public consultation launched. August 2022. URL <https://www.gcc-uk.org/gcc-news/news/entry/education-standards-public-consultation-launched>.
85. Ebrall P. Murakami Y. A critical analysis of the reality distortion of chiropractic among scientists with constructive criticism of the current debate. J Phil Princ Prac Chirop 2019;July 11:1-11. <https://www.vertebralesubluxationresearch.com/2019/07/10/a-critical-analysis-of-the-reality-distortion-of-chiropractic-among-scientists-with-constructive-criticism-of-the-current-debate/>.
86. Kent C. An analysis of the General Chiropractic Council's policy on claims made for the vertebral subluxation complex. J Philos Principles Practice Chiopr 2011;May 16:1-8. URL [http://www.mccoypress.net/subluxation/docs/kent\\_gcc\\_subluxation\\_analysis.pdf](http://www.mccoypress.net/subluxation/docs/kent_gcc_subluxation_analysis.pdf).
87. Through Google translate, does Google become the owner of the processed content? Quora. Accessed 12 August 2022. URL <https://www.quora.com/Through-Google-translate-does-Google-become-the-owner-of-the-processed-content?share=1>.

## APPENDIX

Translations of the constructed paragraph into the identified language and its reverse translation in English.

## AFRIKAANS

From Google Translate:

Die kollektiewe selfstandige naamwoord 'subluksasie' word binne die dissipline van chiropraktyk deur chiropraktisyne gebruik om hoofsaaklik een of meer kliniese tekens en simptome aan te dui wat tydens en deur fisiese ondersoek bewys word. Gekonseptualiseer as die vertoon van elemente van biomeganiese disfunksie tot veranderlike grade, kan subluksasie geïdentifiseer word in 'n spesifieke gewrigskompleks van die ruggraat, bekend as 'n 'spinale mobiliteitseenheid', of ander strukture en word met die hand reggestel deur 'n hand-alleen-beheerde en vinnige terapeutiese stoot te gebruik. met opset. Die stoot kan meganiese ondersteun word. Die uitkoms van so 'n regstelling is 'n aanpassing van sistemiese neurale toon wat ondersteun kan word met lewenstylelemente van voeding tot oefening

Reverse translation to English:

The collective noun 'subluxation' is used within the discipline of chiropractic by chiropractors to primarily denote one or more clinical signs and symptoms evidenced during and through physical examination. Conceptualized as exhibiting elements of biomechanical dysfunction to variable degrees, subluxation can be identified in a specific joint complex of the spine, known as a 'spinal mobility unit', or other structures and is manually corrected by a hand-only -using controlled and rapid therapeutic thrusts. on purpose. The push can be supported mechanically. The outcome of such a correction is an adjustment of systemic neural tone that can be supported with lifestyle elements from nutrition to exercise

## ARABIC

From Google Translate:

ميوقتب جالعلالاجم يف "يئزج علخ" ي عامجل مسالامادختسا متي يف تراشلال يرقفلا دومعل ني موقم لبق نم يرقفلا دومعل يتلا ةيبريسلا ضارعالاو تامالعل نم رثكأ وأ تمالع لبل اغلا رهظت انهأ لىل ع اروضت متي .يندبلال صرحفلا لال خ نم اهتابثا مت ديدحت نكمي و ، تري غتم نتاجردب يويحل ا يف يظولال للخل رصانع مساب فرغي ، يرقفلا دومعل ددحم لصفم عمجم يف يئزج علخ هحيصت متي و يرخأ لكايه وأ ، " يرقفلا دومعل ةيكرح ةدحو " ايودي اهيف مكحتلا متي ةيجالع عفد قوق مادختساب ايودي ةحيتن .ايكين الكيم ةدعاسمب عفدلال نوكي دق .دصقب .ةخيرسو نكمي يتلاو ةيزاهجل ايبصعلال عمغلل لي دعت يه يحيصتلا اذه .ةيضايرلا نيرامتلال لىل ةيذغتلال نم ةايحل طمن رصانع اهمعد

