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Bridging the Gap from Rehab to Performance

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Conflict of Interest Statement

I currently have, or I have had in the past 2 years an affiliation or financial interest with Structure & Function Education PLLC/ Falsone Consulting, PLLC around this presentation, including:

- Consulting
- Employment
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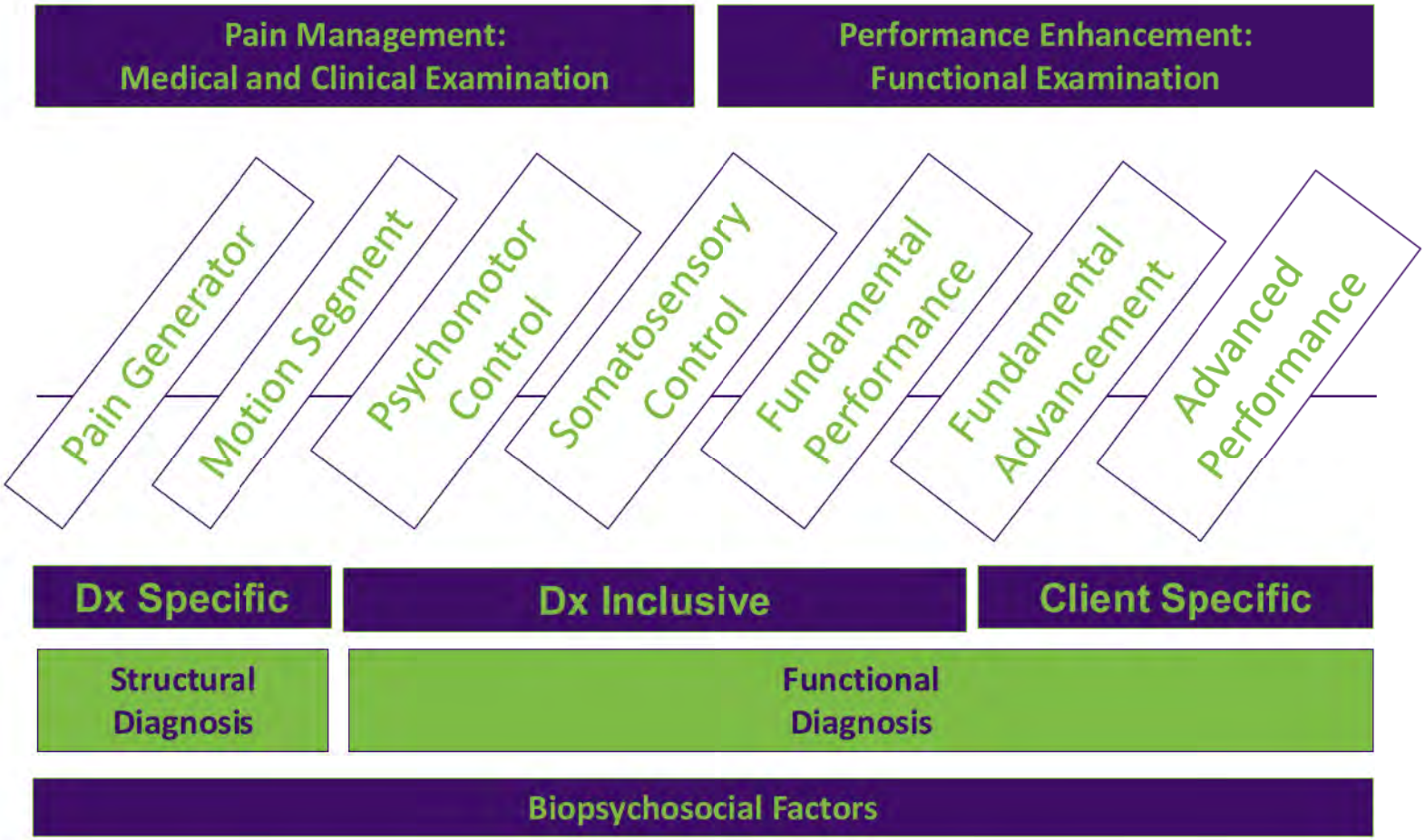
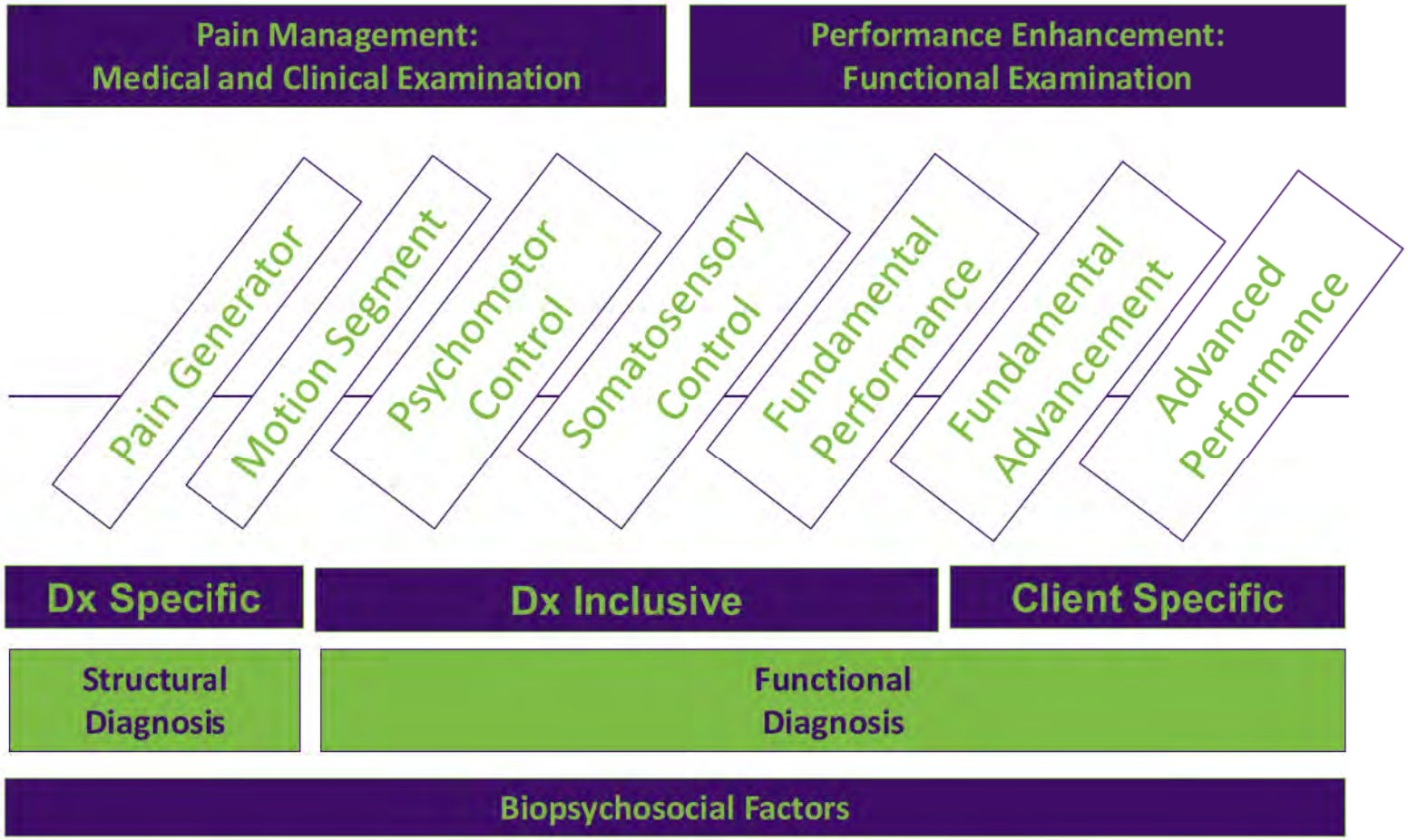
- Royalties or licensing fees
- Honoraria
- Promotional fees
- Research funding
- Corporate laboratory funding
- Scholarship
- Other(s)



*Sizer and Falsone, 2008



* Sizer and Falsone, 2008

Pain Generator

- Identify the tissue that's the issue
- It matters in your course of initial treatment
  - Bursitis vs tendonopathy, for example

Kinesiology Tape

How Does Kinesiology Tape Work?

