

James Waslaski

Adjo Zorn

TABLE OF CONTENTS

Art Riggs 1	Jerry Hesch 190
Refine Your Touch	Sacral Torsion About an Oblique Axis
Striking a Balance Between Relaxation	
and Intense Therapeutic Bodywork	Erik Dalton
Erik Dalton	Vicious Cycle
	School (State State State) *
May the Course be with You	Aline Newton248
Judith Aston 28	Stabilization: The Core and Beyond
Aston Kinetics	A 50 3
A 360° by 360° Perspective of the	James Waslaski274
Human Body	Treating Tendinosis Conditions
	A Revolutionary 12 Step Approach
Til Luchau54	
John Wayne, Marilyn Monroe,	Serge Gracovetsky308
and Goldilocks	The Coupled Motion of the Spine Bipedalism versus Human Gait &
Assessing Pelvis Movement in Walking	Application to Sports Medicine
	-
Gil Hedley	Erik Dalton 330
Reconsidering "The Fuzz"	Human Silly Putty
Notes on Distinguishing Normal and Abnormal Fascial Adhesions	
Abnormal Pascial Aubesions	Robert E. Irvin342
Craig Liebenson74	Enduring Relief of Chronic Pain
A Rehabilitation Roadmap	Using Orthotics to Correct
•	Postural Imbalance
Adjo Zorn / Kai Hodeck 96	
Walk With Elastic Fascia	Robert Schleip and
Use the Springs In Your Step!	Divo Gitta Müller366
Erik Dalton	Fascial Fitness
	Suggestions for a fascia-oriented training approach in sports and movement therapies
Well-Heeled	approach in sports and movement therapies
Robert Schleip	Erik Dalton
Fascia As a Sensory Organ	Weak in the Knees
A Target of Myofascial Manipulation	
A larger of myojasciai maniputation	Aaron Mattes394
Thomas Myers164	Active Isolated Stretching
An Introduction to Anatomy Trains	The Mattes Method
Myofascial Meridians	

Foreword

经工作。但我们才没有完成。这个主义是在"高级",是现代上,是他们的"自己"有关这个

Concepts about the structure and function of the body and how it relates to the mind and emotions are strongly influenced by the environment in which we live and work. The rationalist view of the body and mind dates back to Aristotle (300 B.C.) and was later influenced by the widely adopted theories of people such as Galen (129-199 A.D.), René Descartes (1596-1650), and Isaac Newton (1642-1727). This view provides the underlying principles of orthodox medicine, which takes a mechanistic approach to healing, with the various body systems studied independently of one another, and the body viewed as a machine with parts to be fixed.

Unfortunately, tradition is hard to break and education changes slowly. Many contemporary anatomy and bodywork books still take this approach, and graduates may be indoctrinated into a rationalist viewpoint despite the collective research and understanding to the contrary.

Dynamic Body: Exploring Form, Expanding Function pulls apart this old model and provides the conceptual framework to understand what we already sense as bodyworkers, manual therapists, and massage professionals. We know that what walks into our practices is not a skin-wrapped collection of parts that can be fixed like a car at an auto shop, but a thinking, feeling, emotional, and physical spirit. In this book, you'll discover how these dynamic bodies work, not simply under the microscope or in the cadaver lab, but as complex, fully integrated, and very much *living* beings.

In our profession, we often hear adjectives such as "holistic," "whole body," "interconnected," and "integrative" thrown about as an ideal in client treatment. Complementary and alternative therapies are slowly moving toward a view of the body, mind, and spirit as an integrated whole that, in turn, is integrated with its environment. We understand, on a visceral level, the complexity of our clients and the need to treat the total person. However, while this is a worthy ideal in theory, its practical application is much more difficult, especially as we lack any broad and commonly accepted models for incorporating these concepts into our clinical treatments.

How do we move away from the simple formulaic approaches to treatments that have characterized a longstanding rationalist view of the body? How do we develop a treatment approach that doesn't just address the health status of a small part of the body, but encompasses the structural, neurologic, and psycho-emotional aspects of a client's complaints? How can we even begin to consider our treatment options from this perspective, when the cause of a seemingly isolated complaint is so multifaceted?

· "我们我们是我们的,我们就是我们的,我们就是我们的,我们就会没有一个。""我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我

Dynamic Body makes a bold leap into answering these questions by pulling together some of the top thought leaders in our profession. These forward-thinking researchers and clinicians have devoted their lives to answering questions that help us truly understand adjectives such as "holistic" and "integrated" for the first time. In these pages, they explore and help us understand the "dynamic body" from their diverse backgrounds and rich collective experience.

The contributors to this book are change agents – imaginative and innovative thinkers. They will push you to see the body in an entirely new light. Their insights will help you rethink what you thought was true of the body and challenge you to see your clients' issues in a very different way. They weave together disparate ideas in unique ways in order to show us the fabric, if not the thread, of a new paradigm of the body. Along the way, you will find yourself redefining who you are as a bodyworker and massage professional.

As a director of both the World Massage Conference and Massage Therapy Radio, I've had the opportunity to interview hundreds of the top educators from around the world. So I can say with certainty that the contributors that Erik Dalton has brought together in creating *Dynamic Body* are truly the most novel thinkers in the profession.

You will immediately recognize many of these contributors as celebrities, the giants in our profession. Others may not have the same name recognition, but have been working out of the limelight, formulating their paradigms behind the scenes, and mastering their application. Most are clinicians at heart. They continue to help clients on a daily basis in their own practices. They have hundreds of thousands of hours of shared experience, and their conclusions are based on real life, in the trenches experiences and observable outcomes. As a result, their ideas and approaches to treatment planning have direct relevance and application for you and your clients.

