

Occlusal Splints Thickness in the Treatment of Temporomandibular Disorders: Review of Current Evidence [†]

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Abstract

Introduction. Occlusal splints are oral appliances that have been designed to relieve the temporomandibular symptoms. However, the thickness of occlusal splints in order to have optimal efficacy is still controversial. **Methods.** An electronic search in Medline, Scopus, and Web of Science databases was conducted, using the following keywords up to 2025: (“occlusal splint” OR “stabilization splint” OR “bite splint”) AND (“vertical dimension” OR “thickness” OR “occlusal height”) AND (“temporomandibular disorder” OR “TMD” OR “disc displacement” OR “myofascial pain”). All titles and abstracts were screened. Studies comparing different thicknesses of occlusal splints were included. **Results.** Eight studies met the inclusion criteria, of which five were randomized controlled trials, one a retrospective study, and two finite element analyses. Mixed quality of the studies was found. Based on current evidence, although limited, the following results could be deduced: Occlusal splints with moderate thickness, 3 mm, are recommended for cases that involve both muscular and joint components, particularly when masticatory muscle pain is the primary complaint. Occlusal splints with minimal thickness, 2 mm, may be appropriate in internal derangements in the early stage, though evidence is low. Thicker splints, ≥ 4 mm, are for DDwoR and cases with crepitus. Occlusal splints of ≤ 2 mm and >6 mm were associated with symptoms such as reduced functional outcomes or comfort. **Conclusion.** In most cases, occlusal splints with thicknesses of 3–5 mm seem to be optimal for most TMD cases; however, personalized treatment based on the respective diagnosis is recommended. The decision on splint thickness should be based on evidence according to the severity of the diagnosis, but also patient-centered, to achieve comfort, compliance of the patient, and oral structure preservation. Further high-quality RCTs are needed to gain evidence-based guidelines and to achieve consistent results.

Keywords: temporomandibular disorders; occlusal splint; thickness; stabilization splint; disc displacement



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1. Introduction

Temporomandibular disorders (TMDs) comprise a heterogeneous group of musculoskeletal and neuromuscular conditions involving the temporomandibular joints (TMJs), masticatory muscles, and associated structures [1]. These disorders represent one of the most common causes of chronic non-dental orofacial pain and may be associated with

functional limitation, psychosocial distress, sleep disturbances, and impaired oral health-related quality of life [2,3]. The multifactorial etiology of temporomandibular disorders, including biological, biomechanical, and psychosocial components, complicates both diagnosis and management [4,5]. Conservative approaches are recommended as first-line management for most temporomandibular disorders [6–8]. In this framework, occlusal splints remain among the frequently prescribed interventions [9,10]. Historically, occlusal splints were introduced as mechanical devices in order to protect dentition from para-functional wear. Occlusal splints were first introduced by Karolyi in 1901, and nowadays have evolved into different stabilization and re-positioning splints [11]. Occlusal splint therapy is widely regarded as an adjunctive component of multimodal conservative care rather than a sole approach [12]. Its therapeutic objectives include redistribution of occlusal forces, reduction of abnormal joint loading, neuromuscular relaxation, protection of dental structures, and improvement of mandibular stability and function [13]. Different variables that characterize occlusal splints include design parameters such as material properties (hard vs. resilient), occlusal scheme and guidance, appliance coverage (full-arch vs. partial), and their thickness, which together influence comfort, stability, and potential biomechanical effects [14]. Although occlusal splints are widely used as part of conservative management for temporomandibular disorders, evidence supporting the clear clinical superiority of the characteristics that a splint should have remains inconsistent across studies. Rather than a one-size-fits-all solution, treatment outcomes appear to depend on several factors, including the type of TMD diagnosis, the chronicity of symptoms, and the patient's neuromuscular and behavioral adaptation to the appliance [15]. Among design parameters, splint thickness has attracted particular attention because it directly determines the increase in the vertical dimension and affects mandibular posture and TMJ loading conditions, potentially affecting the activity of the masticatory muscle and intra-articular stress. Occlusal splint therapy has been associated with the improvement of the symptoms in temporomandibular disorders, raising questions about whether splint thickness may influence outcomes across different diagnostic categories. The aim of this narrative review was to critically evaluate and integrate available biomechanical, physiological, and clinical evidence regarding occlusal splint thickness in the management of TMDs.

