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- Email customerservice@PhysicalTherapy.com
Yoga Therapeutics to Cultivate a Sustainable Core

How do postural alignment and breathing patterns affect spinal stability and core muscle endurance?

This presentation will distill concepts from yoga therapy, sports medicine, and physical rehabilitation to reveal novel treatment techniques that can improve relaxation, breathing mechanics, and muscle recruitment.

Liz Gillem Duncanson
PT, MPT, ATC, CSCS, C-IAYT
Learning Outcomes

As a result of this course, participants will be able to:

1) Identify optimal spinal and pelvic posture for efficient core muscle recruitment.
2) Analyze sustainable core muscle recruitment versus fight or flight muscle response.
3) Distinguish between energy-saving and energy-consuming breathing mechanics.
4) Compare modern breathing exercises with ancient yogic techniques for use in today’s rehabilitation.

Introduction

Where the lenses overlap
Whole Body (Holistic) Approach to Rehabilitation

Yoga - considering all the layers

“Find Neutral Spine”

“Check in with your core”

“Breathe”
The aim of yoga is to attain a mental state free from disturbance.

Yoga can help a variety of conditions:

- depression, anxiety, stress, hypertension, heart disease, asthma, diabetes, inflammation in cancer survivors, pregnancy, prenatal and postpartum depression; PTSD, obesity;
- pain syndromes including arthritis, headaches and low back pain; autoimmune conditions including type II diabetes and multiple sclerosis;
- immune conditions including HIV and breast cancer; and aging problems including balance, osteoporosis and Parkinson's.

References:

Yoga has been more effective than control and waitlist control conditions, although not always more effective than treatment comparison groups such as other forms of exercise.

Regional Interdependence

Biopsychosocial

Somatovisceral

Musculoskeletal

Neurophysiological


Image Credit: Dan Duncanson

Bio-psycho-social model

Hierarchical Diagram

Image: CC0 https://www.maxpixel.net/Fantasy-Outer-Space-Galaxy-Astronomy-Nebula-3187373

Image Credit: Dan Duncanson
Yoga has been doing this for 4000 years!

Image used with kind permission from Bandhayoga.com
Koshas

The 8 Limbs (Ashtanga) of Yoga

Eight Limbs of Yoga, a cumulative series of stages embodying ethical principles of behavior and meditative states compiled by the Indian sage Patanjali in a collection of aphorisms known as sutras.

Yoga Therapeutics to Cultivate a Sustainable Core

Patanjali's 8 Limbs of Yoga

- **Yama**
  - restraints
- **Niyama**
  - observances
- **Samadhi**
  - oneness, bliss
- **Dhyana**
  - contemplation, meditation
- **Dharana**
  - intense focus, steady mind
- **Pratyahara**
  - withdrawal of senses
- **Pranayama**
  - breath control
- **Asana**
  - posture & movement

Image Credit: Dan Duncanson

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What is the Core?

Image: OpenClipart-Vectors / 27440 images, Pixabay CC0 image
What is the Core?
refers to the trunk

Subsystems:
passive, active, and neural

Core Stability
is a dynamic concept that continually changes to meet postural adjustments or external loads accepted by the body

References:
Core Muscles:

Primarily type I fibers, so hypothesized that it might respond well to multiple sets with high reps (>15 per set)

For rehabilitation low back injuries, “endurance should take precedence over the development of core strength”

Altered core muscle recruitment and breathing patterns are noted in the presence of pain or stress

References:

Core as a variant paradigm

CLINICAL AND RESEARCH REVIEW

‘The core’: Understanding it, and retraining its dysfunction

Josephine Key, MAPA, MMPAA, APAM*,1

Edgecliff Physiotherapy Sports and Spinal Centre, Suite 505 Eastpoint Tower, 180 Ocean Street
Edgecliff, Sydney, NSW 2027, Australia

Core Control
is about **coordination** rather than strength

Core Response
is about muscle **co-activation** and coordination.