This book is a must have for your professional library. Whether you choose to explore the chapters in sequence or wander through the sections that interest you most, you will discover a world of ideas that will forever enrich your practice.

Eric Brown
Director of Bodyworkbiz.com

A Personal Note

I am a good friend and colleague to Erik Dalton – the mastermind behind this symposium – and I am thrilled to announce that he has finally compiled the book for which we have all been waiting. Within these pages, we are privy to the practical wisdom gained from years of hands-on experience, coupled with a passion for questioning the "norm."

Here, innovative leaders ranging from physicists, psychologists, a human biologist, and an electrical engineer to movement specialists, instructors of physical therapy, and a professor of osteopathy/manual medicine introduce and share their journeys of bodywork excellence.

I have studied and exchanged ideas with several of the authors gathered here, including Robert Schleip, Serge Gracovetsky, Judith Aston, Art Riggs, Tom Myers, Til Luchau, Aline Newton, Adjo Zorn, Gil Hedley, and Dalton himself. And because of my experiences with each of them, I consider myself a better practitioner.

I first met Schleip when he came to study Rolfing[®] in Boulder, Colorado, more than 30 years ago. Since then, his research has become instrumental in providing scientific support for several of the theories that Dr. Ida Rolf proposed over 50 years ago. For example, Schleip has shown there are four nerve categories that innervate fascia, when for years, anatomy books posited only one.

Since seeing Serge Gracovetsky at the First International Congress on Low Back and Pelvic Pain in 1992, my teaching and private practice approach to low back pain has forever changed. In the early '70s, I was fortunate to take classes with Judith Aston, who was subsequently selected by Dr. Rolf to develop the first movement education course for the Institute.

Art Riggs has been writing books and teaching since 1988. I remember him as a bright student who plays a mean piano. As for Dalton, he is a workhorse who toils deep into the night due to his constant obsession with "never knowing enough." He is more than a friend – he is an invaluable resource. As an "in the trenches" clinician, he is the colleague others turn to when we need to consult on challenging cases.

Dalton has an intuitive sense for translating complex theory and research into an understandable "hands-on" language, so readers can integrate these new and practical strategies into their practice. Dalton has used this skill in writing his chapters and compiling this book – a book I'm sure you'll enjoy as much as I have.

Jim Asher

Advanced Rolfing Instructor and founder of the Colorado Cranial Institute

Introduction

A former osteopathic instructor once told me, "Erik, if you ask any two clinicians to agree on one thing, the only thing they'll have in common is the belief that a third clinician is doing it wrong." That statement stuck with me for some reason, and after mulling it over, off and on, for the last few years, I've come to the disappointing conclusion that he was right. I've also come to the conclusion that it doesn't need to be that way.

It's not surprising that massage therapists, anatomists, structural integrators, chiropractors, yoga instructors, personal trainers, and research scientists would filter their views of the body through a philosophic lens, shaped by their individual experiences. Some approach pain and injury from a structural, postural, and biomechanic standpoint. Others elect to evaluate and treat pain using functional movement therapy. However, choosing a single approach to assessment and treatment – although convenient – can hinder our ability to best meet the needs of each client or patient.

A practitioner's preferred approach may work quite well for one issue, yet this same approach can fall somewhat short when applied to a different client or condition. For other issues, the practitioner might find his or her preferred approach entirely ill-suited. Why?

Humans are not simple machines. Our myoskeletal system was not designed for the sole purpose of lugging around 30 feet of intestines, 60 miles of blood vessels, the heart, lungs, and sex organs. Our bodies were also made to express emotions, interact with others, and perform complex daily activities. Even the basic act of putting one foot in front of the other comprises a complex series of reactions, involving dozens of closely interrelated muscles, tendons, and bones, along with a vast network of fascia.

When we view our clients through a single lens, we may be tempted to stereotype the source of their pain, then treat the single offending body segment. What we must keep in mind is that the torso, pelvis, legs, and arms never act alone, but always in harmony with the rest of the body. A motion as simple as reaching forward to use this keyboard not only involves my hands and arms, but also my neck, back, pelvis, and abdomen. Even my feet come into play.

Decades ago, the legendary Dr. Vladimir Janda warned: "Keep in mind that the motor system functions as an entity and that in principle it is a wrong approach to try and understand impairments of different parts of the motor system separately without understanding the function of the motor system as a whole."

·金子、排放如果是 新年达之。 生含化 是然《美国特别·美国特别·美国

Adding to the complexity of our profession – and perhaps sabotaging any hope of a single glorious cure-all approach to musculoskeletal issues – is the fact that no two clients are the same. Each body is a completely unique and complex machine. This is why attempts to apply the same solution to multiple clients – even when they present with seemingly identical symptoms – can fail.

多大**提出了,同时间,**"可以是一个专业,是一个企业,是一个企业,是一个企业,是一个企业,但是一个企

With this book, I encourage readers to consider a more comprehensive and multidisciplinary approach to the human body. In your next client session, be aware of your assessment process. Are you only using one lens to determine proper treatment strategies for strengthening muscles, reducing pain, or improving flexibility? If so, consider viewing your client's body through any one of the diverse lenses presented here by our renowned contributors.

We have been fortunate enough to include lessons from some of the top practitioners and researchers in physical therapy, structural integration, osteopathy, chiropractic, and functional movement training. Within these pages, you'll find an intriguing flow of ideas regarding structure and functional movement, presented by Judith Aston, Adjo Zorn, Kai Hodeck, Craig Liebenson, and Serge Gracovetsky, and highlighted in chapters by Aline Newton, Til Luchau, and Robert Irvin.

