<u>Stand alone reasons for chiropractic radiography.</u>

Subheading – To further establish the current spinal health status of the patient through identification of biomechanical factors where early detection provides patient benefit. The list below tables specific radiological findings which may be modified or managed or stabilised through specific approaches or protocols available within chiropractic-care. These findings therefore provide the justification for the radiography procedure and are findings that may specifically alter patient treatment.

Introduction

1. Overview:

Chiropractic radiography is a growing biomechanical science. The previous document has already provided 81 references in support of an accepted normal or ideal spine position and biomechanical alignment for ideal spinal hygiene. Below we now provide the categories and a lengthy list of supportive references, primarily from medical (non-chiropractic) literature, tabling abnormal spinal biomechanics and abnormal alignment identified through radiography.

The basis for this literature search was that the data accepted met *at least two* of the following three criteria:

1. That responsible radiography was identified as an accepted routine method of investigation of the finding/condition.
2. The referenced finding/condition was recognized both within chiropractic and also within the wider medical literature.
3. The finding/condition has clear relevance to specific protocols available to physical non-surgical management or treatment available to a chiropractor.

The vast majority of this literature synthesis was taken from the most respected medical orthopedic journals in the world including Spine Journal, European Spine Journal and Journal of Spinal disorders and 80% from research documented inside the last 20 years.

Resources:

- Spine journal
- European Spine Journal
- Bone and joint surgery journal
- Arch Phys Med Rehabilitation.
- Journal of Spinal disorders
- Journal of American Geriatrics Society.
- Physical Therapy Journal/journal of physiological therapeutics
- Medline/Medscape/Pubmed
- Several others

Summary of criteria and for chiropractic-radiography beyond red-flags:

SECTION ONE: Provides a list of biomechanical-based spinal health condition/s. These conditions may be identified from radiographic investigation after the initial history, initial orthopedic and physical examination findings:

a) Scoliosis and pseudo-scoliosis **(16 studies)**
b) Hyper or hypo-lordosis of cervical spine **(53 studies)**
c) Hyper and hypo-kyphosis of thoracic spine **(35 studies)**
d) Hyper or hypo-lordosis of lumbar spine **(30 studies)**
e) Aberrant global spinal sagittal balance (lateral posture) **(68 studies)**
f) Aberrant spinal coronal balance (anterior posture) **(10 studies)**
g) Leg length disparity **(26 studies)**

SECTION TWO: The evidence supportive of how changes in therapeutic approaches may result (including the management, stabilization or correction) when the above conditions when are identified on initial chiropractic radiographs.
(80 studies).

a) Scoliosis and pseudo-scoliosis
b) Hyper or hypo-lordosis or kyphosis of cervical spine
c) Hyper and hypo-kyphosis of thoracic spine
d) Hyper or hypo-lordosis of lumbar spine
e) Aberrant global spinal sagittal balance
f) Aberrant spinal coronal balance
g) Leg length disparity- pre/post heel orthotic leveling
h) Spine related pain

SECTION THREE: The role of follow-up radiographic evaluation after recognized periods of conservative physical management for certain specific radiographic findings and conditions thereby establishing and documenting the treatment efficacy **(25 studies).**

SECTION FOUR: The role of radiographic evaluation for patients presenting with mechanical pain or a changing symptomatic picture or where positive mechanical-based orthopedic findings are found on the initial examination. **(117 studies).**

SECTION FIVE: The importance of radiographic evaluation following the initial history and examination of a patient presenting with a history of physical trauma or falling **(28 studies).**

SECTION SIX: The reliability and repeatability of radiographic positioning and radiographic alignment assessment methods used in medicine and chiropractic. Studies confirming the poor reliability of alternative measuring methods **(37 references).**

SECTION SEVEN: A radiographic evaluation may commonly reveal clinical information that may contraindicate the safety of certain physical interventions including spinal manipulation **(11 studies)**

SECTION ONE: A full list of biomechanical-based spinal health condition/s. These conditions must only be considered for further radiographic investigation after the initial history, initial orthopedic and physical examination:

A) Scoliosis and pseudo-scoliosis

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3. Assessment of Spinal Flexibility in Adolescent Idiopathic Scoliosis: Suspension Versus Side-Bending Radiography Lamarre, Marie-Eve BEng; Parent, Stefan MD, PhD; Labelle, Hubert MD; Aubin, Carl-Eric PhD; Joncas, Julie RN; Cabral, Anne BEng; Petit, Yvan PhD **Spine Journal** 15 March 2009 - Volume 34 - Issue 6 - pp 591-597
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5. Diagnostic Findings in Painful Adult Scoliosis Grubb, Stephen A. MD; Lipscomb, Hester J. RN, MPH **Spine Journal** May 1992 Volume 17.
6. Reducing the Lifetime Risk of Cancer From Spinal Radiographs Among People With Adolescent Idiopathic Scoliosis Levy, Adrian R. MSc; Goldberg, Mark S. PhD; Mayo, Nancy E. PhD; Hanley, James A. PhD; Poitras, Benoit MD, FRCP **Spine Journal** 1 July 1996 - Volume 21 - Issue 13 - pp 1540-1547
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B) Hyper or hypo-lordosis or kyphosis of cervical spine

1. Modeling of the Sagittal Cervical Spine as a Method to Discriminate Hypo-Lordosis: Results of Elliptical and Circular Modeling in 72 Asymptomatic Subjects, 52 Acute Neck Pain Subjects, and 70 Chronic Neck Pain Subjects. Harrison DD, Harrison DE, Janik TJ, et al. **Spine Journal.** 2004;29:2485–2492.

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SECTION TWO: The evidence supportive of changes in therapeutic approaches relevant to the management, stabilization or correction of the above spinal health conditions when identified on chiropractic radiographs.

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