

# AOAappliances, etc.

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Freedom Appliances For:  
Class II  
Class III  
Expansion

Red White & Blue:  
A review of why it's  
successful and how it  
could be the right fit for  
your practice.

## Thinking Appliances

### What's New!

This, our 10th edition of AOApliances, etc. features Dr. James Mah. Dr. Mah is an assistant-professor at the Orthodontic Department, University of Southern California. James is perhaps best known to the Orthodontic community as a researcher in the area of computerized imaging. Dr. Mah has contributed many papers on this subject and is much sought after as a lecturer and presenter at various orthodontic gatherings and study groups.

Dr. Mah is sharing with us his approach to reliable, durable and effective methods of correcting Class II, Class III and maxillary width problems. The Freedom Appliances are esthetic and extremely retentive. The approach is immediately understood by the orthodontic staff and patient. While we appreciate the current interest in "Non-Compliance" correction, we also note from our many accounts an important need for a removable appliance to provide the same therapy when seating crowns is not an option. These appliances will be a tool every Orthodontist will want to know is available.

We are also bringing to this issue updates to our Red, White & Blue appliance system. We are sharing some of the ways offices incorporate the system into their practice. Also AOA is "rolling out" a new material that will be used in the Red appliance. Because it is the first to be delivered, we have altered the formula to be slightly more flexible. We feel this may enhance the initial tooth movement. The Red will appear identical to the DuraClear material; however, the new chemistry will continue to keep Red White & Blue the most versatile removable system in your armamentarium for minor to moderate anterior tooth correction.



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## Esthetic Functional Appliances - Attractive Options For Phase I Therapy

Exciting developments in the last few years in orthodontics have brought rapid growth in esthetic orthodontic appliances, particularly in removable designs. This growth has been in a large part driven by public demand for more esthetic and convenient orthodontic treatments as well as more treatment options. The public demand is not limited to a particular demographic as it comes from children as well as adults seeking orthodontic treatment. At present the vast majority of esthetic removable appliances are for the permanent dentition in non-growing patients. However, this is also a time where "there are more twelve-year olds in the United States now than at any other time in history" (ref Turpin). This age group and others undergoing Phase I treatment are also part of the demand for esthetic appliances. Therefore, AOA/Ormco introduces a family of esthetic removable functional appliances that include a Class II jaw repositioner, a maxillary expander and an intra-oral headgear appliance.

Common features of these appliances are esthetic/invisible/clear designs with minimal metallic components and virtually no metal visible. These are removable appliances suitable for cooperative patients that are willing to abide to the wear and adjustment schedule in exchange for the comfort, ease of oral hygiene, efficiency and esthetics of these appliances.



Fig. 1  
Freedom Class II Corrector



Fig.2  
Upper  
Incline  
Plane and  
the lower  
opposing  
Peg. Note  
embedded  
Headgear  
tube.

The Class II jaw repositioner consists of a maxillary and mandibular component, both constructed of a clear, esthetic thermoformed sheet with increased strength and wear properties. The maxillary appliance contains an incline on which a mandibular peg contacts (Fig. 1). As the mandible closes its position, the peg contacts the incline and brings the mandible forward as it closes (Fig. 2). Another feature of the Class II corrector is the possibility for easy additional advancement. By adding standard cold cure acrylic to the distal of the mandibular pegs, the appliance can be re-activated as needed by the clinician. This can be unilaterally or bilateral depending on the clinical requirements. The material used to construct these appliances is compatible with cold cure acrylic without any special preparation. For treatment of severe Class II skeletal malocclusion advancement in two or more stages should be considered.

An exciting design feature of this appliance is the integrated headgear tube in the maxillary inclines. This allows for headgear wear in conjunction with the functional jaw advancement. This approach is directed at simultaneous skeletal and functional correction of the malocclusion. Patients are asked to wear the Class II jaw repositioner full time, day and night, remove it for meals, and wear the headgear with the appliance at a minimum of 14 hours/day. With the combined wear schedule, anterior-posterior jaw discrepancies are corrected very rapidly.



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In addition to Class II correction, other applications for the jaw positioner are in the management of temporomandibular disorders, sleep apnea, and retention following surgical correction of Class II. The latter is a very attractive application as at this time, there is no commonly available retainer of maintenance of skeletal correction.

Major clinical areas of use:

1. Class II correction with and without headgear
2. Treatment of temporomandibular dysfunction by anterior jaw repositioning
3. Retention of Class II correction with orthognathic surgery or following severe Class II correction
4. Sleep apnea – jaw advancement to increase airway

A typical office appointment schedule for patients with the class II jaw repositioner is 4 weeks following insertion and every 8-10 weeks thereafter. At the subsequent visits, treatment progress, oral hygiene, compliance and signs of appliance wear and breakage are evaluated.