2. Methodology

This manuscript represents a proceeding paper presented at the 1st International Online Conference on Prosthesis, held on 10–12 December 2025. An electronic search was conducted in MEDLINE (PubMed), Scopus, and Web of Science databases. The primary electronic literature search covered studies published up to 2025. In addition, relevant articles published up to January 2026 were identified through targeted manual searching and reference screening in order to incorporate the most recent evidence available at the time of manuscript preparation. Key terms used were: (“occlusal splint” OR “stabilization splint” OR “bite splint”) AND (“vertical dimension” OR “thickness” OR “occlusal height”) AND (“temporomandibular disorder” OR “TMD” OR “disc displacement” OR “myofascial pain”). Reference lists of the articles were manually screened in order to identify additional relevant studies. Eligible studies were those that compared and analyzed the occlusal splint thicknesses. Considering the heterogeneity in the design of the studies, diagnostic criteria, outcome measures, and follow-up duration, quantitative synthesis was not appropriate. A narrative synthesis approach was therefore adopted, focusing on the integration of findings across studies. The results are presented and organized according to outcome domain, with studies grouped into (i) clinical outcomes in relation to splint thickness, (ii) neuromuscular and biomechanical evidence, and (iii) integrated interpretation across diagnostic categories and appliance characteristics.

3. Results

Eight studies met the inclusion criteria and were included in the study. A high degree of heterogeneity was evident across the included studies, particularly regarding the design of the studies and occlusal splint design characteristics. Considerable variation was also observed in outcome measures, which ranged from subjective patient-reported symptoms to objective functional and instrumental assessments, therefore limiting direct comparison across studies. In addition, follow-up durations varied, restricting the possibility of achieving consistent conclusions regarding both short and long-term therapeutic effects.

3.1. Clinical Outcomes in Relation to Splint Thickness

Across the analyzed clinical studies, occlusal splint therapy was associated with improvement in pain-related outcomes, temporomandibular joint (TMJ) symptoms, and functional parameters. However, clinical differences emerged according to the thickness of splints, material properties, and diagnostic subgroups. Bilir and Kurt [16] compared stabilization splints of 2 mm and 4 mm thickness in patients with muscle disorders, disc displacement, or combined diagnoses. Both splints were effective in reducing muscle pain and in the management of disc disorders. In patients with combined diagnoses, TMJ sounds decreased significantly, with a statistically significant difference between thicknesses, while a reduction in maximum unassisted opening was observed in the 2 mm group in the combined group. Lin et al. [17] evaluated flat-plane splints of 3 mm and 5 mm thickness in patients with disc displacement without reduction (DDWoR). Both splints resulted in clinical improvement; however, at 12-month follow-up, the 5 mm splint demonstrated greater improvement in patients with DDWoR with crepitus and TMJ arthralgia, while in patients who had DDWoR, but without crepitus and TMJ arthralgia, no significant differences were found between the splints with the two different thicknesses. Other symptoms, such as mandibular deviation, headache, and referred myofascial pain, did not differ significantly between the groups, indicating that increased thickness of occlusal splints may selectively benefit intra-articular symptoms without improving all clinical parameters. In an MRI-guided randomized controlled trial, Hegab et al. [18] reported that splints that were constructed with individualized thickness, approximately 4 mm for disc displacement with reduction (DDwR) and 6 mm for DDWoR, achieved greater reductions in pain intensity and greater improvements in mouth opening compared to the control group, an occlusal splint with 3 mm thickness. These findings support the concept that diagnosis-specific thickness selection, rather than uniform splint design, may enhance clinical outcomes in selected intra-articular cases. Sharma et al. [19] constructed three splints with different thicknesses: 3, 4, and 5 mm. They used joint vibration analyses in order to assess the function of the temporomandibular joint and observed significant functional improvement of the TMJ in patients with DDwR with 3 mm and 4 mm splints, whereas a 5 mm splint did not demonstrate a statistically significant treatment response and was associated with discomfort in some patients. Similarly, Akbulut et al. [20] reported that patients who had worn a 3 mm stabilization splint for a minimum of 6 months produced clinical improvement in patients with temporomandibular disorders, reinforcing the clinical relevance of splints with moderate thickness. In the study of Amin et al. [21], 3 mm hard, soft, and liquid splints were compared; all groups were effective, and the hard splints had the highest efficacy after 3 months of follow-up. Madani et al. [22] compared 1 mm and 3 mm hard splints and 1 mm and 3 mm soft splints. They reported no significant differences in outcomes during the first 7–30 days of therapy. After three months, 3 mm hard splints demonstrated the greatest symptom reduction, while 1 mm soft splints showed the least clinical benefit. Benli and Özcan [23] reported that splint material and thickness affect maximum bite force and sleep quality in sleep bruxism, with short-term improvements,