Reverse translation to English:

The collective name "subluxation" in the field of chiropractic is used by chiropractors to refer mostly to one or more clinical signs and symptoms that are

demonstrated by physical examination. Visualized as exhibiting elements of biomechanical dysfunction of varying degrees, subluxation can be identified in a specific joint complex of the spine, known as a 'spinal mobility unit', or other structures and is manually corrected with a rapid, manually controlled therapeutic thrust. with intent. Propulsion may be mechanically assisted. The result of this correction is a modulation of the systemic nervous tone which can be supported by lifestyle elements from nutrition to exercise.

## CHINESE TRADITIONAL

From Google Translate:

集體名詞“半脫位”由脊醫在整脊學科中使用，主要表示體格檢查所證實的一種或多種臨床體徵和症狀。被概念化為不同程度地表現出生物力學功能障礙的元素，半脫位可以在脊柱的特定關節複合體中識別，稱為“脊柱活動單元”或其他結構，並使用僅手控制和快速治療推力手動糾正有意圖。推力可以是機械輔助的。這種校正的結果是調整全身神經張力，這可能得到從營養到鍛煉的生活方式元素的支持。

Reverse translation to English:

The collective term "subluxation" is used by chiropractors in the discipline of chiropractic primarily to denote one or more clinical signs and symptoms confirmed by a physical examination. Conceptualized as elements that exhibit biomechanical dysfunction to varying degrees, subluxations can be identified in specific joint complexes of the spine, called "spinal mobility units" or other structures, and corrected manually using hand-only control and rapid therapeutic thrust with intent. The thrust may be mechanically assisted. The result of this correction is an adjustment of whole-body nerve tone, which may be supported by lifestyle elements ranging from nutrition to exercise.

## DANISH

From Google Translate:

Det kollektive navneord 'subluksation' bruges inden for disciplinen kiropraktik af kiropraktorer til overvejende at betegne et eller flere kliniske tegn og symptomer påvist ved og ved fysisk undersøgelse. Konceptualiseret som at udvise elementer af biomekanisk dysfunktion i varierende grad, kan subluksation identificeres i et specifikt ledkompleks i rygsøjlen, kendt som en 'spinal mobilitetsenhed', eller andre strukturer og korrigeres manuelt ved hjælp af en hånd-kun kontrolleret og hurtig terapeutisk fremstød med hensigt. Drivkraften kan hjælpes mekanisk. Resultatet af en sådan korrektion er en

justering af systemisk neural tonus, som kan understøttes med livsstilselementer fra ernæring til træning.

Reverse translation to English:

The collective noun 'subluxation' is used within the discipline of chiropractic by chiropractors to predominantly denote one or more clinical signs and symptoms demonstrated by and upon physical examination. Conceptualized as exhibiting elements of biomechanical dysfunction to varying degrees, subluxation can be identified in a specific joint complex of the spine, known as a 'spinal mobility unit', or other structures and manually corrected using a hands-only controlled and rapid therapeutic thrust with intent. The drive can be assisted mechanically. The result of such a correction is an adjustment of systemic neural tone, which can be supported with lifestyle elements from nutrition to exercise.

## FILIPINO

From Google Translate:

Ang kolektibong pangngalan na 'subluxation' ay ginagamit sa loob ng disiplina ng chiropractic ng mga chiropractor upang higit na tukuyin ang isa o higit pang mga klinikal na palatandaan at sintomas na napatunayan sa at sa pamamagitan ng pisikal na pagsusuri. Itinuro bilang pagpapakita ng mga elemento ng biomechanical dysfunction sa mga variable na degree, ang subluxation ay maaaring matukoy sa isang partikular na joint complex ng gulugod, na kilala bilang isang 'spinal mobility unit', o iba pang mga istruktura at itinatama nang manu-mano gamit ang isang hands-only na kontrolado at mabilis na therapeutic thrust may layunin. Ang thrust ay maaaring mekanikal na tinutulungan. Ang kinalabasan ng naturang pagwawasto ay isang pagsasaayos ng systemic neural tone na maaaring suportahan ng mga elemento ng pamumuhay mula sa nutrisyon hanggang sa eherisisyo.