### Maxillary Expander

The maxillary expander is comprised of a traditional palatal expansion screw integrated with a layer of thermoformed material that is relatively more rigid compared with that used for other pressure formed appliances. The appliance extends over the clinical crowns of all maxillary teeth and includes palatal coverage. This design feature provides significantly more anchorage than other expander designs.



Since the maxillary expander is constructed from a stiffer material to counteract the dislodging forces, the fit may be fairly tight during insertion, particularly in the initial day or two. A clinical tip to assist with appliance insertion is to warm the appliance in

warm water from the tap. Some caution needs to be exercised here as some taps deliver extremely hot water that could distort the appliance. After the appliance is warmed for 2-3 minutes, it becomes more flexible and should have no problems with insertion.

The activation schedule is typically one/two turns per day and can be performed prior to placement in the mouth. This offers tremendous ease and ability for either the patient or parent to activate. Following activation, the appliance should feel tighter but not considered too tight. Occasionally, it may be necessary to warm the appliance in hot water as above to soften it prior to placement.

When the desired amount of activation is achieved, the incisor region is cut out to free up central and lateral incisors.

The transeptal fibers act to close the diastema and align the incisors. During this time, the expander is left in place without activation to retain during this phase (typically 4 weeks). When the diastema is closed, another impression is taken for fabrication of a thermoformed retainer. It is recommended to use the same thick, stiffer thermoform material as the expander to ensure maintenance of the results. After 3-4 months, the thicker material is replaced with a new appliance that is also thermoformed but thinner.

The maxillary expander appliance allows for expansion in a wider range of patients. Expansion is generally performed in the early mixed dentition where the primary tooth roots are still fairly complete or the late mixed dentition when the first premolars have erupted. The rationale is that the primary first molars or the first premolars are used for anchorage with an RPE or similar type of expander. The middle mixed dentition is characterized by resorbing tooth roots on the first and second primary molars, thereby limiting band placement and application of forces. With our design of maxillary expander, there is no requirement to band the resorbing teeth. This enables expansion to be performed at an age when the dentition does not allow for other appliance designs. However it is also a time when the mid-palatal suture is open and has not yet begun to coalesce and fuse.

### Intra-oral Headgear Appliance



The intra-oral headgear appliance is a layer of esthetic, rigid, thermoformed material with integrated headgear tubes or elastic hooks for Class II and Class III correction, respectively. The Class II

appliance is similar to that of the maxillary component of the jaw repositioner without the inclines. Similarly cold-cure acrylic can be added to the material without special preparation allowing for fabrication of a bite plane if needed.

The Class III appliance contains integrated elastic hooks for attachment of elastics to a facemask type of headgear. This appliance design is very appealing in the treatment of Class III malocclusion with maxillary retrognathism as this type of patient is typically in treatment for many years as growth takes its course. Using traditional appliances, the bands could be in place for this duration with deleterious effects. Additionally, this type of patient often requires maxillary expansion along with reverse-pull headgear wear. In this situation, elastic hooks can optionally be added to the maxillary expander.



A typical office appointment schedule for patients with the intra-oral headgear is much like the Class II jaw repositioner with the first recall visits following insertion at 4 weeks and subsequent appointments every 8-10 weeks thereafter.

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## Red, White & Blue – Here’s How It Works...



The Red, White & Blue system is designed to treat minor rotations, torque, tip and spacing problems in the social six anteriors by using a series of three active appliances,

each working to move the teeth progressively closer to the desired result. Most patients wear each active retainer for two to four weeks in the easy-to-remember sequence transitioning from the Red to the White to the Blue appliances with the Blue serving as the final appliance and retainer. Each appliance is clearly marked with color-coded dots for easy identification. The entire system can be delivered to the patient rather than the patient returning to the office for the next appliance in the series. How easy is that!

**Step 1:** Conduct the initial examination to determine if your patient is a candidate for Red, White & Blue.

**Step 2:** Make a quality impression of your patient’s teeth. Note: if you use polyvinyl siloxane (e.g., Take 1 Super Fast Medium/Monophase from Kerr), you don’t need to pour a model. Just be sure the impression doesn’t have any bubbles or missing margins. If you use alginate (e.g., Basis fromOrmco) for your impressions, we ask that you pour and trim the resulting model(s).

**Step 3:** Select the anterior teeth that you want corrected using our AOA Red, White & Blue prescription form. Note: if you have elected to reposition cuspids, we suggest that you maintain one or more incisors in their current position. Make sure to indicate which, if any, teeth are to be stripped. If you choose to strip prior to the impression for the work models make sure to note this on the set up portion of the Rx form. If stripping is to be done post impression, again, note carefully where AOA is to reduce the interproximal areas on the model(s).