- **Sensory *theory***
  - Gate Control theory
- **Circulatory *theory***
  - Convolutions lift skin, creates channels, promotes blood flow and reduces pressure
- **Muscle activation *theory***
  - Based on the different directions and tensions

Bottom Line: *We really don't know*

A Mega Review of Kinesiology Taping Research

(Page et al 2015)

Study	PAIN	STRENGTH	ROM	PROPRIO	SWELLING	FUNCTION
Bassett 2010	+					
Csapo 2014		+				
Drouin 2013		+	+	+		+
Kalron 2013	+	0	0		?	0
Lim 2015	++					0
Montalvo 2014	+					
Morris 2013	+		+			
Mostavifar 2012	+	?				?
Parriera 2014	+					+
Taylor 2014	+	0	+			
Williams 2012	+	+	?	?		

+	**Trivial benefit; as effective**	-	**Harmful**
++	Clinically beneficial	?	Unclear/ inconclusive
0	No benefit		

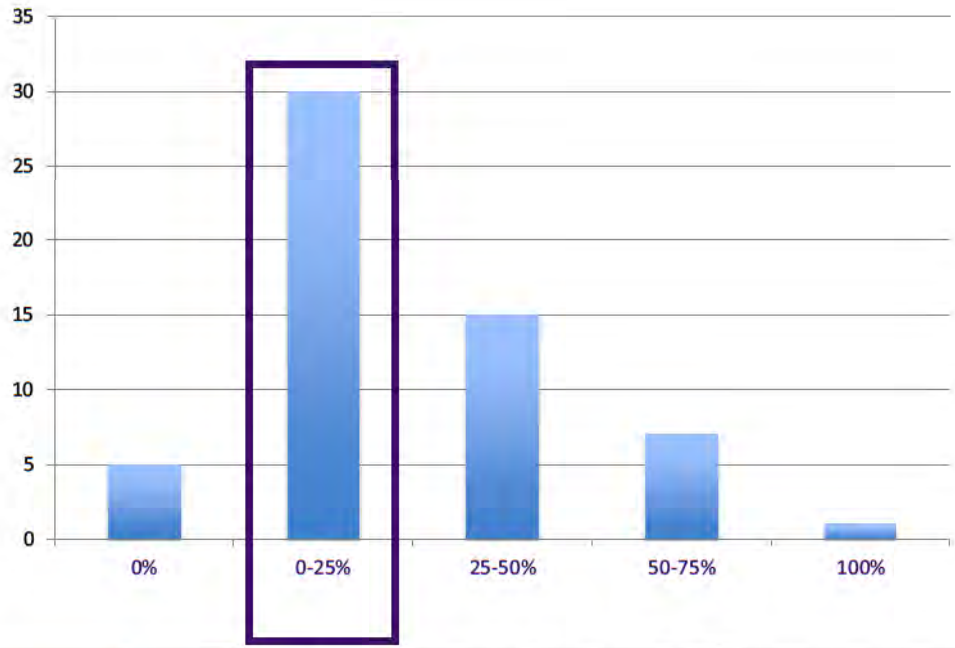
Does Tension Affect Outcomes?

- There is no evidence that specific tensions provide specific outcomes, however:

- *Tension is associated with outcomes overall (Lim & Tay, 2015)*
  - *More tension is associated with smaller effect sizes*

Specified Kinesiology Tape Tensions with Positive, Significant Outcomes (Page et al. 2015)

- *In well-controlled studies with significant outcomes, 86% of studies utilized tension ≤50%;*
- *The most common tension used was ≤25%.*



Instrument-Assisted Soft Tissue Mobilization (IASTM)

IASTM *Theoretical* Mechanisms

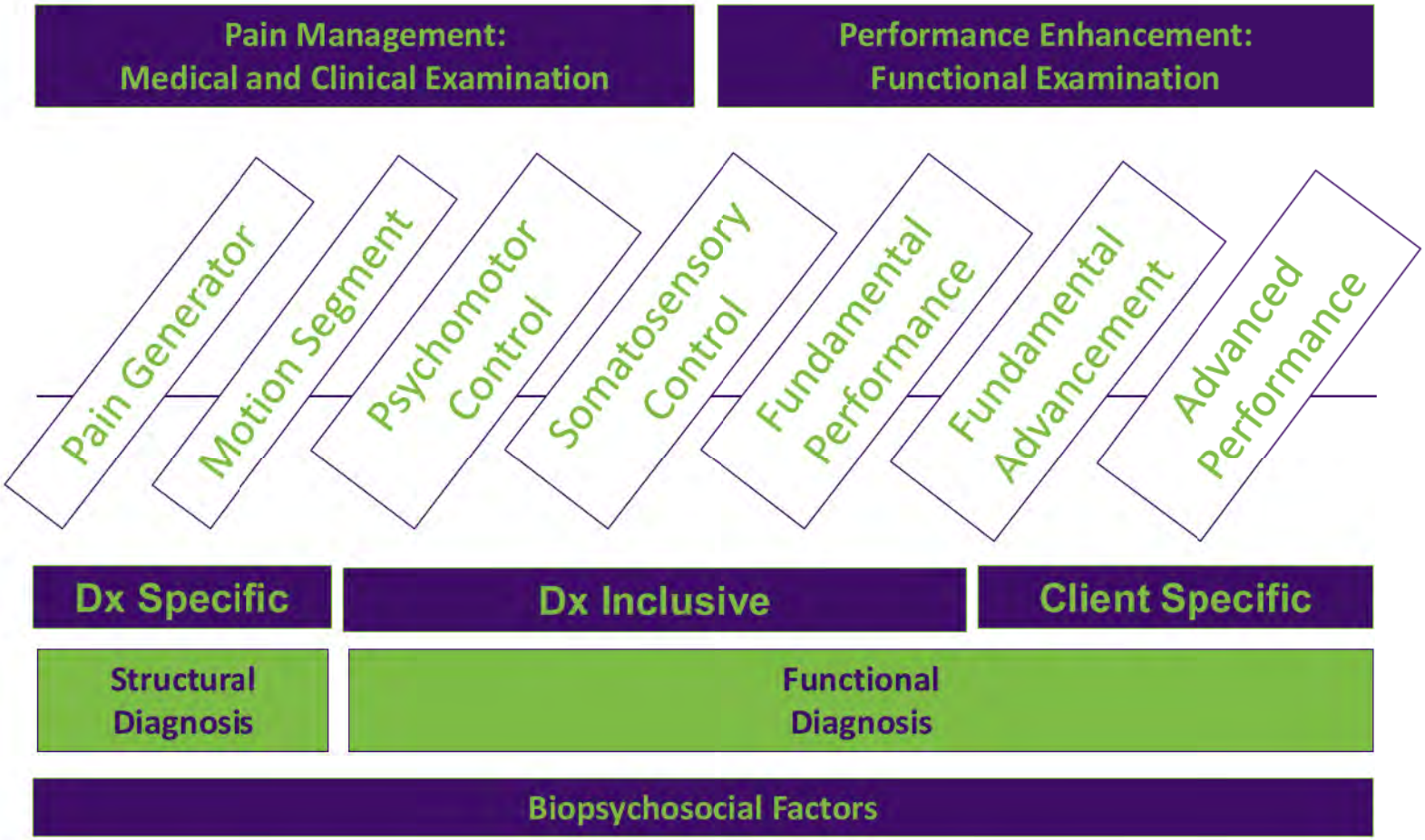
- **Analgesic**
  - **Uses gate-control theory for analgesia**
- Vascular/Circulatory
  - Promotes vasodilation & edema reduction
  - Hydrates tissue and removes metabolites
- Neurological
  - Mechanotransduction
  - Muscle tone
- Mechanical
  - Mobilizes fascial cross-links (fibrolysis) & realignment
  - Piezoelectric effect
- Physiological
  - Re-creates inflammatory response by stimulating fibroblasts & collagen thru microtrauma
  - Promotes conversion of Type 3 to Type 1 collagen