---

Key, J. (2013). 'The core': understanding it, and retraining its dysfunction. *Journal of bodywork and movement therapies*, 17(4), 541-559.

---

Functional control
coordinate the **postural** and **respiratory** functions of the trunk muscles.

**Intra-Abdominal Pressure** mechanism to work against gravity

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Key, J. (2013). 'The core': understanding it, and retraining its dysfunction. *Journal of bodywork and movement therapies*, 17(4), 541-559.
core control

The ability to generate optimal IAP to support both breathing and the provision of three dimensional postural and movement control of the torso.

Image used with kind permission from Bandhayoga.com


Part I

Bony Core
Yoga Therapeutics to Cultivate a Sustainable Core

By Human_skeleton_diagram.png: (Source: Collier's New Encyclopedia, VIII (New York: P.F. Collier & Son Company, 1921), p. 446. derivative work: GregorDS (talk) 09:18, 21 December 2011 (UTC) (Human_skeleton_diagram.png) [Public domain or Public domain], via Wikimedia Commons

Public Domain Clip Art Image: Halloween 0017 By: Inky2010
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Alignment Matters


Ebert, R., Campbell, A., Kemp-Smith, K., & O’Sullivan, P. (2014). Lumbar spine side bending is reduced in end range extension compared to neutral and end range flexion postures. Manual therapy, 19(2), 114-118.
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Alignment Matters:
Spinal Posture Affects Core Muscle Recruitment

Pelvic Muscles recruited best when lumbar sitting posture is neutral (verses reduced lumbar lordosis).


Postural awareness helps decrease neck pain

The findings of this study show that thoracic cage anterior/posterior translations cause significant changes in thoracic kyphosis (26°), lumbar curve, and pelvic tilt.


The degree of thoracic kyphosis was higher in patients with uterine prolapse than in controls.

Spinal Position affects IAP, IV Disc pressure and Lumbar loads

Let's all try to find seated neutral spine

Images used with kind permission from Bandhayoga.com
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Neutral Position. The posture of the spine in which the overall internal stresses in the spinal column and the muscular effort to hold the posture are minimal.

Image used with kind permission from Bandhayoga.com


Image Credit: Dan Duncanson
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Posture screen adapted from Gary Cook’s FMS In-Line Lunge Test

The dowel is placed behind the back touching the head, thoracic spine, and middle of the buttocks.

Image Credit: Dan Duncanson

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Alignment provides environment for coordinated **co-contraction**.

Image: mohamed hassan [CC0](https://www.publicdomainpictures.net/pictures/250000/velka/yoga-1516086816888P.jpgg-W4L_Cq1m2Vg.jpg).

Image used with kind permission from Bandhayoga.com

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Co-contraction

Consider the bony core as one joint.


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The core is an interdependent pressure system

Co-contraction related to
Intra-abdominal Pressure
and
Intra-Thoracic Pressure

**Thoracic Cavity**
- pneumatic physics

**Abdominal Cavity**
- hydraulic physics

Image CC0: File:Body cavities.svg

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Passive Core

Fascia and Human Resting Myofascial Tone HRMT supported by Tensegrity

Conclusions (Masi et al 2010)
The HRMT model is now expanded and translated for clinical relevance to therapists. Its passive role in helping to maintain balanced postures is supported by biomechanical principles of myofascial elasticity, tension, stress, stiffness, and tensegrity.


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Tensegrity

R. Buckminster Fuller holds up a Tensegrity sphere. 18th April, 1979.
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Biotensegrity

Image By Bob Burkhardt [CC BY 2.5 (https://creativecommons.org/licenses/by/2.5)], via Wikimedia Commons


Part II
Muscular Core
Consider the muscles which attach to the bony core.

Balls and balance training devices are not superior to floor exercises when training the core muscles.