which were observed primarily with 2 and 3 mm soft splints. These clinical studies suggest that occlusal splints with moderate thicknesses are most consistently associated with favorable clinical outcomes, while very thin or excessively thick designs may be associated with reduced efficacy, discomfort, or limited tolerance.

3.2. Neuromuscular and Biomechanical Evidence

Electromyographic and biomechanical studies contribute to understanding how occlusal splint thickness may affect temporomandibular disorder-related outcomes, although their direct applicability to clinical practice remains limited. Electromyographic studies demonstrate inconsistent and non-linear relationships between the thickness of occlusal splints and the activity of the masticatory muscle. Pita et al. [24] evaluated the masseter and anterior temporalis muscles of asymptomatic individuals with occlusal splints of 3 mm and 6 mm thickness during mandibular rest and maximum voluntary clenching. No statistically significant differences were observed between the two occlusal splints with the two different thicknesses.

In contrast, Abekura et al. [25] analyzed electromyographic activity in individuals with sleep bruxism and reported that a 3 mm splint significantly reduced masseter and temporal muscle activity. A 6 mm splint, however, showed no significant benefit. These findings indicate that moderate vertical increases may be more favorable for neuromuscular modulation, whereas excessive separation may overload or disturb neuromuscular adaptation. Akat et al. [26] compared three types of occlusal splints (hard, soft, and semi-soft) in patients with bruxism. All occlusal splint types reduced masticatory muscle activity after 3 months, with the greatest EMG reduction and muscle thickness changes observed in the hard splint group.

Biomechanical modeling studies offer additional insight into how occlusal splint therapy affects joint-level mechanics. He et al. [27], through a finite element analysis, compared stabilization splints with thicknesses ranging from 2 to 6 mm in a model of unilateral anterior disc displacement without reduction. The 2 mm occlusal stabilization splint minimized stress in the disc and bilaminar region in unilateral DDWoR, whereas other occlusal splints did not further reduce joint stress.

The studies by Koolstra and van Eijden [28] and Tanaka et al. [29] highlight that joint loading increases with muscle activity and that excessive forces may contribute to cartilage damage, while the articular disc plays an important protective role by distributing joint loads. Ferreira et al. [30] used a computer-based finite element model and demonstrated that jaw closing places the highest stress on the middle part of the TMJ disc and that occlusal splints can reduce disc stress when the disc is displaced, while having little effect in normal joint conditions. Taken together, the limited neuromuscular and biomechanical evidence indicates that the effects of occlusal splint thickness on muscle activity and joint loading are non-linear and depend on the type of diagnosis. Occlusal splints of moderate thickness appear to support better neuromuscular adaptation, thinner splints may offer biomechanical advantages in certain joint-related conditions, and increasing the vertical separation beyond these ranges does not seem to provide additional benefit.

3.3. Integrated Interpretation

According to the INfORM/IADR key points for good clinical practice, Manfredini et al. [8] positioned oral appliances as second-line, provisional, and time-limited adjuncts in order to support self-management for the care of temporomandibular disorder. Kostrzewa-Janicka, Mierzwińska-Nastalska, Jarzębski et al. [31] studied 28 patients with myofascial pain, who were treated with three splints of different thicknesses each. They analyzed pain relief and clinical improvement and measured bite force (BF) at different jaw openings.