Instrument Assisted Soft Tissue

- Reduces inappropriate fibrosis
  - May be causing irritation or restrictions in movement
- Treatment must be followed by exercise
  - Collagen remodeling to adapt the tissue

Dry Needling

- **Pain (Cagnie, 2013)**
  - **Inhibits pain via gate control theory**
  - **Conditioned Pain Theory**
- Circulation
  - Release of CGRP, adenosine and NO
  - All are vasodilators (Butts, 2016)
- Mechanical
  - Evidence of collagen and elastic fibers on needle (Kimura, 1992)



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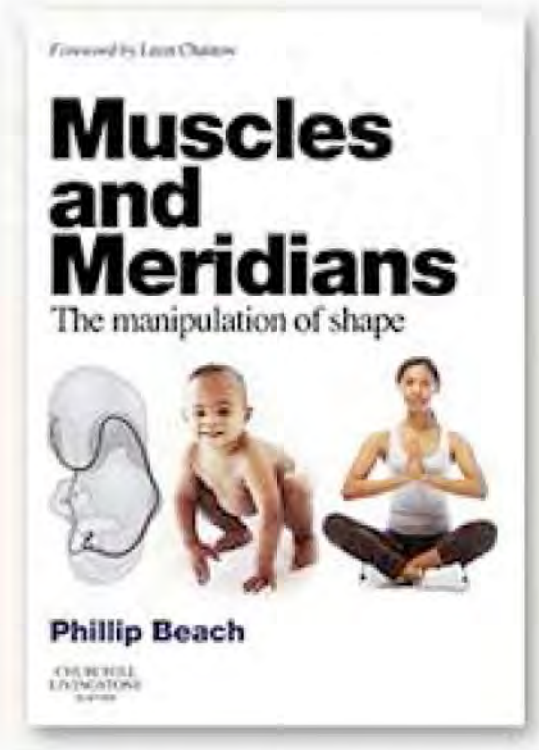
Motion Segment

- Normalize the motion segment that is involved
- When it comes to overhead movement:
  - 1st MTP DF
  - Foot Intrinsics
  - Ankle DF
  - Hip ROM
  - Hip Stability
  - Lumbopelvic stability
  - Shoulder ROM
  - Elbow ROM
  - Wrist and hand ROM
  - Thoracic Mobility
  - Scapular Controlled Mobility
- USE: ART, MWM, ASTYM, SFMA, VM, SFDN, RYT, MAT, FM

Archetypal Postures and Erectorcises

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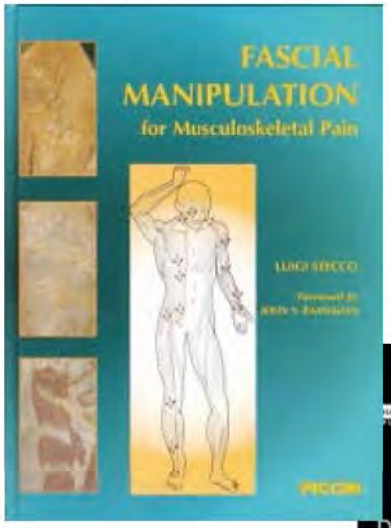
sensational-yoga-poses.com

