

Efficacia di **ELIBA™** e **R.O.LI.NMF.®** nella riduzione del bruxismo e dei Tmd (disordini temporomandibolari) ad esso correlati

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E' sempre piu' frequente la presenza nei nostri studi di pazienti che presentano una sintomatologia riconducibile ad un disordine temporo-mandibolare (1) spesso inviati da colleghi che non se la sentono di cimentarsi in un campo che richiede conoscenze di fisiologia e neurofisiologia del sistema stomatognatico, con particolare riguardo alla diagnosi differenziale del dolore orofacciale, o da specialisti otorinolaringoiatri a cui i pazienti si rivolgono per dolore all'orecchio senza presentare segni obbiettivi riconducibili a quest'ultimo.

Il disordine temporo-mandibolare (Dtm) rappresenta una condizione caratterizzata da (2,3,4,5,6,7)

- Dolore***
- Disfunzione***

I segni e sintomi più frequenti sono dolore, movimenti mandibolari alterati e limitati, rumori articolari

In ordine di frequenza si riscontrano

- Dolore alla palpazione dei muscoli masticatori***
- Rumori a livello dell'atm***
- Dolore alla palpazione dell'atm***
- Limitazione della dinamica mandibolare***

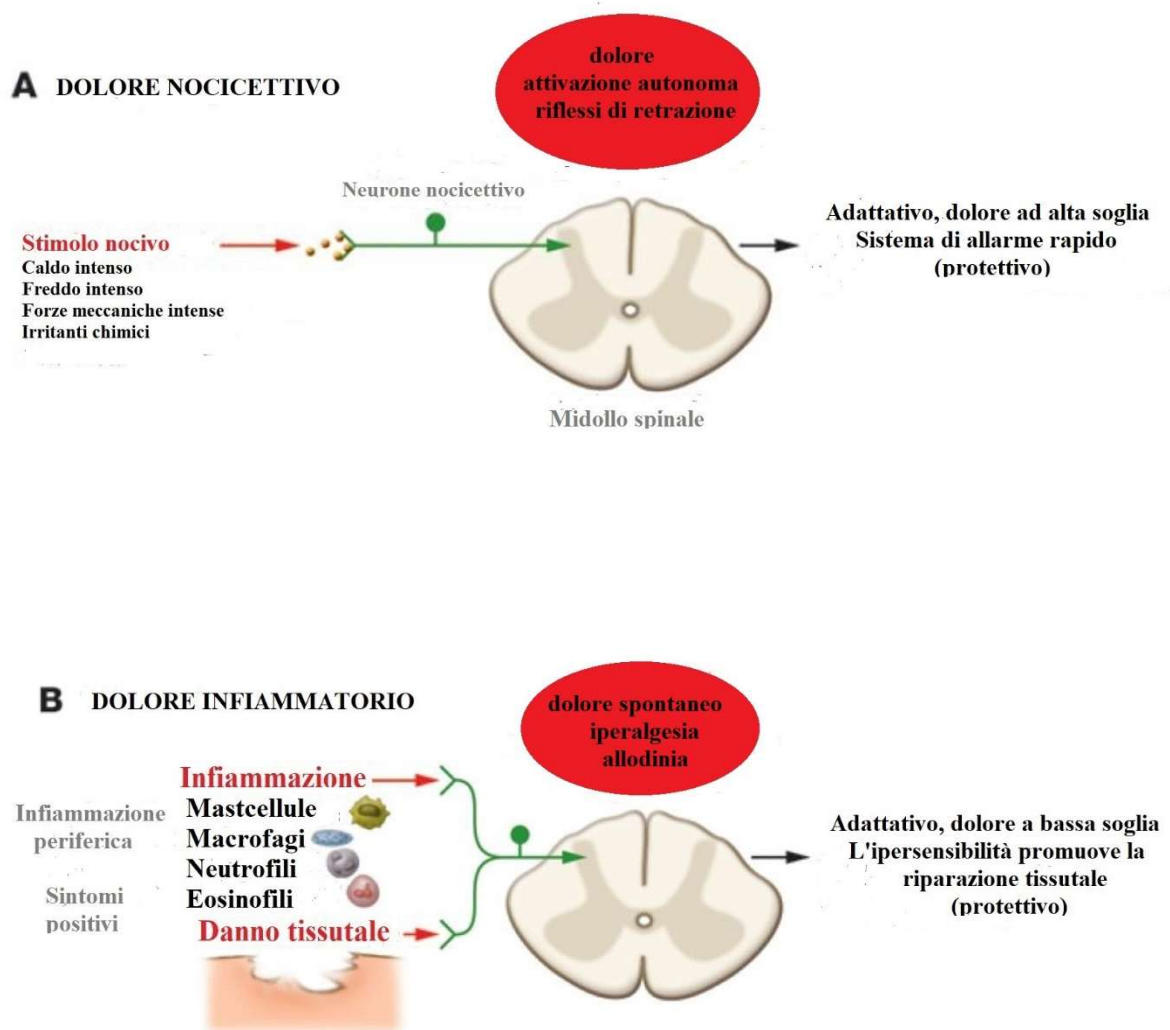
Per quanto riguarda il DOLORE (8,9), esso rappresenta la seconda causa di dolore orofacciale dopo il dolore

dento-parodontale e la seconda causa di dolore muscolo-scheletrico dopo il dolore lombare