Jerry Hesch introduces a new "two-minute" correction for SI joint dysfunction, along with collaborative evidence to support his recent sacral torsion findings. Gil Hedley's stimulating visual perspectives of fascial dissection are brought to life in Robert Schleip's chapter *Fascia as a Sensory Organ* and by Thomas Myers in his elegant *Anatomy Trains* model.

Four of the chapters I've written for this book take a deeper look at the pain and dysfunction that can develop through active hobbies, a certain fashion habit, and everyday movements. Two of the chapters focus on the common musculoskeletal issues associated with the popular pastimes of cycling and golf.

In *Well-Heeled*, we explore the negative impact of high-heels on posture and gait. Then, in a chapter titled *Human Silly Putty*, we consider how gravity and faulty movement patterns combine to effect chronic pain.

My fifth chapter concentrates on knee pain, addressing the confusion that often surrounds this complex joint, making it tough to determine the correct treatment plan. In each of these five chapters, I outline the appropriate steps to help restore proper function, beginning with an accurate assessment.

Art Riggs, in his contribution to the book, brings us up to date on the semantics of touch and new perspectives on pain, and James Waslaski's *Treating Tendinosis Conditions* offers practical applications for commonly seen injuries. A self-conditioning section featuring Aaron Mattes' *Active Isolated Stretching* and Robert Schleip and Divo Müller's *Fascial Fitness* closes the book.

These chapters reflect the expertise and individual "lens" of their respective authors – from background and style to approach and delivery. To best convey each author's voice and perspective, the *Dynamic Body* editors have intentionally avoided the trend to mold these chapters into one standard format.

Even with a tissue-based practice, the concept of using one form of therapy to treat every client who presents with a certain problem has not proven productive. A cookie-cutter model may work for baking, but not for the inherent complexities of human function and dysfunction. Instead of choosing one method over another, we encourage clinicians to incorporate a broad, multi-disciplinary model that emphasizes a more holistic approach to rehabilitation.

There are many fine reference books that address basic principles and practice of manual and movement therapies, but this is one of the few books to present a global model for blending past, present, and future therapeutic approaches across multiple disciplines.

Erik Dalton, Ph.D.

Founder of Freedom From Pain Institute®

Pages 1-189 purposely left out for copyright reasons



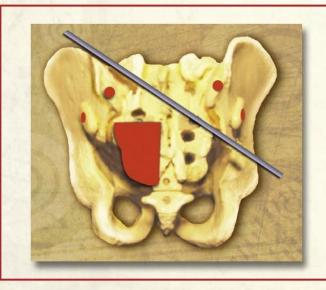
Jerry Hesch MHS, PT

For more than 30 years, Jerry Hesch has worked toward a three-dimensional understanding of joint movement. A licensed physical therapist, with a master's in health science, Hesch has meticulously examined existing research and literature for clinical problems without adequate solution – then worked to fill those gaps.

In doing so, he has developed an innovative approach to evaluation and treatment of joint dysfunction, known as the Hesch Method of Manual Therapy. Integration of the Hesch Method into practice helps the clinician swiftly and accurately pinpoint the exact nature of a client's joint dysfunction, to efficiently achieve strong clinical outcomes.

In July 2010, the Hesch Institute was established in Las Vegas, Nevada. This nonprofit organization aims to incorporate the Hesch Method into contemporary health-care practices, through initiatives ranging from research and education to clinical services and training.

For more information, visit http://beschinstitute.org.



With torsion, one sacral quadrant will be prominent.
In the presence of a sacral torsion the sacrum will be most asymmetrical at only one side of the sacral base or apex. In the most common torsion, the left lower sacral quadrant is prominent.

Sacral Torsion About an Oblique Axis

A New Approach to an Old Problem

Jerry Hesch, MHS, PT

This chapter is an in-depth exploration of sacral torsion and sacroiliac joint dysfunction. It presents a model of nomenclature, evaluation, and treatment that is much more user-friendly than the traditional model. For those who do not want to dig deeply

into the historical and theoretical reading, but do wish to learn the clinical application, you will find the latter part of the chapter that starts with Torsion Evaluation will suffice.

Manual therapy applied to the sacroiliac joint (SIJ) encompasses a variety of types of movement dysfunction, and it may include a variety of pain presentations. In this chapter, SIJ dysfunction (SIJD) will be defined thus: Sacroiliac joint dysfunction is a movement dysfunction in which movement within the SIJ, or going through the SIJ, is altered, possibly causing pelvic posture to be altered and provoking proximal or distal pain. The pain may be intrinsic

to the SIJ, or extrinsic – for example, from sacroiliac ligaments and other proximal soft tissue.

Due to the proximity of the lumbar and sacral nerve supply, pain patterns can be unclear. True SIJ pain is not always clearly demarcated. Furthermore, the SIJ and lumbar spine are inextricably linked and, therefore, I deny distinct and separate SIJD without lumbar segmental involvement. In contradistinction to much of the general literature, asymmetry is not a necessary prerequisite for the definition of SIJD, as symmetrical and treatable hypomobilities and hypermobilities do exist.

A frequently reported sacral movement dysfunction is named "sacral torsion about an oblique

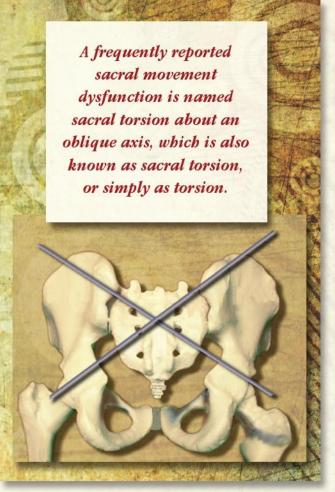
axis," which is also known as "sacral torsion," or simply as a "torsion." Torsions do meet the above definition of SIJD, and they are the focus of this chapter. I also include my method of evaluation and treatment for sacral torsions.

