

## Series of Nukiwa's Articles on Breathing in the Kokyu Rinsho:

Nukiwa's serial articles (essays) and Links (Free to read in full, but ID/PW registration is required. If you are using Google/Chrome, you can translate the Japanese into English with AI translator on your PC to get a general idea of what the Articles are about.)

[Note for the word "Soma" in the series:

At the start of the series the author was not aware of the Medial Motor Column (MMC) as the major and evolutionally old locomotion system. However, the author somehow felt that unknown nervous system inside the body is working in the phenomena induced by the Taiki practice. The author described this unknown system using a word "Soma".

The actual system described as "Soma" corresponds to the evolutionarily older system of forward locomotion movement, which was identified in the early 21<sup>st</sup> century and described in the article Part 12-3 of these series. Although it is currently a hypothesis, the basal ganglia to MMC locomotion system (also exists in our body) is essential to understand Oriental bodywork.]

### **Title of the Series**

Encounter with Breathing and Respiratory Medicine: Personal History and Significance of "Breathing" in Oriental Bodywork

(1) Part 1: Encounter with Breathing

<https://kokyurinsho.com/focus/e00023/>

- Encounter with "Breathing" through Zen Buddhism

(2) Part 2: Encounter with Respiratory Medicine

<https://kokyurinsho.com/focus/e00029/>

- Encounters with Respiratory Medicine and Unique Mentors
- Encounters with the Respiratory Organs in the Evolution: Difference of the Lungs of Mammals and Birds from the Morphological and Physiological Points
- History of the Anatomical Understanding of Human Respiratory Organs

(3) Part 3: Soma (Evolutionally Old Body Trunk System) and Respiratory Organs: A Crossing through "Breathing Movement"

<https://kokyurinsho.com/focus/e00037/>

- Introduction
- Physiological Meaning of Deep Breathing and Gas Exchange
- Why Do Mammals Stretch and Yawn? -Physiological Unintelligible Behavior involving Breathing Movements
- What is Soma (Integrative Body System) Signaled by Breathing Movement?
- Practice in the East: Understanding the Soma through Bodywork

(4) Part 4: Introducing Fascia (Myofascia): The Continuous and Interlocking Structure of the Body where “Breathing Movement” Propagates

<https://kokyurinsho.com/focus/e00058/>

- Introduction
- Why just an Introduction? Scientific Frontier to the Evolutionally Old Structure.
- 1) A Structure Too Little Recognized.
- 2) The Effectiveness of Fascia Release is Changing Physicians' Perceptions.
- 3) Missing-link of Muscular Force Transmission in Myofascial System
- 4) How can Fascia be Studied?
- Conclusion: Familiar Sense of Fascia: Hot Spring and Traditional Rehabilitation
- Postscript: What the Master of Daitoh-ryu Aiki-jujutsu told on Fascia.

(5) Part 5: Fascia Medicine and “Anatomy Train” is Launched by Western Bodyworks.

<https://kokyurinsho.com/focus/e00066/>

- Introduction
- Is Bodywork Really of Oriental Origin? - Iceman's Body Surface Tattoos -
- The Pedigree of Bodywork: Exchanges of Bodywork between East and West
- History and Schools of the Bodywork in the U.S.A.
- From Bodywork to the Fascia Research Congress
- Anatomy Train: Tendon and Myofascial System as Underwear of the Whole Body
- Bodywork Research in Japan
- Personal Experience of Bodywork (Rolfing) in Japan
- Conclusion: The Body is Musical Instrument and Breathing is the Source of its Vibration

(6) Part 6: This is Translational Medicine! What Do Zen and Mindfulness Have in Common?

<https://kokyurinsho.com/focus/e00067/>

- Introduction
- Zazen that Medical Doctors Talk About

- Explanation of the Lotus Position by Researchers Who Knows Medicine
- A High Priest of the Rinzai-Zen Buddhism: Zazen and the Sokushin-kokyu
- Expansion of Zen Buddhism in the United States: In View of World History and Medicine
- Conclusion: Respect for the Dynamism of American Thought and Practice in Zen Propagation

(7) Part 7: Neuroscience of Zazen and Mindfulness: from fMRI to Neural Networks, and from Active Expiration to Zazen Breathing (Tanden).