They found a correlation between treatment efficacy and splint thickness. This study demonstrated that the most effective occlusal stabilization splint thickness varies between individuals and corresponds to the jaw separation at which bite force first reaches a minimum, supporting an individualized approach to the thickness of the splints. The thickness of splints should be considered in the broader context of appliance design and fabrication characteristics. As stated in the study of Nassif et al. [32], occlusal splints differ in material composition and manufacturing techniques, including variations in stiffness, fabrication workflows, and the characteristics of surfaces. These observations support interpreting splint thickness as one of several variables in occlusal appliance therapy, rather than an isolated treatment outcome.

3.4. Clinical Implications

From a clinical perspective, the selection of occlusal splint thickness should be guided by the type of diagnosis, the extent of joint involvement, and patient tolerance to alterations in vertical dimensions. In routine clinical practice, occlusal splints that produce moderate increases in vertical dimension are most commonly used in the management of myofascial pain and mixed temporomandibular disorder presentations, as they are generally associated with a favorable balance between symptom reduction and functional tolerability. In selected intra-articular conditions, including disc displacement without reduction, increased vertical separation has been investigated as a therapeutic strategy, and it may be considered in specific clinical contexts. However, given the variability in the reported outcomes, such approaches should be implemented with caution and accompanied by careful monitoring of mandibular function, symptom evolution, and patient-reported comfort as well. In selected early-stage internal derangements, minimal increases in vertical dimension may be considered, with attention to maintaining the habitual mandibular position and ensuring appliance tolerance. Conversely, large alterations in vertical dimension at either extreme are more frequently associated with inconsistent neuromuscular responses, reduced comfort, and lower treatment adherence, which limits their applicability in everyday routine clinical settings.

4. Discussions

The aim of this proceeding paper was to integrate the available evidence regarding the role of occlusal splint thickness in the management of temporomandibular disorders by synthesizing clinical, neuromuscular, and biomechanical findings. The analysis of the included studies suggests that splint thickness should not be interpreted as a uniform or isolated determinant of treatment efficacy, but rather as a diagnosis-dependent and patient-specific parameter that interacts with mandibular posture, neuromuscular adaptation, and temporomandibular joint loading conditions [16–19,22,24,25,27].

From a clinical perspective, studies that compare different splint thicknesses generally indicated that moderate increases in vertical dimensions were associated with favorable pain and functional outcomes, particularly in patients with muscular or mixed muscle–joint temporomandibular disorders. Bilir and Kurt [16] reported clinical improvement with stabilization splints with thicknesses of both 2 mm and 4 mm, although TMJ sounds and functional changes were different between thicknesses, while Madani et al. [22] demonstrated greater reduction in symptoms with hard splints of 3 mm compared with thinner ones (1 mm). Similarly, Sharma et al. [19], using joint vibration analysis, observed superior functional improvement with splints with mid-range thickness (3 and 4 mm), whereas thicker splints (5 mm) did not provide additional benefit and were associated with discomfort in some patients.

In intra-articular disorders, particularly in disc displacement without reduction, the response to the thickness of splints appeared to be diagnosis- and symptom-specific rather than uniform. Lin et al. [17] reported comparable outcomes between 3 mm and 5 mm splints in DDwoR overall, with an advantage of the splint with 5 mm thickness in patients presenting with crepitus and arthralgia. An MRI-guided randomized controlled trial by Hegab et al. [18] showed that individualized thickness based on MRI (4 mm for DDwR and 6 mm for DDwoR) resulted in greater improvements in pain and mouth opening compared with the occlusal splints with 3 mm thickness.

Neuromuscular and biomechanical studies provide additional insight into the mechanisms underlying these clinical observations. Electromyographic studies indicate no differences in masticatory muscle activity between 3 mm and 6 mm splints in asymptomatic individuals [24], whereas in patients with sleep bruxism, splints of 3 mm significantly reduced muscle activity, while a 6 mm splint showed no additional benefit [25]. Finite element modeling by He et al. [27] indicated that splints with 2 mm thickness minimized joint stress in unilateral DDwoR, with no additional benefit from increased thickness.