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Proximal Stability Yields Distal Mobility


Movement presupposes stability

EMG activity of PFMs is observed prior to initiation of extremity movement


Sustainable Core Muscles

1. Pelvic Floor

Image used with kind permission from Bandhayoga.com
Recruited best in *neutral* lumbar position

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PFM contribute to posture and respiration


Postural and Respiratory Functions of the Pelvic Floor Muscles

P.W. Hodges,* R. Sapsford, and L.H.M. Pengel
Division of Physiotherapy, the University of Queensland, Brisbane, Queensland, Australia


The female pelvic floor: A dome-not a basin

Sigrún Hjartardóttir, Jan Nilsson, Cecilia Petersen, Goran Lingman

First published: 31 December 2010 | https://doi.org/10.3109/00016349709024586

Conclusions. MRI of the female pelvis is valuable in anatomic and dynamic analysis in healthy women and offers new information about the female pelvic floor. The female pelvic floor is shaped like a dome - not like a basin.

PFM are part of the trunk stability mechanism.

Their function is interdependent with other muscles of this system. They also contribute to continence, elimination, sexual arousal and intra-abdominal pressure.
Co-activation of the abdominal and pelvic floor muscles during voluntary exercises

R.R. Sapsford, P.W. Hodges, ... See all authors.

First published: 21 December 2000

The results of these experiments indicate that abdominal muscle activity is a normal response to PF exercise in subjects with no symptoms of PF muscle dysfunction and provide preliminary evidence that specific abdominal exercises activate the PF muscles.

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Pelvic Floor rehab programs

Individualized
Integrative
Include
submaximal PF co-contraction with TVA

---


and the treatment goal is to normalize the intra-abdominal pressure (IAP) with co-contraction of the PFM and TVA.


Sustainable Core Muscles
2. Deep Abdominals
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Transverse Abdominus Muscle has a role in lumbo-pelvic stability

abdominal muscle activity is a normal response (co-contraction) to PF exercise in subjects with no symptoms of PF muscle dysfunction

abdominal activity is altered in patients with chronic LBP


PF and Abdominals work together

Can’t uncouple IAP from trunk muscle co-activation
PF, abdominal muscles, and respiratory diaphragm work together. Described as 3-D “abdominal ‘canister’

“The functional interaction between TrA, diaphragm and pelvic floor muscles should be considered.”
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Take home points:

- **Sequenced Coordinated** recruitment pattern of core muscles is needed for spine stabilization.
- **Transverse Abdominus and Diaphragm** contraction recruitment occurs before rapid limb movements to control stability of the spine against perturbation produced by that movement.
- EMG activity of PFM was observed prior to initiation of extremity movement.

Latin word for heart is **cor**

Sustainable Core Muscles

3. Scapular Stabilizers

Scapular Eccentric Upward Rotators
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Image By Anatomography [CC BY-SA 2.1 jp (https://creativecommons.org/licenses/by-sa/2.1/jp/deed.en)], via Wikimedia Commons

Lower Trapezius Muscle
Serratus Anterior Muscle

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Yoga includes the wings

“Wings protect the heart”

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Obliques and Serratus Anterior Muscles
“Abds and Wings”

Alignment of the pelvis and scapulae results in greater activation of core* muscles

The fifth spinal movement: axial extension

**Defined as a simultaneous reduction of both the primary and secondary curves of the spine**

- Requires neutral alignment
- Decompresses the spine - helps reduce lumbar and disc loads
- Requires use of the “great seal” *maha bandha*

Axial extension and *co-contraction*

Cue in yoga and Pilates to “lift crown”
“contrology” in Pilates
“yoking” in yoga
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barriers to sustainable recruitment

Image: CC0 baukegel-2694486_1920.png pixabay kalhh
First Barrier to a sustainable core:  
Chronic “Computer-asana”  
(poor posture) alignment issue

Upper Crossed and Lower Crossed Syndromes

Image CC0: https://www.flickr.com/photos/bethscupham/7237112342/  
Poor posture leads to *poor breathing patterns* and faulty breathing patterns are statistically correlated with neck pain.