<https://kokyurinsho.com/focus/e00068/>

- Introduction
- 3D Arrangement of Neural Network by fMRI and its Dynamic Shift.
- Mindfulness goes to Neuroscience
- Why is "Naikan (Introspection)" Good as a Trigger to the Salience Network?
- Dogen Zenji's "Shikan-daza": Reconceptualization through Neuroscience
- "Breathing Matters" (The Title of a Review in Nature Reviews Neuroscience, 2018)
- Neuroscientific Significance of Zazen
- Why is the Oxygen Demand Enough even in the Ultra-rare Breaths during Zazen?
- Physiological Background of Japanese "Obi" (a belt for kimono) Culture
- When People Get Sitting-upright, their Faces Change (Dousa Ryohou, Gosaku Naruse).
- Conclusion: Breathing, Body trunk and Brain

(8-1) Part 8 (1): It All Started with a Sensation of Impact on the Whole Body - Nishino-Breathing Methods (NBM)

(1) Basics: Sokushin-Kokyu - fMRI Study Shows Awakening Signals to "Soma"

<https://kokyurinsho.com/focus/e00077-1/>

- Introduction
- Why did the NBM start as a "Breathing Method" and not as a Martial art?
- "Rei, Ki no Shinto (Penetration of Ki), Sokushin-kokyu": Actual Operation and Understanding of its Background
- Sokushin-kokyu (Breathing from the bottom of feet)

(8-2) Part 8 (2) Same as above

(2) Basics: Exteroception & Interoception

<https://kokyurinsho.com/focus/e00077-2/>

- Exteroception & Interoception
- Research on Insula (an area of the brain cortex)

- Back to the Sokushin-kokyu (Interoception by foot-core respiration)
- Is Deep Breathing not for Oxygenation?
- Conclusion

(9-1) Part 9 (1): It All Started with a Sensation of Impact on the Whole Body - Nishino-Breathing Methods (NBM)

(3) Basics: Co-evolution of Karin/Locomotion and Breathing Movement  
(Interrelation of CPG, Locomotion, and Breathing with Body Axis Rotation)

<https://kokyurinsho.com/focus/e00081-1/>

- Introduction
- Transient from Sokushin-kokyu to Karin
- Karin Should not be Stopped Abruptly – Slowly While Feeling Your Own Body-axis.
- Body-axis and its Formation in Karin Practice
- Ballet like Breathing Practices Following Karin
- The Flowing Performance of NBM Basics

(9-2) Part 9 (2): Same as above

(4) Basics: Sense of Relaxed with Elasticity and “Anatomy Train”:

Karin movement and Fascia continuum (tendon-myofascia structure all over the body)

<https://kokyurinsho.com/focus/e00081-2/>

- Anatomy Train (Myers TW): Myofascial Meridians for Manual and Movement Therapists
- Locomotion Entrain Respiratory Rhythm
- Evolved CPG (central pattern generators, evolutionally-old and fundamental several neural circuits) and the Mysterious Sensation of NBM
- Karin and Locomotion CPG (walking, jogging, cycling, climbing, swimming): a Deep Physical Health Theory based on the Old System in Vertebrates Evolution
- Body-axis Formation and Sense of Straight Forward: Inner Life History in Our Body
- Conclusion

(10-1) Part. 10 (1): It All Started with a Sense of Impact on the Whole Body - Nishino-Breathing Methods (NBM)

(5) “Taiki” - Mutual Active Expiration, Sensation of Fascia-connectedness, Mirroring Interoception

<https://kokyurinsho.com/focus/e00088-1/>

- Introduction
- On Describing the Phenomena of the “Taiki” Practice

- The Practice of “Taiki”
- Personal Experience of “Taiki”: Until the Shocking Body Reaction as to Get Blown Backwards
- Personal Experience of "Taiki": Sending Signals to Partner Trainees

(10-2) Part. 10 (2): Same as above

(6) "Taiki": Who and with What Kind of Backgrounds Do Trainees Respond to Taiki Signals?

