

## REVIEW ARTICLE

# Occlusal Splint Therapy for a Dysfunctional Temporomandibular Joint

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## ABSTRACT

Splint therapy is an effective form of treatment for the pain of many types of temporomandibular disorders and bruxism. There are many unanswered questions as to how splints work. This article is a review of the literature which focuses on an effective splint design for the different degrees of temporomandibular problems.

**Keywords:** Temporomandibular disorders, Permissive splints, Anterior midpoint contact splints, Directive splints.

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## INTRODUCTION

Splint therapy is defined as the art and science of establishing neuromuscular harmony in the masticatory system and creating a mechanical disadvantage for parafunctional forces with removable appliances.

A correctly constructed splint supports a harmonious relation between the muscles of mastication, disk assemblies, joints, ligaments, bones, teeth and tendons.

## FUNCTIONS OF SPLINTS

- Relaxation of the muscles
- To allow the condyle to comfortably seat in centric relation

- To give diagnostic information
- To protect teeth from bruxism
- To mitigate periodontal ligament proprioception
- To decrease cellular hypoxia levels.

## TYPES OF OCCLUSAL SPLINTS<sup>1</sup>

Permissive splints are designed to eliminate noxious occlusal contacts and promote harmonious masticatory muscle function. The primary function of these splints is to change the occlusion so that teeth do not interfere with complete seating of the condyles and to reduce muscle forces. The two common designs of permissive splints are anterior midpoint contact splints and full contact splints.

Directive splints guide the mandibular condyles away from the fully seated joint position when a painful joint problem is present. Whereas permissive splints alter the occlusion to allow the condyles to be fully seated superiorly and anteriorly by the elevator muscles, directive splints prevent full seating of the joints by guiding the mandible into a forward posture on closure into the occlusal splint.

## ANTERIOR MIDPOINT CONTACT PERMISSIVE SPLINTS



## Objectives

- Removes occlusal interferences.
- Allows freedom for full seating of the mandibular condyles when the elevator muscles contract on closure.
- Encourages release of the lateral pterygoid and anterior neck positioning muscles on closure.

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## FULL CONTACT PERMISSIVE SPLINTS



### Objectives

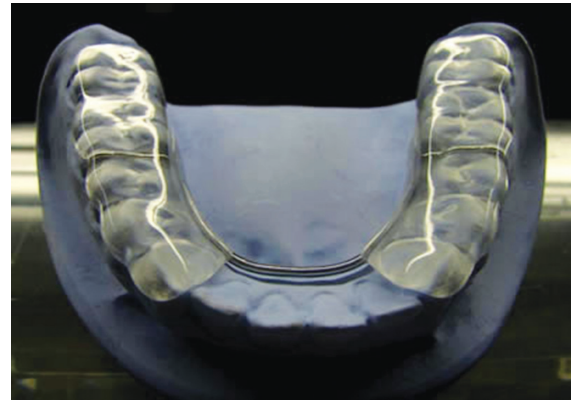
- They are designed to create an idealized occlusion in a reversible manner
- To eliminate discrepancies between seated joints and occlusion (CR = MI)
- A large surface area of shared biting force
- Reduced joint loading
- Idealized functional occlusion
- The opportunity to observe for occlusal and joint stability over time
- Eliminates interferences
- Distributes occlusal forces
- Place condyles in the most musculoskeletal stable position
- Eliminates instability between joint and the occlusion.

## ANTERIOR REPOSITIONING DIRECTIVE SPLINT



- Guide the mandibular condyles away from the fully seated joint position when a painful joint problem is present
- Directive splints prevent full seating of the joints by guiding the mandible into a forward posture on closure into the occlusal splint
- Anterior repositioning directive splints are useful in two scenarios of joint management: severe trauma with retrodiscal edema and chronic painful disk displacement disorders.

## POSTERIOR BITE PLANES



### Indications

- In case of severe loss of vertical dimension
- When major changes in anterior positioning of mandible are needed
- By athletes to improve athletic performance.

## SOFT OR RESILIENT APPLIANCE

### Indications

- Protective appliance for persons likely to receive trauma to their dental structures
- Patients suffering from recurrent or chronic sinusitis resulting in extremely sensitive posterior teeth.

## Choosing the Correct Splint

### *Simple Occluso-muscle Problem<sup>2</sup>*

- The use of an anterior midpoint contact permissive splint will achieve muscle release
- Duration—1 to 5 minutes to 24 hours.
- Occasionally, total relaxation of the jaw muscles may require deprogramming for several hours or overnight.

### *Occluso-muscle Parafunction Problems*

- Initial therapy Use of anterior midpoint contact permissive splint.
- Duration—2 to 4 weeks
- Upon successful resolution of symptoms, occlusal analysis and appropriate occlusal correction are implemented, sometimes use of a full arch permissive splint.

### *Parafunction*

- Use of an anterior midpoint contact permissive splint.
- Duration—2 to 4 weeks
- A nightguard to control the harmful effects of nocturnal parafunction may be used indefinitely to prevent muscle symptoms and protect the teeth from excessive wear.

*Partial Disk Displacement*

- Use of a full arch permissive splints.
- Duration—6 to 8 weeks.

*Complete Disk Displacement*

- Use of anterior repositioning directive splint for 2 weeks followed by full arch permissive splint
- Duration—3 + months.

**SPLINT DESIGN WITH FUNCTIONAL CONSIDERATION<sup>3,4</sup>**

- Stability
- Balance in centric relation
- Equal intensity stops on all teeth
- Provides immediate posterior disclusion by the anterior and condylar guidance

- Must have freedom in movement for neuromuscular harmony and subsequent healing
- The splint must be continuously adjusted
- Comfort during wear
- Reasonable esthetics.

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