Reverse translation to English:

The collective noun 'subluxation' is used within the chiropractic discipline by chiropractors to further refer to one or more clinical signs and symptoms evidenced on and by physical examination. Defined as the manifestation of elements of biomechanical dysfunction in variable degrees, subluxation can be identified in a specific joint complex of the spine, known as a 'spinal mobility unit', or other structures and corrected manually using a hands-only controlled and rapid therapeutic thrust with purpose. The thrust may be mechanically assisted. The outcome of such correction is an adjustment of systemic neural tone that can be supported by lifestyle elements from nutrition to exercise.

## FRENCH

From Google Translate:

Le nom collectif « subluxation » est utilisé dans la discipline de la chiropratique par les chiropraticiens pour désigner principalement un ou plusieurs signes et symptômes cliniques mis en évidence lors de l'examen physique. Conceptualisée comme présentant des éléments de dysfonctionnement biomécanique à des degrés variables, la subluxation peut être identifiée dans un complexe articulaire spécifique de la colonne vertébrale, appelé « unité de mobilité vertébrale », ou d'autres structures et est corrigée manuellement à l'aide d'une poussée thérapeutique rapide et contrôlée uniquement par les mains avec intention. La poussée peut être assistée mécaniquement. Le résultat d'une telle correction est un ajustement du tonus neural systémique qui peut être soutenu par des éléments de style de vie allant de la nutrition à l'exercice.

Reverse translation to English:

The collective name "subluxation" is used in the discipline of chiropractic by chiropractors to refer primarily to one or more clinical signs and symptoms evident on physical examination. Conceptualized as having elements of biomechanical dysfunction to varying degrees, subluxation can be identified in a specific joint complex of the spine, called the "spinal mobility unit", or other structures and is corrected manually using 'a rapid and hands-only controlled therapeutic push with intention. The thrust can be mechanically assisted. The result of such correction is an adjustment in systemic neural tone that can be supported by lifestyle elements ranging from nutrition to exercise.

This translation replaces 'thrust' with 'push'. Historically the term 'push' was used in various technique descriptions and is not considered here to reduce fidelity given the adverb/adjective 'rapid' is included, depending on whether 'push' is accepted as a noun or a verb.

## GERMAN

From Google Translate:

Das Sammelwort „Subluxation“ wird in der Disziplin der Chiropraktik von Chiropraktikern verwendet, um überwiegend ein oder mehrere klinische Anzeichen und Symptome zu bezeichnen, die bei und durch körperliche Untersuchung nachgewiesen werden. Konzipiert als Elemente einer biomechanischen Dysfunktion in unterschiedlichem Ausmaß, kann eine Subluxation in einem bestimmten Gelenkkomplex der Wirbelsäule, bekannt als „spinale Mobilitätseinheit“, oder anderen Strukturen identifiziert werden und wird manuell mit einem kontrollierten und schnellen therapeutischen

Schub manuell korrigiert mit Absicht. Der Schub kann mechanisch unterstützt werden. Das Ergebnis einer solchen Korrektur ist eine Anpassung des systemischen neuralen Tonus, der durch Lifestyle-Elemente von der Ernährung bis zum Training unterstützt werden kann.

Reverse translation to English:

The collective term "subluxation" is used by chiropractors in the discipline of chiropractic to refer primarily to one or more clinical signs and symptoms detected on and by physical examination. Conceived as elements of biomechanical dysfunction of varying degrees, a subluxation in a specific joint complex of the spine known as the "spinal mobility unit" or other structures can be identified and manually corrected with a controlled and rapid therapeutic push with intent. The thrust can be mechanically assisted. The result of such correction is an adjustment in systemic neural tone, which can be supported by lifestyle elements from diet to exercise.