Taken together, these findings support an individualized approach to the selection of the thickness of occlusal splints. Rather than identifying a universally optimal thickness, the available evidence indicates that moderate vertical dimension increases are often effective and well tolerated, while thickness adjustments should be guided by the specific temporomandibular disorder diagnosis, symptom profile, and patient tolerance.

4.1. Limitations

The current evidence related to occlusal splint thickness is limited. Studies are characterized by small sample sizes, short follow-up durations, heterogeneous diagnostic criteria, and variability in appliance design and outcome measures. Direct randomized comparisons of multiple splint thicknesses are limited, and only a small number of studies have outcomes according to temporomandibular disorder subtype.

4.2. Future Directions

Future research should be directed toward well-designed, randomized controlled trials with longer follow-up periods to analyze both short-term and long-term symptom changes. The integration of imaging, electromyography, and joint vibration analysis, together with patient-reported outcomes, may provide a more comprehensive understanding of the effect related to the thickness of occlusal splints. Prospective studies that explore individualized thickness determination based on parameters such as craniofacial morphology, neuromuscular response characteristics, or biomechanical modeling may contribute to a more precise and clinically framework for splint design.

5. Conclusions

Due to the limited number of available studies and the heterogeneity of the evidence base, definitive conclusions regarding optimal occlusal splint thickness cannot be established. Within the above limits, we can conclude that splint thickness should be approached as a diagnosis-dependent and patient-specific parameter rather than a universally optimal value. Current evidence most consistently supports the use of occlusal splints producing moderate increases in vertical dimension, across a broad spectrum of TMD presentations, particularly in cases involving muscular or mixed muscle–joint components. Thinner splints may be appropriate in selected early-stage internal derangements, while thicker splints may be considered in specific intra-articular conditions; however, these approaches should be considered in a cautious way and should be based on the specific diagnosis, symptom severity, functional response, and patient tolerance. Further well-designed ran-

domized controlled trials with standardized protocols and longer follow-up periods are required in order to establish more consistent and clinically applicable guidelines.

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Abbreviations

The following abbreviations are used in this manuscript:

BF	Bite force
CBCT	Cone-beam computed tomography
DDwR	Disc displacement with reduction
DDwoR	Disc displacement without reduction
EMG	Electromyography
FEA	Finite element analysis
INFORM	International Network for Orofacial Pain and Related Disorders Methodology
IADR	International Association for Dental, Oral and Craniofacial Research
MRI	Magnetic resonance imaging
RCT	Randomized controlled trial
TMJ	Temporomandibular joint
TMD	Temporomandibular disorder

References

1. de Leeuw, R.; Klasser, G.D. (Eds.) *Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management*, 6th ed.; Quintessence Publishing: Chicago, IL, USA, 2018.
2. Slade, G.D.; Ohrbach, R.; Greenspan, J.D.; Fillingim, R.B.; Bair, E.; Sanders, A.E.; Dubner, R.; Diatchenko, L.; Meloto, C.; Smith, S.; et al. Painful temporomandibular disorder: Decade of discovery from the OPPERA studies. *J. Dent. Res.* **2016**, *95*, 1084–1092. [[CrossRef](#)]
3. Ohrbach, R.; Dworkin, S.F. The evolution of TMD diagnosis: Past, present, future. *J. Dent. Res.* **2016**, *95*, 1093–1101. [[CrossRef](#)] [[PubMed](#)]
4. Yap, A.U.; Chua, E.K.; Hoe, J.K. Clinical TMD, pain-related disability and psychological status of TMD patients. *J. Oral Rehabil.* **2002**, *29*, 374–380. [[CrossRef](#)] [[PubMed](#)]
5. Manfredini, D.; Guarda-Nardini, L.; Winocur, E.; Piccotti, F.; Ahlberg, J.; Lobbezoo, F. Research diagnostic criteria for temporomandibular disorders: A systematic review of axis I epidemiologic findings. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endod.* **2011**, *112*, 453–462. [[CrossRef](#)] [[PubMed](#)]
6. Vaira, L.A.; De Riu, G. Temporomandibular joint disorders: Functional and conservative treatment. *J. Clin. Med.* **2023**, *12*, 4772. [[CrossRef](#)]
7. Manfredini, D.; Kandasamy, S. Temporomandibular disorders: Do we finally have a consensus standard of care for dissemination? *Am. J. Orthod. Dentofac. Orthop.* **2026**, *169*, 8–11. [[CrossRef](#)]
8. Manfredini, D.; Häggman-Henrikson, B.; Al Jaghsi, A.; Baad-Hansen, L.; Beecroft, E.; Bijelic, T.; Bracci, A.; Brinkmann, L.; Bucci, R.; Colonna, A. Temporomandibular disorders: INfORM/IADR key points for good clinical practice based on standard of care. *J. Craniomandib. Sleep Pract.* **2025**, *43*, 1–5. [[CrossRef](#)]

