Course Title: Stroke Rehab 137

Course Subtitle: Neurophysiology of Stroke Recovery

Source: Stroke Recovery and Rehabilitation, 2nd ed.

Source Description: The definitive core text in its field, Stroke Recovery and Rehabilitation is a comprehensive reference covering all aspects of stroke rehabilitation from neurophysiology of stroke through the latest treatments and interventions for functional recovery and restoration of mobility. This second edition is completely updated to reflect recent advances in scientific understanding of neural recovery and growing evidence for new clinical therapies.

The second edition provides in-depth information on the assessment and management of all acute and long-term stroke-related impairments and complications including cognitive dysfunctions, musculoskeletal pain, and psychological issues.

It examines risk factors, epidemiology, prevention, and neurophysiology as well as complementary and alternative therapies, functional assessments, care systems, ethical issues, and community and psychosocial reintegration.

With contributions from over 100 acknowledged leaders from every branch of the stroke recovery field, this edition features expanded coverage of key issues such as the role of robotics and virtual reality in rehabilitation. New chapters have been incorporated to cover fields of recent exploration including transcranial magnetic stimulation, biomarkers, and genetics of recovery as well as essentials like the use of medication and the survivor’s perspective. The up-to-date presentation of scientific underpinnings and multi-specialty clinical perspectives from physical medicine and rehabilitation, neurology, physical therapy, occupational therapy, speech and language pathology, and nursing ensures that Stroke Recovery and Rehabilitation will continue to serve as an invaluable reference for every health care professional working to restore function and help stroke survivors achieve their maximum potential.

See course outline below for details and inclusive content in Stroke Rehab 137 course.

Target Audience: OT/OTA, PT/PTA and other healthcare professionals

Course Length: 4 hours

Course Author/Instructor: Joel Stein, MD / Brown, MS, OTR/L

Educational Level: Introductory, Intermediate, Advanced
Course Objectives:
At the end of the course, participants will be able to:

- Describe various mechanisms and neurophysiology of recovery from stroke
- Describe how imaging is used in regard to stroke recovery
- Outline 3 changes to brain function in relation to recovery of behavior after stroke
- List and describe 3 anatomical biomarkers used as predictors of recovery after stroke
- Describe how genetics can influence stroke recovery
- Outline 3 other factors that influence recovery after stroke
- Become familiar with the physiological basis of rehabilitation in stroke
- Describe rehabilitation training techniques that target the central nervous system, spinal cord and skeletal muscle

Outline of Content:

Hour #1
The Mechanisms and Neurophysiology of Recovery from Stroke
ORGANIZATION OF MOTOR CORTEX IN PRIMATES
Primary motor cortex
Dorsal motor cortex
Ventral motor cortex
Supplemental motor area
DIFFERENTIAL PROCESSING STREAMS BETWEEN PARIETAL AND PREMOTOR CORTEX
Cingulate Motor Areas
Primary somatosensory cortex
EXPERIENCE-DEPENDENT PLASTICITY IN CEREBRAL CORTEX
PLASTICITY IN ADJACENT TISSUE AFTER FOCAL DAMAGE TO M1
FUNCTIONAL AND STRUCTURAL PLASTICITY IN REMOTE REGIONS AFTER FOCAL DAMAGE TO M1
ROLE OF BEHAVIOR IN MODULATING POSTINFARCT RECOVERY

Functional Imaging and Stroke Recovery
METHODS FOR EXAMining SPONTANEOUS BEHAVIORAL RECOVERY FOLLOWING STROKE
Animal studies
Human brain mapping

Hour #2
CHANGES IN BRAIN FUNCTION IN RELATION TO RECOVERY OF BEHAVIOR AFTER STROKE
Increased activation across a network
Diaschisis
Reduced activation in the injured zone
Displacement of function and representational maps
Changes in peri-infarct activity
Changes in interhemispheric laterality
THERAPEUTIC INTERVENTION AND RECOVERY
Brain mapping to guide poststroke therapy
Brain mapping to predict treatment responses and outcomes
Functional imaging of treatment-induced recovery
Motor learning and plasticity
EMERGING CONNECTIVITY METHODS TO STUDY CORTICAL FUNCTION DURING STROKE RECOVERY
FUTURE STUDIES

Anatomical and Physiological Predictors of Recovery
GOALS OF BIOMARKER RESEARCH
Idea of prediction
Correlation with recovery
Motor focus
The ideal biomarker in stroke recovery

Hour #3
ANATOMICAL MARKERS
Lesion volume/location
Focus on the corticospinal tract
Fractional anisotropy as a measure of white-matter integrity
Tractography
PHYSIOLOGICAL MARKERS IN MOTOR RECOVERY
Transcranial magnetic stimulation
EEG/MER
PET/fMRI
Near infrared spectroscopy
Motor synergies/EMG/Kinesiological markers
NONMOTOR FUNCTIONS
Aphasia
CONCLUSIONS

Genetics of Stroke Recovery
FORMS OF GENETIC VARIATION
GENETICS OF NEURAL PLASTICITY AND RECOVERY
INDENTIFICATION OF NEW GENETIC VARIANTS
RELEVANCE OF GENETIC POLYMORPHISMS
OTHER FACTORS THAT INFLUENCE RECOVERY
Depression
Stress
Cerebral Blood Flow
Plasticity
CONCLUSION
Hour #4
Physiological Basis of Rehabilitation Therapeutics in Stroke
Rehabilitation Training Techniques Targeting CNS
Other interventions supporting CNS plasticity
SPINAL CORD
Rehabilitation Training Techniques Targeting Spinal Cord
SKELETAL MUSCLE
Rehabilitation training techniques targeting muscle
SUMMARY

Medications and Stroke Recovery
CONCEPTS AND MECHANISMS
PRECLINICAL PHARMACOLOGY
Noradrenergic agents
Antihypertensives
Major tranquilizers and related drugs
Antidepressants
Anxiolytics
Anticonvulsants
Possible Mechanisms of Neurotransmitter-Modulated Recovery
Pharmacological Effects on Poststroke Recovery in Humans
Recovery from Aphasia
Impairment of recovery
CONCLUSION

Instructional Methods and Formats:
Online course available 24/7 at www.OnlineCE.com includes PDF downloadable course.
See course formats for additional details.

Course Completion Requirements:
A minimum passing score of 100% is required for course completion. You will have as many attempts as needed until your passing score of 100% is achieved. Upon successful completion of course, you will receive your certificate of completion and AOTA eligible CEUs.

AOTA Classification Codes:
Category 1: Domain of OT
Category 2: Occupational Therapy Process
Category 3: Professional Issues

Additional Policies:
OnlineCE Policies are available by clicking on the tab – Policies – located in the left-hand navigation bar.
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