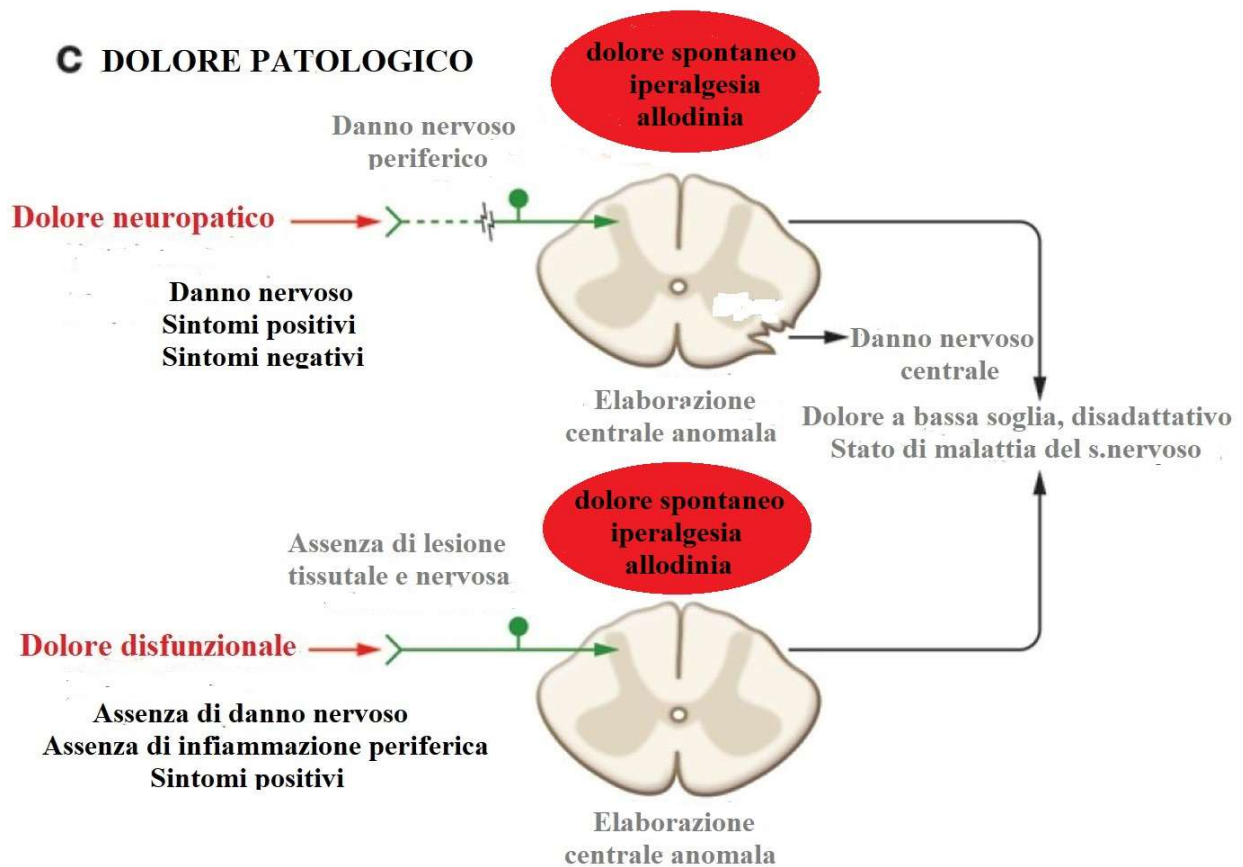
Può presentarsi con

- **Mialgia muscoli masticatori**
- **Artralgia atm**
- **Cefalea attribuibile al Tmd (10)**

È importante porre una corretta diagnosi differenziale perché esistono molteplici tipi patogenetici di dolore e quindi di dolore orofacciale (11,12)



C DOLORE PATOLOGICO



Classificazione patogenetica del dolore orofacciale

- **Dolore orofacciale infiammatorio**
- **Dolore orofacciale neuropatico**
- **Interessamento orofacciale nelle sindromi da dolore disfunzionale (central sensitization syndromes: fibromialgia e correlati), utilità del central sensitization inventory (13)**

	Central Sensitization Inventory (CSI)	mai	raro	talora	spesso	sempre
1	Non mi sento riposata/o al risveglio alla mattina					
2	Sento i muscoli pesanti e dolenti					
3	Ho degli attacchi d'ansia					
4	Digrigno e serro i denti					
5	Ho diarrea e/o stitichezza					
6	Ho bisogno d'aiuto per eseguire i compiti giornalieri					
7	Mi dà fastidio la luce intensa					
8	Mi stanco davvero facilmente quando lavori "fisici"					
9	Sento dolore in tutto il corpo					
10	Soffro di mal di testa					
11	Ho fastidio e/o bruciore alla vescica quando urino					
12	Non dormo bene					
13	Faccio fatica a concentrarmi					
14	Soffro di secchezza, prurito, arrossamenti e reazioni cutanee					
15	Lo stress peggiora i miei sintomi					
16	Mi sento stanco/a o depresso/a					
17	Mi sento svuotato/a e senza energia					
18	Sento i muscoli del collo e delle spalle in tensione					
19	Ho dolore alla mandibola, alla sua articolazione e ai muscoli della faccia					
20	Certi odori, come quelli dei profumi, mi provocano capogiri e/o nausea					
21	Sento il bisogno di urinare frequentemente					
22	Quando vado a letto sento fastidio alle gambe e non riesco a tenerle ferme					
23	Mi scordo facilmente le cose					
24	Ho sofferto di traumi psichici e psicofisici nell'infanzia					
25	Provo dolore nella mia zona pelvica (basso ventre)					

Neblett R, Cohen H, Choi Y, Hartzell MM, Williams M, Mayer TG, Gatchel RJ The Central Sensitization Inventory (CSI): establishing clinically significant values for identifying central sensitivity syndromes in an outpatient chronic pain sample. J Pain. 2013 May;14(5):438-45. doi: 10.1016/j.jpain.2012.11.012. Epub 2013 Mar 13.

Neblett R, Hartzell MM, Cohen H, Mayer TG, Williams M, Choi Y, Gatchel RJ. Ability of the central sensitization inventory to identify central sensitivity syndromes in an outpatient chronic pain sample. Clin J Pain. 2015 Apr;31(4):323-32. doi: 10.1097/AJP.0000000000000113.

gravità	Punteggio totale
Subclinico	0-29
Lieve	30-39
Moderato	40-49
Grave	50-59
Molto grave	60-100

Neblett R, Hartzell MM, Mayer TG, Cohen H, Gatchel RJ Establishing Clinically Relevant Severity Levels for the Central Sensitization Inventory. Pain Pract. 2016 Mar 15. doi: 10.1111/papr.12440. [Epub ahead of print]

Il dolore nel Tmd è un dolore orofacciale infiammatorio e può avere le seguenti caratteristiche (7,10)

Table 2 Diagnostic Criteria for the Most Common Pain-Related Temporomandibular Disorders

Indicated history and exam criteria must be met for each diagnosis.

Myalgia (ICD-9 729.1; ICD-10 M79.1)*

Description		Pain of muscle origin that is affected by jaw movement, function, or parafunction, and replication of this pain occurs with provocation testing of the masticatory muscles.
Criteria	History	Positive for both of the following: 1. Pain** in the jaw, temple, in the ear, or in front of ear; AND 2. Pain modified with jaw movement, function or parafunction.
	Exam	Positive for both of the following: 1. Confirmation [†] of pain location(s) in the temporalis or masseter muscle(s); AND 2. Report of familiar pain [‡] in the temporalis or masseter muscle(s) with at least one of the following provocation tests: a. Palpation of the temporalis or masseter muscle(s); OR b. Maximum unassisted or assisted opening movement(s).
Validity		Sensitivity 0.90; Specificity 0.99
Comments		The pain is not better accounted for by another pain diagnosis. Other masticatory muscles may be examined as dictated by clinical circumstances, but the sensitivity and specificity for this diagnosis based on these findings have not been established.

**Types of myalgia as differentiated by provocation testing with palpation:
Local myalgia, myofascial pain, and myofascial pain with referral**

Local myalgia (ICD-9 729.1; ICD-10 M79.1)

Description		Pain of muscle origin as described for myalgia with localization of pain only at the site of palpation when using the myofascial examination protocol. ⁴⁷
Criteria	History	Positive for both of the following: 1. Pain** in the jaw, temple, in the ear, or in front of ear; AND 2. Pain modified with jaw movement, function, or parafunction.
	Exam	Positive for all of the following: 1. Confirmation [†] of pain location(s) in the temporalis or masseter muscle(s); AND 2. Report of familiar pain [‡] with palpation of the temporalis or masseter muscle(s); AND 3. Report of pain localized to the site of palpation.
Validity		Sensitivity and specificity have not been established.
Comments		The pain is not better accounted for by another pain diagnosis. Other masticatory muscles may be examined as dictated by clinical circumstances but the sensitivity and specificity for this diagnosis based on these findings have not been established.

