UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Physiology of The Stomatognathic System

2021-3-H4601D071-H4601D033M

Aims

The course provides specific concepts in the stomatognathic system for better understanding the pathophysiology and the basic clinical knowledge to practice the profession. The course, organized in one semester, is divided into lectures, tutorials and seminars.

Contents

Describe the sensory innervation of oro-facial region, the sensory innervation of the tooth

Outline the reflexes, swallowing and masticatory function

Detailed program

Salivation. Secretion of water and electrolytes. Ionic mechanisms of salivary secretion.
Enzyme secretion. Cellular mechanisms of control of salivary secretion. Nervous control of salivary glands.

Sensory innervation of oro-facial region. The touch-pressure receptors, thermal receptors, nociceptors, receptors of the temporomandibular joint. Muscle and tendon receptors. Sensory innervation of the tooth; the innervation of the periodontal ligament

The trigeminal field. Anatomical and functional organization of the trigeminal nuclear complex. The trigeminal pain.

Taste receptors, distribution and innervation.

The biomechanics of mastication. Temporo-mandibular joint. Movements of elevation and lowering of the jaw.

Lateral movements.The muscles of mastication, muscle fiber type and motor unit and the lowering of the elevator muscles of the jaw, tension-length relationship. Jaw movements and muscle activity during chewing.

Central integration of the sensitivity and motility of the masticatory system. The brainstem (cranial nerve nuclei, reticular formation and monoaminergic systems). The reflexes of the masticatory muscles: Excitation and inhibition of mastication motor neurons: synaptic effects of proprioceptive muscle afferents of the oral cavity. Reflex actions initiated by muscle proprioceptors. Degree of jaw
reflexes: their role during locomotion and during chewing. Adjustment and sensitivity of the stretch reflex during mastication. The masticatory function Masticatory cycle: during opening, closing, occlusal phase (phase of working power). Control of mastication: local control: reflex compensation masticatory loading and unloading; central control: subcortical rhythm generator; trunk circuits-brain and cerebellar influences and the role of the cerebral cortex.

Voluntary and involuntary phases of swallowing. Influence of the pharyngeal phase on the breath. Neural control of swallowing. Motility of the esophagus and lower esophageal sphincter function.

Calcium homeostasis. Introduction of calcium in the diet and its absorption, calcium content in the blood, calcium deposits in the body, control of calcium excretion and balance.

Prerequisites

Fundamentals of physics, biochemistry, histology and anatomy

Teaching form

The teaching methods will include lectures, videos, and class discussions. Whenever possible, clinical case analyzes will be proposed for the evaluation of the specific physiological parameters

In the first semester the courses will be delivered in mixed mode from asynchronous remote with synchronous videoconferencing events (WEBEX)

Textbook and teaching resource

Manzoni, SCARNATI, *Fisiologia Orale e dell'apparato stomatognatico*, EDI-ERMES

Semester

First semester

Assessment method

The exam consists in a written test. Closed and open questions will be posed to the student in order to evaluate the general knowledge of the topics. Moreover, the student will be asked to answer to questions that require the analysis of a complex phenomenon, its rationalization and the application of specific physiology principles and to

solve simple exercises. Finally, a clinical case may be presented which will require the analysis of the interconnections between different physiological variables in the light of the theoretical paradigms.

Exams written remotely, unless otherwise indicated by the teacher, will be provided by the platform https://esamionline.elearning.unimib.it, access to which will be activated for the date and time of the exam

Office hours

By appointment, by communication to be sent to greta.forcaia@unimib.it; giulio.sancini@unimib.it