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Second Barrier: Increased Intra-abdominal Pressure

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Image: CC0 http://www.freestockphotos.biz/stockphoto/15189
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Increased IAP Leads to pelvic girdle pain

Possible harmful effects of high intra-abdominal pressure on the pelvic girdle

Jan Mens*, Gilbert Hoek van Dijke, Annelies Pool-Goudzwaard, Victor van der Hulst, Henk Stam

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Accepted 13 January 2005

Abstract

The present study explores the hypothesis that a high intra-abdominal pressure (IAP) loads the ligaments of the pelvic girdle to such an extent that frequent periods of high IAP might cause pain and/or interfere with recovery of patients with pelvic girdle pain (PGP). In a theoretical model the size of the load of IAP on the pelvic girdle was computed. The diameters of abdomen and pelvis needed for the calculations were measured on MRI scans; the IAP values during activities were gained from literature. In slim, healthy subjects the calculated load on the pelvic ring during activities of daily living was 36.0–52.0N with peaks to 155N. During straining, vigorous work or heavy exercise the load could increase to values ranging from 110 to 320N. The load is higher in subjects with pain or fatigue, or in case of a distended abdomen. When the load on the pelvic ring induced by IAP is larger than 100N, the force exceeds the force at which a pelvic belt reduces complaints in PGP, at 90N, the force is larger than the force at which somatic hip adduction provokes pain in PGP. We conclude that the size of the load induced by IAP on the pelvic girdle seems to be sufficient to cause pain in patients with PGP and might interfere with recovery. It seems worthwhile to give patients with PGP instructions to reduce IAP as much as possible during activities.

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Trunk rotation adversely effects the ability to perform a Valsalva maneuver

Valsalva (against a closed mouth and *glottis*) and straining (as if defecating) are different tasks with different PFM activation patterns.

Proper TVA recruitment vs. loafing

*Diastasis Rectii*

By Emily Miller [Otto J. Placik] (CC BY-SA 3.0) or [GFDL](http://www.gnu.org/copyleft/fdl.html), via Wikimedia Commons
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Increased IAP can be a factor in hernia, prolapse, stroke, and Diastasis.

Gastrointestinal
Normal Intraabdominal Pressure in Healthy Adults
William S. Cobb M.D., Justin M. Burns M.D., Kent W. Kercher M.D., Brent D. Matthews M.D., H. James Norton Ph.D., & Todd Heniford M.D.

https://doi.org/10.1016/j.jas.2005.06.015

Background
Intraabdominal pressure (IAP) has been considered responsible for adverse effects in trauma and other abdominal catastrophes as well as in formation and recurrence of hernias. To date, little information is available concerning IAP in normal persons. Our purpose in this study was to measure the normal range of IAP in healthy, nonobese adults and correlate these measurements with sex and body mass index (BMI).


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Highest intra-abdominal pressures in healthy patients are generated during coughing and jumping.


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Valsalva increases sympathetic response


Third barrier: chronic stress and pain

Image: laptop-3087585_1920.jpg JESHOOTS.com pixabay CC0
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Pain duration is associated with increased muscle sympathetic nerve activity


Increased SNS activity leads to muscle tension


Clinically, tension appears in Accessory Breathing Muscles

Ilio-Psoas
Quadratus Lumborum
Respiratory Diaphragm
Rhomboids
Pectoralis Minor
SCM
Scalenes
Upper Traps
Masticator / Temporalis
Intrinsic Laryngeal Muscle
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Ilio-Psoas

Image CC0
https://commons.wikimedia.org/wiki/File:Psoas_major_muscle_-_animation05.gif

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Quadratus Lumborum

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Respiratory Diaphragm

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Image used with kind permission from Bandhayoga.com
Rhomboids

Pectoralis Minor

SternoCleidoMastoid
Scalenes

Upper Traps

Image CC0: https://commons.wikimedia.org/wiki/Category:Scalene_muscles#/media/File:Scalenus.png