Myofascial pain (ICD-9 729.1; ICD-10 M79.1)

Description		Pain of muscle origin as described for myalgia with pain spreading beyond the site of palpation but within the boundary of the muscle when using the myofascial examination protocol. ⁴⁷
Criteria	History	Positive for both of the following: 1. Pain** in the jaw, temple, in the ear, or in front of ear; AND 2. Pain modified with jaw movement, function or parafunction.
	Exam	Positive for all of the following: 1. Confirmation [†] of pain location(s) in the temporalis or masseter muscle(s); AND 2. Report of familiar pain [‡] with palpation of the temporalis or masseter muscle(s); AND 3. Report of pain spreading beyond the site of palpation but within the boundary of the muscle.
Validity		Sensitivity and specificity have not been established.
Comments		The pain is not better accounted for by another pain diagnosis. Other masticatory muscles may be examined as dictated by clinical circumstances but the sensitivity and specificity for this diagnosis based on these findings have not been established.

Myofascial pain with referral (ICD-9 729.1; ICD-10 M79.1)

Description		Pain of muscle origin as described for myalgia with referral of pain beyond the boundary of the muscle being palpated when using the myofascial examination protocol. ⁴⁷ Spreading pain may also be present.
Criteria	History	Positive for both of the following: 1. Pain** in the jaw, temple, ear, or in front of ear; AND 2. Pain modified with jaw movement, function, or parafunction.
	Exam	Positive for all of the following: 1. Confirmation [†] of pain location(s) in the temporalis or masseter muscle(s); AND 2. Report of familiar pain [‡] with palpation of the temporalis or masseter muscle(s); AND 3. Report of pain at a site beyond the boundary of the muscle being palpated.
Validity		Sensitivity 0.86; Specificity 0.98
Comments		The pain is not better accounted for by another pain diagnosis. Other masticatory muscles may be examined as dictated by clinical circumstances but the sensitivity and specificity for this diagnosis based on these findings have not been established.

Table 2 continued

Arthralgia (ICD-9 524.62; ICD-10 M26.62)	
Description	Pain of joint origin that is affected by jaw movement, function, or parafunction, and replication of this pain occurs with provocation testing of the TMJ.
Criteria	History Positive for both of the following: 1. Pain** in the jaw, temple, ear, or in front of ear; AND 2. Pain modified with jaw movement, function, or parafunction.
	Exam Positive for both of the following: 1. Confirmation [†] of pain location in the area of the TMJ(s); AND 2. Report of familiar pain [‡] in the TMJ with at least one of the following provocation tests: a. Palpation of the lateral pole or around the lateral pole; OR b. Maximum unassisted or assisted opening, right or left lateral, or protrusive movement(s).
Validity	Sensitivity 0.89; Specificity 0.98
Comments	The pain is not better accounted for by another pain diagnosis.
Headache attributed to TMD (ICD-9 339.89 and 748.0; ICD-10 G44.89) [§]	
Description	Headache in the temple area secondary to pain-related TMD (see Note) that is affected by jaw movement, function, or parafunction, and replication of this headache occurs with provocation testing of the masticatory system.
Criteria	History Positive for both of the following: 1. Headache** of any type in the temple; AND 2. Headache modified with jaw movement, function, or parafunction.
	Exam Positive for both of the following: 1. Confirmation [†] of headache location in the area of the temporalis muscle(s); AND 2. Report of familiar headache [‡] in the temple area with at least one of the following provocation tests: a. Palpation of the temporalis muscle(s); OR b. Maximum unassisted or assisted opening, right or left lateral, or protrusive movement(s).
Validity	Sensitivity 0.89; Specificity 0.87
Comments	The headache is not better accounted for by another headache diagnosis.
Note	A diagnosis of pain-related TMD (eg, myalgia or TMJ arthralgia) must be present and is established using valid diagnostic criteria.
* ICD-9: International Classification of Diseases 9th Revision; ICD-10: International Classification of Diseases 10th Revision. ** The time frame for assessing pain including headache is in "the last 30 days" since the stated sensitivity and specificity of these criteria were established using this time frame. Although the specific time frame can be dependent on the context in which the pain complaint is being assessed, the validity of this diagnosis based on different time frames has not been established. [†] The examiner must identify with the patient all anatomical locations that they have experienced pain in the last 30 days. For a given diagnosis, the location of pain induced by the specified provocation test(s) must be in an anatomical structure consistent with that diagnosis. [‡] "Familiar pain" or "familiar headache" is based on patient report that the pain induced by the specified provocation test(s) has replicated the pain that the patient has experienced in the time frame of interest, which is usually the last 30 days. "Familiar pain" is pain that is similar or like the patient's pain complaint. "Familiar headache" is pain that is similar or like the patient's headache complaint. [§] The ICD-9 and ICD-10 have not established a specific code for headache attributed to TMD as a secondary headache; ICD-9 339.89 and ICD-10 G44.89 are for "other headache syndrome" and ICD-9 784.0 is for "Headache, Facial Pain, Pain in Head NOS (Non-specific)."	

Per quanto riguarda la DISFUNZIONE (7), si tratta di alterazioni intracapsulari dell'Atm che possono causare rumori articolari o, in associazione con un interessamento della muscolatura stomatognatica, difficoltà di apertura della bocca fino ad una franca riduzione

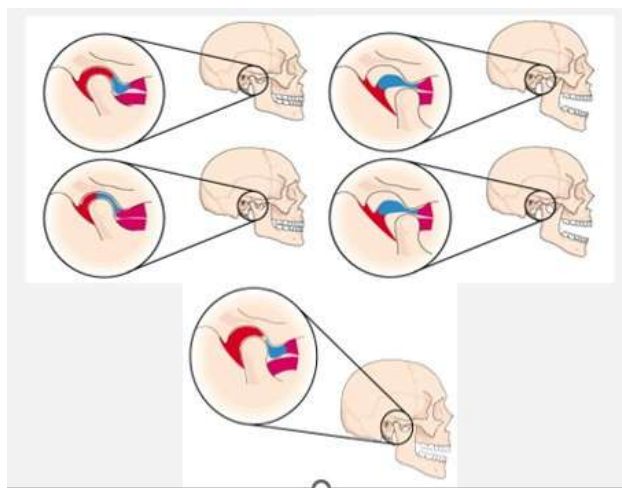


Table 3 Diagnostic Criteria for the Most Common Intra-articular Temporomandibular Disorders

Indicated history and exam criteria must be met for each diagnosis except subluxation, which is based only on history.

Disc displacement with reduction (ICD-9 524.63; ICD-10 M26.63)*

Description	An intracapsular biomechanical disorder involving the condyle-disc complex. In the closed mouth position, the disc is in an anterior position relative to the condylar head and the disc reduces upon opening of the mouth. Medial and lateral displacement of the disc may also be present. Clicking, popping, or snapping noises may occur with disc reduction. A history of prior locking in the closed position coupled with interference in mastication precludes this diagnosis.	
Criteria	History	Positive for at least one of the following: 1. In the last 30 days,** any TMJ noise(s) present with jaw movement or function; OR 2. Patient report of any noise present during the exam.
	Exam	Positive for at least one of the following: 1. Clicking, popping, and/or snapping noise during both opening and closing movements, detected with palpation during at least one of three repetitions of jaw opening and closing movements; OR 2a. Clicking, popping, and/or snapping noise detected with palpation during at least one of three repetitions of opening or closing movement(s); AND 2b. Clicking, popping, and/or snapping noise detected with palpation during at least one of three repetitions of right or left lateral, or protrusive movement(s).
Validity	Without imaging: sensitivity 0.34; specificity 0.92. Imaging is the reference standard for this diagnosis.	
Imaging	When this diagnosis needs to be confirmed, TMJ MRI criteria ³ are positive for both of the following: 1. In the maximum intercuspal position, the posterior band of the disc is located anterior to the 11:30 position and the intermediate zone of the disc is anterior to the condylar head; AND 2. On full opening, the intermediate zone of the disc is located between the condylar head and the articular eminence.	

