The IPA and the FMT Foundation are

The Functional Manual Therapy

Source

For

- Functional Manual Therapy Continuing Education
- A Functional Manual Therapy Certification
- An APTA Credentialed Functional Manual Therapy Orthopedic Residency
- An AAOMPT (IFOMT) Credentialed Functional Manual Therapy Fellowship
- Clinically applicable research

PNF for the restoration of FUNCTION

- Gregg and Vicky Johnson, Directors and Co-Founders of the IPA, both had their beginnings at Kaiser, Vallejo (GJ: 1971-1978, VJ: 1978) mentoring under Maggie Knott, PT
- More than just D-1 and D-2
- An clinically proven method of neuromuscular reeducation and motor control training
- Focuses on specific motor activation and palpation skills
- CoreFirst™ (Saliba, 2009) Manual Facilitation Techniques

Functional Manual Therapy

An Evolution in Patient Care

- PNF for the restoration of FUNCTION
- Joint Mobilization to treat pain:
  - Gregg and Vicky Johnson studied with Paris, Grimsby, McKenzie, Maitland, Rocabado, Travell, Kaltenborn, and Cyriax to expand their treatment of the orthopedic and neurological patient to include the treatment of joints and pain.

Soft Tissue Mobilization

A Biomechanical Approach

- Functional Mobilization I (FM I): Gregg Johnson developed Soft Tissue Mobilization after extensive studies in alternative systems that explored the role of fascia in the human body.
- FMI was the first Soft Tissue Mobilization course offered to the PT profession in 1980 (STM, Johnson 1979).
Functional Manual Therapy
An Evolution in Patient Care
- PNF for the restoration of FUNCTION
- Joint Mobilization to treat pain
- Soft Tissue Mobilization: A Biomechanical Approach
- CoreFirst Strategies for Back Education and Training

CoreFirst™ Strategies for Back Education and Training
- In the early 1980's, stabilization was just beginning to become a component of back care.
- Three primary centers for the development of stabilization programs: Australia, Scandinavia, and the North San Francisco Bay Area.
- Only the contingency in San Francisco, Gregg Johnson, Vicky Saliba Johnson, Michael Moore, Denise Morgan, and Eileen Vollowitz had their basis in PNF, therefore promoting a more functional approach to back stabilization.

Function Based Stabilization
- The Link To Patient Self Responsibility and Independence through ACE™ (Automatic Core Engagement) training and CoreFirst™ postural and movement strategies
- Functional Test to Promote Effective Outcome Studies
- Functional Exercise Programs That Promote Volitional AND Automatic Activation of the Core Muscles of the Trunk and Extremities

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Functional Manual Therapy
An Evolution in Patient Care
- PNF for the restoration of FUNCTION
- Joint Mobilization to treat pain
- Soft Tissue Mobilization: A Biomechanical Approach
- Back Education and Training
- Functional Mobilization™: BET created the need to treat in functional planes and weight bearing positions with patient’s active involvement

IPA Evaluation and Treatment Model
- Mechanical
- Neuromuscular
- Motor Control

- Barrier Driven Approach
- End-Feel Assessment (Not Positional)
- Three dimensional localization to depth and direction
- Non-weight bearing and weight bearing mobilization
- Trace and isolate functional driver
- Patient assisted with active and resisted contractions
Neuromuscular: Initiation, Strength, and Endurance

Motor Control: Efficient strategies of posture and movement, utilizing efficient structural and neuromuscular systems

Motor Control: The Buzz Word of the Day
Should the therapist delineate Motor Control from Neuromuscular Control?

Motor Control is the *coordinated* use of synergistic muscles to control posture and movement (Van Dieen, Cholewicki: 2003, Hodges 2010: patterns vary with and without LBP)

Research documents that movement patterns/motor strategies change with back pain because of a neuromuscular deficiency.

The IPA philosophy is that this change is a combination of both neuromuscular and motor control and that neuromuscular control is a prerequisite for motor control. Effective intervention requires an understanding of the proper cause and effect.

Neuromuscular Control
Can the necessary muscles actually initiate with appropriate strength and endurance?

• Controlled activation of a muscle or muscle group is neuromuscular control
• Proper timing of the activation of the motor units for each motor control strategy is necessary for CoreFirst ADL.

Categorization of Muscles
Borgmark, 1989

- Local: Deep muscles and the deep portions of some muscles that have their origins on the spine. Responds to feed forward to provide stability and *segmental control* with prolonged contractions, especially in shear. (Hodges, McGill, Hide, Massery, Schleip, Lehmann-Horn, Vleeming)
- Multifidi
- Transverse Abdominus
- Deep Fibers of the Psoas
- Deep Fibers of the Quadratus
- Some fibers of the IO
- Pelvic Floor Muscles
- Diaphragm
- Vocal Cords (Massery)
- Fascial Component

Research supports the role of these structures in spinal function:

- Wilke: 1995 (MF and Psoas)
- Allison: 2008 (multiple patterns of firing)
- Kaigle: 1995 (importance of MT)
- Massery: 2011 CSM
- Schleip, 2004
- Vleeming, 1995
Global