Fascia


FASCIAL
MANIPULATION
for Musculoskeletal Pain
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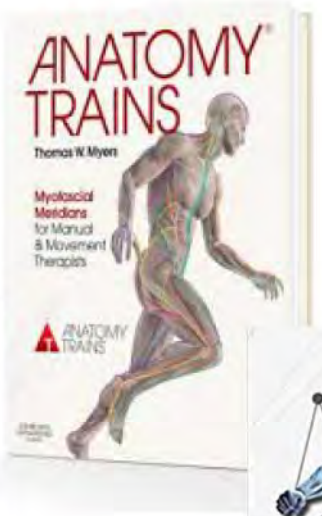
ANATOMY
TRAINS
Thomas W. Myers
Myofascial
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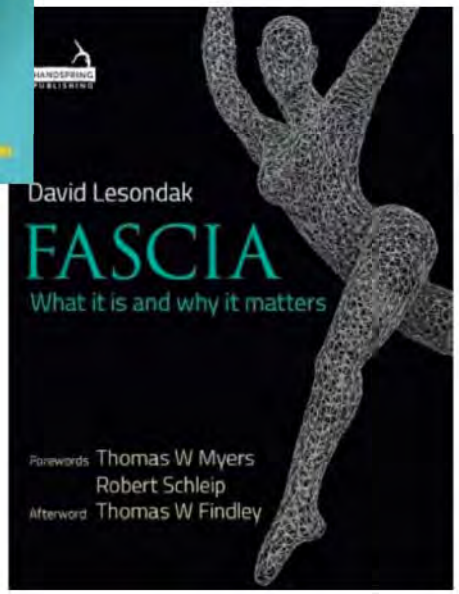
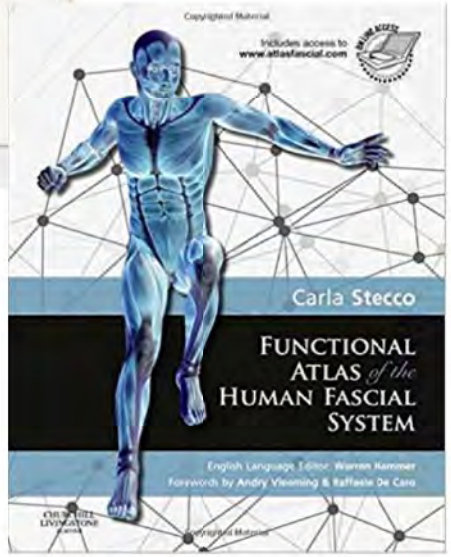
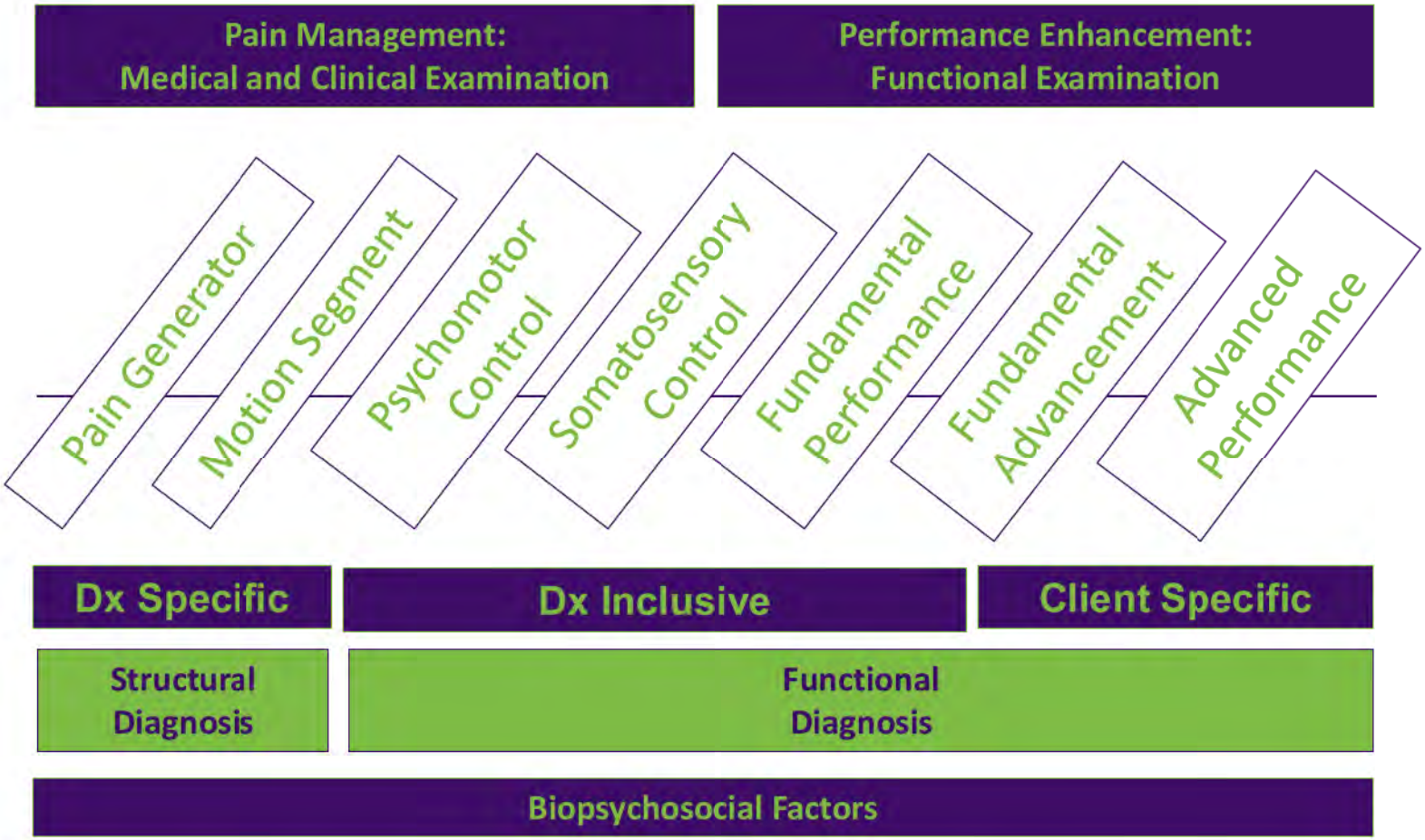

David Lesondak
FASCIA
What it is and why it matters
Forewords Thomas W Myers
Robert Schleip
Afterword Thomas W Findley


Includes access to
www.atlasfascial.com
Carla Stecco
FUNCTIONAL
ATLAS of the
HUMAN FASCIAL
SYSTEM
English Language Editor: Warren Hammer
Forewords by Andry Vleeming & Raffaele De Caro

Cupping

Cupping

- Opposite of IASTM
  - Creates a distraction of tissue instead of compression
  - Periodizes our soft tissue work
- Creates a microexplosion
  - Loosening or destruction of adhesions between tissues
- Negative pressure destroys non-functioning capillaries
  - Blood and lymph



*Sizer and Falsone, 2008

Psychomotor Control

- Make sure things are firing at the right time

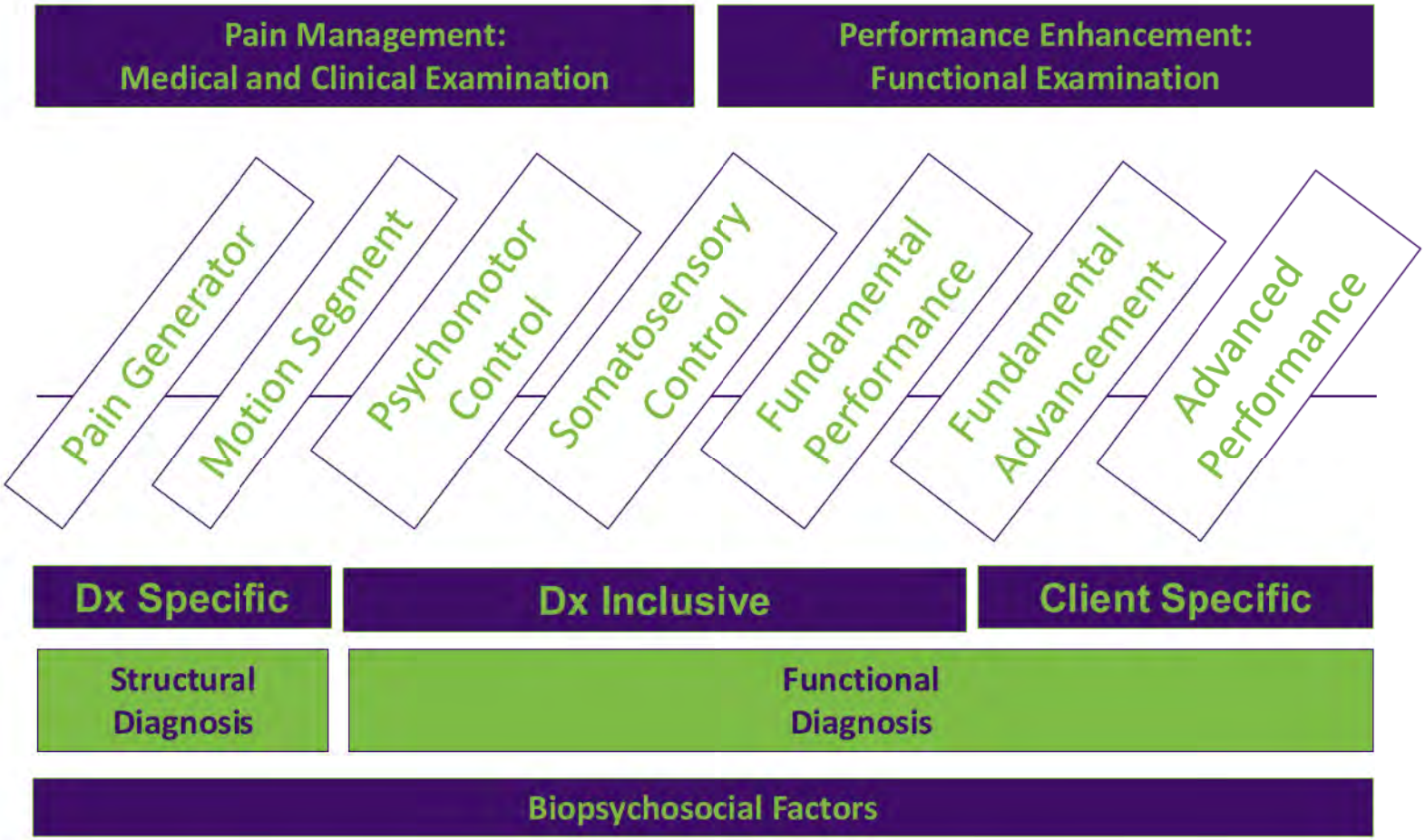
- USE: DNS, PRI, MAT, SFDN, FMS/ SFMA correctives, PMA-CPT

Psychomotor Control

- Let ***stabilizers*** be stabilizers
- Let ***prime movers*** be prime movers
- Let ***synergists*** be synergists

- When a *stabilizer becomes a prime mover*
  - OR
- A *prime mover becomes a stabilizer or synergist*
  - OR
- A *synergist becomes a prime mover*

THE BODY GETS MAD!