Disc displacement with reduction with intermittent locking (ICD-9 524.63; ICD-10 M26.63)

Description	An intracapsular biomechanical disorder involving the condyle-disc complex. In the closed mouth position, the disc is in an anterior position relative to the condylar head, and the disc intermittently reduces with opening of the mouth. When the disc does not reduce with opening of the mouth, intermittent limited mandibular opening occurs. When limited opening occurs, a maneuver may be needed to unlock the TMJ. Medial and lateral displacement of the disc may also be present. Clicking, popping, or snapping noises may occur with disc reduction.	
Criteria	History	Positive for both of the following: 1a. In the last 30 days,** any TMJ noise(s) present with jaw movement or function; OR 1b. Patient report of any noise present during the exam; AND 2. In the last 30 days,** jaw locks with limited mouth opening, even for a moment, and then unlocks.
	Exam	Positive for at least one of the following: 1. Clicking, popping, and/or snapping noise detected during both opening and closing movements, detected with palpation during at least one of three repetitions of jaw opening and closing movements; OR 2a. Clicking, popping, and/or snapping noise detected with palpation during at least one of three repetitions of opening or closing movement(s); AND 2b. Clicking, popping, and/or snapping noise detected with palpation during at least one of three repetitions of right or left lateral, or protrusive movement(s).
Validity	Without imaging: sensitivity 0.38; specificity 0.98. Imaging is the reference standard for this diagnosis.	
Imaging	When this diagnosis needs to be confirmed, the imaging criteria ³ are the same as for disc displacement with reduction if intermittent locking is not present at the time of imaging. If locking occurs during imaging, an imaging-based diagnosis of disc displacement without reduction will be rendered and clinical confirmation of reversion to intermittent locking is needed.	
Note	Although not required, when this disorder is present clinically, examination is positive for inability to open to a normal amount, even momentarily, without the clinician or patient performing a maneuver to reduce the lock.	

Disc displacement without reduction with limited opening (ICD-9 524.63; ICD-10 M26.63)

Description	An intracapsular biomechanical disorder involving the condyle-disc complex. In the closed mouth position, the disc is in an anterior position relative to the condylar head, and the disc does not reduce with opening of the mouth. Medial and lateral displacement of the disc may also be present. This disorder is associated with persistent limited mandibular opening that does not reduce with the clinician or patient performing a manipulative maneuver. This is also referred to as "closed lock." This disorder is associated with limited mandibular opening.	
Criteria	History	Positive for both of the following: 1. Jaw locked so that the mouth would not open all the way; AND 2. Limitation in jaw opening severe enough to limit jaw opening and interfere with ability to eat.
	Exam	Positive for the following: 1. Maximum assisted opening (passive stretch) movement including vertical incisal overlap < 40 mm.
Validity	Without imaging: sensitivity 0.80; specificity 0.97. Imaging is the reference standard for this diagnosis.	
Imaging	When this diagnosis needs to be confirmed, TMJ MRI criteria ³ are positive for both of the following: 1. In the maximum intercuspal position, the posterior band of the disc is located anterior to the 11:30 position and the intermediate zone of the disc is anterior to the condylar head; AND 2. On full opening, the intermediate zone of the disc is located anterior to the condylar head. Note: Maximum assisted opening of < 40 mm is determined clinically.	
Note	Presence of TMJ noise (eg, click during opening) does not exclude this diagnosis.	

Table 3 continued**Disc displacement without reduction without limited opening (ICD-9 524.63; ICD-10 M26.63)**

Description	An intracapsular biomechanical disorder involving the condyle-disc complex. In the closed mouth position, the disc is in an anterior position relative to the condylar head and the disc does not reduce with opening of the mouth. Medial and lateral displacement of the disc may also be present. This disorder is NOT associated with current limited opening.	
Criteria	History	Positive for both of the following in the past: 1. Jaw locked so that the mouth would not open all the way; AND 2. Limitation in jaw opening severe enough to limit jaw opening and interfere with ability to eat.
	Exam	Positive for the following: 1. Maximum assisted opening (passive stretch) movement including vertical incisal overlap $\geq$ 40 mm.
Validity	Without imaging: sensitivity 0.54; specificity 0.79. Imaging is the reference standard for this diagnosis.	
Imaging	When this diagnosis needs to be confirmed, TMJ MRI criteria ³ are the same as for disc displacement without reduction with limited opening. Note: Maximum assisted opening of $\geq$ 40 mm is determined clinically.	
Note	Presence of TMJ noise (eg, click during opening) does not exclude this diagnosis.	

Degenerative joint disease (ICD-9 715.18; ICD-10 M19.91)

Description	A degenerative disorder involving the joint characterized by deterioration of articular tissue with concomitant osseous changes in the condyle and/or articular eminence.	
Criteria	History	Positive for at least one of the following: 1. In the last 30 days,** any TMJ noise(s) present with jaw movement or function; OR 2. Patient report of any noise present during the exam.
	Exam	Positive for the following: 1. Crepitus detected with palpation during at least one of the following: opening, closing, right or left lateral, or protrusive movement(s).
Validity	Without imaging: sensitivity 0.55; specificity 0.61. Imaging is the reference standard for this diagnosis.	
Imaging	When this diagnosis needs to be confirmed, then TMJ CT criteria ³ are positive for at least one of the following: Subchondral cyst(s), erosion(s), generalized sclerosis, or osteophyte(s). Note: Flattening and/or cortical sclerosis are considered indeterminate findings for degenerative joint disease (DJD) and may represent normal variation, aging, remodeling, or a precursor to frank DJD.	

Per quanto riguarda l'eziopatogenesi dei Dtm, vi sono ormai numerose prove a sostegno del ruolo del BRUXISMO (14,15,16,17,18), in special modo del serramento dentario come fattore di sovraccarico muscolo-scheletrico, nella sua insorgenza, senza nessun ruolo diretto dell'occlusione dentale, che rappresenterebbe, in caso di squilibrio, solo un fattore aggravante, avendo un ruolo nella distribuzione dei carichi (17,19,20)

Elevati livelli di compromissione nell'asse II (7,22,23) di valutazione psicosociale sono stati descritti in numerosi lavori clinici sui Tmd, con influenza anche sulla prognosi, ma non è mai stato chiarito il legame con l'insorgenza dei sintomi (modello biopsicosociale)

L'aspetto più importante che lega il modello del sovraccarico al modello biopsicosociale è il ruolo primario che il primo può assegnare agli aspetti psicosociali

L'attività muscolare isometrica protratta riconosce nella anormale sensibilità allo stress e nella personalità ansiosa i più plausibili fattori eziologici, supportando il potenziale ruolo primario della tensione emotiva come fattore scatenante e di altri fattori di tipo affettivo come predisponenti o aggravanti dei sintomi

