Dynamic Neuromuscular Stabilization (DNS):
According to Kolar
A Developmental Kinesiology Approach
What is DNS?

• A new method of intrinsic locomotor system stabilization
• A new manual rehabilitative approach to activate the “Integrated Stabilizing System” and achieve exciting levels of improved function
What is DNS?

- DNS is not just a technique, but rather an overall strategy designed to better understand the neurophysiological principles of locomotor system function.
- It includes both a knowledge and theoretical base, in addition to assessment, treatment, exercise and lifetime strategy.
Who is the developer of DNS?

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He bases the concept of DNS upon the scientific principles of developmental kinesiology, the neurophysiological aspects of the maturing locomotor system.
The integrated stabilizing system of the spine

- Short intersegmental spinal muscles (multifidi)
- The deep neck flexors
- The diaphragm
- The abdominal wall
- The pelvic floor

- These muscles typically automatically activate prior to purposeful movement to establish a stable base (“Feedforward Mechanism”)
The stabilizing system of the spine

• Each movement starts with the stabilization of body segments providing balance, efficiency and security to the participating elements.

• Activation of the stabilizing muscles during any movement is automatic, or “subconscious”

• All stabilizing muscles act as a functional unit

• Ensures stabilization of the spine and torso during any phasic movement
Functional Stabilization

• Is required for **safe purposeful movement** of the extremities and head

• Essential in course of **static loading** of the spine (sitting, standing)

• Insufficient stabilizers: frequent cause (etiolog) of locomotor system disturbances
• Even simple **purposeful movement**
• Must be preceded and secured by activity of stabilizers
• **Stabilization** – activity of not one muscle only
• But the whole **chain**
• What is the **quality of stabilization**?
Functional Stabilization

- If one muscle (even part of it, such as with trigger points) is dysfunctional, then…
  - The whole stabilizing function is disturbed
  - The quality of the purposeful movement is compromised
Compromised stabilizing system

• The compensatory mechanisms occur trying to provide at least some degree of the body segmental stability
• These compensatory measures typically involve superficial muscle groups overloaded
• The generated movement lacks the efficiency of the proper balance
• Overload of spinal joints and discs, muscle overuse and repetitive strain
• Continuous imbalance in the locomotor system and decreased spinal stability
DNS

• Presents a critical set of functional tests
• These tests:
  – Analyze the quality of functional stability
  – Assist in finding a “key link” of dysfunction
The DNS system is based on developmental kinesiology

Our **diagnosis** – **comparison** of patient‘s stabilizing pattern with the stabilization developmental pattern of a healthy baby
DNS treatment

• To train ideal patterns as defined by the developmental kinesiology

Can you see the difference in stabilization?
DNS therapeutic system

- **Specific functional exercises** improve spinal stability by **targeting the Integrated Stabilizing System**
- **The brain** must be properly stimulated and conditioned to automatically activate optimal movement patterns necessary to co-activate stabilizers
DNS therapeutic system

• The ultimate strategy is to teach the brain to maintain central control and stability of the movement restored during the therapy.

• This is achieved by activation/stimulation of the stabilizers when placing the patient in the primal developmental positions (see reflex locomotion).
DNS therapeutic system

• During activation the spinal and extremity joints become centered.
• The spine becomes axially extended and intro-abdominal pressure activated.
• Stability in all body segments is achieved.

The foundation of healthy movement.
DNS therapeutic system

- As the program advances and becomes more challenging these ideal movement patterns fall under the patient’s voluntary control with less assistance from the clinician.

- Eventually, through the repetition of the exercises, the central control establishes an automatic model that becomes a fundamental part of everyday movement.
DNS treatment strategy

1. Evoke an ideal pattern of stabilization as defined by developmental kinesiology - usually reflex approach is necessary (see reflex locomotion)

2. The patient activates the same quality of stabilization voluntarily under the clinician’s supervision

3. Self-treatment techniques

4. Integration of ideal pattern of stabilization in daily activities (ex\ work, sports, etc.)
DNS therapeutic system

- Encompasses not only a set of exercises
- Also mobilization techniques based on developmental kinesiology positions

- And body awareness training (see body awareness)
When the DNS can be used?

• DNS is equally applicable for the feeble geriatric patient and the elite athlete, for the acute intervertebral disc patient and the chronic neurological disorder patient.
• DNS methods can also benefit infants and adolescents equally
• Once the DNS principles are understood and methods learned, clinicians come to understand that the entire scope of patients available to benefit becomes significantly expanded from previous standards of rehabilitation.
Key Publication

Kolar P:
Facilitation of Agonist Antagonist Co-activation by Reflex Stimulation Methods

Lippincott Williams& Wilkins, 2nd edition 2006, pgs.531-565

See our video presentation
Do you want to learn more about DNS, which forms the basis for many of your current rehabilitation approaches and complements both manual and exercise therapy?

- Register for an official DNS course !!
- Contact Alena Kobesova, M.D. at: alenamudr@klakson.cz
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