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Somatosensory Control

- Restore balance, reflexes, postural sway and control

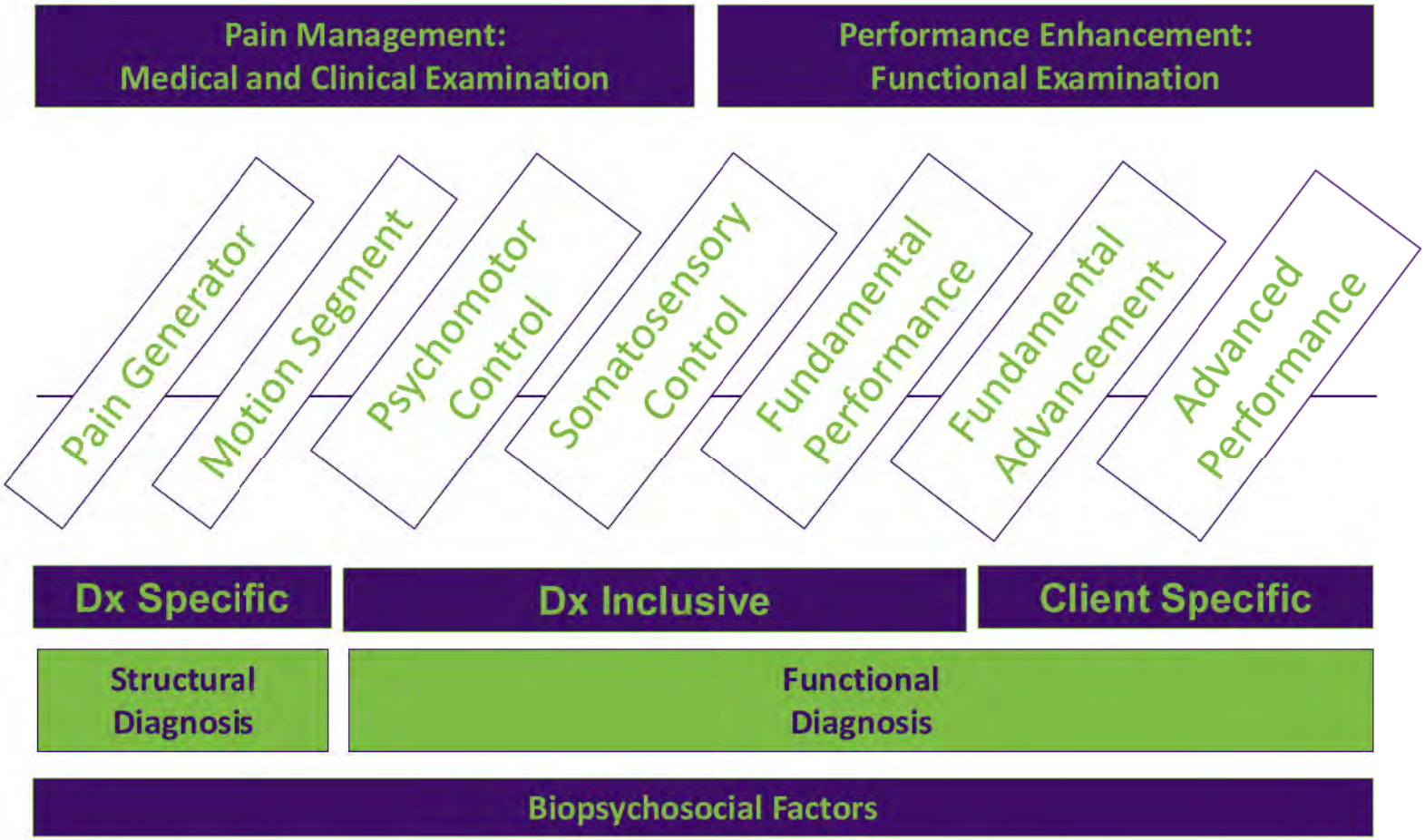
- USE: DNS, VM, PRI, RYT, PMA-CPT

We Need…

- Postural Control
- Single Leg Balance
- Visual Manipulation
- Vestibular Manipulation
- Proprioceptive Manipulation







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Fundamental Performance

- Basic 5/5 strength is happening throughout the system

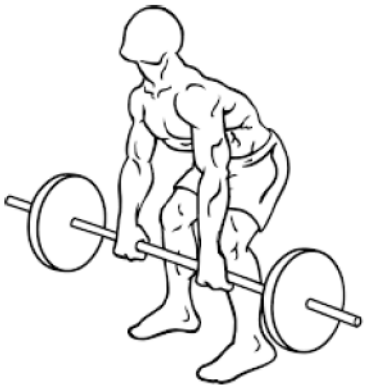
- USE: FMS/ SFMA correctives, PRI, MAT, SFDN, CSCS

Strength and Conditioning Perspective

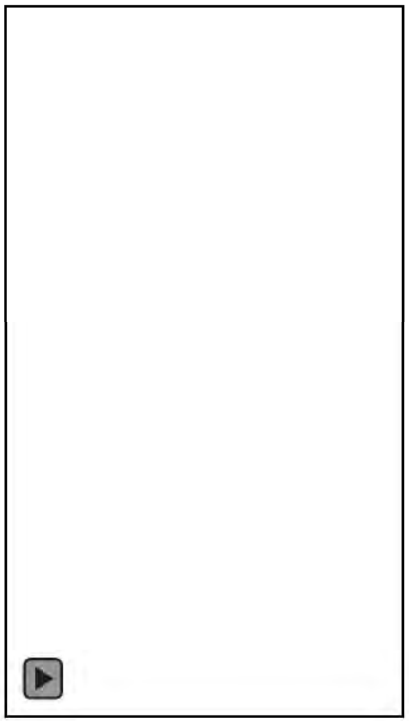
- Focus on transfer of force from lower body to upper body
- Consider
  - Core stabilization vs core propulsion
    - Reeves , Clin Biomech, 2007
    - Uhl, JAT, 2000
  - Resistance training load variables
  - Time under tension

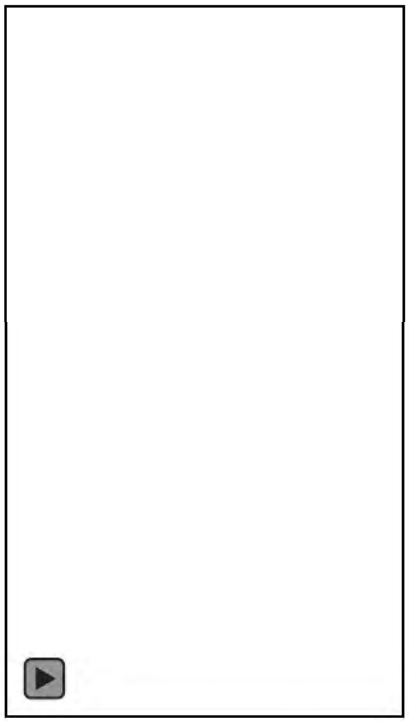
Resistance/ Load Intensity/ Time Under Tension