9. Gupta, A.K.; Singh, R.K.; Narula, V. Centric stabilization occlusal splints vs other conservative therapies in the management of temporomandibular disorders: A systematic review and meta-analysis. *Saudi Dent. J.* **2025**, *37*, 52. [\[CrossRef\]](#)
10. Zhang, Y.; Zhang, H.; Liu, R.; Jin, S.; Huo, T.; Wei, H.; Qin, L. The efficacy of treatments for temporomandibular disorders with occlusal splints versus other conservative therapies: A meta-analysis of randomized controlled trials. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol.* **2025**, *139*, 509–520. [\[CrossRef\]](#)
11. DuPont, J.S.; Brown, C.E. Occlusal splints from the beginning to the present. *J. Craniomandib. Sleep Pract.* **2006**, *24*, 141–145. [\[CrossRef\]](#)
12. List, T.; Axelsson, S. Management of TMD: Evidence from systematic reviews and meta-analyses. *J. Oral Rehabil.* **2010**, *37*, 430–451. [\[CrossRef\]](#)
13. Crout, D.K. Anatomy of an occlusal splint. *Gen. Dent.* **2017**, *65*, 52–59.
14. Bhargava, D.; Chávez Farías, C.; Ardizzone García, I.; Mercuri, L.G.; Bergman, S.; Pogrel, M.A.; Sidebottom, A.J.; Srouji, S.; Şentürk, M.F.; Elavenil, P.; et al. Recommendations on the Use of Oral Orthotic Occlusal Appliance Therapy for Temporomandibular Joint Disorders: Current Evidence and Clinical Practice. *J. Maxillofac. Oral Surg.* **2023**, *22*, 579–589. [\[CrossRef\]](#)
15. Singh, B.P.; Singh, N.; Jayaraman, S.; Kirubakaran, R.; Joseph, S.; Muthu, M.S.; Jivnani, H.; Hua, F. Occlusal interventions for managing temporomandibular disorders. *Cochrane Database Syst. Rev.* **2024**, *2024*, CD012850. [\[CrossRef\]](#)
16. Bilir, H.; Kurt, H. Influence of stabilization splint thickness on temporomandibular disorders. *Int. J. Prosthodont.* **2022**, *35*, 163–173. [\[CrossRef\]](#)
17. Lin, S.L.; Wu, S.L.; Ko, S.Y.; Yen, C.Y.; Yang, J.W. Effect of flat-plane splint vertical thickness on disc displacement without reduction: A retrospective matched-cohort study. *J. Oral Maxillofac. Surg.* **2017**, *75*, 1627–1636. [\[CrossRef\]](#) [\[PubMed\]](#)
18. Hegab, A.F.; Youssef, A.H.; Hameed, H.I.A.A.; Karam, K.S. MRI-based determination of occlusal splint thickness for temporomandibular joint disk derangement: A randomized controlled clinical trial. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol.* **2018**, *125*, 74–87. [\[CrossRef\]](#)
19. Sharma, J.; Banerjee, R.; Gajbhiye, V.; Bhoge, A.; Jaiswal, P.; Nayak, K. Randomized clinical trial to evaluate the effectiveness of different thicknesses of stabilization splints in treating temporomandibular disorder using joint vibration analysis. *J. Indian Prosthodont. Soc.* **2025**, *25*, 210–219. [\[CrossRef\]](#) [\[PubMed\]](#)
20. Akbulut, N.; Altan, A.; Akbulut, S.; Atakan, C. Evaluation of the 3 mm thickness splint therapy on temporomandibular joint disorders (TMDs). *Pain Res. Manag.* **2018**, *2018*, 3756587. [\[CrossRef\]](#) [\[PubMed\]](#)
