Dynamic Neuromuscular Stabilization
DNS Based Functional and Neurological Assessment

REHABILITATION PRAGUE SCHOOL

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DYNAMIC NEUROMUSCULAR STABILIZATION
DNS
Motor Control for Life

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Dynamic Neuromuscular Stabilization approach for back pain, dysfunction, neurological assessment and treatment, and optimal performance

Dynamic Neuromuscular Stabilization (DNS) is a new rehabilitation strategy based on the principles of developmental kinesiology and the neurophysiological aspects of a maturing postural-locomotor system. The maturation of the postnatal central nervous system (CNS) and muscle function are related to anatomical maturation (morphological development). Postural activity occurs automatically in the course of maturation of the CNS via coordinated activity of muscles. Postural ontogenesis defines ideal posture from a developmental perspective. Optimal muscle coordination is ideal for joint loading and defines ideal motor stereotypes. The process is genetically determined and begins automatically during CNS maturation. At the age of 4.5 months, stabilization of the spine, pelvis and the chest in the sagittal plane is completed. Completion of basic sagittal stabilization is followed by the development of extremity movement patterns (i.e., supporting and stepping forward /grasping functions) coupled with trunk rotation. As such, the quality of trunk stabilization is essential for any phasic (dynamic) movement since each movement is preceded by stabilization of body segments to provide balance, efficient coordination and stability for its participating elements. DNS diagnosis is based on comparing the patient's stabilizing pattern to the developmental stabilization pattern of a healthy infant. The treatment approach emphasizes training of these ideal patterns as defined by developmental kinesiology. The brain must be properly stimulated and trained to automatically activate optimal movement patterns that are necessary for co-activation of the stabilizers. The ultimate strategy is to teach the brain to maintain central control and stability of the movement restored during therapy. This can be achieved by activation of the stabilizers when placing the patient in the developmental positions. DNS approach requires patient's participation and compliance. Perception, i.e., the conscious feeling of the movement, is critical. The patient must differentiate between the correct "centrated movement" and the incorrect "decentrated movement" and be able to correct any "decentrated" segments. This ability depends on adequate body awareness. Daily exercise practice is a prerequisite for long lasting effects of the DNS approach to treat pain, prevent repetitive strain injury and enhance sports performance. DNS principles can also be used in functional neurological assessment and treatment. Neurological assessment based on ontogenetic principles will be demonstrated for spasticity, rigidity, cerebellar dysfunction, and neuromuscular diseases.

Course Objectives

- Human ontogenesis: postural development, postural reactions and primitive reflexes for early screening of infants; central coordination disturbance
- DNS stabilization strategies - the integrated stabilizing system, locomotor stereotypes, respiratory stereotype
- Diaphragm role in stabilization & definition of ideal postural-locomotion function from developmental perspective
- Functions of the abdominal wall muscles and diaphragm
- Combined diaphragmatic respiratory, postural and sphincter functions
- Importance of ideomotor functions in movement and sport
- Cortical sensory-motor Integration
- Developmental coordination disorder
- Assessment and training of cortical function
- Neuromotor aspects of rehabilitation in DNS
- Neurological assessment based on ontogenetic principles
- Spasticity, rigidity, cerebellar dysfunction, neuromuscular diseases
- DNS research projects

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Dr. Kobesova is a neurologist and physiatrist at the Rehabilitation Department, University Hospital Motol, School of Medicine, Charles University, Prague, Czech Republic.

Dr. Kobesova is a certified instructor in Manual Medicine in the Czech Republic. She has studied extensively with Professor Karel Lewit, an international authority in manual medicine for more than 5 decades and the founder of the internationally renowned "Prague School of Manual Medicine & Rehabilitation". In conjunction with Professor Lewit, she has produced a seven-volume instruction video demonstrating "Prague School" therapeutic soft tissue mobilization and relaxation techniques.

Dr. Kobesova is the Assistant Academic Director of the Rehabilitation Clinic, the 2nd Medical School and also the Physiotherapy School, Charles University, Prague. In 2014-2018 she acted as a Vice-Dean for physiotherapy and nursing study programs. Since 2014 she has been a member of Research Council at the 2nd Medical Faculty, Charles University, Prague, and since 2017 a member of Research Council at Medical Faculty, Masaryk University, Brno, Czech Republic. Dr. Kobesova is an instructor of neurology and also of physical/manual medicine and rehabilitation. She is a chairman of doctoral study program Kinesiology and Rehabilitation at 2nd Medical faculty, Charles University. She also organizes and teaches courses for international groups of clinicians who travel to the Czech Republic to study Dynamic Neuromuscular Stabilization (DNS) and "Prague School" methods. She is the main coordinator of all DNS courses worldwide and website administrator for www.rehabps.com

Specializing in the treatment of patients suffering from various neurological disorders, Dr. Kobesova is a member of interdisciplinary team, which cares for patients suffering from hereditary motor and sensory neuropathy (HMSN - Charcot Marie Tooth). She has published several clinical articles in the Czech and international journals regarding HMSN, in addition to papers on other topics related to DNS and rehabilitation.

Dr. Kobesova successfully completed the Czech Reflex Locomotion Training Course, which covers the theoretical and practical methods of the founder of Reflex Locomotion, Professor Vaclav Vojta.
Dr. Kobesova has instructed over 80 physical/manual medicine and rehabilitation courses on four continents, mainly on DNS according to Kolar. She has been a key-note speaker on more than 40 international and 50 Czech scientific conferences. She served as the main organizer and/or president on four international conferences in DNS.

Dr. Kobesova currently serves as a member of committee of Czech Society of Rehabilitation and Physical Medicine. Dr. Kobesova is a member of editorial board of Czech Journal of Physical Medicine and Rehabilitation, and international journal Physiotherapy Quarterly. She has published and co-authored 16 book chapters, over 40 scientific papers, 3 educational posters, numerous educational videos and booklets. In 2009-2012 Dr. Kobesova accepted an appointment as Adjunct Senior Lecturer in the Faculty of Health

Sciences, Murdoch University, Australia. Since 2018 Dr. Kobesova has a visiting professor appointment with Alma Mater University, Maribor, Slovenia.

In 2009 Alena Kobesova successfully completed her Ph.D. Her thesis was: "Stability disturbances in patients with hereditary motor and sensory neuropathy" and in 2014 appointed a title of Associate Professor in Kinanthropology.

Dr. Kobesova resides in Prague, Czech Republic.