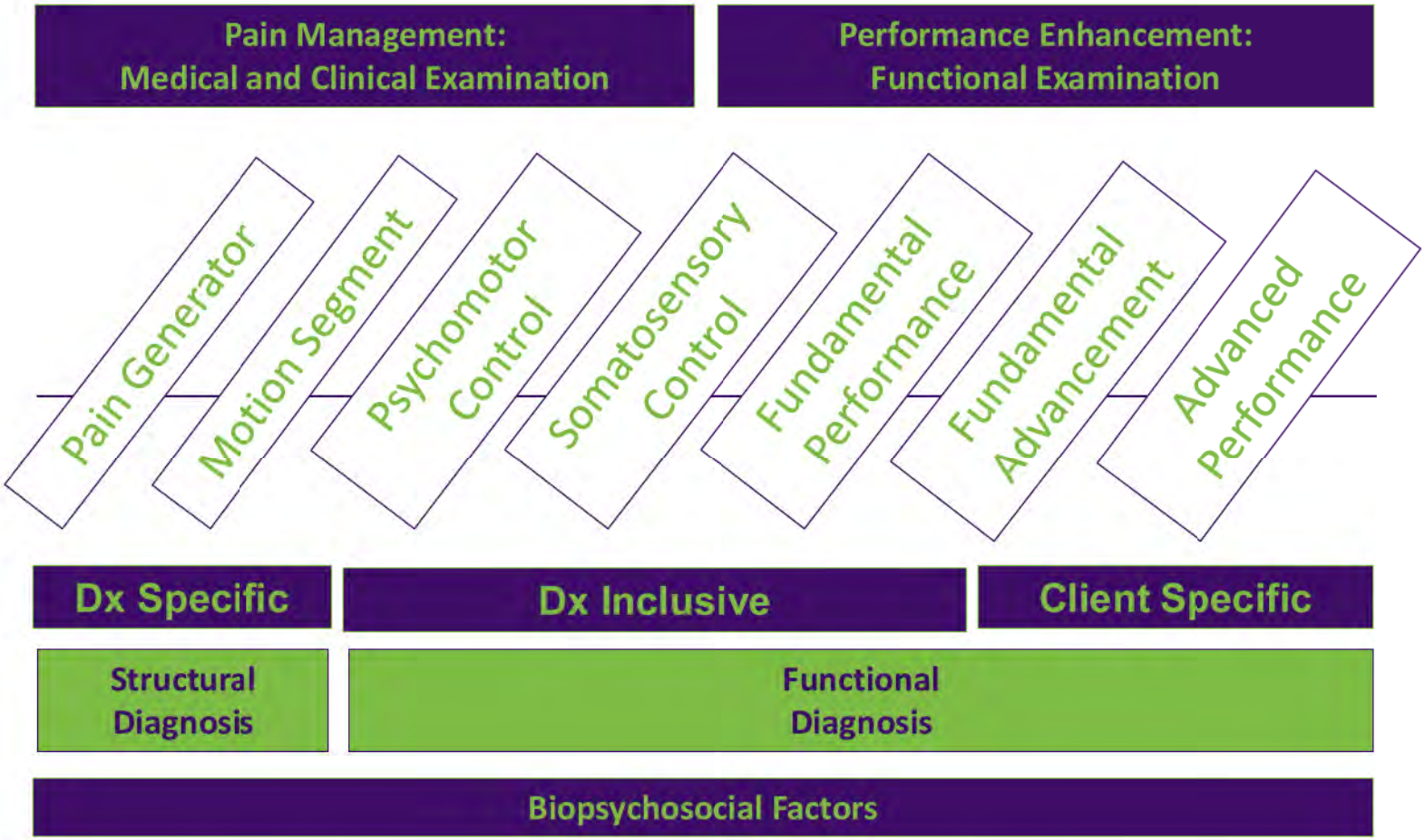
- Relative Strength
  - 1 to 5 Reps
  - 0-20s per set
- Relative Power
  - 1-10+ Reps Depending on Specificity
  - 0-10s per set
  - Power Endurance – Capacity of Wattage over time
- Applied/Functional Hypertrophy
  - 6-8 Reps
  - 20-40s per set
- Hypertrophy
  - 9-15 Reps
  - 40-70s per set



RIP Trainer







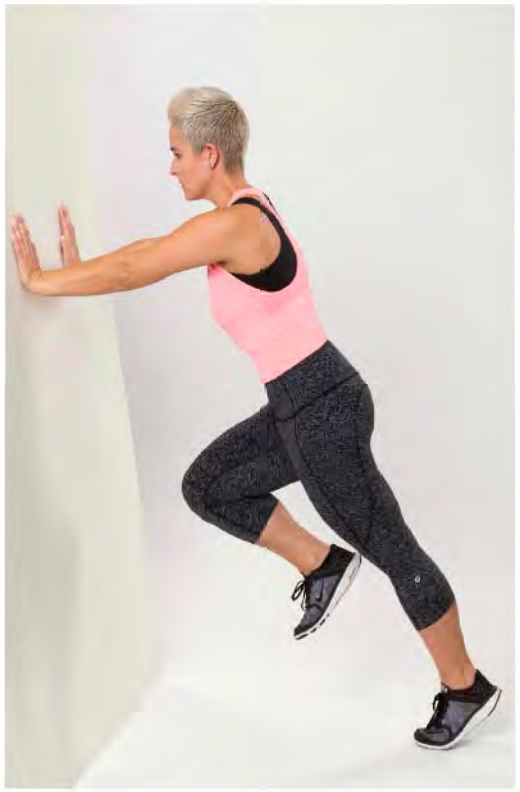
*Sizer and Falsone, 2008

Fundamental Advancement

- Make sure the athlete has proper fundamental ability to perform athletic skill
  - Acceleration, absolute speed, deceleration, base, other MD movement skill