There are other axes and other types of sacral dysfunction that will not be detailed in this chapter. These include forward-bending and backward-bending restriction, pure rotation on a vertical axis, pure side-bending, and posterior glide.

Some patterns that might be predicted do not actually appear to exist, or are extremely

rare, such as anterior glide, side-glide, and dorsal plane tilt (imagine a pinwheel axis to differentiate from side-bending).

My work is a distinct enhancement from the traditional evaluation and treatment paradigm, and is, therefore, referred to as the *Hesch Method*.



Pages 192-224 purposely left out for copyright reasons



References

- 1. Greenman, P.E. (1989). *Principles of Manual spondylitis on sacroiliac joint movement patterns*. Presented at 7th Interdisciplinary World Congress on Low Back and Pelvic Pain, Los Angeles, CA.
- 2. Schamberger, W. (2002). *The Malalignment Syndrome* (pp. 55-57). Edinburgh, Scotland: Churchill Livingstone.
- 3. Fryette, H. (1966). *Principles of Osteopathic Technic*. Carmel, CA: Academy of Applied Osteopathy.
- 4. Greenman, Manual Medicine, 227-229.
- 5. Mitchell, F. Sr. (1958). *Structural Pelvic Function* (pp. 72-90). Carmel, CA: Academy of Applied Osteopathy.
- 6. Mitchell, F. Jr., Moran, P., & Pruzzo, N. (1979). An Evaluation and Treatment Manual of Osteopathic Muscle Energy Procedures. Valley Park, MO: ICEOP.
- 7. Mitchell, F. Jr., & Mitchell, P. (1995). *The Muscle Energy Manual*. East Lansing, MI: MET Press.
- 8. Richard, R. (1986). Sacral lesions in torsion about an oblique axis. In R. Richard (Ed.), *Osteopathic Lesions of the Sacrum* (pp. 255-272). New York, NY: Thorsons Publishing.
- 9. Nyberg, R. (1989). Pelvic girdle. In O. Payton (Ed.), *Manual of Physical Therapy* (pp. 372-376). New York, NY: Churchill Livingstone.
- 10. Woerman, A.L. (1989). Evaluation and treatment of dysfunction in the lumbar-pelvic-hip complex. In R. Donatelli, & M. Wooden (Eds.), *Orthopaedic Physical Therapy* (pp. 496 & 500-504). New York, NY: Churchill Livingstone.
- 11. Schamberger, Malalignment Syndrome, 55.
- 12. Greenman, P. (1990). Clinical aspects of sacroiliac function in walking. *J Man Med*, *5*(3), 127-129.
- 13. Maitland, G.D. (1986). *Vertebral Manipulation* (5th ed.), (pp. 314-317). London, United Kingdom: Butterworths.
- 14. DonTigny, R. (1979). Dysfunction of the sacroiliac joint and its treatment. *J Orthop Sports Phys Ther*, 1(1), 23-35.
- 15. DonTigny, R. (1985). Function and pathomechanics of the sacroiliac joint. *Phys Ther*, 65(1), 35-44.

- 16. DonTigny, R. (1990). Anterior dysfunction of the sacroiliac joint as a major factor in the etiology of idiopathic low back pain syndrome. *Phys Ther*, 70(4), 250-262.
- 17. Grieve, G. (1986). *Modern Manual Therapy of the Vertebral Column* (pp. 324-329). New York, NY: Churchill Livingstone.
- 18. Makofsky, H.W. (2003). *Spinal Manual Therapy* (p. 170). Thorofare, NJ: SLACK Incorporated.
- 19. Porterfield, J. (1985). The sacroiliac joint. In G. Davis, & J. Gould (Eds.), *Orthopedics and Sports Physical Therapy* (pp. 550-579). St Louis, MO: CV Mosby.
- 20. Porterfield, J., & DeRosa, C. (1990). The sacroiliac joint. In G. Davis, & J. Gould (Eds.), *Orthopedic and Sports Physical Therapy* (2nd ed.), (pp. 553-574). St Louis, MO: Mosby-Yearbook.
- 21. Porterfield, J., & DeRosa, C. (1991). *Mechanical Low Back Pain: Perspectives in Functional Anatomy*. Philadelphia, PA: W.B. Saunders.
- 22. Prather, H., & Hunt, D. (2010). Sacroiliac joint problems. In C.A. Guanche (Ed.), *Hip and Pelvis Injuries in Sports Medicine* (pp. 200-206). Philadelphia, PA: Lippincott Williams & Wilkins.
- 23. Bourdillon, J.F., & Day, E.A. (1987). *Spinal Manipulation* (4th ed.), (pp. 64-65). London, United Kingdom: William Heineman Medical Books.
- 24. Lewit, K. (1999). *Manipulation in Rehabilitation of the Locomotor System* (2nd ed.), (pp. 162-164). London, United Kingdom: Butterworth.
- 25. Levangie, P.K., & Norkin, C.C. (2005). The hip complex. In *Joint Structure & Function: A Comprehensive Analysis* (pp. 368-372). Philadelphia, PA:F.A. Davis.
- 26. Neumann, D. (2002). Axial skeleton: osteology and arthrology. In *Kinesiology of the Musculoskeletal System* (pp. 303-305). St Louis, MO. Mosby Inc.
- 27. Neumann, "Axial skeleton," 303.
- 28. Hesch, J., Aisenbrey, J., & Guarino, J. (1990, June). *The Pitfalls Associated With Traditional Evaluation of Sacroiliac Dysfunction and Their Proposed Solution*. Presented at Annual Conference of the American Physical Therapy Association, Anaheim, CA.