Il bruxismo si distingue in (24,25,26,27)

- ***Bruxismo del sonno (sleep bruxism)***
- ***Bruxismo della veglia (awake bruxism)***
- ***Serramento (bruxismo statico, clenching)***
- ***Digrignamento (bruxismo dinamico, grinding)***

Durante la veglia può essere presente bracing, ovvero una condizione nella quale i muscoli

masticatori sono tenuti in costante tensione senza contatto tra i denti, thrusting, ovvero una costante spinta in protrusione della mandibola, oppure il mantenimento di un costante contatto tra i denti

È altamente probabile che gli effetti del clenching e del grinding si esplichino in modo differente sulle diverse componenti del sistema stomatognatico (16)

ACTIVITY	FORCE INTENSITY	DEGREES OF FREEDOM	LOADED SURFACE	CONDYLAR FATIGUE
Grinding	Low (isotonic)	6	Variable	Minimum
Clenching	High (isometric)	0	Fixed	Maximum

Quindi le sue conseguenze cliniche saranno differenti, maggior sovraccarico muscolo-articolare nel serramento, con possibile comparsa di Dtm, maggiore usura e fratture dentali, trauma parodontale da occlusione, complicanze protesiche ed implanto-protesiche nel digrignamento

Senza entrare nel merito della sua complessa eziopatogenesi (28), che potrà essere oggetto di trattazione a parte, potremo sintetizzare così

- Il bruxismo non è un disordine occlusale (29)***
- I denti, il parodonto, le strutture muscolo-articolari sono vittime e non causa di bruxismo (30)***
- Il bruxismo del sonno ha origine centrale (31,32)***

- ***I fattori psicosociali hanno maggiore importanza nel clenching durante la veglia rispetto al bruxismo del sonno (33)***

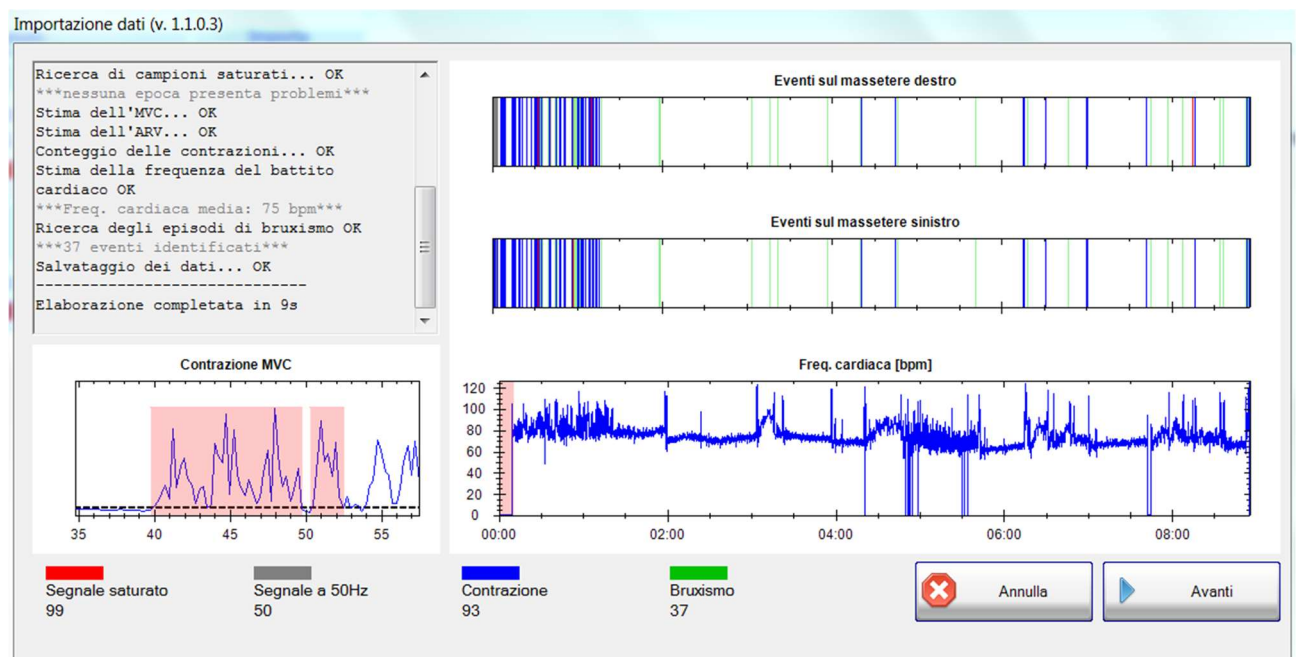
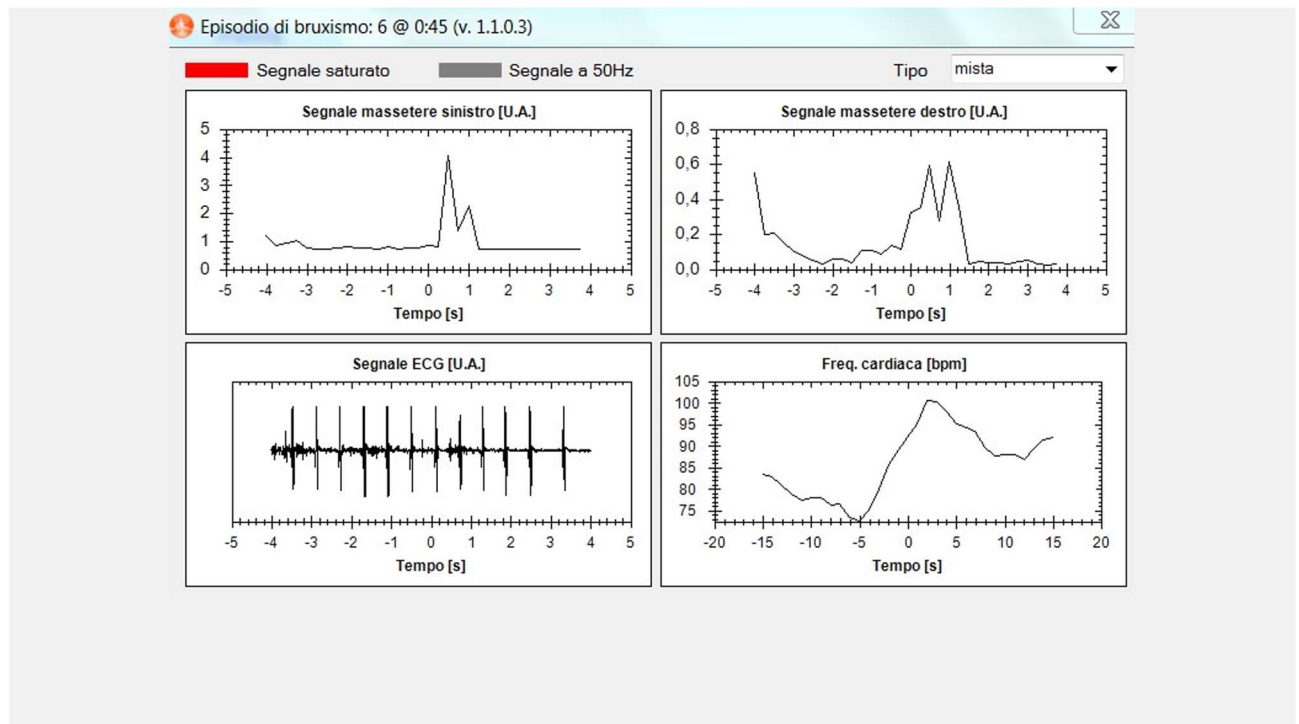