## HEBREW

הקיסטרופורריכה מוחת תרגסמב שמשמ "subluxation" יביטקלוקה מצעה מש רתוי וא דחא ינילק וימסתו ומיס רקיעב וייצל ידכ מירוטקרפורריכ ידי לע לש מיטנמלא גיצמכ הגשמה. תינפוג הקידב ידי לעו תינפוג הקידבב מיחכומה לולכמב ההוומ תויהל היושע היצסקול-תת, תונתשמ תוגרדב ינכמויב דוקפת וא, 'הרדשה דומע תודיינ תדיחי' הנוכמה, הרדשה דומע לש יפיצפס מיקרפמ דבלב ריהמו רקובמ ילופיט חחד תועצמאב ינדי נפואב וקותמו מירחא מינבמ איה הזכ ויקית לש האצותה. ינכמ עויסב תויהל יושע חדה. הנווכ חותמ מייח חרוא לש מיטנמלאב דמתיהל יושע רשא יתכרעמ יבצע סנווט לש המאתה תינפוג תוליעפ דעו הנוזתמ.

Reverse translation to English:

The collective noun "subluxation" is used within the field of chiropractic by chiropractors to refer primarily to one or more clinical signs and symptoms demonstrated by physical examination and physical examination. Conceptualized as exhibiting elements of biomechanical dysfunction to varying degrees, subluxation may be identified at a specific joint assembly of the spine, referred to as the 'spinal mobility unit', or other structures and manually corrected using controlled and rapid therapeutic thrust alone. In purpose. The drive may be mechanically assisted. The result of such correction is an adjustment of systemic nervous tone which may be supported by lifestyle elements from diet to physical activity

## HINDI

From Google Translate:

सामूहिक संज्ञा 'मोच आ' का उपयोग कायरोपरेटर्किक के अनुशासन के भीतर कायरोपरेटर्स द्वारा मुख्य रूप से एक या एक से अधिक नैदानिक संकेतों और लक्षणों को शारीरिक परीक्षा से और इसके द्वारा प्रकट करने के लिए किया जाता है। परविरतनशील डगिरी के लिए बायोमेकेनिकल डिसिफंक्शन के तत्वों को प्रदर्शति करने के रूप में संकल्पति, रीड की

एक वशिष्ट संयुक्त परसिर में उदात्तता की पहचान की जा सकती है, जिसे 'रीढ़ की गतशीलता इकाई' या अन्य संरचनाओं के रूप में जाना जाता है और इसे केवल हाथों से नयितरति और तेजी से चकित्सीय जोर का उपयोग करके मैन्युअल रूप से ठीक किया जाता है। इरादे से। जोर यंत्रवत् सहायता प्रदान की जा सकती है। इस तरह के सुधार का परणाम प्रणालीगत तंत्रिका स्वर का समायोजन है जिसे पोषण से लेकर व्यायाम तक जीवनशैली तत्वों के साथ समर्थति किया जा सकता है

Reverse translation to English:

The collective noun 'sublimation' is used by chiropractors within the discipline of chiropractic to primarily describe one or more clinical signs and symptoms revealed by and by physical examination. Conceived as exhibiting elements of biomechanical dysfunction to a variable degree, subluxation can be identified in a specific joint complex of the spine, known as the 'spine mobility unit' or other structures and is simply Corrected manually using controlled and rapid therapeutic thrust by hands. With intent. Thrust can be assisted mechanically. The result of such improvement is an adjustment of systemic neural tone that can be supported with lifestyle elements ranging from nutrition to exercise.

Note: I recommend replacing 'उदात्तता' (sublime) with 'मोच आ' meaning 'sprain' to carry the meaning of subluxation in Hindi.