Keep in mind that the Red, White & Blue system is for minor to moderate correction. Typical candidates are post orthodontic refining, and patients with stable posterior

occlusions with complaints of rotations, crowding or spaces. Teeth that are to be treated with “cosmetic” bonding can also be positioned for optimal restorative results. Example: small upper laterals.

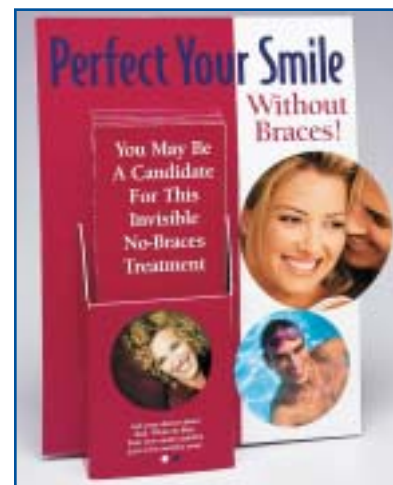
**Step 4:** Send the prescription and impression or model to AOA. Call our Customer Service Department (1-800-262-5221) for mailing supplies and forms.

**Step 5:** The system will be returned in approximately three weeks. The returned shipment will include the three appliances (four appliances if the long-term Blue2 Appliance option is selected) and two carrying cases. The extra case is included for convenient storage of the appliances not being worn. A brochure for the patient explaining care and wearing techniques.

**Step 6:** For the most reappointment flexibility, deliver all three appliances at one time. You may choose to reappoint your patients in approximately 8 weeks when they should be ready to begin wearing the Blue Appliance. At that point, you can then perform any additional recontouring before the patient begins the final phase of treatment.

### Consultation Aids are Available...

AOA will furnish your practice with complimentary aids to help explain the system to patients as well as brochures the patient can take home for review or to show other members of their family and friends. The brochures are displayed in a counter or table top “poster” for a direct patient introduction to the Red, White & Blue system.



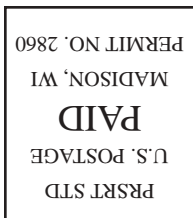
Attractive binder with typodonts and appliances are available for a modest fee to add to your consultation display. Images for websites can be made available upon request.

*“Red, White & Blue is an appropriately simple technology for simple cases and it’s the perfect option for patients who would otherwise do nothing. All I have to do is send in an impression and AOA does the rest.”*

Randall Moles, DDS, MS, Racine, WI

*“How many times have you had to tell the patient’s parents who asked about fixing a mild crowding, rotations or spacing that the only alternative was braces or another retainer alternative that involves considerable time and monetary commitment. Finally, with Red, White & Blue, I’ve got a treatment option that’s simple and affordable for these types of cases and a new source of income by satisfying an unfulfilled niche”*

Ross Styker, DDS, Lebanon, MO



Seated  
Freedom  
Expander.



Activated to  
prescribed  
width.



Anterior view.  
The plastic  
can be  
trimmed  
away  
allowing  
closure of the  
diastema.

## Advantage for the Orthodontic Practice

Clinical trials with these appliances have shown clear advantages for the orthodontic practice in reducing the number of appointments, inventory, and emergency visits. Since these esthetic appliances do not use bands, the appointments for placement of separators, fitting and cementation of bands are eliminated. In many cases, an extra set of impressions is taken at the records appointment to be used for construction of the appliances. The appliances are easily inserted at the same visit as the record review and consultation. This treatment sequence eliminates two appointments, thereby increasing treatment efficiency. An overriding philosophy is to be as efficient as possible with fixed appliances – select the proper time to initiate treatment, do so expediently and remove the appliances. This philosophy leads to less “in vivo” inventory (the bands, bonds, wires, elastics in patients’ mouths) and the less potential for failure and emergencies to develop. Additionally, providing as much correction as possible with Phase I treatment reduces the period of time required for Phase II treatment with fixed appliances.

Due to the removable nature of these appliances, oral hygiene is significantly better than that of patients treated with the more traditional fixed Phase I appliances.

Emergency visits with removable appliances are much easier to handle. Problems are usually associated with lost or damaged appliances rather than associated with sores, pain and ulcerations from sharp edges of appliances.

### Conclusion:

1. Fewer visits – eliminate separation, band fitting for Phase I.
2. Decrease the “in vivo” inventory – bands and other fixed components in patients mouths leave more potential for problems to arise.
3. Fewer and easier “emergencies” due to appliance failure. There is less potential sites of breakage/failure and if emergencies develop, patients can simply remove the appliance until they are reappointed. The emergencies are typically related to loss of the appliance as opposed to sores, pain and ulcerations from sharp edges of appliances.
4. New possibilities for retention of surgical /severe Class II correction, treatment of TMJ disorders and sleep apnea.