- Large superficial muscles that cross multiple segments and do not have attachment on the spine. Co-activation increase compressive force on spine. Often over active in patients with LBP. Limited ability to control shear force, but provides much stability to flexion and extension. (McGill, Wilke, Cholewicki) 2004, 2007

Neuromuscular: Do the appropriate muscles have the ABILITY to initiate?
- Decreased activation and cross sectional area of Multifidi secondary to LBP: Richardson. Spine: 1996
- Multifidi Muscle Recovery is NOT automatic
  Hides, Stanton, et al. JOSPT 2008
- Para Spinal Reflexes are disturbed following prolonged flexion postures: Rogers, 2006
- TMS reveals change in cortical representation of the Multifidi Hodges, 2010 (ISLPP 2010, CSM 2011)

Neuromuscular Facilitation Strategies

- Identify the Synergistic Muscle Groups necessary for function based on anatomy, biomechanics, and research.
- Evaluate the initiation, strength, and endurance of this muscle group.
- Facilitate using PNF, Irradiation, Tonic Spread, Pro-longed holds, and exercise.
- Incorporate into efficient strategies of movement and Motor Control.

Effective Restoration of Function Requires both Neuromuscular and Motor Control Training

- Local control essential for spinal stability: Hodges, McGill
- Neutral Spine is factory for core muscles Sapsford, 2001, Claus, 2009, 2010
- Motor control requires coordinated muscle activity between the core and global
  - Hodges: 1997
  - McGill: 2004
  - Alison, Morris, and Lay: 2008
  - Wilke: 1995

Combining Neuromuscular Strategies with Motor Control Strategies

- Ensure ability for muscles to activate
- Facilitate in dynamic functional patterns
- Progress to active movements
- Progress to resisted active movements
- Incorporate repetition of ADL
- Make sure home program addresses:
  - Neuromuscular
  - Motor Control
  - Mechanical

Efficient Function is Brought to you by Synergy and Balance CoreFirst Motor Strategies

Global
- Prime Mover
- Primarily Phasic
- Fast Twitch (Type II)
- Multiple Joint

Local
- Core Stabilizers
- Primarily Tonic
- Slow Twitch (Type I)
- One Joint

Optimum CoreFirst Strategies require dynamic stability coupled with controlled mobility. The strength and function of the global muscles is directly proportionate to the effectiveness of the core control.
A Functional Core is one that automatically engages as needed during everyday activities of daily living. The research shows that alignment, exercise, and motor control effect this response.

Our job as Physical Therapist is to facilitate this Automatic Core Engagement through the proper training of coordination, initiation, strength, and endurance of both local and global muscles, as well as synergistic strategies of combined use.

The Learning Model
- Cognitive
- Associative
- Automatic

Fitts and Posner, 1967, Stages of Motor Learning
Presented at NuStep Conference, 1973

CoreFirst™ Postural and Movement Strategies
The Link to Patient Self Responsibility and Independence
Grounded in Clinical Reasoning and Experience, Supported by Evidence

KCT
Kinesthetic Comparative Training
- A-B-A
  - Always start with the existing pattern
  - Train in the new posture or movement
  - Reposition in the old pattern
  - Principle of accommodation

Automatic
- Patient must demonstrate the ability to automatically initiate a CoreFirst motor strategy
- Patient must demonstrate the ability to repetitively utilize appropriate motor strategies when speed and distractions are entered into the equation.
CoreFirst Principles for Posture and Movement

- Base of Support
- Alignment
- Lumbar Protective Mechanism
- Weight Shift
- Weight Acceptance

Base of Support

- Serves as a foundation for the structure above
- Anticipates Movement
- Enhances the automatic activation of the core

Efficient Alignment

- Cannot be predetermined by an anatomical chart
- Is a state of balance in which the structures efficiently relate to one another in relationship to gravity
- Promotes optimal weight transference
- Allows for the most efficient neuromuscular activation

Efficient Alignment Creates Efficient Function Automatically

First Developed in 1983
Automatic Core Engagement (ACE)

The LPM is a representation of the Automatic Core Engagement (ACE) that happens with efficient motor control.

Evaluation of the Patient's LPM

- The LPM is a Neuromuscular Response
  - Initiation: Does the patient initiate with proper timing of the correct core muscles which include the TA, Multifidi, Deep Fibers of the Psoas, Deep Fibers of the Quadratus, Deep fibers of the Internal Obliques, the Diaphragm and the Pelvic Floor
  - Strength
  - Endurance

Factors Which Influence LPM

- Base of Support
- Alignment
- Increased abdominal pressure
- Muscular Responsiveness and Strength

Weight Shift

Weight Shift is the movement of an efficient alignment within the base of support, utilizing the proper timing and proper joints for movement.

- Common dysfunctions are flexion, extension, and rotation
- Alteration of the efficient alignment during weight shift diminishes the automatic activation of the LPM

Weight Acceptance

- Use of efficient Base of Support
- Facilitates the LPM
- Essential to active sitting and active standing activities such as reaching and lifting

Clinically Applicable Research in Functional Manual Therapy

- Under the funding and direction of the Functional Manual Therapy Foundation, Vicky Saliba Johnson is working together with Emel Demircan, Biomechanics PhD candidate in the Artificial Intelligence Department at Stanford University to validate the VCT, EFT, and ACE with weight acceptance.