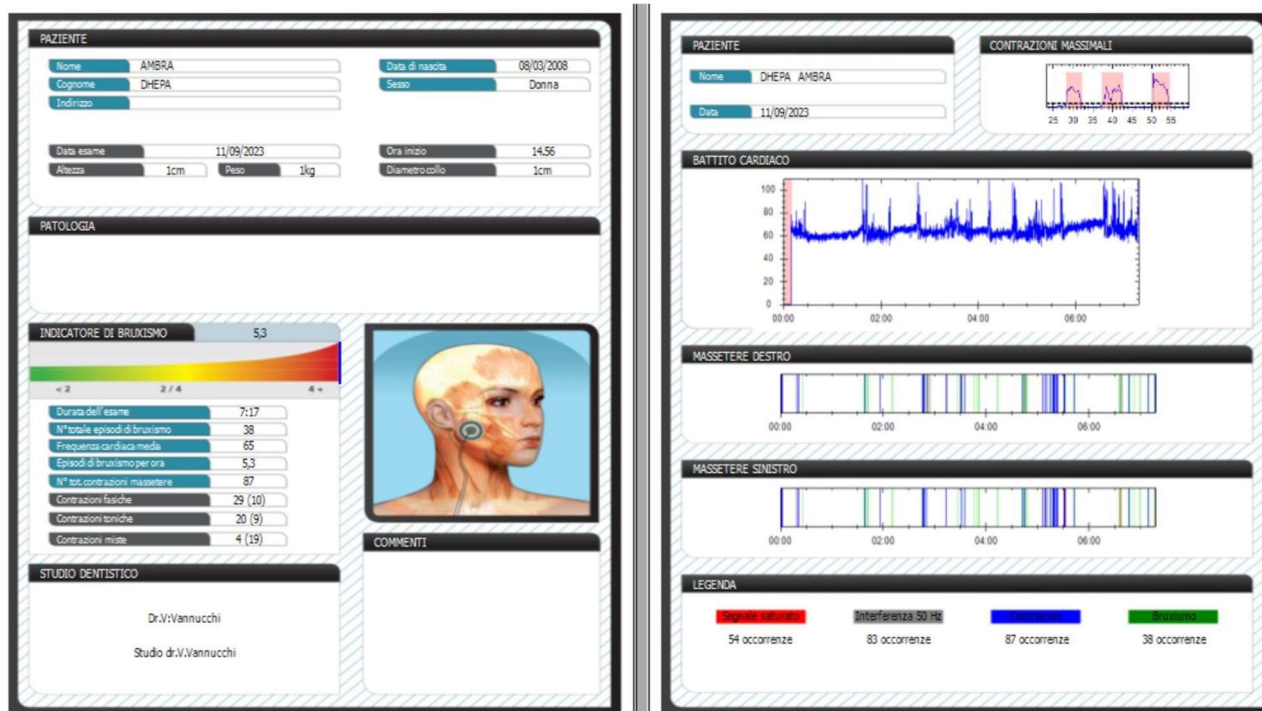
Per la diagnosi di bruxismo del sonno utilizziamo un holter, il BRUXOFF (34,35,36,37,38,39)



Il bruxoff mette in evidenza la presenza di un aumento della frequenza cardiaca e della successiva contrazione del massetere (in una finestra di 5 secondi), che permette di identificare l'episodio di bruxismo e di differenziarlo da altre attività oromotorie (deglutizione, movimenti della

testa, tosse, soliloquio), in quanto le RMMA (attivazione ritmica dei muscoli masticatori) sono secondarie ad un'attivazione del SNA (40,41,42,43,44)





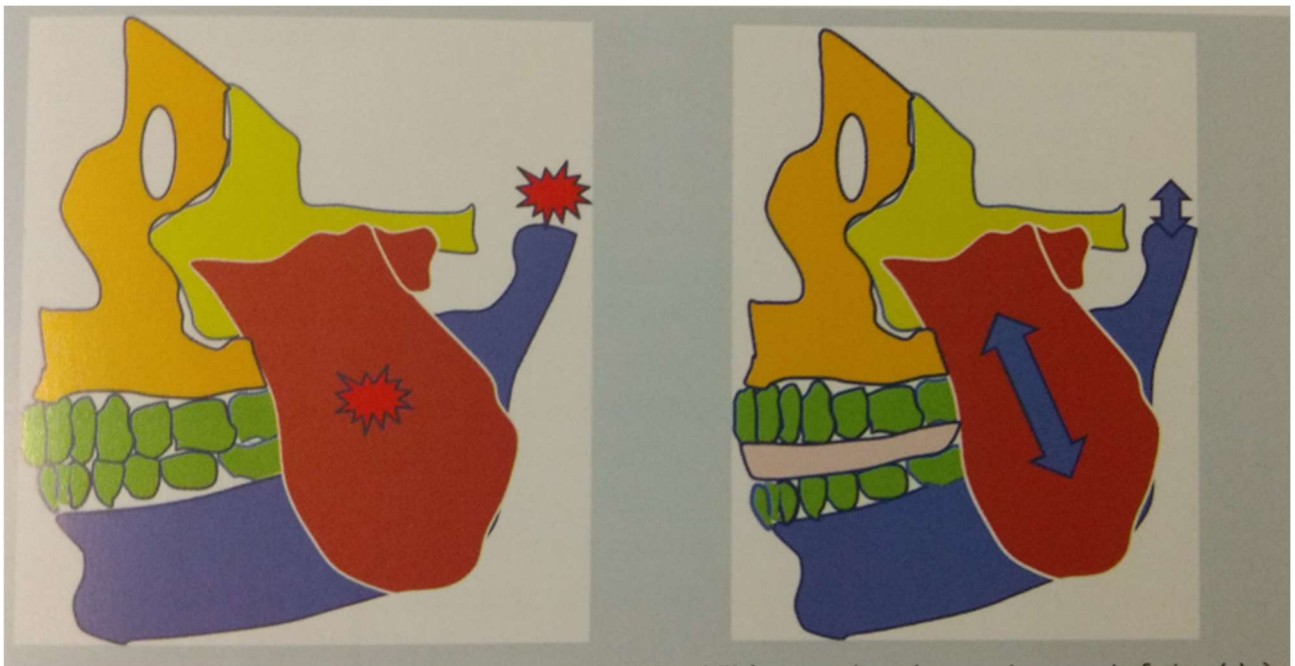
La diagnosi di bruxismo della veglia è essenzialmente una diagnosi self report, basata su una serie di domande (45,46)

Item	Si	No	Non so
1) Digriгна i denti quando dorme?			
2) Le hanno mai detto che digriгна i denti quando dorme?			
3) Qualcuno ha sentito il rumore provocato dai suoi denti mentre dorme?			
4) Le capita di svegliarsi con i denti serrati?			
5) Le capita di svegliarsi con dolore o indolenzimento alla mascella?			
6) Le capita di svegliarsi con dolore o indolenzimento ai denti e/o alle gengive?			
7) Le capita di svegliarsi con un mal di testa nella regione delle tempie?			
8) Le capita di svegliarsi con la sensazione che la mandibola sia bloccata?			
9) Si è mai accorto di serrare i denti durante il giorno?			
10) Si è mai accorto di digriгна i denti durante il giorno?			

