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## MYOFASCIAL PAIN SYNDROME AND SENSITIZATION

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**M**yofascial pain syndrome (MPS) is identified by palpating skeletal muscle for myofascial trigger points (MTrPs). A MTrP is "a hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band." There are emerging findings suggest that MPS is a complex form of neuromuscular dysfunction consisting of motor and sensory abnormalities involving both the peripheral and central nervous systems. Sensitization in corresponding spinal segments plays a major role in the formation of continuous pain in a given part of the body. The clinical manifestation of dorsal horn sensitization includes hyperalgesia of the dermatome, pressure pain sensitivity of the sclerotome and myofascial trigger points within the myotomes, which are supplied by the same sensitized spinal segment. Hence therapeutic approaches require varieties of techniques for eradication of MTrP and desensitization of the whole related spinal segment. Spinal segmental sensitization (SSS) is a hyperactive state of the spinal cord caused by irritative foci sending nociceptive impulses from a sensitized damaged tissue to dorsal horn neurons. The clinical manifestation of dorsal horn sensitization includes hyperalgesia of the dermatome, pressure pain sensitivity of the sclerotome and myofascial trigger points within the myotomes, which are supplied by the sensitized spinal segment. There are significant elevated levels of substance P, calcitonin gene-related peptide (CGRP), bradykinin, tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and interleukin-1 $\beta$  (IL-1 $\beta$ ), serotonin, and norepinephrine in the vicinity of the active myofascial trigger point. Overall, pH is significant lower in the active trigger point. The mechanism consists of the nociceptive stimuli generated in the sensitized areas bombarding the dorsal horn of the spinal cord. This causes central nervous system sensitization with resultant hyperalgesia of the dermatome and sclerotome and spreads from the sensory component of the spinal segment to the anterior horn cells, which control the myotome within the territory of the SSS. The development or

amplified activity of MTrPs is one of the clinical manifestations of SSS. The Segmental Desensitization treatment consists of injection of local anesthetic agents in the involved dermatome to block the posterior branch of the dorsal spinal nerve along the involved paraspinal muscles. In addition, local anesthetic injection is applied peripherally near the foci of irritation in local soft tissue, directly into taut bands and trigger points, using a needling and infiltration technique. Stretching exercises, local heat application and additional transcutaneous electrical nerve stimulation (TENS) treatment complete the muscular relaxation after the injections. Extracorporeal shockwave therapy (ESWT) and High Power Laser (HPL) also play a role as desensitization. Prevention of recurrence should focus on appropriate ergonomic changes common in patients' day-to-day activities to avoid repetitive stress to the injured muscles. In conclusion, MPS, a common pain syndrome consists of local pathology and SSS. Hence therapeutic approaches require varieties of techniques for eradication of trigger point and desensitization of the whole related spinal segment.

### Biography

Areerat Suputtitada MD is a Professor of Rehabilitation Medicine from Chulalongkorn University and King Chulalongkorn Memorial Hospital, Bangkok, Thailand. She is the Director of Excellent Center for Gait and Motion at King Chulalongkorn Memorial Hospital and Chairperson of Neurorehabilitation Research Unit of Chulalongkorn University. She has been involved in education, residency training, research, and clinical treatment related to rehabilitation medicine for more than 20 years. She was invited as international speaker more than 80 times around the world. She received 18 national and international awards, and published more than 60 national and international articles in several areas of Rehabilitation Medicine including Neurological Rehabilitation, Spasticity and Dystonia, Pain, Gait and Motion, and Sport and Exercise Medicine. She has been elected and appointed to important positions in the ISPRM such as the Chairperson of ISPRM Women and Health Task Force and ISPRM International Exchange Committee.

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