Image By Anatomography (en-Anatomography [CC BY-SA 2.1 jp](https://creativecommons.org/licenses/by-sa/2.1/jp/deed.en)), via Wikimedia Commons
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Masseter

By Anatomography (configuration page of this image[1]) [CC BY-SA 2.1 jp (https://creativecommons.org/licenses/by-sa/2.1/jp/deed.en)], via Wikimedia Commons

Temporals

Henry Vandyke Carter [Public domain], via Wikimedia Commons
Intrinsic Laryngeal Muscles

![Diagram of Larynx with labels: Epiglottis, False vocal cords, Vocal ligament, Vocal cords, Trachea, Hyoid bone, Thyroid cartilage, Cricoid cartilage]

Image CC0 https://commons.wikimedia.org/wiki/File:Illu_larynx.jpg

Image CC0 https://commons.wikimedia.org/wiki/Pharynx#/media/File:Illu_pharynx.svg

Fight or Flight

![Images of a person karate kicking and a person jogging]


Deep Slow Breathing reduces stress


Effect of short-term practice of breathing exercises on autonomic functions in normal human volunteers

G.K. Pal, S. Velukumar & Madammohan

Department of Physiology, Jawaharlal Institute of Postgraduate Medical Education & Research Pondicherry, India

Conclusion: regular practice of slow breathing exercise for a minimum of three months improves autonomic functions. The practice of fast breathing exercise for the same duration does not affect the autonomic functions.
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Polyvagal Theory

lengthening the exhalation changes vagal tone


HYPOTHESIS AND THEORY ARTICLE

Yoga Therapy and Polyvagal Theory: The Convergence of Traditional Wisdom and Contemporary Neuroscience for Self-Regulation and Resilience

Marlysa B. Sullivan1, Matt Erb1, Laura Schmalzl1, Steffany Moonaz1, Jessica Noggle Taylor2 and Stephen W. Porges3

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Yoga Therapeutics to Cultivate a Sustainable Core

Polyvagal Theory regulating the HPA axis

Different types of yogic breathing produce different mental states

- **Chest Breath** (more specifically, a “constricted thoracic” breath) ——> **Anxiety / Panic**
- **Belly Breath** (more specifically an abdomino-diaphragmatic breath) ——> **Calming**
- **Thoraco-diaphragmatic breath** ——> clear attentive mental state (**Centered** / balanced).

Self-Regulation of Breathing as a Primary Treatment for Anxiety

Ravinder Jerath1 · Molly W. Crawford1 · Vernon A. Barnes2 · Kyler Harden4

Cardiorespiratory and Metabolic Changes during Yoga Sessions: The Effects of Respiratory Exercises and Meditation Practices

Marcello Árias Dias Danucalov · Roberto Sena Simões · Elisa Barani Kecana · José Roberto Leite


Augmentation of Mind-body Therapy and Role of Deep Slow Breathing*

Ravinder Jerath and Vernon A. Barnes

Part III
Breathing Core

Respiratory Diaphragm Muscle

Image CC0 Dawn Hudson

Image used with kind permission from Bandhayoga.com
Respiratory Diaphragm Muscle

Main muscle of inspiration, and is responsible for generating the majority of inspiratory airflow

“Except in cases of paralysis, the respiratory diaphragm muscle is always used for breathing.

The issue is whether it is being used efficiently or not”
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Tidal Volumes

Image: CC0 https://commons.wikimedia.org/wiki/File:LungVolume.jpg
"Breathing affects **posture** and posture affects breathing"

Image used with kind permission from Bandhayoga.com

Breathing programs help decrease low back pain

The Use of Breathing Exercises in the Treatment of Chronic, Nonspecific Low Back Pain

Barton E. Anderson and Kellee C. Huxel Bilven

*Clinical Scenario:* Research has shown a link between poor core stability and chronic, nonspecific low back pain, with data to suggest that alterations in core muscle activation patterns, breathing patterns, lung function, and diaphragm mechanics may occur. Traditional treatment approaches for chronic, nonspecific low back pain focus on exercise and manual therapy interventions; however, it is not clear whether breathing exercises are effective in treating back pain.