21. Amin, A.; Meshramkar, R.; Lekha, K. Comparative evaluation of clinical performance of different kinds of occlusal splints in the management of myofascial pain. *J. Indian Prosthodont. Soc.* **2016**, *16*, 176–181. [\[CrossRef\]](#)
22. Madani, A.; Mirmortazavi, A.; Iraj, M.B. Comparative efficacy of different thicknesses of soft and hard splints in reducing clinical symptoms in patients with temporomandibular disorders. *J. Craniomaxillofac. Res.* **2023**, *10*, 58–68. [\[CrossRef\]](#)
23. Benli, M.; Özcan, M. Short-term effect of material type and thickness of occlusal splints on maximum bite force and sleep quality in patients with sleep bruxism: A randomized controlled clinical trial. *Clin. Oral Investig.* **2023**, *27*, 4313–4322. [\[CrossRef\]](#)
24. Pita, M.S.; Ribeiro, A.B.; Garcia, A.R.; Pedrazzi, V.; Zuim, P.R. Effect of occlusal splint thickness on electrical masticatory muscle activity during rest and clenching. *Braz. Oral Res.* **2011**, *25*, 506–511. [\[CrossRef\]](#)
25. Abekura, H.; Yokomura, M.; Sadamori, S.; Hamada, T. The initial effects of occlusal splint vertical thickness on the nocturnal electromyographic activities of masticatory muscles in subjects with a bruxism habit. *Int. J. Prosthodont.* **2008**, *21*, 116–120.
26. Akat, B.; Görür, S.A.; Bayrak, A.; Eren, H.; Eres, N.; Erkan, Y.; Kılıçarslan, M.A.; Orhan, K. Ultrasonographic and electromyographic evaluation of three types of occlusal splints on masticatory muscle activity, thickness, and length in patients with bruxism. *J. Craniomandib. Sleep Pract.* **2023**, *41*, 59–68. [\[CrossRef\]](#) [\[PubMed\]](#)
27. He, J.; Ran, J.; Zheng, B.; Algahefi, A.; Liu, Y. Finite element analysis of various thickness occlusal stabilization splint therapy on unilateral temporomandibular joint anterior disc displacement without reduction. *Am. J. Orthod. Dentofac. Orthop.* **2022**, *161*, e277–e286. [\[CrossRef\]](#)
28. Koolstra, J.H.; van Eijden, T.M. Combined finite-element and rigid-body analysis of human jaw joint dynamics. *J. Biomech.* **2005**, *38*, 2431–2439. [\[CrossRef\]](#)
29. Tanaka, E.; Rego, E.B.; Iwabuchi, Y.; Inubushi, T.; Koolstra, J.H.; van Eijden, T.M.G.J.; Kawai, N.; Kudo, Y.; Takata, T.; Tanne, K. Biomechanical response of condylar cartilage-on-bone to dynamic shear. *J. Biomed. Mater. Res. A* **2008**, *85A*, 127–132. [\[CrossRef\]](#) [\[PubMed\]](#)
30. Ferreira, F.M.; César Simamoto-Júnior, P.; Soares, C.J.; Ramos, A.M.; Fernandes-Neto, A.J. Effect of occlusal splints on the stress distribution on the temporomandibular joint disc. *Braz. Dent. J.* **2017**, *28*, 324–329. [\[CrossRef\]](#)

31. Kostrzewa-Janicka, J.; Mierzwińska-Nastalska, E.; Jarzębski, G.; Okoński, P. Vertical jaw separation for vertical thickness of occlusal stabilization splint. *J. Stomatol. Occ. Med.* **2012**, *5*, 20–27. [[CrossRef](#)]
32. Nassif, M.; Haddad, C.; Habli, L.; Zoghby, A. Materials and manufacturing techniques for occlusal splints: A literature review. *J. Oral Rehabil.* **2023**, *50*, 1348–1354. [[CrossRef](#)] [[PubMed](#)]

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