Sono attualmente in studio degli holter che permettono di monitorare il paziente nelle 24 ore, permettendo quindi di evidenziare un eventuale bruxismo della veglia (47)

Quindi il bruxismo, in particolar modo il serramento (contrazione isometrica, clenching), determinerebbe un sovraccarico muscolo-scheletrico tale da indurre stress sulle strutture articolari, con artralgia ed alterazioni discali fino alla perforazione ed alla conseguente artrosi e dolorabilità muscolare da esaurimento da fatica, quindi l'insorgenza di un quadro clinico di Dtm (16,17,18)

Qualsiasi tipo di PLACCA OCCLUSALE (18) puo' apportare dei benefici, riducendo gli EFFETTI del bruxismo sulle strutture muscolo-articolari



Questo in quanto è spesso sufficiente incrementare la dimensione verticale per ridurre lo stress sulle strutture muscolo-scheletriche

L'effetto è, però, solo momentaneo, in quanto dopo qualche mese, le nuove fibre reclutate a causa della variazione del loro asse di lavoro dovuto alla presenza della placca, vanno anche loro incontro ad esaurimento da fatica, e questo costringe il clinico a continui aggiustamenti, senza intervenire sulla causa

Al contrario, ELIBA™ (48) risulta in grado di agire sul bruxismo e non solo sulle sue conseguenze





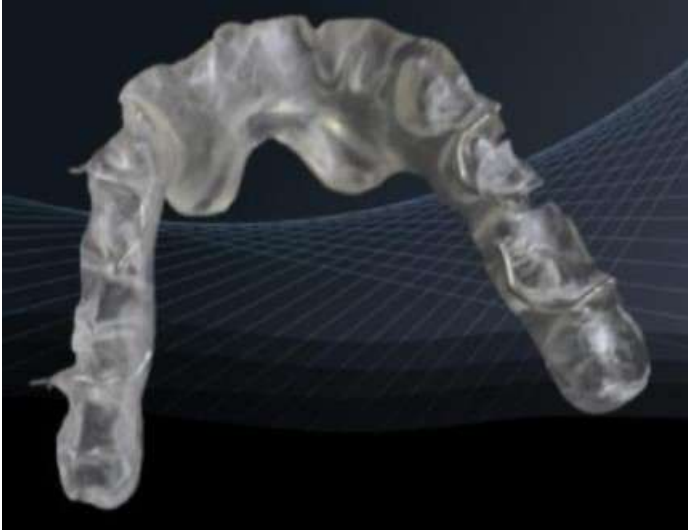
SENZA ELIBA

CON ELIBA

Il dispositivo R.O.LI.NMF. ®, oltre a ridurre il bruxismo, determina anche un riequilibrio occlusale qualora l'occlusione, evidenziata dalle nostre metodiche neuromiofasciali, risulti non equilibrata (17,19,20)

Cio' determinerebbe una torsione mandibolare durante il serramento, con aggravamento del danno articolare e muscolare





- 1) **AAOP: Temporo-mandibular Disorders. Guidelines for Classification, Assessment and Management. C. Mc Neill Ed., Illinois, 1993, 2 th. Ed.**
- 2) **Simons, DG.; Travell, JG.; Simons, LS. Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual. Williams & Wilkins; Baltimore: 1999. p. 1064**
- 3) **Wright, EF. Manual of Temporomandibular Disorders. Blackwell Munksgaard; Ames, IA: 2005. p. 338**
- 4) **Okeson, JP. History and examination for temporomandibular disorders.. In: Okeson, JP., editor. Management of Temporomandibular Disorders and Occlusion. Mosby; St Louis: 2008. p. 228-301.**
- 5) **Stegenga B. Nomenclature and classification of temporomandibular joint disorders. J Oral Rehabil. 2010; 37:760–765. [PubMed: 20887277]**
- 6) **Greene CS. American Association for Dental Research. Diagnosis and treatment of temporomandibular disorders: Emergence of a new care guidelines**

- statement. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2010; 110:137–139. [PubMed: 20659695]*
- 7) *Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP et al. Diagnostic Criteria for Temporomandibular Disorders (DC/ TMD) for Clinical and Research Applications: recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group. J Oral Facial Pain Headache. 2014;28:6–27.*
 - 8) *The American Academy of Orofacial Pain. Orofacial pain: guidelines for assessment, diagnosis and management, 5th ed. Chicago (IL): Quintessence Publishing Co, Inc.; 2013.*
 - 9) *National Institute of Dental and Craniofacial Research. [7/28/2013] Facial Pain. <http://www.nidcr.nih.gov/DataStatistics/FindDataByTopic/FacialPain/>*
 - 10) *Schiffman E, Ohrbach R, List T, Anderson G, Jensen R, John MT et al. Diagnostic criteria for headache attributed to temporomandibular disorders. Cephalalgia. 2012;32:683–692.*
 - 11) *Woolf CJ. What is this thing called pain?. J Clin Invest. 2010;120(11):3742-4.*
 - 12) *Smart KM, Blake C, Staines A, Doody C. The Discriminative validity of “nociceptive,” “peripheral neuropathic,” and “central sensitization” as mechanisms-based classifications of musculoskeletal pain. Clin J Pain. 2011;27(8):655-63.*
 - 13) *Woolf CJ. Central sensitization: implications for the diagnosis and treatment of pain. 2011;152(3 Suppl):S2-15.*
 - 14) *Manfredini D, Lobbezoo F. Relationship between bruxism and temporomandibular disorders: a systematic review of literature from 1998 to 2008. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2010;109:e26–e50.*
 - 15) *Raphael, K.G.; Janal, M.N.; Sirois, D.A.; Dubrovsky, B.; Wigren, P.E.; Klausner, J.J.; Krieger, A.C.; Lavigne, G.J. Masticatory muscle sleep background electromyographic activity is elevated in myofascial*

- temporomandibular disorder patients. J. Oral Rehabil.* 2013, 40, 883–891.
- 16) Peretta R, Manfredini D. Future perspectives in TMD pathophysiology. In: Manfredini D (Ed). *Current concepts on temporomandibular disorders*. Berlin, Quintessence Publishing 2010: 153-168
 - 17) Manfredini D, Rossi A, Stellini E, Guarda Nardini L. Il bruxismo come fattore di sovraccarico muscolo-scheletrico. In: Manfredini D. *Il bruxismo nella clinica odontoiatrica*. Quintessenza Edizioni 2015: Cap.5 65-84
 - 18) Manfredini D. Gestione delle conseguenze cliniche: I disordini temporomandibolari. In: Manfredini D. *Il bruxismo nella clinica odontoiatrica*. Quintessenza Edizioni 2015: Cap.8 117-163
 - 19) Gidarakou IK, Tallents RH, Kyrkanides S, Stein S, Moss ME. Comparison of skeletal and dental morphology in asymptomatic volunteers and symptomatic patients with bilateral disk displacement with reduction. *Angle Orthod* 2002; 72: 541-6.
 - 20) Turp JC, Schindler H. The dental occlusion as a suspected cause for TMDs: epidemiological and etiological considerations. *J Oral Rehabil* 2012; 39: 502-12.
 - 21) Turp JC, Schindler HJ. Occlusal therapy of temporomandibular pain. In: Manfredini D (Ed). *Current concepts on TMD*. Berlin, Quintessence Publishing, 2010: 359-382.
 - 22) Manfredini D, Ahlberg J, Winocur E, Guarda-Nardini L, Lobbezoo F. Correlation of RDC/TMD axis I diagnoses and axis II pain-related disability. A multicenter study. *Clin Oral Investig* 2011; 15: 749-756.
 - 23) Manfredini D, Lobbezoo F. Role of psychosocial factors in the etiology of bruxism. *J Orofac Pain* 2009; 23: 153-166.
 - 24) Lobbezoo F, Ahlberg J, Glaros AG, Kato T, Koyano K, Lavigne GJ et al. Bruxism defined and graded: an international consensus. *J Oral Rehabil.* 2013;40:2–4.
 - 25) American Academy of Sleep Medicine. *The international classification of sleep disorders: diagnostic*