*Focused Clinical Question:* In adults with chronic, nonspecific low back pain, are breathing exercises effective in reducing pain, improving respiratory function, and/or health-related quality of life? *Summary of Key Findings:* Following a literature search, 3 studies were identified for inclusion in the review. All review studies were critically appraised at level 2 evidence and reported improvements in either low back pain or quality of life following breathing program interventions.

*Clinical Bottom Line:* Exercise programs were shown to be effective in improving lung function, reducing back pain, and improving quality of life. Breathing programs frequencies ranged from daily to 3-4 times per week, with durations ranging from 4 to 6 weeks. Based on these results, athletic trainers and physical therapists caring for patients with chronic, nonspecific low back pain should consider the inclusion of breathing exercises for the treatment of back pain when such treatments align with the clinician's own judgment and clinical expertise and the patient's preferences and values. *Strength of Recommendation:* Grade B evidence exists to support the use of breathing exercises in the treatment of chronic, nonspecific low back pain.

Respiratory Diaphragm Muscle provides stability during rapid limb movements

Postural Function of the Diaphragm in Persons With and Without Chronic Low Back Pain


Breathing patterns

affect sports performance posture, spinal stabilization, and motor control.

Clinicians should include breathing exercises in the treatment of low back pain.


Osteopathic manipulation of the Diaphragm Muscle decreases low back pain

Image CC0 https://commons.wikimedia.org/wiki/File:Massage-abdomen.jpg


Include diaphragmatic breathing with functional movement as it’s the foundation of core stability


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The RD and PF Mm move together like a piston

https://www.youtube.com/watch?v=dih56AMrTMo

http://www.pilatesanytime.com - At the 2015 PMA Conference in Denver, Colorado, Brent Anderson and Hadar Schwartz tested their theories about the pelvic floor. They used two ultrasound machines to show the relationship between the pelvic floor and the diaphragm, and how the pelvic floor responds best to natural breath.

Normal Breathing Patterns

versus inefficient and faulty breathing patterns

Image CC0 https://www.flickr.com/photos/internetarchivebookimages/14584600757/

Pranayama

Yoga definition: control of life (through breath)

*Prana* = breath, life

*Ayama* = lengthen, expand
Different kinds of yogic breathing

Diaphragmatic Breathing

Abdomino-Diaphragmatic Breath vs. Thoraco-Diaphragmatic Breath

Video used with kind permission from bandhayoga.com
https://youtu.be/DZlZ4MsQQk8
Abdomino - Diaphragmatic breathing
aka “belly breath”

- performed in Supine
- chest and spine are fixed
- TVA remains relaxed

  - inhalation concentric
  - insertion: central tendon of the dome
  - is mobile and the costal attachments are stable
  - exhalation eccentric (passive during quiet tidal volume)
  - great relaxation strategy, but not great athletic strategy

---

Thoraco - Diaphragmatic breathing

- requires mild tension in the TVA
- even though there is little belly bulging or expansion, the lateral thoracic breath primarily utilizes the diaphragm muscle.
  - the abdominal organs act as a cantilever
  - the base of the rib cage expands like an umbrella
    - the central tendon of the RD is stabilized and the ribs are free to move.
    - the base of the rib cage is now the moveable insertion
      - Anterior, posterior, AND lateral costal expansion

---

Thoraco - Diaphragmatic breathing

AKA:

“TATD Breath” G. Garner
“Band Breath” Z-Health
“Umbrella Breath” J. Wiebe
“Pilates Breath”

“In the Pilates method, the respiratory style accentuates costal breathing where the ribs ascend and descend during the respiratory flow, extending laterally and to the posterior.