- 29. Hesch, J. (1992, November). *Manual therapy evaluation of the pelvic joints using palpatory and articular spring tests*. Presented at First Interdisciplinary World Congress on Low Back Pain and Its Relation to the Sacroiliac Joint, San Diego, CA.
- 30. Beal, M.C. (1982). The sacroiliac problem: review of anatomy, mechanics, and diagnosis. *J Am Osteopath Assoc*, 81(10), 73-85.
- 31. Jordan, T.R. (2006). Conceptual and treatment models in osteopathy II: sacroiliac mechanics revisited. *Am Acad Osteopath J*, 16(2), 11-17.
- 32. Greenman, Manual Medicine, 225 & 229.
- 33. Flynn, T.W., Cleland, J.A., & Whitman, J.M. (2008). *User's Guide to Musculoskeletal Examination: Fundamentals for the Evidence-Based Clinician* (pp. 196-217). Buckner, NY: Evidence in Motion.
- 34. Goode, A., Hegedus, E.J., Sizer, P., Brismee, J.M., Linberg, A., & Cook, C. (2008). Three-dimensional movements of the sacroiliac joints: a systematic review of the literature and assessment of clinical utility. *J Man Manip Ther*, 16(1), 25-38.
- 35. Huijbregts, P. (2004, May/June). Sacroiliac joint dysfunction: evidence-based diagnosis. *Orthopaedic Division Review*, 18-44.
- 36. Huijbregts, P. (2008). Evidence-based diagnosis and treatment of the painful sacroiliac joint. *J Man Manip Ther*, 16(3), 153–154.
- 37. Woerman, "Lumbar-pelvic-hip complex," 500.
- 38. Janiak, D.D. (2001). Review of sacral somatic dysfunction. *Am Acad Osteopath J, 11*(1), 18-23.
- 39. Educational Council on Osteopathic Principles. *Glossary of Osteopathic Terminology*. American Association of Colleges of Osteopathic Medicine. Retrieved August 25, 2011, from http://www.aacom.org/resources/bookstore/Pages/glossary.aspx
- 40. Cook, C. (2008). Philosophical differences in manual therapy. *J Man Manip Ther*, 16(1), 5-6.
- 41. Mintken, P., DeRosa, C., Little, T., & Smith, B. (2008). A model for standardizing manipulation terminology in physical therapy practice. *J Man Manip Ther*, 16(1),50–56.

- 42. Hungerford, B. (2003). Evidence of altered lumbopelvic muscle recruitment in the presence of sacroiliac joint pain. *Spine*, *28*(14),1593-1600.
- 43. Scholtes, S.A., Norton, B.J., Lang, C.E., & Van Dillen, L.R. (2010). The effect of within-session instruction on lumbopelvic motion during a lower limb movement in people with and people without low back pain. *Man Ther*, 15(5), 496-501.
- 44. Reiman, M.P., Cox, K.D., Jones, K.S., & Byrd, J.W. (2011). Lumbo-pelvic-hip complex pain in a competitive basketball player: a case study. *Sports Health*, *3*(1), 70-72.
- 45. Hesch, J. (2001-2011). *The Hesch Method of Treating Sacroiliac Joint Dysfunction: Integrating the Pelvis, SI, Symphysis Pubis, Hip and Lumbar Spine.* Seminar presented at the Hesch Institute, Henderson, NV.
- 46. Woerman, "Lumbar-pelvic-hip complex," 500-501.
- 47. Greenman, Manual Medicine, 247-248.
- 48. Goode, "Sacroiliac joints," 35.
- 49. Huijbregts, "Sacroiliac joint dysfunction," 18.
- 50. Cook, C., Massa, L., Harm-Ernandes, I., Segneri, R., Adcock, J., Kennedy, C., & Figuers, C. (2007). Interrater reliability and diagnostic accuracy of pelvic girdle pain classification. *J Manip Physiol Ther*, *30*(4), 252-258.
- 51. Holmgren, U., & Waling, K. (2008). Inter-examiner reliability of four static palpation tests used for assessing pelvic dysfunction. *Man Ther*, 13(1):50-56.
- 52. Riddle, D.L., & Freburger, J.K. (2002). Evaluation of the presence of sacroiliac joint region dysfunction using a combination of tests: a multicenter intertester reliability study. *Phys Ther*, 82(8), 772-781.
- 53. Laslett, M. (2008). Evidence-based diagnosis and treatment of the painful sacroiliac joint. *J Man Manip Ther*, 16(3):142-152.
- 54. Robinson, H.S., Brox, J.I., Robinson, R., Bjelland, E., Solem, S., & Telje, T. (2007). The reliability of selected motion- and pain provocation tests for the sacroiliac joint. *Man Ther*, *12*(1), 72-79.