- and coding manual, 2nd ed. Westchester (IL): American Academy of Sleep Medicine; 2005.*
- 26) Lobbezoo, F.; Ahlberg, J.; Raphael, K.G.; Wetselaar, P.; Glaros, A.G.; Kato, T.; Santiago, V.; Winocur, E.; De Laat, A.; De Leeuw, R.; et al. *International consensus on the assessment of bruxism: Report of a work in progress. J. Oral Rehabil.* 2018, 45, 837–844.
- 27) Manfredini, D.; Ahlberg, J.; Wetselaar, P.; Svensson, P.; Lobbezoo, F. *The bruxism construct: From cut-off points to a continuum spectrum. J. Oral Rehabil.* 2019, 46, 991–997.
- 28) Manfredini, D.; Colonna, A.; Bracci, A.; Lobbezoo, F. *Bruxism: A summary of current knowledge on aetiology, assessment and management. Oral Surg.* 2020, 13, 358–370.
- 29) Manfredini D, Landi N, Tognini F, Montagnani G, Bosco M. *Occlusal features are not a reliable predictor of bruxism. Minerva Stomatol* 2004; 53:231-9.
- 30) Lobbezoo F, Hamburger HL, Naeije M. *Etiology of bruxism. In: Paesani D (Ed). Bruxism: from theory to practice. Berlin, Quintessence Publishing* 2009.
- 31) Kato T, Thie N, Miyawaki S, Lavigne GJ. *Topical review: sleep bruxism and the role of peripheral sensory influences. J Orofac Pain* 2003; 17: 191-213.
- 32) Lavigne GJ, Kato T, Kolta TA, Sessle BJ. *Neurobiological mechanisms involved in sleep bruxism. Crit Rev Oral Biol Med* 2003; 14: 30-46.
- 33) Manfredini D, Lobbezoo F. *Role of psychosocial factors in the etiology of bruxism. J Orofac Pain* 2009; 23: 153-66.
- 34) Castroflorio T, Icardi K, Becchino B, Merlo E, Debernardi C, Bracco P, Farina D. *Reproducibility of surface EMG variables in isometric sub-maximal contractions of jaw elevator muscles. J Electromyogr Kinesiol* 2006 Oct;16(5):498-505.
- 35) Dutra KMC, Pereira FJ jr, Romprè PH, Huynh N, Fleming N, Lavigne GJ. *Oro-facial activities in sleep bruxism patients and in normal subjects: a controlled*

- polygraphic and audio/video study. J Oral Rehabil. 2009 Feb;36(2):86-92.*
- 36) Manfredini D, Ahlberg J, Castroflorio T, Poggio CE, Guarda-Nardini L, Lobbezoo F. Diagnostic accuracy of portable instrumental device for measuring sleep bruxism. A systematic review of polysomnographic studies. J Oral Rehabil 2014; 41: 836-842.**
 - 37) Castroflorio T, Deregibus A, Bargellini A, Debernardi C, Manfredini D. Detection of sleep bruxism: comparison between an electromyographic and electrocardiographic portable holter and polysomnography. J Oral Rehabil. 2014; 41: 163-9.**
 - 38) Deregibus A, Castroflorio T, Bargellini A, Debernardi CL. Reliability of a portable device for the detection of sleep bruxism. Clin Oral Investig. 2014; 18: 2037-43.**
 - 39) Thymi, M.; Lobbezoo, F.; Aarab, G.; Ahlberg, J.; Baba, K.; Carra, M.C.; Gallo, L.M.; De Laat, A.; Manfredini, D.; Lavigne, G.; et al. Signal acquisition and analysis of ambulatory electromyographic recordings for the assessment of sleep bruxism: A scoping review. J. Oral Rehabil. 2021, 48, 846–871.**
 - 40) Macaluso GM, Guerra P, Di Giovanni G, Boselli M, Parrino L, Terzano MG. Sleep bruxism is a disorder related to periodic arousals during sleep. J Dent Res 1998 Apr;77(4):565-73.**
 - 41) Huynh N, Kato T, Rompré PH, Okura K, Saber M, Lanfranchi PA, Montplaisir JY, Lavigne GJ. Sleep bruxism is associated to micro-arousals and an increase in cardiac sympathetic activity. J Sleep Res 2006 Sep;15(3):339-46.**
 - 42) Lavigne GJ, Huynh N, Kato T, Okura K, Adachi K, Yao D, Sessle B. Genesis of sleep bruxism: motor and autonomic-cardiac interactions Arch Oral Biol. 2007 Apr;52(4):381-4.**
 - 43) Kato T, Masuda Y, Yoshida A, Morimoto T. Masseter EMG activity during sleep and sleep bruxism. Arch Ital Biol 2011 Nov 7;149(4):478-91. Review.**
 - 44) Carra MC, Rompré PH, Kato T, Parrino L, Terzano MG, Lavigne GJ, Macaluso GM. Sleep bruxism and sleep**

arousal: an experimental challenge to assess the role of cyclic alternating pattern. J. Oral Rehabil 2011 Sep;38(9):635-42.

- 45) Bracci, A.; Djukic, G.; Favero, L.; Salmaso, L.; Guarda-Nardini, L.; Manfredini, D. Frequency of awake bruxism behaviors in the natural environment. A seven day, multiple-point observation of real time report in healthy young adults. J. Oral Rehabil. 2018, 45, 423–429.***
- 46) Colonna, A.; Lombardo, L.; Siciliani, G.; Bracci, A.; Guarda-Nardini, L.; Djukic, G.; Manfredini, D. Smartphone-based application for EMA assessment of awake bruxism: Compliance evaluation in a sample of healthy young adults. Clin. Oral Investig. 2020, 24, 1395–1400.***
- 47) Colonna, A.; Noveri, L.; Ferrari, M.; Bracci, A.; Manfredini, D. Electromyographic Assessment of Masseter Muscle Activity: A Proposal for a 24 h Recording Device with Preliminary Data. J. Clin. Med. 2023, 12, 247.***
- 48) A. Monaco, D. Pietropaoli, IAPNOR, B. C. Cooper, and E. Ortu, “A new device improves signs and symptoms of TMD,” Pain Research and Management, vol. 2019, Article ID 5646143, 10 pages, 2019.***