- USE: CSCS, RKC

Acceleration



Absolute Speed

Athletic Base

Shuffle

Change of Direction

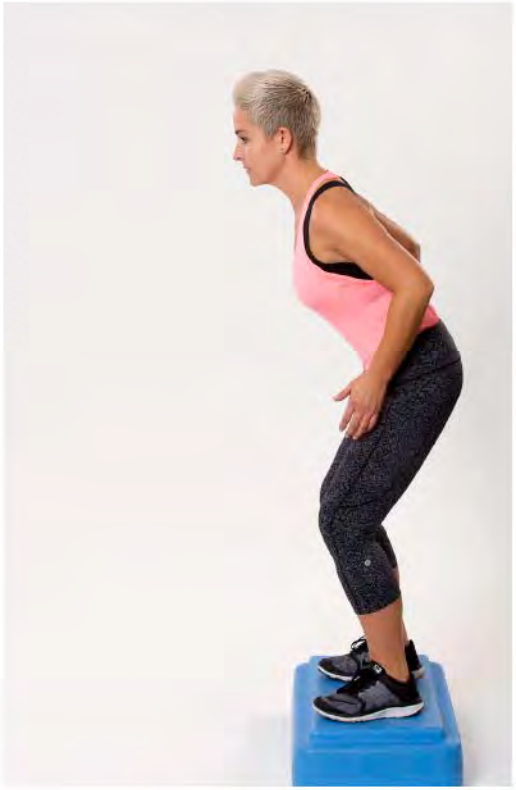
Crossover

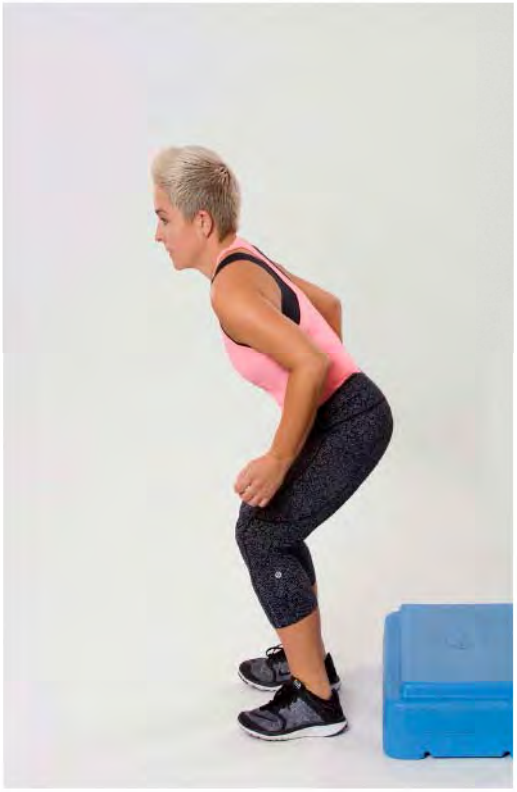
Open Step

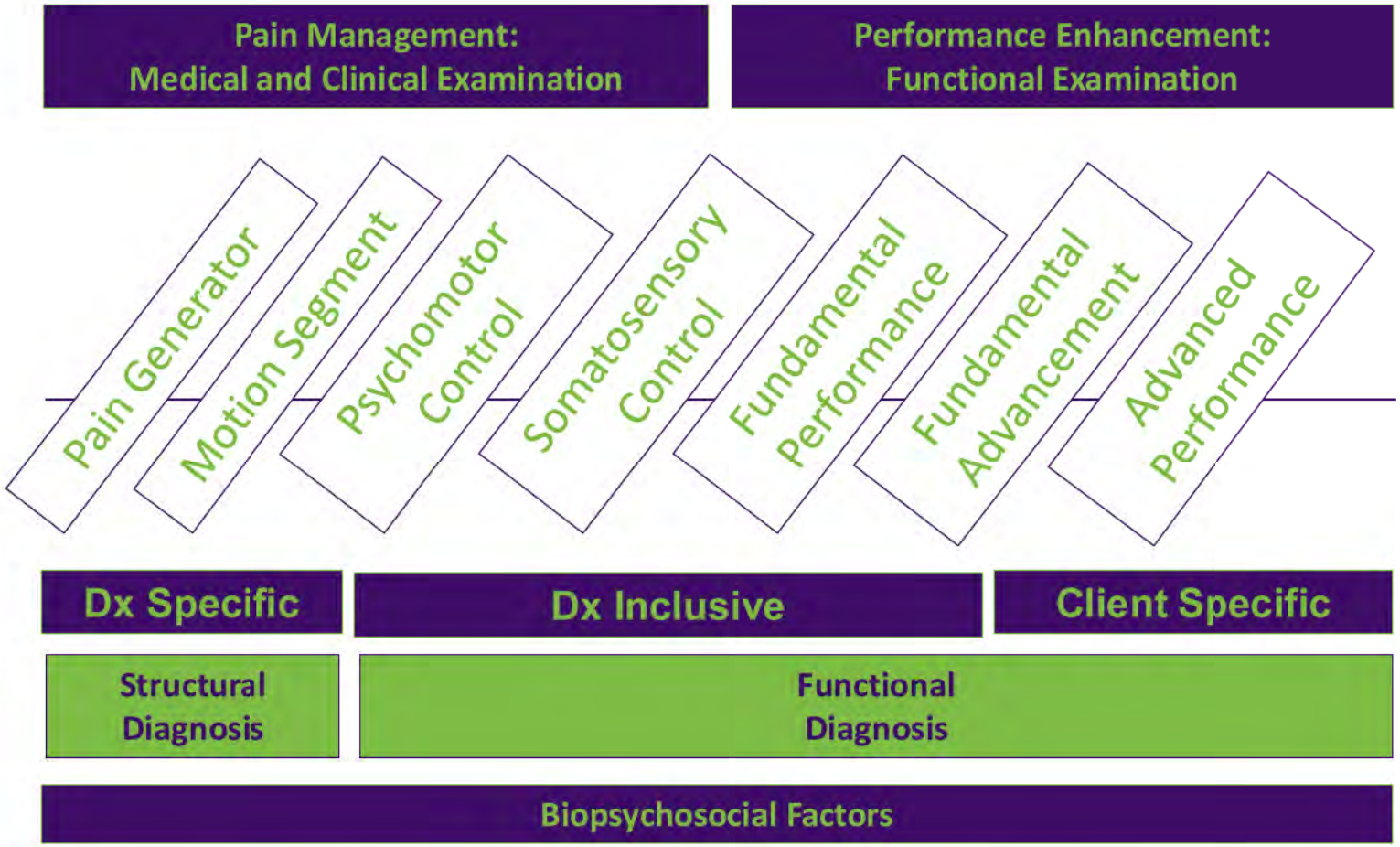
Drop Step

Jumping

Landing







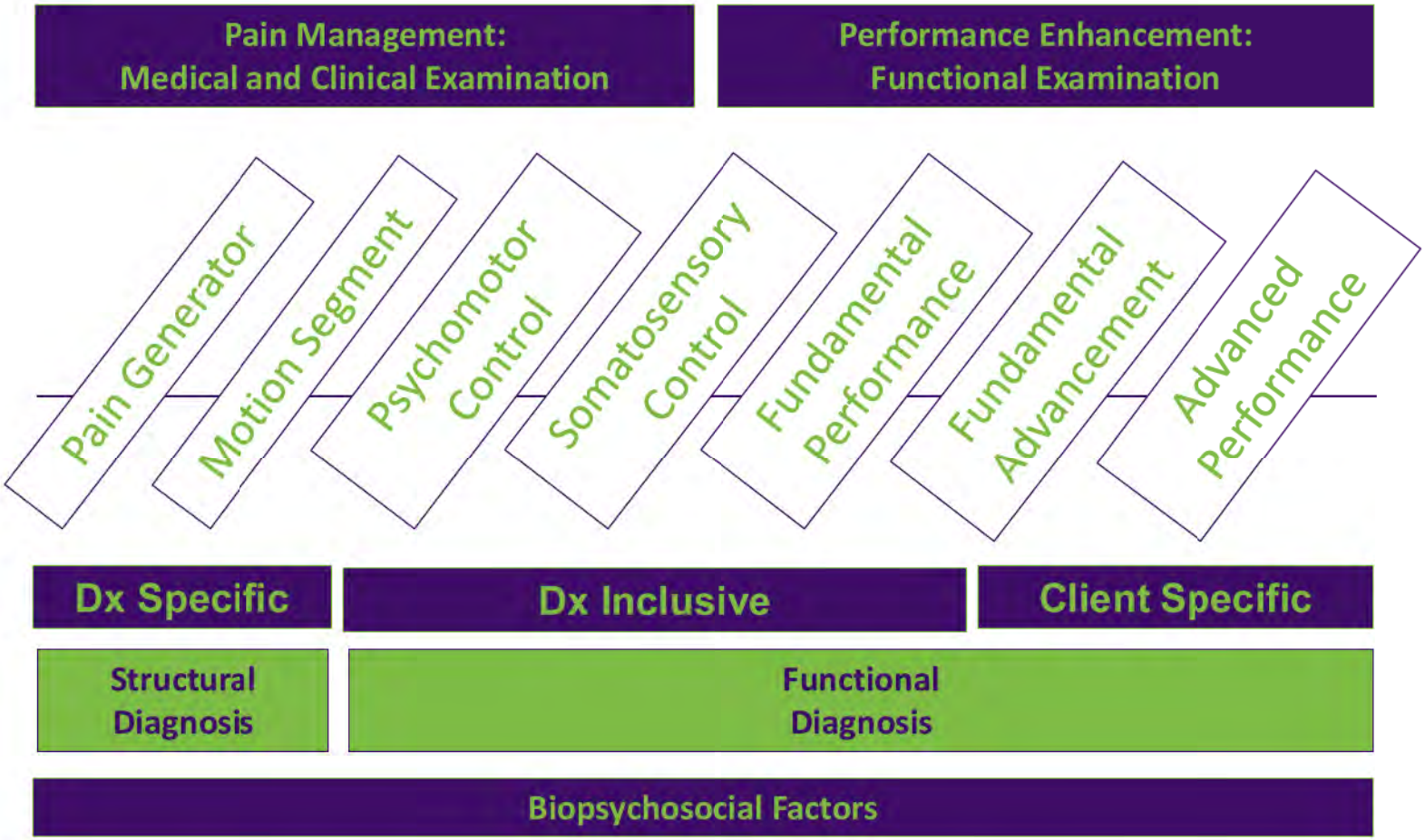
*Sizer and Falsone, 2008

Advanced Performance

- Make sure the athlete is using the fundamental athletic skill applied towards his/ her position and sport

- USE: CSCS, Interdisciplinary approach with skill coaches

Sport Specific



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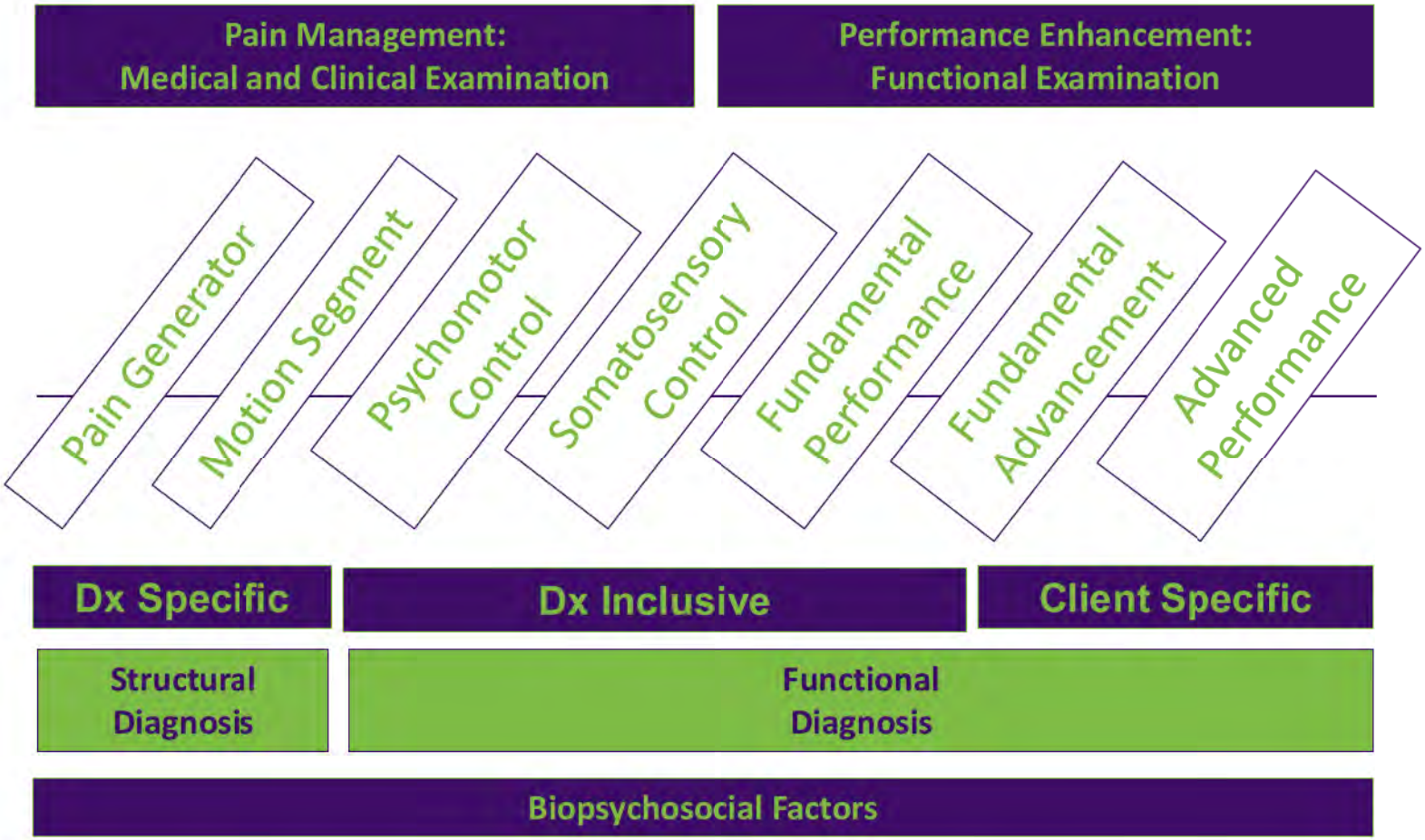

*Sizer and Falsone, 2008

“Let’s Do Some Functional Training”

- Motor redundancy
  - There are infinite ways for the nervous system to complete a task
- What is the goal of functional training?
  - Perfect the movement?

OR

  - Give the organism multiple ways to complete a task safely?

"Let's Do Some Functional Training"

- Dynamic Systems Theory (McKeon, 2009)
  - Create functional variability
  - The SMS is affected by
    - The health of the organism
    - The task being performed
    - The environment in which the task is being performed
  - The SMS is free to adapt task execution based on the environment and the organism

“Let’s Do Some Functional Training”

Cultivating Functional Variability: The Dynamical-Systems Approach to Rehabilitation

Patrick O. McKeon, PhD, ATC, CSCS • University of Kentucky

- “Coordination within the sensorimotor system changes on the basis of demands imposed by the movement goal”
- “A healthy sensorimotor system can accomplish a movement goal in a variety of ways…based on the environmental cues received as the task is performed”
- “Injury reduces the functional variability of a system”

“Let’s Do Some Functional Training”

- Our job is to give the nervous system as many ways as possible to safely complete a task
- Injury reduces this ability and forces the organism to compensate
- The nervous system will prioritize protection of injured tissue (Hug, 2014)

In Summary…

- Keeping DST in mind, Functional Training should
  - Manipulate the organism
    - Eyes closed, turned head, rhythmic perturbation, cognitive tasks
  - Manipulate the task
    - Alter BOS and COG
  - Manipulate the environment
    - Predictable to unpredictable, surface, noise, light

In Summary

- Consider the tools you have available to you for each phase of the spectrum
- Make friends with someone who has other skills along the spectrum in places you may lack knowledge or skill

Stay in Touch!

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