- 55. Ivanov, A.A., Kiapour, A., Ebraheim, N.A., & Goel, V. (2009). Lumbar fusion leads to increases in angular motion and stress across sacroiliac joint: a finite element study. *Spine*, *34*(5), 162-169.
- 56. Lavignolle, B., Vital, J.M., Senegas, J., Destandau, J., Toson, B., Bouyx, P., ... Calabet, A. (1983). An approach to the functional anatomy of the sacroiliac joints in vivo. *Anat Clin*, *5*(3), 169-176.
- 57. Lumsden, R., & Morris, J. (1968). An in vivo study of axial rotation and immobilization at the lumbosacral joint. *J Bone Joint Surg*, 50(8), 1591-1602.
- 58. Miller, J., Schultz, A., & Andersson, G. (1987). Load-displacement behavior of sacroiliac joints. *J Orthop Res*, 5(1), 92-101.
- 59. Miles, M., & Sullivan, W.E. (1961). Lateral bending at the lumbar and lumbosacral joints. *Anat Rec, 139*(3), 387-398.
- 60. Panjabi, M., Yamamoto, I., Oxland, T., & Crisco, J. (1989). How does posture affect coupling in the lumbar spine? *Spine*, *14*(9), 1002-1011.
- 61. Pearcy, M.J. (1985). Stereo radiography of lumbar spine motion. *Acta Orthop Scand Suppl, 212*, 1-45.
- 62. Wang, M. (1998). Mechanical behavior of the female sacroiliac joint and influence of the anterior and posterior sacroiliac ligaments under sagittal loads. *Clin Biomech*, *13*(4-5), 293-299.
- 63. Weitz, E.M. (1981). The lateral bending sign. *Spine*, 6(4), 388-397.
- 64. Wood, K.B., Schendel, M.J., Ogilvie, J.W., Braun, J., Major, M.C., & Malcom, J.R. (1996). Effect of sacral and iliac instrumentation on strains in the pelvis. A biomechanical study. *Spine*, *21*(10),1185-1191.
- 65. Yamamoto, I., Panjabi, M., Crisco, J., & Oxland, T. (1989). Three-dimensional movements of the whole lumbar spine and lumbosacral joint. *Spine*, *14*(11), 1256-1260.
- 66. Stevens, A. (1992). Side-bending and axial rotation of the sacrum inside the pelvic girdle. In A. Vleeming, V. Mooney, C. Snijders, & T. Dorman (Eds.), Proceedings from: *First Interdisciplinary World Congress on Low Back Pain and its Relation to the Sacroiliac Joint* (pp. 209-230). San Diego, CA.

- 67. Stevens, A., & Vyncke, G. (1986). Sacrum rotation in the horizontal plane on lateral bending. Proceedings from: *8th Congress of the International Federation for Manual Medicine* (pp. 24 & 28). Madrid, Spain.
- 68. Stevens, "Side-bending," 228.
- 69. Mitchell, Structural Pelvic Function, 74.
- 70. Egund, N., Olsson, T.H., Schmid, H., & Selvid, G. (1978). Movements in the sacroiliac joints demonstrated with roentgen stereophotogrammetry. *Acta Radiol Diagn*, 19(5), 833-846.
- 71. Sturesson, B., Selvik, G., & Udén, A. (1989). Movements of the sacroiliac joints: a roentgen stereophotogrammetric analysis. *Spine*, *14*(2), 162-165.
- 72. Sturesson, B., Udén, A., & Vleeming, A. (2000). A radiostereometric analysis of movements of the sacroiliac joints during the standing hip flexion test. *Spine*, *25*(3), 364-368.
- 73. Hesch, "World Congress."
- 74. Whitman, J., Flynn, T., Magel, J., Rendeiro, D., Butler, B., Wainner, R., & Allison, S. (2001, November). Does manual therapy experience influence reliability for selected pelvic girdle tests and measures? Proceedings from: 4th Interdisciplinary World Congress on Low Back & Pelvic Pain. Montreal, Canada.
- 75. Olson, L. (1998). Effects from the Hesch method pelvic mobilization on lumbar flexion, straight leg raise performance, and standing pelvic inclination angles in patients with low back pain. (Doctoral dissertation). Finch University of Health Sciences/The Chicago Medical School, Chicago, IL.
- 76. Olson, L., & Kraemer, T.J. (2003, June). *Establishing the reliability of the Hesch method spring and positional tests in patients with low back pain*. Presented at 14th International Congress of the World Confederation for Physical Therapy, Barcelona, Spain.
- 77. Smidt, G.L., McQuade, K., Wei, S.H., & Barakatt, E. (1995). Sacroiliac kinematics for reciprocal straddle positions. *Spine*, *20*(9), 1047-1054.
- 78. Bussey, M.D., Yanai, T., & Milburn, P. (2004). A non-invasive technique for assessing innominate bone motion. *Clin Biomech (Bristol, Avon)*, 19(1), 85-90.

- 79. Bussey, M.D., Bell, M.L., & Milosavljevic, S. (2010, November). The effect of ankylosing spondylitis on sacroiliac joint movement patterns. Presented at 7th Interdisciplinary World Congress on Low Back and Pelvic Pain, Los Angeles, CA.
- 80. Bussey, M.D. (2010). Does the demand for asymmetrical functional lower body postures in lateral sports relate to structural asymmetry of the pelvis? *J Sci Med Sport*, 13(3), 360-364.
- 81. Tullberg, T., Blomberg, S., Branth, B., & Johnsson, R. (1998). Manipulation does not alter the position of the sacroiliac joint. A roentgen stereophotogrammetric analysis. *Spine*, 23(10), 1124-1129.
- 82. Dar, G., Khamis, S., Peleg, S., Masharawi, Y., Steinberg, N., Peled, N. ... Hershkovitz, I. (2008). Sacroiliac joint fusion and the implications for manual therapy diagnosis and treatment. *Man Ther*, 13(2), 155-158.
- 83. Weinert, D.J. (2007). Influence of axial rotation on chiropractic pelvic radiograph analysis. *J Manip Physiol Ther*, 30(1), 78-79.
- 84. Lucas, B., Asher, M., McIff, T., Lark, R., & Burton, D. (2005). Estimation of transverse plane pelvic rotation using a posterior-anterior radiograph. *Spine*, 30(1), E20-27.
- 85. Robbins, S.E., & Morse, M.H. (1996). Is the acquisition of a separate view of the sacroiliac joints in the prone position justified in patients with back pain? *Clin Radiol*, 51(9), 637–638.
- 86. Badii, M., Shin, S., Torreggiani, W., Jankovic, B., Gustafson, P., Munk, P.L., & Esdaile, J.M. (2003). Pelvic bone asymmetry in 323 study participants receiving abdominal CT scans. *Spine*, 28(12), 1335-1339.
- 87. Faflia, C.P., Prassopoulos, P.K., Daskalogiannaki, M.E., & Gourtsoyiannis, N.C. (1998). Variation in the appearance of the normal sacroiliac joint on pelvic CT. *Clin Radiol*, 53(10), 742-746.
- 88. Marshall, P., & Murphy, B. (2006). The effect of sacroiliac joint manipulation on feed-forward activation times of the deep abdominal musculature. *J Manip Physiol Ther*, 29(3), 196-202.
- 89. Suter, E., McMorland, G., Herzog, W., & Bray, R. (1999). Decrease in quadriceps inhibition after sacroiliac joint manipulation in patients with anterior knee pain. *J. Manip Physiol Ther*, 22(3), 149-153.