<https://kokyurinsho.com/focus/e00088-2/>

- "Taiki": Who and with What Kind of Backgrounds Do Trainees Respond to Taiki Signals?
- Active Expiration
- Mirroring Interoception
- What is the "Intention" to the Partner Trainees in the "Taiki"?

(10-3) Part. 10 (3): Same as above

(7) Practical Training to Introduce "Taiki" - Walking with "Taiki" Connection / "Don't Push with Arm Force!"

<https://kokyurinsho.com/focus/e00088-3/>

- Practical Training to Introduce "Taiki" - Walking with "Taiki" Connection / "Don't Push with Arm Force!"
- Breathing for Two - Experiencing Paired Physiology through Active Expiration
- Personal Diversity of "Taiki" Reaction and Vital Soma (Body Trunk) Sense: Potential as a Medical Application
- Conclusion

(11-1) Part 11 (1): Traditional Asian Bodies and Breathing Methods - Introduction to Paired Signaling Physiology (New Medical Field through Body-connected Breathing)

(1) Studies of Western Researchers on the Asian Body

<https://kokyurinsho.com/focus/e00091-1/>

- Introduction: "Body and Mind" - "Breathing" is the Intermedium that Connects Them.
- Exploring Eastern Breathing through Yasuo Yuasa's "Ki, Shugyo, Shintai"
- Western Intellectuals (Jung CG, a German Genius, and a French Chinese Scholar) who Could Have an Objective View on the Body and Breathing Philosophy of Asia
- 1) German Genius: Richard Wilhelm
- 2) French Authority: Henri Maspero
- Ancient Chinese Theories of the Body, Breathing, and Philosophy through the Writings

of the French and German Authorities

1) Ancient Chinese View of the Body

2) Ancient Chinese Breathing Techniques

• The Taoism and the Propagation of Buddhism in China: What were their Mutual Interactions?

(11-2) Part 11 (2): Same as above

(2) Introduction to Paired Signaling Physiology

<https://kokyurinsho.com/focus/e00091-2/>

• Preface to "Introduction to Paired Signaling Physiology": How to Avoid Tautological Descriptions?

• The History of Paired Signaling Physiology, an Unexpectedly New: Bodily Understanding through Breathing in "Dou-in" and Mutual Bodily Recognition in Chinese Kung-fu traditions.

• The World of Paired Signaling Physiology

1) Nishino Breathing Methods "Taiki"

2) "Tuishou (pushing hands)" in Chinese Taiji-quan

3) "Sensing the Partner or 'Ting Jing'," the Key to "Tuishou"

• Paired Signaling Physiology in Daito-ryu Aikijujutsu in Japan

• What is beyond "Paired Signaling Physiology"?: "Non-contact" Mutual Phenomena and signals?

• Conclusion

(12-1) Part 12 (1): Paired Signaling Physiology, a Novel Field of Human Physiology: its Basic and Clinical Research

(1) Molecular Biology of Mesoderm, Bilateralia, and Fascia

<https://kokyurinsho.com/focus/e00095-1/>

• Note

• Introduction

• Basic Research for the Paired Signaling Physiology

• Animal Evolution and Fascia System: Mesodermal Bodyplan and Migratory Movement

1) Locomotion is the Key to Animal Evolution.

2) Mesoderm, Bilateralia, and Locomotion

3) Mesodermal Morphogenesis and Fascia-related Gene Expression

• Molecular Biology of Fascia System: What is Connective Tissue (CT) in Vertebrates?

- 1) Classification of Connective Tissues as Animal Forms
- 2) Classification of Connective Tissues and Expression of Related Genes

