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## What is bruxism?

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**B**ruxism, a disorder characterized by grinding and clenching of the teeth, directly involves the teeth and masticatory muscles, therefore the trigeminal nerve, whose central nuclei include the Mesencephalic Trigeminal Nucleus (MTN) that is not a true nucleus consisting of the usual multipolar neurons, MTN is the only intraneuraxial ganglion in the central nervous system, composed mainly of large pseudo-unipolar glutamatergic cells, The peripheral branches of the MTN neurons mainly innervate the stretching receptors of the chewing muscles of the jaw and the mechanoreceptors of the periodontal ligament: therefore, they are activated by bruxism. MTN's central branches release only glutamate (they are only activators cells) and activate the trigeminal motor nucleus and the Reticular Activating System (RAS) nuclei. Bruxism occurs mostly during sleep, so let's see what happens during sleep.

To induce and maintain sleep, the hypothalamic neurons of its preoptic area release Gamma-Amino Butyric Acid (GABA), an inhibitor neurotransmitter, on the Reticular Activating System (RAS) nuclei, this neurotransmitter induces the entry of chlorine into the cells, hyperpolarizing and inhibiting these. MTN cells, on the contrary, are depolarized by GABA, because their receptors are activated upon GABA binding, they "let out" chlorine and depolarize. MTN cells release glutamate, an excitatory neurotransmitter, onto their target cells, in this case onto the RAS cells. During wakefulness, RAS activation causes cerebral cortex activation and also during sleep, of course, the MTN activates the cerebral cortex, furthermore avoids an excessive reduction in RAS neurotransmitters, including noradrenaline, dopamine, serotonin, acetylcholine and glutamate, which, in addition to activating the cerebral cortex, modulate vital functions such as cardiac and respiratory functions. Polysomnography shows that sleep bruxism is always accompanied by cardiac and respiratory activation and, most importantly, by brain function activation. Bruxism is not a para-function, its functions is to activate RAS nuclei, both during wakefulness and during sleep.

## Biography

Andrisani Giovanni, graduated in Dentistry at the University of Bari Aldo Moro (Italy); works in Matera (Italy). Andrisani Giorgia, graduated in Dentistry at the Alfonso X el Sabio University, Madrid (Spain), works in Delft (Netherlands). Both are members of the Italian Society for the Study of Headaches (SISC); members of the Italian sleep medicine association (AIMS); members of the International Society for the Study and Prevention of Perinatal and Infant Death (ISPID).

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