- 90. O'Sullivan, P.B., Beales, D.J., Beetham, J.A., Cripps, J., Graf, F., Lin, I.B. ... Avery, A. (2002). Altered motor control strategies in subjects with sacroiliac joint pain during the active straight-leg-raise test. *Spine*, 27(1), E1-8.
- 91. Painter E.E., Ogle, M.D., & Teyhen, D.S. (2007). Lumbopelvic dysfunction and stress urinary incontinence: a case report applying rehabilitative ultrasound imaging. *J Ortho Sports Phys Ther*, 37(8), 499-504.
- 92. Hesch, J. (2010, November). Case studies: downslip ilium with paradoxical upslip ilium appearance, pudendal neuropathy, parainguinal neuropathy; a new internal sensory diagnostic test. Presented at 7th Interdisciplinary World Congress on Low Back and Pelvic Pain, Los Angeles, CA.
- 93. Neville, C. (2008). An interdisciplinary approach to treatment of a patient with chronic pelvic pain following gall bladder surgery: a case report. *J Women Health Phys Ther*, 32(2), 24-34.
- 94. Cibulka, M.T. (1999). Low back pain and its relation to the hip and foot. *J Ortho Sports Phys Ther*, 29(10), 595-601.
- 95. Voorn, R. (1998). Case report: can sacroiliac joint dysfunction cause chronic achilles tendinitis? *J Ortho Sports Phys Ther*, 27(6), 436-443.
- 96. Indahl, A., Kaigle, A., Reikeras, O., & Holm, S. (1999). Sacroiliac joint involvement in activation of the porcine spinal and gluteal musculature. *J Spin Disord*, 2(4), 325-330.
- 97. Wyke, B.D. (1972). Articular neurology: a review. *Physiotherapy*, 58(3), 94-99.
- 98. Sakamoto, N., Yamashita, T., Takebayashi, T., Sekine, M., & Ishii, S. (2001). An electrophysiologic study of mechanoreceptors in the sacroiliac joint and adjacent tissues. *Spine*, 26(20), 468-471.
- 99. Szadek, K.M., Hoogland, P.V., Zuurmond, W.W., de Lange, J.J., & Perez, R.S. (2008). Nociceptive nerve fibers in the sacroiliac joint in humans. *Reg Anesth Pain Med*, 33(1), 36-43.
- 100. Murakami, E., Tanaka, Y., Aizawa, T., Ishizuka, M., & Kokubun, S. (2007). Effect of periarticular and intraarticular lidocaine injections for sacroiliac joint pain: prospective comparative study. *J Orthop Sci*, 12(3), 274-280.

- 101. Stoddard, A. (1980). Manual of Osteopathic Technique. London, United Kingdom: Hutchinson.
- 102. Bernard, T. (1992, November). Sacroiliac joint injection. Presented at the First Interdisciplinary World Congress on Low Back Pain and Its Relation to the Sacroiliac Joint, San Diego, CA.
- 102. Walker, J.M. (1992). The sacroiliac joint: a critical review. *Phys Ther*, 72(12), 913.
- 103. Davis, P., & Lentle, B. (1978). Evidence for sacroiliac disease as a common cause of low backache in women. *The Lancet*, 312(8088), 496-497.
- 104. Depledge, J., McNair, P.J., Keal-Smith, C., & Williams, M. (2005). Management of symphysis pubis dysfunction during pregnancy using exercise and pelvic support belts. *Phys Ther*, 85(12), 1290-1300.
- 105. Eichner, E., Waltner, C., Goodman, M., & Post, S. (1956). Relaxin, the third ovarian hormone: its experimental use in women. Am J Obstet Gynecol, 71(5), 1035-1048.
- 106. Epstein, J.A. (1959). Treatment of low back pain and sciatic syndromes during pregnancy: a symposium. *NY State J Med*, 59(9), 1757-1768.
- 107. Farbrot, E. (1952). The relationship of the effect and pain of pregnancy to the anatomy of the pelvis. *Acta Radiol*, 38(5), 403-419.
- 108. Fast, A., Shapiro, D., Ducommun, E., Friedmann, L.W., Bouklas, T., & Floman, Y. (1987). Low-back pain in pregnancy. *Spine*, 12(4), 368-371.
- 109. Golighty, R. (1982). Pelvic arthropathy in pregnancy and puerperium. *Physiotherapy*, 68(7), 216-220.
- 110. Grose, A. (1986, January). Pelvic ring instability during pregnancy. Unpublished material.
- 111. Hagen, R. (1974). Pelvic girdle relaxation from an orthopedic view. *Acta Orthop Scand*, 45(4), 550-563.
- 112. Joseph, J. (1988). The joints of the pelvis and their relation to posture in labor. *Midwives Chron*, 101(1202), 63-64.
- 113. Laban, M.M., & Meerschaert, J.R. (1975). Lumbosacralanterior pelvic pain with pubic symphysis instability. Arch Phys *Med Rebab*, *56*, *48*.
- 114. Lynch, F.W. (1920). The pelvic articulations during pregnancy, labor and puerperium: an X-ray study. *Surg Gynecol Obstet*, 30, 575-580.