## JAPANESE

From Google Translate:

集合名詞「亜脱臼」は、カイロプラクターによるカイロプラクティクスの分野で使用され、主に身体検査で証明された1つ以上の臨床的兆候と症状を示します。生体力学的機能障害の要素をさまざまな程度で示すものとして概念化された亜脱臼は、「脊椎可動ユニット」または他の構造として知られる脊椎の特定の関節複合体で識別され、手のみで制御された迅速な治療推力を使用して手動で修正されます。意図的に。推力は機械的に補助することができます。このような修正の結果は、栄養から運動までのライフスタイル要素でサポートされる可能性のある全身の神経緊張の調整です。

Reverse translation to English:

The collective noun "subluxation" is used in the field of chiropractic by chiropractors and primarily presents with one or more clinical signs and symptoms demonstrated by physical examination. Subluxation, conceptualized as an indication of elements of biomechanical dysfunction to varying degrees, is identified by a specific joint complex of the spine known as the "spine mobile unit" or other structure and is controlled only by the hand. It will be corrected manually using a rapid therapeutic thrust intentionally. Thrust can be mechanically assisted. The result of these modifications is the regulation of systemic

nerve tone that may be supported by lifestyle factors from nutrition to exercise.

## KOREAN

From Google Translate:

집합 명사 '아탈구'는 카이로프랙틱 의사가 카이로프랙틱의 분야 내에서 신체 검사 및 신체 검사에 의해 입증되는 하나 이상의 임상 징후 및 증상을 주로 나타내는 데 사용됩니다. 다양한 정도의 생체역학적 기능 장애 요소를 나타내는 것으로 개념화된 아탈구는 '척추 가동성 단위'로 알려진 척추의 특정 관절 복합체 또는 기타 구조에서 식별될 수 있으며 손으로만 제어되고 신속한 치료 추력을 사용하여 수동으로 교정됩니다. 의도로, 추력은 기계적으로 지원될 수 있습니다. 이러한 교정의 결과는 영양에서 운동에 이르기까지 생활 방식 요소로 뒷받침될 수 있는 전신 신경 톤의 조정입니다.

Reverse translation to English:

The collective noun 'subluxation' is used primarily by chiropractors within the field of chiropractic to refer to one or more clinical signs and symptoms as evidenced by a physical examination and physical examination. Conceptualized to represent varying degrees of biomechanical dysfunction, subluxations can be identified in specific articular complexes or other structures of the spine known as 'vertebral mobility units' and corrected manually using hand-controlled and rapid healing thrusts. It's possible, with intention. Thrust can be supported mechanically. The result of these corrections is the coordination of whole-body nerve tones, which can be underpinned by lifestyle factors, from nutrition to exercise.

## RUSSIAN

From Google Translate:

Собирательное существительное «подвывих» используется хиропрактиками в рамках дисциплины хиропрактики преимущественно для обозначения одного или нескольких клинических признаков и симптомов, выявленных при физическом осмотре. Предполагаемый как проявление элементов биомеханической дисфункции различной степени, подвывих может быть идентифицирован в определенном суставном комплексе позвоночника, известном как «единица подвижности позвоночника», или в других структурах, и корректируется вручную с помощью контролируемого и быстрого терапевтического толчка только руками, с намерением. Тяга может быть механически усилена. Результатом такой коррекции является адаптация системного нервного тонуса, которая может поддерживаться элементами образа жизни от питания до физических упражнений.

Reverse translation to English:

The collective noun "subluxation" is used by chiropractors within the discipline of chiropractic primarily to refer to one or more clinical signs and symptoms identified on physical examination. Assumed to be manifestations of varying degrees of biomechanical dysfunction, subluxation can be identified in a particular articular complex of the spine, known as the "spinal mobility unit", or in other structures, and corrected manually with controlled and rapid therapeutic push with only the hands. with intention. The thrust can be mechanically reinforced. The result of this correction is an adaptation of systemic nerve tone, which can be supported by lifestyle elements from nutrition to exercise.