Let’s try a seated thoraco-diaphragmatic breath

Image Credit: Dan Duncanson
3 Part Breath “Dirgapranayama”

combo of AD, TD, and chest breath

stretches and facilitates the

Accessory Breathing Muscles

in theory it helps prepare us for emergencies

used in study that improved upper extremity function and

scapular posturing in persons with hyperkyphosis


Let’s try a Three Part Breath

Accessory Muscles of Breath
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**Ujjayi Breath**

“Hissing breath” or “psychic breath”

Concentric and eccentric contraction of laryngeal muscles

“pranayama that preserves the upper airway potency by maintaining airway dilator muscle tone” is comparable to physiotherapy for sleep apnea and snoring patients

---


Kumar, V., Mahotra, V., & Kumar, S. Application of Standardised Yoga Protocols as the Basis of Physiotherapy Recommendation in Treatment of Sleep Apneas: Moving Beyond Pranayamas. Indian Journal of Otolaryngology and Head & Neck Surgery, 1-8.

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3rd Diaphragm (Vocal Folds)

Breathing correlated with the pelvic floor!

Fascia continuous from pharynx through respiratory diaphragm muscle and to pelvic floor!*

*Actually from the tongue to our PHL! Check out Tom Meyers Deep Front Line! https://www.youtube.com/watch?v=7zK-MZ2fjXA


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Three domes
- vocal
- respiratory
- pelvic

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Three diaphragms
Parallel diaphragms work in synch through the fascia and neural networks

Image CC0 https://upload.wikimedia.org/wikipedia/commons/7/77/Gray838.png
caution: advanced yoga

“energetic locks”

**Mahabandha**
- jalandhara bandha
- uddiyana bandha
- mula bandha

Skills to Cultivate:

Master the 2:1 ratio with RD
(exhalation:inhalation)

Interoception

Mindfulness
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Interception

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Mindfulness Based Pain Treatment

“Observe your breath with curiosity”


Yoga Therapeutics to Cultivate a Sustainable Core

Dynamic change of awareness during meditation techniques: neural and physiological correlates


*Department of Obstetrics and Gynecology, Augusta Women’s Center, Augusta, GA, USA
1Georgia Prevention Center, Institute of Public and Preventive Health, Georgia Health Sciences University, Augusta, GA, USA
3University of South Carolina, Aiken, SC, USA
4College of Medicine, American University of Antigua, New York, NY, USA

Illustration by johnhain pixabay CC0 https://pixabay.com/en/brain-mindset-mindfulness-744180/


Conclusions

The classification-based cognitive functional therapy produced superior outcomes for non-specific chronic low back pain compared with traditional manual therapy and exercise.

Efficacy of classification-based cognitive functional therapy in patients with non-specific chronic low back pain: A randomized controlled trial

K. Vibe Fersum, P. O’Sullivan, J. S. Skouen, A. Smith, A. Kville

First published: 04 December 2012 | https://doi.org/10.1002/j.1532-2149.2012.02526.x

Conclusions

The classification-based cognitive functional therapy produced superior outcomes for non-specific chronic low back pain compared with traditional manual therapy and exercise.

The subtle flow of vibration, called the “breath of life”
carried in channels called **Nadis**

3 Important **Nadis:**
ida, pingala, and sushumna
Nadis

ida

pingala

sushumna

Vayu travels through the Nadis.
Eternal *Prana* lives in the heart

*Udana*
Maintains upright posture

*Apana*
Maintains elimination

---

Check in

Bony Core
Muscular Core
Breathing Core
Energetic Core
Yoga Therapeutics to Cultivate a Sustainable Core

“Find Neutral Spine”

“Check in with your core”

“Breathe”

Image CC0: https://pixabay.com/en/skeleton-smiling-sitting-cartoon-39160/

Case Studies

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Holistic Approach

Review

References

- Please find on a separate pdf to download

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