(12-2) Same as above

(2) Proprioception and a Novel Baroreceptor, Piezo2

<https://kokyurinsho.com/focus/e00095-2/>

- Introduction: Fascia and Musculoskeletal Mechanosensing: Proprioception and its Frontier in Signaling
  - Elusive and Essential "Sixth Sense": What is Proprioception?
  - Can Proprioception Elucidate "Taiki", "Tui Shou", and other Oriental Martial Arts?
- 1) Proprioception in the Future: From Individual Physiology to Physiology with a Partner
  - 2) Proprioception in Oriental Martial Arts
  - 3) Sense of Connectedness between Partners in "Taiki": the Reality from Proprioception Research.
  - 4) Sense of "Mutual Body-connectedness" not Locally but as a Whole, and the Sense of Mutual Cognition of "Body-Centeredness.
  - 5) Does the Sense of "Effort" in an Individual Correspond to the Sense of "Intention" toward the Partner?
    - Identification of a Novel Systemically-distributed Sensing Molecule, Piezo2 and Proprioception.
    - Piezo2 is Expressed in Mechanosensing Receptors in Skin throughout the Body.
    - Conclusion: Basic Research is needed for New Field of Paired Signaling Physiology

12-3-1) Same as above

(3) Trunk Muscle Locomotion by the Trunk Engine System (Basal Ganglia/ Spinal cord CPGs (Central Pattern Generators)): Brain Science in 21st Century Suggests this Evolutionally Old System is Relevant to Oriental Bodywork - A Hypothesis

1) What is the "Deep Body", the Trunk Locomotion Engine?

<https://kokyurinsho.com/focus/e00095-3-1/>

- Preface to Part 12-3: Changes and Additions
- Introduction
- What is "Body Trunk"? Long Misunderstood Structure of Forward Motion System
- Molecular Biology in the 21st century Clarified the Evolution of the Medial Motor Column (MMC)
- Overview of the Neural Mechanism of the Trunk Forward Motor System (Basal ganglia/Medulla/Spinal cord CPGs)

- Function of Basal Ganglia: Motor Intentions, Motor Selection, Inhibition and Facilitation

12-3-2) Same as above

2) MLR (Mesencephalic Locomotor Region) and Spinal Cord CPGs: Actual Working System of the Locomotion: What Is the Structure and How Do They Work?

<https://kokyurinsho.com/focus/e00095-3-2/>

- Preface
  - Mesencephalon and Medulla Oblongata
  - Spinal cord CPGs: What Are the Structure and How Do They Work?
- 1) Principle and Details of CPGs Circuit
  - 2) Further Characteristics of Locomotion CPGs: Walk, Trot, and Bound

12-3-3) Same as above

3) Oriental Bodywork and Breathing Methods is Accessing to the "Deep Body (Trunk MMC neural path) – A Hypothesis

<https://kokyurinsho.com/focus/e00095-3-3/>

- Preface
  - Understanding the Oriental Bodywork Based on Evolutional Locomotion System
- 1) Traditional Training of Trunk Muscle System: Kyudo (Japanese archery), sliding feet (Suri-ashi), Sumo Wrestler's Shiko-humi (Legged stomping)
  - 2) Connection of Ulnar and Dorsal Trunk Muscles through the LCMI: Meaning of Traditional Instructions - Armpit Tightening, or Grip by little/ring Fingers
    - Nishino Breathing Methods for Reactivating the "Deep Body" Locomotion System
- 1) Sokushin-Kokyu
  - 2) Karin
  - 3) Taiki
    - i) Accessing the Mutual Trunk Muscles through Back of Hand (ulnar) Contact
    - ii) Sensations of Shock and Exhilaration at Taiki: Derived from Basal Ganglia and CPGs?
    - iii) Why Locomotion-related Responses at Taiki?: Due to the Activation of MMC System?
      - Future Development in the MMC-related Area (DeepBody)
- 1) Efforts to Measure MMC Functions: Novel EMG of Trunk Muscles, or any Novel Mobile Apparatus?
  - 2) Multifaceted Project for the New Frontier of the Neural MMC pathway/ DeepBody
    - i) First, Comprehensive Medical Explanations and Education
    - ii) Innovation of Exercise Education for School Children
    - iii) Application for Elderly and Maintenance of Physical Ability



3) Further Research in "DeepBody": More Enigmatic Issues that Take Time for Elucidation

i) Search for Afferent Pathways (from Back of Hand to Basal Ganglia and Facilitation)

ii) Interactive Body Signaling in "Non-contact" Systems: No Explanation Available Yet

Conclusion: Prospects for the Future "DeepBody"