- 115. MacLennan, A.H. (1983). The role of relaxin in human reproduction. *Clin Reprod Fertil*, 2(2), 77-95.
- 116. MacLennan, A.H. (1991). The role of the hormone relaxin in human reproduction and pelvic girdle relaxation. *Scan J Rheumatol Suppl*, 88, 7-15.
- 117. Quagliarello, J., Steinetz, B.G., & Weiss, G. (1979). Relaxin secretion in early pregnancy. *Obstet Gynecol*, 53(1), 62-63.
- 118. Sands, R. (1958). Backache of pregnancy. *Obstet Gynecol*, 12(6), 670-676.
- 119. Sicuranza, B., Richards, J., & Tisdall, L. (1970). The short leg syndrome in obstetrics and gynecology. *Am J Obstet Gynecol*, 107(2), 217-219.
- 120. Svensson, H.O., Andersson, G.B., Hagstad, A., & Jansson, P. (1990). The relationship of low-back pain to pregnancy and gynecologic factors. *Spine*, 15(5), 371-375.
- 121. Walheim, G. (1979). Pelvic instability after fracture and parturition. *Acta Orthop Scand*, 50, 362.
- 122. Weiss, G., O'Byrne, E.M., & Steinetz, B.G. (1976). Relaxin: a product of the human corpus luteum of pregnancy. *Science*, 194(4268), 948-949.
- 123. Young, L. (1940). Relaxation of the pelvic joints in pregnancy. *Brit J Obstet Gyneac*, 47, 493-524.
- 124. Badii et al., "Pelvic bone asymmetry."
- 125. Eustance, S., Coughlan, R.J., & McCarthy, C. (1993). Ankylosing spondylitis. *A comparison of clinical and radiographic features in men and women. Ir Med J*, 86(4), 120-122.
- 126. Wurdinger, S., Humbsch, K., Reichenbach, J.R., Peiker, G., Seewald, H.J., & Kaiser, W.A. (2002). MRI of the pelvic ring joints postpartum: normal and pathological findings. *J Magn Reson Imaging*, 15(3):324-329.
- 127. Coventry, M., & Tapper, E. (1972). Pelvic instability: a consequence of removing iliac bone for grafting. *J Bone Joint Surg Am*, 54(1), 83-101.
- 128. Ha, K.Y., Lee, J.S., & Kim, K.W. (1976). Degeneration of sacroiliac joint after instrumented lumbar or lumbosacral fusion: a prospective cohort study over five-year follow-up. *Spine*, 33(11), 1192-1198.
- 129. Macnab, I. (1981). Backache (pp. 64-78 & 217-218). Baltimore, MD: Williams & Wilkins.

- 130. Maigne, J.Y., & Planchon, C.A. (2005). Sacroiliac joint pain after lumbar fusion. A study with anesthetic blocks. *Eur Spine J*, 14(7), 654-658.
- 132. McGregor, M., & Cassidy, J.D. (1983). Post-surgical sacroiliac joint syndrome. *J Manip Physiol Ther*, 6(1), 1-11.
- 133. Zimmermann, T., Patzak, H.J., Kelm, C., Flechsenhar, K., & Kunze, K. (1992). Treatment of ruptures of the symphysis and iliosacral joint in pediatric patients. *EurJ Pediatr Surg*, 2(6), 348-351.
- 134. Hesch, J. (1996). Evaluating sacroiliac joint play with spring tests. *Ob Gyn PT*, 20(3). 4-7.
- 135. Vleeming, A., Van Wingerden, J.P., Snijders, C., Stoeckart, R., & Stijnen, T. (1989). Load application to the sacrotuberous ligament: influences on sacroiliac joint mechanics. *Clin Biomech*, 4, 204-209.
- 136. Hesch J. (1997). Evaluation and treatment of the most common pattern of sacroiliac joint dysfunction. In A. Vleeming, V. Mooney, T. Dorman, C. Snijders, & R. Stoeckart (Eds.), *Movement*, Stability & Low Back Pain: The Essential Role of the Pelvis (pp. 535-552). London, United Kingdom: Churchill Livingstone.
- 137. Huijbregts, "Sacroiliac joint dysfunction," 22-23.
- 138. Hesch, J. (2001-2011). The Hesch Method of treating sacroiliac joint dysfunction: integrating the pelvis, SI, symphysis pubis, hip and lumbar spine. Henderson, NV: Hesch Institute.
- 139. Greenman, Manual Medicine, 238.
- 140. Greenman, Manual Medicine, 239-241.
- 141. Makofsky, Spinal Manual Therapy, 7-8 & 11-12.
- 142. Keating, J., Matyas, T.A., Bach, T.M. (1993). The effect on training on physical therapists' ability to apply specific forces of palpation. *Phys Ther*, 73(1), 45-53.
- 143. Greenman, Manual Medicine, 240-241.
- 144. Greenman, Manual Medicine, 246.
- 145. Nyberg, "Pelvic girdle," 364-382.
- 146. Vleeming, A., Snijders, C., Stoeckart, R., & Mens, J. (1997). The role of the sacroiliac joint in coupling between spine, pelvis, legs and arms. In A. Vleeming, V. Mooney, T. Dorman, C. Snijders, C. Egund, & R. Stoeckart (Eds.), *Movement, Stability & Low Back Pain:*

- *The Essential Role of the Pelvis* (pp. 55-71). London, United Kingdom: Churchill Livingstone.
- 147. Grieve, G. (1981). *Common Vertebral Joint Problems* (pp. vii-x). New York, NY: Churchill Livingstone.