## SPANISH

From Google Translate:

Los quiroprácticos utilizan el sustantivo colectivo 'subluxación' dentro de la disciplina de la quiropráctica para denotar predominantemente uno o más signos y síntomas clínicos evidenciados en y por el examen físico. Conceptualizada como la exhibición de elementos de disfunción biomecánica en grados variables, la subluxación puede identificarse en un complejo articular específico de la columna, conocido como "unidad de movilidad de la columna", u otras estructuras, y se corrige manualmente mediante un empuje terapéutico rápido y controlado solo con las manos. con intención El empuje puede ser asistido mecánicamente. El resultado de tal corrección es un ajuste del tono neural sistémico que puede apoyarse con elementos del estilo de vida, desde la nutrición hasta el ejercicio.

Reverse translation to English:

Chiropractors use the collective noun 'subluxation' within the discipline of chiropractic to denote predominantly one or more clinical signs and symptoms evidenced on and by physical examination. Conceptualized as exhibiting elements of biomechanical dysfunction to varying degrees, subluxation can be identified in a specific joint complex of the spine, known as the "spinal mobility unit", or other structures, and manually corrected by rapid therapeutic thrust and controlled only with the hands. with intention. The thrust can be mechanically assisted. The result of such correction is an adjustment of systemic neural tone that can be supported by elements of lifestyle, from nutrition to exercise

## TURKISH

From Google Translate:

Toplu isim 'subluksasyon', kayropratik disiplini içinde, kiropraktörler tarafından ağırlıklı olarak fizik muayene ile

kanıtlanan bir veya daha fazla klinik belirti ve semptomu belirtmek için kullanılır. Değişken derecelerde biyomekanik disfonksiyon unsurları sergilemek olarak kavramsallaştırılan subluksasyon, omurganın 'omurga hareketliliği birimi' olarak bilinen belirli bir eklem kompleksinde veya diğer yapılarda tanımlanabilir ve yalnızca elle kontrollü ve hızlı terapötik bir itme kullanılarak manuel olarak düzeltilir. niyetle. İtme mekanik olarak desteklenebilir. Böyle bir düzeltmenin sonucu, beslenmeden egzersize kadar yaşam tarzı öğeleriyle desteklenebilen sistemik nöral tonun ayarlanmasıdır.

Reverse translation to English:

The collective noun 'subluxation' is used within the discipline of chiropractic to denote one or more clinical signs and symptoms that are predominantly evidenced by physical examination by chiropractors. Conceptualized as exhibiting varying degrees of biomechanical elements of dysfunction, subluxation can be identified in a specific joint complex or other structures of the spine known as the 'spinal mobility unit' and is only manually corrected using a controlled and rapid therapeutic push. with intent. The thrust can be supported mechanically. The result of such a correction is an adjustment of systemic neural tone, which can be supported by lifestyle elements from nutrition to exercise.

## UKRANIAN

From Google Translate:

Збірний іменник «підвивих» використовується мануальними терапевтами в галузі мануальної терапії переважно для позначення одного або кількох клінічних ознак і симптомів, які виявляються під час фізичного огляду. Концептуалізований як демонстрація елементів біомеханічної дисфункції різного ступеня, підвивих може бути ідентифікований у специфічному суглобовому комплексі хребта, відомому як «одиниця рухливості хребта», або в інших структурах і коригується вручну за допомогою швидкого терапевтичного поштовху, контрольованого лише руками з умислом. Поштовх може підтримуватися механічно. Результатом такої корекції є коригування системного нейронного тону, який можна підтримувати елементами способу життя від харчування до фізичних вправ.

Reverse translation to English:

The collective noun "subluxation" is used by chiropractors in the chiropractic field primarily to refer to one or more clinical signs and symptoms that are found during physical examination. Conceptualized as demonstrating elements of varying degrees of biomechanical dysfunction, subluxation can be identified in a specific spinal joint complex known as the "spinal mobility unit" or in other structures and is manually corrected with a rapid therapeutic thrust controlled only by the hands

with intent. The thrust can be supported mechanically. The result of such a correction is an adjustment of the systemic neural tone, which can be supported by lifestyle elements from nutrition to exercise.